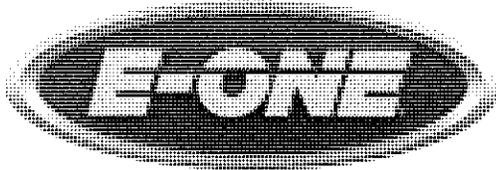


Letter of Introduction  
Bid Bond



**Proposal For:**

Triple Combination Pumper  
Lexington Fire Dept.

**Dealer**

Vogelpohl Fire Equip., Inc.  
2770 Circleport Dr.  
Erlanger, KY 41018  
800-797-8317  
859-282-1000  
859-282-1550 fax

*Todd Vogelpohl, President*  
*513-659-8789 cell*

**Sales Representative**

*Kevin Kleman*  
*Vice President*  
*859-240-1515 cell*

Exceptions  
Clarifications

Proposal  
Specifications

Customer  
Specifications

Warranties

Miscellaneous

Drawings

Literature



## Vogelpohl Fire Equipment, Inc.

2770 Circleport Drive

Erlanger, KY 41018

800-797-8317 859-272-1000 859-272-1550 fax

October 3, 2013

Lexington Fayette Urban County Government  
200 E. Main St. Rm 338  
Lexington, KY 40507

Gentlemen,

Thank you for the opportunity to submit this proposal for your fire department custom pumper needs.

We have enclosed our proposal for an E-One Mainline Custom Pumper with a 1500 GPM Waterous CSU Pump, 1000 gallon Water Tank, and a heavy-duty Extruded Aluminum Body, mounted on an E-One Typhoon Custom Fire Apparatus Chassis. We have included requested forms and submissions, and detailed specifications as to the construction of the apparatus bid. E-ONE, Inc. is a leading worldwide designer, manufacturer and marketer of fire rescue vehicles with more than 23,000 vehicles in operation around the world. Headquartered in Ocala, Florida, E-ONE manufactures custom and commercial pumpers and tankers, aerial ladders and platforms, rescues of all sizes, quick attack units, industrial trucks, and aircraft rescue firefighting vehicles to meet the needs of fire departments, rescue/EMS squads, airports and Homeland Security agencies. Vogelpohl Fire Equipment, Inc., Erlanger Kentucky, is the local E-One dealer, who will be responsible for meeting all your sales and service requirements.

As you evaluate the proposals you receive, we would welcome the opportunity to meet with you and representatives of the fire department to discuss our proposal in detail and to answer any questions and concerns. While we have had to take exception to certain items in your specifications due to configuration and construction limitations, we look forward to taking part in the on-line bidding event on October 14, and assuming we are competitive, working with you to provide a final configuration fully meeting the needs of the Lexington Fire Department. While E-One may not be the lowest bid received, we hope that you will recognize the design, construction, durability, and service that make us one of the best values in the industry today, and worthy of your business.

Again, we thank you for considering us for your fire apparatus needs, and we look forward to hearing from you.

Sincerely,

A handwritten signature in black ink, appearing to read "Vogelpohl", written over a white background.

Todd Vogelpohl  
President, Vogelpohl Fire Equipment, Inc.  
E-One Dealer Representative

# Document A310™ – 2010

Conforms with The American Institute of Architects AIA Document 310

## Bid Bond

### CONTRACTOR:

(Name, legal status and address)

E-One, Inc.  
1601 SW 37th Avenue  
Ocala, FL 34474

### SURETY:

(Name, legal status and principal place of business)

Travelers Casualty and Surety Company of America  
One Tower Square  
Hartford, CT 06183

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

### OWNER:

(Name, legal status and address)

City of Lexington  
200 E. Main Street, Room 338  
Lexington, KY 40507

BOND AMOUNT: \$ 22,500

Twenty Two Thousand Five Hundred Dollars and 00/100

### PROJECT:

(Name, location or address, and Project number, if any)

Supply One (1) Triple Combination Pumper

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this 4th day of October, 2013



(Witness)



(Witness)

E-One, Inc.

(Principal)

(Seal)

By:

(Title)

Travelers Casualty and Surety Company of America

(Surety)

(Seal)

By:

(Title) Stephanie L. Klearman Attorney-in-Fact



POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 227062

Certificate No. 005612235

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Lisa A. McAleenan, Kelly M. Sunderman, Anne M. Gliedt, Teresa M. Sheppard, Kevin E. McDaniel, Stephanie L. Klearman, and DeAnna M. Maurer

of the City of St. Louis, State of Missouri, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 21st day of August, 2013.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By: [Signature]
Robert L. Raney, Senior Vice President

On this the 21st day of August, 2013, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2016.



[Signature]
Marie C. Tetreault, Notary Public



# CERTIFICATE OF LIABILITY INSURANCE

7/1/2014

DATE (MM/DD/YYYY)

9/20/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Lockton Companies, LLC-1 St. Louis Three City Place Drive, Suite 900 St. Louis MO 63141-7081 (314) 432-0500	CONTACT NAME:	
	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A : First Specialty Insurance Corporation		34916
INSURER B : The Phoenix Insurance Company		25623
INSURER C : Sentry Insurance a Mutual Company		24988
INSURER D : National Union Fire Ins Co Pittsburgh PA		19445
INSURER E :		
INSURER F :		

COVERAGES EONE60      CERTIFICATE NUMBER: 12569954      REVISION NUMBER: XXXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<b>GENERAL LIABILITY</b> <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC	N	N	IRG2001384-00	7/1/2013	7/1/2014	EACH OCCURRENCE	\$ 1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 300,000
							MED EXP (Any one person)	\$ Excluded
							PERSONAL & ADV INJURY	\$ 1,000,000
							GENERAL AGGREGATE	\$ 2,000,000
							PRODUCTS - COMP/OP AGG	\$ 2,000,000
								\$
B	<b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS	N	N	Y8104052R029PHX13	7/1/2013	7/1/2014	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
							BODILY INJURY (Per person)	\$ XXXXXXXX
							BODILY INJURY (Per accident)	\$ XXXXXXXX
							PROPERTY DAMAGE (Per accident)	\$ XXXXXXXX
								\$ XXXXXXXX
D	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTIONS 10,000	N	N	BE031731054	7/1/2013	7/1/2014	EACH OCCURRENCE	\$ 25,000,000
							AGGREGATE	\$ 25,000,000
								\$ XXXXXXXX
C	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below <input type="checkbox"/> Y <input checked="" type="checkbox"/> N    N/A		N	90-17680-03 90-17680-04 (NY)	7/1/2013 7/1/2013	7/1/2014 7/1/2014	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER	
							E.L. EACH ACCIDENT	\$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	\$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	\$ 1,000,000
B	Garage Keepers Liability	N	N	Y8104052R029PHX13	7/1/2013	7/1/2014	Limit specified by location.	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

## CERTIFICATE HOLDER

## CANCELLATION

12569954

CITY OF LEXINGTON  
200 E. MAIN ST, RM 338  
LEXINGTON KY 40507

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Customer Specification	E-One Bid Proposal
<p><b>Invitation to Bid</b></p> <p>Pg 11. – 1Year Contract. Prices firm for 180 days. One price adjustment may be permitted after 180 days</p> <p><b>Specifications</b></p> <p>Pg. 1 – Payment – 50% completion of chassis, 50% upon acceptance</p> <p>Pg. 2 – Manufacturer Sponsored Training – 8 man days.</p> <p>Pg. 11 – Overall Length – Max approx. 32’</p> <p>Pg. 11 – Frame Corrosion Protection</p> <p>Pg. 14 – Brake system total air capacity of 4,362.</p> <p>Pg. 14 – Air Tank Additional, 1454 cu.in.</p> <p>Pg. 25 – Front Bumper – Lift and Tow design.</p> <p>Pg. 28 – Driver Side EMS Compartment.</p> <p>Pg. 28 – EMS Compartment Rear Wall – Cargo net</p> <p>Pg. 37 – Radio Compartment</p> <p>Pg. 45 – Hosebed, maximum 70” off ground.</p> <p>Pg. 51 – Folding Ladder Mounting – behind ladders</p>	<p>Comply - E-One pricing shall be firm for 180 days after acceptance with one price adjustment allowable after 180 days.</p> <p>E-One standard terms are 100% at delivery and acceptance. E-One will provide a discount of 3% annual simple interest on any pre-payment amount. Discount will be calculated from date of receipt at E-One until apparatus is complete and ready for inspection at the plant and applied as a deduction on final invoice.</p> <p>E-One base bid includes (1) trip for (2) FD technicians to a four-day course at the manufacturing facility. Includes fees, course materials, airfare, car rental, four nights hotel accommodation, and a meal allowance per person for (5) days. For multiple unit purchase, price assumes no additional manufacturer training, with cost of the (1) trip for (2) technicians split between the units. For additional engines to be ordered later, no additional manufacturer training trips are included in the unit price.</p> <p>With cab configuration, pump module configuration, and body/tank size requested, overall length of the proposed apparatus is 32’ 10” – Pg. 65</p> <p>E-One base bid includes galvanized frame rails, urethane painted per paint specifications provided in the E-One bid specifications.- Pg. 7</p> <p>Total air capacity of E-One custom pumper is 5,314 cu.in, not including any auxiliary tanks. - Pg. 11</p> <p>E-One additional air tank is 1,738 cu.in. – Pg. 13</p> <p>Front bumper will be fitted with optional tow blocks. Exact configuration to be discussed at pre-construction conference. – Pg. 21</p> <p>This compartment provided standard with (2) adjustable shelves. Shelves will be adjusted/removed as required for SCBA/PPE storage. – Pg. 37</p> <p>Due to safety concerns this compartment will utilize a roll-up door – Pg. 38</p> <p>Radio compartment will be provided at rear of engine compartment. Aluminum compartment with louvers and drop down door. Top can be used for radio, equipment mounting. – Pg. 41</p> <p>With tank size and compartmentation requested, hosebed floor will be 63” off the ground. – Pg. 64 &amp; Drawing</p> <p>Folding ladder compartment will be provided below the officer’s side compartment top, recessed into the body with door at rear to accommodate the lowest possible ladder storage. Alternate location would be on compartment</p>

Customer Specification	E-One Bid Proposal
<p>Pg. 64 – Water Level Gauge, Foam Level Gauge – 5 light LED</p> <p>Pg. 76 – Lettering – Goldleaf</p> <p>Pg. 77 – Frame Warranty – 50 years.</p> <p>Pg. 78 – Dri-Dek Compartment Floors</p> <p>Pg. 80 – Pricing Sheet</p>	<p>top adjacent to pike pole storage. – Pg. 61</p> <p>Water level and foam level gauge will be 10-light LED. – Pg. 80</p> <p>Lettering will be sign gold with outline and shade. – Pg. 100</p> <p>Frame and crossmembers carry a lifetime warranty to original owner. – Pg. 101</p> <p>Compartment decking will be Turtle Tile, black. – Pg. 103</p> <p>Item 1 Price will include a total of (3) factory trips for (4) FD representatives and (1) dealer representative. – Pg. 3</p> <p>Item 2 and 3 price each assumes the 2 or 3 pumpers will be ordered and manufactured at the same time, and the price each assumes a <b>total</b> of (3) factory trips for (4) FD representatives and (1) dealer representative for the combined order with the associated cost to the manufacturer/dealer split between the units.</p> <p>Items 4 and 5 price each assumes the 2 or 3 additional pumpers will be ordered and manufactured at the same time, and the price each assumes a <b>total</b> of (3) factory trips for (4) FD representatives and (1) dealer representative for the combined order with the associated cost to the manufacturer/dealer split between the units. The pre-build or mid-point factory trip for the additional pumpers may be eliminated at the option of the fire department and E-One will provide a deduct for the associated trip costs if requested.</p>

Customer Specification	E-One Bid Proposal
<b>Specifications</b>	
Pg. 2 – Delivery	The apparatus shall be delivered within 240 to 270 calendar days. \$500 per day penalty to start after 270 days. – Pg. 4
Pg. 3 – Safety Video	Safety video is not available from E-One.
Pg. 5 – Specification Order	Detailed manufacturer specifications are enclosed. The E-One specification is driven by the manufacturer's engineering and build documents which group components differently than shown in the customer spec and thus not in the exact same sequence. However, specifications are grouped logically by major component and table of contents is provided to make comparison as easy as possible. All exceptions and clarifications are listed with the both customer specification page number and E-ONE specification page number where applicable.
Pg. 11 – Maximum Overall Height 114"	With raised roof cab and rooftop compartments, overall height of vehicle as proposed is 117". – Pg. 65 & Drawing
Pg. 11 – Frame RBM 3,200,000.	E-One 110,000 psi frame RBM is 3,161400. Frame and crossmembers have lifetime warranty to original purchaser. – Pg. 7
Pg. 11 Front Axle – Meritor MFS20	Front axle will be Meritor FL943, 20,000#. – Pg. 8
Pg. 13 – Brakes – Front – Knorr/Bendix Disc	Front brakes will be Meritor EX225H, 17" disc. – Pg. 10
Pg. 15 – Park Brake Control, additional on officer side.	A single park brake control will be provided mounted on dash over engine cover in reach of both driver and officer. – Pg. 12
Pg. 15 – Engine, Spin-on Coolant Filter	Spin-on coolant filter is not provided as it is not recommended by Cummins for this engine.
Pg. 17 – Radiator, copper fins.	Radiator is aluminum construction. – Pg. 17
Pg. 17 – Fuel Tank, 65 gallons.	Fuel tank will be 50 gallons. Largest tank available from E-One with air ride suspension. – Pg. 19
Pg. 19 – Steering Gear 3 Year Warranty	Steering gear warranty is one year
Pg. 20 – Cab Width, 100"	E-One Typhoon and Cyclone cab is 94" wide. – Pg. 23
Pg. 20 – Overhead Storage, open shelf with cargo netting.	Overhead storage in forward Vista roof area will be an enclosed compartment. – Pg. 38
Pg. 22 – Glove Box, officer side.	Glove box is not available due to mounting of heater core in officer side dash.
Pg. 24 – Fender Crowns – rubber	Fender crowns will be bright finish brushed aluminum. – Pg. 23
Pg. 25 – Bumper – Top flange Line-X	Top of front bumper is overlaid with aluminum tread plate. No area for Line-

**LIST OF EXCEPTIONS**

Proposal for: Triple Combination Pumper

Customer Specification	E-One Bid Proposal
coated.	X.
Pg. 26 – Driver and Officer’s Seats - Air Ride	Driver’s and officer’s seats will be non-suspension, electric adjustable. Air suspension seat is not available with air bag and roll-over protection system. – Pg. 34 / 35
Pg. 30 – Step Lights – Ri-tar	Step lights will be EON or Trucklite LED depending on location. – Pg. 31
Pg. 31 – Rear Heaters – 32,000 BTU	Auxiliary Rear heaters will be 23,000 BTU, mounted on rear wall one each side. – Pg. 34
Pg. 32 – Gauges	Gauges will be as listed in detailed E-One specifications submitted with bid. – Pg. 43
Pg. 33 – Indicator Lamps	Indicator lamps will be as listed in detailed E-One specifications submitted with bid. – Pg. 26
Pg. 35 – Custom Switch Panels	Switch panels will be as listed in detailed E-One specifications submitted with bid. – Pg. 26
Pg. 37 – Radio Interface Cables	Base bid will include (1) flexible conduit from radio compartment mounted behind engine tunnel to the cab dash. E-One heavy-duty extruded aluminum cab construction will not permit concealed conduit to overhead console. – Pg. 45
Pg. 40 – Batteries (6)	(5) batteries will be provided as listed in detailed E-One specifications submitted with bid. There is insufficient space for (6) batteries with under-cab DEF tank. – Pg. 20
Pg. 41 – Alternator – Niehoff 340 amp	Alternator will be Niehoff C505 360amp. - Pg. 20
Pg. 42 – Load Management – Kussmaul	Load management system is Weldon integral with Vmux Multiplex system. – Pg. 84
Pg. 47 – Rear Step –	Inside surface of body at rear is unpainted, natural finish aluminum or treadplate. Stainless overlay not required or provided. – Pg. 47
Pg. 47 – Rear Tow Bar –	E-One provides a rear underbody support frame with tow eyes under frame. See detailed E-One specifications included with bid. – Pg. 21
Pg. 48 – Compartment Floor	Compartment floors are flat, sweep out.
Pg. 49 – Compartment Sizes	Compartment sizes are as indicated in detailed E-One specification and drawings included with bid. This is the optimal body configuration available from E-One to meet the overall length requirement while providing the cab configuration and pump module configuration requested. – Pg. 46-47 / Drawing
Pg. 50 – Body Rubrail – Rubber	Body rubrail is extruded aluminum. – Pg. 66

Customer Specification	E-One Bid Proposal
Pg. 50 – Rear Fender Crowns – Rubber	Rear fender crowns are formed aluminum extrusion. Pg. 66
Pg. 50 – Handrails – Front of Cab	Cab rails are not provided on front of cab as front bumper extension is not NFPA approved walking surface due to step height.
Pg. 50-51 – Storage in Wheelwell – (2) Extinguisher (4) SCBA Cylinders	E-One bid includes (3) double SCBA/extinguisher compartments in wheelwells and (1) single compartment. Compartments fit most commonly used fire service extinguishers except large CO2. Compartment doors are aluminum treadplate. – Pg. 66
Pg. 52 – Rear Steps – Corner	Rear steps will be oversize folding style to avoid interference with rear compartment. – Pg. 62
Pg. 54 – Pressure Controller – PB200	Pressure controller will be Pump Boss PBA400. – Pg. 79
Pg. 54 – Lubrication Fittings – extend to pump panel.	Not available option from Waterous. Not provided.
Pg. 56 – Front Intake – Handwheel controlled.	Front intake valve will be electrically operated from pump panel with manual back-up behind officer panel. Location of front intake valve does not provide adequate space for manual linkage. Pg. 72
Pg. 57 – Left Discharge 2.5" Handwheel Controlled	Left side 2.5" discharge will be controlled by direct lever handle. – Pg. 75
Pg. 58 – Crosslays, (3) double stack, max. 68" off ground, adjustable dividers.	To keep wheelbase and overall truck length as short as possible, forward (2) 1.75" preconnect crosslays to be single stack. Bottom of pre-connect crosslays to be 71" off ground which is low as E-One linear pump panel configuration will allow. Deadlay crosslay to be double stack with bottom of crosslay higher off ground, per E-One drawing. Divider between preconnect crosslays to be centered and fixed. Divider between preconnects and deadlay to be fixed due to height differential. – Pg. 54 & 55
Pg. 58 – Crosslays – painted, stainless overlay at ends.	Pump module will be painted on outside surfaces only. Inner areas of crosslays and storage pan will be unpainted natural aluminum for maximum durability. Stainless steel scuff plates not required or provided. – Pg. 54
Pg. 59 – Foam Tanks, Integral, No reduction in water tank.	E-One 1000 gallon tank bodies are designed for a maximum capacity of 1030 gallons water and/or foam. Water tank capacity will be 980 gallons with requested 20 gallon class A and 30 gallon class B integral foam tanks. – Pg. 59 & 60
Pg. 61 – Pump panel 48" wide	Pump panel will be 51" wide to accommodate requested controls. – Pg. 54
Pg. 63 – Gauges – Warranty 10 Years.	Class 1 warranty is 3 years for liquid filled gauges specified by the Fire Department. – PG. 80 & 81
Pg. 68 – Step Lights – RiTar/Whelen	Step lights will be EON or Trucklite LED depending on location. – Pg. 91
Pg. 70 – Side Scene Lights – FRC Spectra SPA260-Q15 – Driver and Officer Side	Side scene lights will be FRC Spectra Q20, mounted over rear doors with brow style brackets. There is not sufficient flat space on cab side to mount Spectra SPA260 surface mount lights. – Pg 96

**LIST OF EXCEPTIONS**

Proposal for: Triple Combination Pumper

<b>Customer Specification</b>	<b>E-One Bid Proposal</b>
Pg. 71 – Spotlight – Nova Tech  Pg. 72 – Electronic Siren – Powercall 5200 mounted overhead.  Pg. 72 – Speakers – Federal MS100.	Spotlight will be Collins CL-12-M. – Pg. 94  Powercall siren control will be mounted on top of dash. Siren control is too large to fit in E-One overhead console. – Pg. 89  Speakers will be Federal ES-100, recess mounted in bumper with E-One stainless steel grille. – Pg. 90

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## **SPECIFICATIONS**

### **E-ONE MAINLINE CUSTOM PUMPER**

**Prepared for:**

**LEXINGTON FAYETTE URBAN COUNTY GOVERNMENT**  
**LEXINGTON FIRE DEPARTMENT**  
**LEXINGTON, KY**

#### **APPARATUS DESCRIPTION**

The apparatus herein specified is an E-One Mainline Custom Pumper with a 1500 gpm Waterous CSU Pump, 1000 gallon Water Tank, and a heavy-duty Extruded Aluminum Body, mounted on an E-One Typhoon Custom Chassis.

#### **MANUFACTURER PROFILE**

E-ONE is a worldwide designer, manufacturer and marketer of fire rescue vehicles with more than 23,000 vehicles in operation around the world. Headquartered in Ocala, Florida, E-ONE is the industry leader in product innovations, new technologies and exceeding customer expectations.

E-ONE manufactures custom and commercial pumpers and tankers, aerial ladders and platforms, rescues of all sizes, quick attack units, industrial trucks, and aircraft rescue firefighting vehicles to meet the needs of fire departments, rescue/EMS squads, airports and Homeland Security agencies.

Just as important as the full product line is the fact that E-ONE engineers and builds the complete vehicle - chassis, cab, body, and aerial device. And because E-ONE is a single source manufacturer, the customer's after sale needs are satisfied with just one call to their dealer or E-ONE for parts, service, warranty, training and manuals.

Established in 1974, E-ONE has grown to become an industry leader, and today employs more than 800 people in five plants totaling more than 420,000 square feet. E-ONE pioneered the use of aluminum in fire rescue vehicles and continues to lead the industry today with innovative uses of this material. Innovation has been the company's driving force and continues to be the impetus behind its pursuit of new technologies. The result is state-of-the-art fire rescue vehicles recognized for superior firefighting and rescue capabilities.

Quality is the number one priority throughout E-ONE, and we consider it to be critical for continued business success. We define quality as conformance to requirements and charge all employees, from top management down, to dedicate their abilities and direct their energies towards complying with our quality policy.

Delivery of products and services that conform to customer and regulatory/legal requirements is a company-wide mandate. We will not knowingly accept a contract with quality requirements that cannot be met or surpassed, nor will we deliver any product that does not meet contractual requirements.

At E-ONE, quality applies to every department and everything we do. Each employee, by producing quality work, individually contributes to the fulfillment of our policy. Every employee is empowered with the authority and responsibility to ensure that their work process operates in conformance to requirements. All levels of management are responsible to continually stress our position on quality and are required to discontinue work and institute corrective action if conformance to requirements cannot be maintained. We will not waiver or alter this position.

E-ONE has one of the best warranty packages in the industry. E-ONE vehicles have a 10-year body structural warranty, a 10-year stainless steel plumbing warranty, a 10-year paint warranty, a 20-year aerial device structural warranty, a lifetime corrosion perforation warranty and a lifetime water tank warranty.

E-ONE dealers are supported by a Customer Support Group, which includes a computerized parts warehouse that can ship E-ONE parts worldwide within 72-hours. This skilled group provides a single-point contact for all service needs, warranty and parts requirements, and is ready to provide technical assistance. Since E-ONE builds the complete apparatus, most parts are in stock and ready to ship.

E-ONE is wholly American owned by American Industrial Partners (AIP), and operates as a division of Allied Specialty Vehicles, Inc., a market leader in the manufacture of fire and emergency vehicles, recreational vehicles, and bus and industrial vehicles with an annual revenue of approximately \$1 billion. Other ASV brands include Horton, Wheeled Coach, AEV, Road Rescue, and Leader ambulances, the Fleetwood line of recreational vehicles, and Collins buses.

### **DEALER PROFILE**

The fire apparatus specified will be sold and serviced by Vogelpohl Fire Equipment, Inc., Erlanger KY. Vogelpohl Fire Equipment has been in business for 24 years. Vogelpohl Fire Equipment provides experienced personal dedicated to fire apparatus and emergency vehicle sales and service, and also sells and services a broad line of fire department equipment and supplies.

Vogelpohl representatives, in conjunction with the manufacturer, prepared this proposal, and will attend all contract and/or specification review meetings, pre-construction meetings, inspection trips, and will deliver the completed unit to the Purchaser and provide the training as proposed, to ensure the success of your apparatus purchase.

Vogelpohl technicians will perform or coordinate all warranty and repair. Service and repair will be accomplished in your station whenever possible, or when necessary at our sales and service facility located near the Greater Cincinnati Airport.

### **BID BOND REQUIREMENTS**

E-ONE has furnished a bid surety in the amount of \$22,500 with our bid.

### **PERFORMANCE BOND**

If their bid is accepted and awarded, E-ONE will furnish a 100% performance bond within fifteen (15) working days after the order is received.

### **PRE-CONTRACT CONFERENCE**

A meeting shall be held at the Purchaser's Fire Headquarters prior to the contract signing for a thorough review of the Purchaser's bid specifications and the Bidder's detailed response, to ensure that all aspects of Purchaser's requirements have been addressed by the Bidder.

### **PRE-CONSTRUCTION CONFERENCE**

A meeting shall be held after the contract has been signed so that all specifications, details, drawings, questions and engineering work can be reviewed and approved by the Purchaser.

This meeting will be in accordance with the build schedule of E-ONE and shall not in any way delay the construction of the apparatus beyond the delivery commitment of the bid. The meeting shall be held prior to the commencement of any work being done on the chassis or the apparatus. The responsible representative(s) of the Purchaser shall be in attendance at the conference to authorize decisions to be made in the behalf of the Purchaser.

Unless otherwise specified in the bid, this meeting shall be held at the Purchaser's Fire Headquarters. Signed approvals by authorized personnel from the Purchaser must be given prior to any work being started.

It is understood that delays in obtaining approval signatures may delay construction and such caused delays are beyond the control of E-ONE.

### **INSPECTION TRIPS**

E-ONE has included in their bid three (3) factory visits for four (4) representatives of the fire department and one (1) dealer representative to the E-ONE manufacturing facility where the apparatus proposed is being constructed. The trips will take place for a pre-construction conference, mid-point inspection, and final inspection of the completed apparatus prior to delivery to the Dealer's facility. All expenses for transportation, meals and lodging will be paid for by E-ONE and its authorized dealer/agent. Travel would be via commercial airline.

Trips shall be scheduled in accordance with the production schedule, any delays caused by changes ordered by the purchaser shall affect the delivery schedule.

**TESTING**

The apparatus shall be thoroughly tested by a certified, independent Third Party Testing Organization in accordance with the appropriate requirements of the latest edition of NFPA, Standard For Automotive Fire Apparatus.

Upon delivery, the Purchaser may elect to duplicate some or all of these pumping and road tests. The manufacturer shall include all required certification forms in the delivery package, no exception.

In event the apparatus fails to meet on-site delivery testing, second trials may be arranged within 30 days following first test failure. Such subsequent trials shall be final and conclusive and failure to meet these requirements shall be cause for rejection.

Also, failure to make changes deemed necessary by the Purchaser to make apparatus conform to any clause of the specifications within 30 days after notice to the manufacturer shall also be deemed cause for rejection of the apparatus. Permission to keep or store the apparatus by the Purchaser during the testing and re-testing period, if agreeable with manufacturer, shall not constitute acceptance of the apparatus.

**DELIVERY**

Completed fire apparatus shall be provided FOB the purchaser's location, serviced and ready for use with all equipment specified. Delivery from the manufacturer's plant to the purchaser shall be over-the-road under the vehicle's own power. Any mechanical problems discovered during delivery shall be corrected prior to delivery to the purchaser. Training will be provided for three consecutive days by E-ONE on operations and associated components.

**DELIVERY DATE**

The completed fire apparatus shall be delivered by E-ONE between 240 and 270 calendar days after signing of contract.

**PENALTY**

If the completed apparatus is not delivered within 240-270 calendar days after receipt of purchase order at E-One, a penalty of \$500.00 per day for each day over 270 days will be deducted from the invoice.

Prebuild and approval must take place within 30 days of purchase order received at E-One. Major configuration changes / alterations at pre-build may affect delivery days that will be renegotiated in good-faith

**PENALTY DISCLAIMER**

E-ONE will not assume the responsibility for any manufacturing delays caused by Natural Disasters, Acts of God, Racial Disturbances, Labor Disputes, or Delayed Material Shipments, which are beyond our control.

## **TESTING COMPLIANCE STANDARD**

### **NFPA Compliance**

The E-ONE supplied components of the apparatus shall be compliant with NFPA 1901, 2009 edition.

## **BUMPERS**

### **Bumper**

A heavy duty 10" high steel channel type front bumper shall be provided. The front corners of the bumper shall be angled at 45 degrees to reduce swing clearance. The bumper shall be painted job color.

### **Front Bumper Extension**

The bumper shall be extended approximately 20" from the face of the cab as required.

### **Bumper Gravel Shield**

The extended front bumper gravel shield shall be made of 1/8" (.125") aluminum treadplate material.

## **BUMPER TRAYS**

### **Bumper Tray - Driver Side**

A hose tray constructed of 1/8" aluminum shall be recessed into the front bumper extension. The tray shall be located on the driver side of the bumper outboard of the frame rail and be approximately 14" deep (13" to the top of the slats). One inch thick aluminum slats shall be included in the bottom of the hose tray to aid in the dissipation of water from the tray.

### **Bumper Tray - Center**

A hose tray constructed of 1/8" aluminum shall be recessed into the front bumper extension. The tray shall be located in the center of the bumper and be approximately 14" deep (13" to the top of the slats). One inch thick aluminum slats shall be included in the bottom of the hose tray to aid in the dissipation of water from the tray.

### **Bumper Tray Securing Strap**

A heavy duty black nylon strap with an aluminum quick-release buckle shall be provided for driver's side, center front bumper tray. The strap shall be attached to the inboard side of the tray and shall not reduce the overall tray capacity.

## FRAME ASSEMBLY

### Frame Rail Construction

The frame shall consist of two (2) C-channel frame rails with heavy-duty cross-members. Each frame rail shall have the following minimum specifications in order to minimize frame deflection under load and thereby improve vehicle ride and extend the life of the frame:

Dimensions: 10-1/4" x 3-1/2" x 3/8"

Material: 110,000-psi minimum yield strength, high strength, low alloy steel

Section Modulus: 16.61 cu. in.

Resistance to Bending Moment (RBM): 1,827,045 in. lbs.

If larger rails are provided, the maximum height of each frame rail shall not exceed the 10-1/4" dimension by more than 1/2" in order to ensure the lowest possible body height for ease of access as well as the lowest possible vehicle center of gravity for maximum stability.

There shall be a minimum of six (6) cross-members joining the two (2) frame rails in order to make the frame rigid and hold the rails/liners in alignment. The cross-members shall be a combination of a formed steel C-channel design along with heavy duty steel fabricated designs as required for the exact chassis configuration. The cross-members shall be attached to the frame rails with not less than four (4) bolts at each end arranged in a bolt pattern to adequately distribute the cross-member load into the rail/liner and minimize stress concentrations.

All frame fasteners shall be high-strength Grade 8, flanged-head threaded bolts and nuts for frame strength, durability, and ease of repair. The nuts shall be Stover locknuts to help prevent loosening. The frame fasteners shall be tightened to the proper torque at the time of assembly.

The frame rails and frame liners shall be finished with black paint. The frame cross-members and frame mounted components (suspensions, axles, air tanks, battery boxes, fuel tank, etc.) shall be painted black.

The apparatus manufacturer shall supply a full lifetime frame warranty including cross-members against defects in materials or workmanship. Warranties that provide a lifetime warranty for only the frame rails, but not the cross-members, are not acceptable. **NO EXCEPTIONS.**

The custom chassis frame shall have a **WHEEL ALIGNMENT** in order to achieve maximum vehicle road performance and to promote long tire life. The alignment shall conform to the manufacturer's internal specifications. All wheel lug nuts and axle U-bolt retainer nuts shall be

tightened to the proper torque at the time of alignment. The wheel alignment documentation shall be made available at delivery upon request.

### **Frame Liner**

A 9-3/8" x 3-1/8" x 3/8" channel frame liner shall be bolted to each frame rail for added strength and rigidity. Frame liners shall be made of 110,000 psi minimum yield, high strength, low alloy steel. Each frame rail with liner shall have the following minimum characteristics:

Section Modulus: 28.74 cu. in.

RBM: 3,161,400 in. lbs.

The frame liners shall be inserted inside the open portion of the frame rails and shall run continuously from the rear of the frame to the centerline of the front axle to provide maximum frame strength at all critical load points.

### **Rear Underbody Support Frame**

The body shall be supported at the rear by a steel frame extension bolted to the chassis frame rails. The frame rails and frame extension shall be isolated from the aluminum body extrusions by 5/16" x 2" fiber reinforced rubber.

The frame extension shall be built with (2) 2.5" sq. x .25 wall thickness x full width cross rails welded to (2) 2.5" sq. x .25 wall thickness side rails. The frame extension assembly will be welded to steel weldments, which are secured to the chassis frame with grade 8 5/8" bolts.

The frame extension shall not interfere with N.F.P.A. minimum requirements for angle of departure.

### **Galvanized Frame Rails**

The chassis frame rails and rear subframe (if equipped) shall have a hot-dipped galvanized zinc coating in place of standard for increased corrosion resistance. The coating shall be done in compliance with the ASTM A123 Standard.

### **Galvanized Frame Liners**

The chassis frame rail liners shall have a hot-dipped galvanized zinc coating in place of standard for increased corrosion resistance. The coating shall be done in compliance with the ASTM A123 Standard.

## **AXLE OPTIONS**

### **Front Axle**

The vehicle shall utilize an ArvinMeritor FL-943 5" drop beam front axle with a rated capacity of 20,000 lbs. It shall have "easy steer" knuckle pin bushings and 68.83" kingpin centers. The axle shall be of I-beam construction and utilize grease-lubricated wheel bearings. The vehicle shall have a nominal cramp angle of 45 degrees, plus two (+ 2) degrees to minus three (- 3) degrees including front suction applications.

The front axle hubs shall be made from ductile iron and shall be designed for use with 10 hole hub-piloted wheels in order to improve wheel centering and extend tire life.

The front springs shall be parabolic tapered, minimum 4" wide x 54" long (flat), minimum three (3) leaf, progressive rate with bronze bushings and a capacity of 20,000 lbs. at the ground. Tapered leaf springs provide a 20% ride improvement over standard straight spring systems.

The vehicle shall be equipped with a Sheppard model M110 integral power steering gear, used in conjunction with a power assist cylinder. The steering assembly shall be rated to statically steer a maximum front axle load of 20,000 lbs. Relief stops shall be provided to reduce system pressure upon full wheel cut. The system shall be able to operate mechanically should the hydraulic system fail.

A 2-year/unlimited miles parts and 2-year labor front axle warranty shall be provided as standard by ArvinMeritor Automotive.

In order to achieve maximum vehicle road performance and to promote long tire life, there shall be a wheel alignment. The alignment shall conform to the manufacturer's internal specifications. All wheel lug nuts and axle U-bolt retainer nuts shall be tightened to the proper torque at the time of alignment. The wheel alignment documentation shall be made available at delivery.

### **Shock Absorbers Front**

Koni model 90 shock absorbers shall be provided for the front axle. The shocks shall be three way adjustable.

The shocks shall be covered by the manufacturer's standard warranty.

### **Front Axle Oil Seals**

The front axle shall have Stemco oil seals with sight glass to check the lubricant level of the axle spindles.

### **Rear Axle**

The vehicle shall be equipped with an ArvinMeritor RS-25-160 single rear axle with single-reduction hypoid gearing and a manufacturer's rated capacity of 27,000 lbs. The axle shall be equipped with oil-lubricated wheel bearings with ArvinMeritor oil seals.

The rear axle hubs shall be made from ductile iron and shall be designed for use with 10 hole hub-piloted wheels to improve wheel centering and extend tire life.

A 2-year/unlimited miles parts and 2-year labor rear axle warranty shall be provided as standard by ArvinMeritor Automotive.

## **SUSPENSIONS**

### **Rear Suspension**

The vehicle shall be equipped with a FIREMAAX® EX model FMX-272 air ride suspension. The suspension shall include dual height control valves that allow uneven, side heavy loads to be balanced, Quik-Align for easy axle alignment and two (2) hydraulic shock absorbers. The suspension shall be rated for the maximum axle capacity.

## **WHEEL OPTIONS**

### **Front Wheels**

The vehicle shall have two (2) polished (on outer wheel surfaces only) Alcoa aluminum disc wheels. They shall be forged from one-piece corrosion-resistant aluminum alloy and sized appropriately for the tires.

### **Front Wheel Trim Package**

The front wheels shall have stainless steel lug nut covers (chrome plated steel lug nut covers not acceptable). The front axle shall be covered with American made Real Wheels brand mirror finish, 304L grade, non-corrosive stainless steel universal baby moons. All stainless steel baby moons shall carry a lifetime warranty plus a 2 year re-buffing policy. There shall be two (2) baby moons and twenty (20) lug nut covers.

### **Rear Wheels**

The vehicle shall have four (4) polished (on outer wheel surfaces only) Alcoa aluminum disc wheels. They shall be forged from one-piece corrosion-resistant aluminum alloy and sized appropriately for the tires.

### **Rear Wheel Trim Package, Single Axle**

The rear wheels shall have stainless steel lug nut covers (chrome plated steel lug nut covers not acceptable), or American made chrome plated plastic lug nut covers. The rear axle shall be covered with American made Real Wheels brand mirror finish, 304L grade, non-corrosive stainless steel, spring clip band mount high hats, DOT user friendly. All stainless steel high hats shall carry a lifetime warranty plus a 2 year re-buffing policy. There shall be two (2) high hats and twenty (20) lug nut covers.

## **TIRE OPTIONS**

### **Front Tires**

The front tires shall be two (2) Michelin 425/65R22.5 tubeless type 20 PR radial tires with XFE highway tread.

The tires with wheels shall have the following weight capacity and speed rating:

22,800 lbs. @ 65 MPH

The wheels and tires shall conform to the Tire and Rim Association requirements.

### **Rear Tires**

The rear tires shall be four (4) Michelin 12R22.5 tubeless type 16 PR (Ply Rating) radial tires with XZE highway tread.

The tires with wheels shall have the following maximum weight and speed capacity:

27,000 lbs. (dual) @ 75 MPH.

The tires and wheels shall conform to the Tire and Rim Association requirements.

### **Tire Pressure Monitor**

The apparatus shall be provided with tire pressure indicating valve stem caps. The indicators shall be installed on each tire and be a heavy duty design manufactured specifically for trucks. When tire is properly inflated, the indicator inside the cap shall be green, and when the tire is underinflated by 10%, the indicator inside the cap shall be red.

## **BRAKE SYSTEMS**

### **Front Brakes**

The front axle shall be equipped with Meritor DiscPlus EX225H 17 inch disc brakes.

The brakes shall be covered by the manufacturer's standard warranty which is three years, unlimited mileage and parts only.

### **Rear Brakes**

The rear axle shall be equipped with ArvinMeritor 16-1/2" x 7" S-cam brakes with cast brake drums. Q-Plus shoes shall be provided with up to 24,000 lb. axle ratings and P-Type shoes with over 24,000 lb. axle ratings.

The rear axle brakes shall be furnished with automatic slack adjusters. ArvinMeritor brand shall be supplied on RS-24-160 and RS-25-160 axles, and Haldex brand shall be supplied on RS-26-185 and RS-30-185 axles.

A 3 year/unlimited miles parts and 3 year labor rear brake warranty shall be provided as standard by ArvinMeritor Automotive. The warranty shall include bushings, seals, and cams.

## **Brake System**

The vehicle shall be equipped with air-operated brakes and an anti-lock braking system (ABS). The brake system shall meet or exceed the design and performance requirements of the current Federal Motor Vehicle Safety Standard (FMVSS)-121, and the test requirements of the current NFPA 1901 Standard.

A dual-treadle brake valve shall correctly proportion the braking power between the front and rear systems. The air system shall be provided with a rapid pressure build-up feature, designed to meet current NFPA 1901 requirements, to allow the vehicle to begin its emergency response as quickly as possible.

A pressure-protection valve shall be installed to prevent use of the air horns or other air-operated devices should the air system pressure drop below 85 psi. This feature is designed to prevent inadvertent actuation of the emergency/parking brakes while the vehicle is in motion.

Two (2) air pressure needle gauges, one (1) each for front and rear air pressure, with a warning light and buzzer shall be installed at the driver's instrument panel.

The braking system shall be provided with a minimum of three (3) air tank reservoirs for a total air system capacity of 5,214 cu. in. One (1) reservoir shall serve as the wet tank and a minimum of one (1) tank shall be supplied for each of the front and rear axles. The total system shall carry a sufficient volume of air to comply with FMVSS-121.

Tank Capacities in Cubic Inches:

Wet	Front	Rear	Total
1,738	1,738	1,738	5,214

Spring-actuated emergency/parking brakes shall be installed on the rear axle.

A Bendix-Westinghouse SR-1 valve, in conjunction with a double check valve system, shall provide automatic emergency brake application when the air brake system pressure falls below 40 psi in order to safely bring the vehicle to a stop in case of an accidental loss of braking system air pressure.

A four-channel Wabco ABS shall be provided to improve vehicle stability and control by reducing wheel lock-up during braking. This braking system shall be fitted to both front and rear axles. All electrical connections shall be environmentally-sealed for protection against water, weather, and vibration.

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel transmit wheel speed data to an electronic processor, which shall detect approaching wheel lock-up and instantly modulate (or pump) the brake pressure up to five (5) times per second to

prevent wheel lock-up. Each wheel shall be individually controlled. To improve field performance, the system shall be equipped with a dual-circuit design configured in a diagonal pattern. Should a malfunction occur in one circuit, that circuit shall revert to normal braking action. A warning light at the driver's instrument panel shall signal a malfunction.

The system shall also be configured to work in conjunction with all auxiliary engine, exhaust, or driveline brakes to prevent wheel lock-up.

To improve maintenance troubleshooting, provisions in the system for an optional diagnostic tester shall be provided. The system shall test itself each time the vehicle is started, and a dash-mounted light shall go out once the vehicle is moving above 4 MPH.

A 3 year/300,000 mile parts and labor Anti-Locking Braking System (ABS) warranty shall be provided as standard by Meritor Automotive.

### **Park Brake Release**

One (1) Bendix-Westinghouse PP-5 parking brake control valve shall be supplied on the engine cover within reach of the driver or officer.

### **Park Brake Release Guard**

A park brake release guard shall be provided over the release control. The guard shall be constructed of 14 gauge brushed stainless steel.

### **Electronic Stability Control**

The apparatus shall be equipped with a G4 4S4M Electronic Stability Control (ESC) system that combines the functions of Roll Stability Control (RSC) with the added capability of yaw - or rotational - sensing.

RSC focuses on the vehicle's center of gravity and the lateral acceleration limit or rollover threshold. When critical lateral acceleration thresholds are exceeded, RSC intervenes to regulate the vehicle's deceleration functions. The added feature of ESC is to automatically intervene to reduce the risk of the vehicle rotating while in a curve or taking evasive action, prevents drift out through selective braking, and controlling and reducing vehicle speed when lateral acceleration limits are about to be exceeded.

Intervention by the system occurs in three forms - engine, retarder and brake control. The ESC system uses several sensors to monitor the vehicle. These include a steering wheel angle sensor, lateral accelerometer, and yaw position sensor. ESC constantly monitors driving conditions and intervenes if critical lateral acceleration is detected or if the vehicle begins to spin due to low friction surfaces. The system provides control of engine and retarder torque as well as automatically controlling individual wheels to counteract both over steer and under steer.

To further improve vehicle drive characteristics, the unit shall be fitted with Automatic Traction Control (ATC). This system shall control drive wheel slip during acceleration from a resting point. An extra solenoid valve shall be added to the ABS system. The system shall control the

engine and brakes to improve acceleration slip resistance. The system shall have a dash mounted light that shall come on when ATC is controlling drive wheel slip.

3 year/300,000 miles parts and labor warranties for ESC, RSC, and ATC shall be provided as standard by Meritor Automotive.

## **AIR SYSTEM OPTIONS**

### **Air Dryer**

The chassis air system shall be equipped with a Meritor/Wabco System Saver 1200 air dryer located under the cab. The air dryer shall utilize a single spin-on desiccant cartridge.

### **Air Inlet**

A 1/4" brass quick-release air inlet with a male connection shall be provided. The inlet shall allow a shoreline air hose to be connected to the vehicle, discharging air directly into the wet tank of the air brake system. It shall be located driver door jamb.

### **Isolated Air Reservoir**

The air system shall have an additional 1738 cu. in. isolated reservoir. The supply side of the reservoir shall be equipped with a check valve and an 85 psi pressure protection valve.

Specified options shall be plumbed to the isolated air tank.

### **Auxiliary Air Tank Plumbing**

The auxiliary air tank shall be plumbed to the following optional accessories, if equipped: Chassis air horns, brake system air outlet, air reel, light tower and or customer/dealer supplied pneumatic add-on(s).

### **Air Lines**

Air brake lines shall be constructed of color coded nylon tubing routed in a manner to protect them from damage. Brass fittings shall be provided.

### **Air Horns**

Dual Grover air horns shall be provided, connected to the chassis air system. The horns shall be mounted through the front bumper. The front bumper shall have two (2) holes punched to accommodate the horns. A pressure protection valve shall be installed to prevent the air brake system from being depleted of air pressure.

### **Air Outlet**

A 1/4" female quick-disconnect air hose outlet shall be mounted and will be connected to the air reservoir tank. A 1/4" inline check valve will be installed in the line. It shall be located driver's step well.

### **Stainless Steel Mounting Straps [Qty: 4]**

Stainless steel mounting straps shall be provided for an air tank.

### **Heated Moisture Ejector**

The air dryer shall be equipped with a Bendix DV-2 automatic reservoir drain valve which shall automatically eject moisture and contaminants. The moisture ejector shall be heated.

## **ENGINES & TRANSMISSIONS**

### **Transmission Programming**

The transmission shall be re-programmed so that when "D" is selected, the transmission will shift from 1st through 4th gear and pressing "MODE" will allow the transmission to shift up to 5th gear. Downshift pre-select will remain as standard (4th gear).

### **Transmission Selector**

A push-button transmission shift module, Allison model 29538373, shall be located to the right side of the steering column within easy reach of the driver. The shift position indicator shall be indirectly lit for after dark operation. The shift module shall have a "Do Not Shift" light and a "Service" indicator light. The shift module shall have means to enter a diagnostic mode and display diagnostic data including oil life monitor, filter life monitor, transmission health monitor and fluid level. A transmission temperature gauge with warning light and buzzer shall be installed on the cab instrument panel.

### **Transmission Fluid**

The transmission fluid shall be TransSynd synthetic.

### **Vehicle Speed**

The maximum speed shall be electronically limited to 68 MPH as required by NFPA 1901.

Note: Maximum speed may be set at 65 MPH due to tire rating.

### **6th Gear Overdrive**

The chassis transmission shall include a 6th gear with an overdrive ratio of 0.65:1.

### **Engine/Transmission Package**

**Engine**

The vehicle shall utilize a Cummins ISL 2013 electronic engine as described below:

- 450 gross bhp at 2200 rpm
- 1250 lb.-ft. peak torque at 1400 rpm
- Six (6)-cylinder, charge air cooled, 4-cycle diesel
- 543 cu. in. displacement -- 4.49 in bore x 5.69 in stroke (8.9 liters)
- 16.6:1 compression ratio
- Interact System Controlled Viable Geometry Turbocharged
- Engine shall be equipped with Full-Authority Electronics
- Electronic Timing Control fuel system
- Fuel cooler (when equipped with a fire pump)
- Fleetguard FS1022 fuel filter with integral water separator and water-in-fuel sensor approved by Cummins for use on the ISL engine
- Fleetguard LF9009 Venturi Combo combination full-flow/by-pass oil filter approved by Cummins for use on the ISL engine
- Engine lubrication system, including filter, shall have a minimum capacity of 25 quarts
- Delco-Remy 39 MT-HD 12-volt starter
- Cummins 18.7 cubic foot per minute (cfm) air compressor
- Corrosion inhibitor additive for coolant system
- After treatment system consisting of a oxidation catalyst and diesel particulate filter and selective catalyist reduction system
- Ember separator compliant with 2009 NFPA 1901 standard
- The engine shall be compliant with 2013 EPA Emission standards

The engine air intake shall draw air through the front cab grill. The intake opening shall be located on the officer (right) side behind front cab face with a plenum that directs air to the air filter. The air cleaner shall be a 11" diameter dry type that is easily accessed for service. Air cleaner intake piping shall be made from aluminized steel tubing with flexible rubber hoses. Air cleaner intake piping clamps shall be heavy-duty, constant-torque, T-bolt clamps to ensure proper sealing under all temperatures in order to keep dust and other contaminants out of the engine intake air stream and protect the engine.

The engine exhaust piping shall be a minimum of 4" diameter welded aluminized steel tubing. The muffler shall be mounted horizontally under the right-hand frame rail in back of the cab in order to minimize heat transmission to the cab and its occupants. The exhaust shall be directed away from the vehicle on the right side ahead of the rear wheels in order to keep exhaust fumes as far away as possible from the cab and pump operator position.

A 5-year/100,000-miles parts and labor warranty shall be provided as standard by Cummins Bulletin 3381161.

A copy of the Engine Installation Review stating the engine installation meets Cummins recommendations shall be provided as requested. The engine installation shall not require the operation of any type of "power-down" feature to meet engine installation tests.

**Transmission**

The vehicle shall utilize an Allison EVS3000P, electronic, 5-speed automatic transmission.

A push button shift module shall be located right side of the steering column, within easy reach of the driver. The shift position indicator shall be indirectly lit for after-dark operation. The shift module shall have a "Do Not Shift" light and a "Service" indicator light that are clearly visible to the driver. The shift module shall have means to enter a diagnostic mode and display diagnostic data.

A transmission oil temperature gauge with warning light and buzzer shall be installed on the cab instrument panel to warn the driver of high oil temperatures that may damage the transmission.

The transmission shall have a gross input torque rating of 1250 lb.-ft. and a gross input power rating of 450 HP.

The gear ratios shall be as follows:

1 - 3.49

2 - 1.86

3 - 1.41

4 - 1.00

5 - .75

R - 5.03

The transmission shall have an oil capacity of 23 quarts and shall be equipped with a fluid level sensor (FLS) system, providing direct feedback of transmission oil level information to the driver.

A water-to-oil transmission oil cooler shall be provided to ensure proper cooling of the transmission when the vehicle is stationary (no air flow). Air-to-oil transmission oil coolers, which require constant air flow, are not acceptable.

The transmission shall be provided with two (2) engine-driven PTO openings located at the 4 o'clock and 8 o'clock positions for flexibility in installing pto-driven equipment.

The automatic transmission shall be equipped with a power lock-up device. The transmission lock-up shall prevent down shifting of the transmission when the engine speed is decreased during pump operations, thereby maintaining a constant gear ratio for safe operation of the pump. The transmission lock-up shall be automatically activated when the pump is engaged in gear. The transmission lock-up shall be automatically deactivated when the pump is disengaged for normal road operation.

A 5-year/unlimited miles parts and labor warranty shall be provided as standard by Allison Transmission.

## **SECONDARY BRAKING**

### **Telma Retarder**

A Telma driveline retarder shall be mounted directly to the driveline to aid in slowing the vehicle by providing up to 85% of the braking requirements.

The retarder is a self air cooled, frictionless, electromagnetic retarder that develops a magnetic field that applies a resistant torque to a set of rotors that are connected to the drive shaft. The driver shall be able to regulate the amount of retardation by the pressure applied to the brake pedal. The retarder begins to slow the vehicle down before the foundation brakes are activated. As a result, the foundation brakes remain cool and capable of operating at their maximum efficiency.

The Telma has four (4) stages of retardation. Four (4) pressure switches with ratings 3, 5, 7 and 10 are used to progressively activate the four (4) stages of the retarder. Four (4) lights mounted on the instrument panel indicate to the driver the stage at which the retarder is applied. An electronic speed switch is used to deactivate the retarder when the vehicle comes to a stop.

## **EXHAUST OPTIONS**

### **Exhaust End Modification**

The end of the exhaust tail pipe shall be modified to accommodate a Plymovent in-house exhaust extraction system. The tail pipe will be at 90 degrees and straight out below the side of body. A stop ring shall be provided on the tail pipe to properly position the Plymovent nozzle.

### **Exhaust Heat Shield**

A heat shield shall be provided on the exhaust to provide protection to the compartment floor.

## **COOLING PACKAGE**

### **Engine Cooling Package**

#### **Radiator**

The cooling system shall include an aluminum tube-and-fin radiator with a minimum of 1,408 total square inches of frontal area to ensure adequate cooling under all operating conditions. There shall be a drain valve in the bottom tank to allow the radiator to be serviced. A sight glass shall be included for quick fluid level assessment. The radiator shall be installed at the prescribed angle in order to achieve the maximum operational effectiveness. This shall be accomplished according to established work instructions and properly calibrated angle measurement equipment.

#### **Silicone Hoses**

All radiator and heater hoses shall be silicone. Pressure compensating band clamps shall be used to eliminate hose pinching on all hoses 3/4" diameter and larger. All radiator hoses shall be routed, loomed, and secured so as to provide maximum protection from chafing, crushing, or contact with other moving parts.

### **Coolant**

The cooling system shall be filled with a 50/50 mixture of water and antifreeze/coolant conditioner to provide freezing protection to minus 40 (- 40) degrees F for operation in severe winter temperatures.

### **Coolant Recovery**

There shall be a coolant overflow recovery system provided.

### **Charge Air Cooler System**

The system shall include a charge air cooler to ensure adequate cooling of the turbocharged air for proper engine operation and maximum performance.

### **Charge Air Cooler Hoses**

Charge air cooler hoses shall be made from high-temperature, wire-reinforced silicone to withstand the extremely high temperatures and pressures of the turbocharged air. The hoses shall incorporate a flexible hump section to allow motion and misalignment of the engine relative to the charge air cooler. Charge air cooler hose clamps shall be heavy-duty, constant-torque, T-bolt clamps to ensure proper sealing under all temperatures in order to keep dust and other contaminants out of the engine intake air stream and protect the engine.

### **Fan/Shroud**

The fan shall be 30" in diameter with eleven (11) blades for maximum airflow and dynamic balance. It shall be made of nylon for strength and corrosion resistance. The fan shall be installed with grade 8 hardware which has been treated with thread locker for additional security. A fan shroud attached to the radiator shall be provided to prevent recirculation of engine compartment air around the fan in order to maximize the cooling airflow through the radiator. The fan shroud shall be constructed of fiber-reinforced high temperature plastic. The shroud shall be specifically formed with curved surfaces which improves air flow and cooling.

### **Transmission Cooler**

The cooling system shall include a liquid-to-liquid transmission cooler capable of cooling the heat generated from the transmission. When a transmission retarder is selected, the cooler shall have an increased capacity to handle the additional heat load.

### **Engine Coolant Filter**

A remote mounted engine coolant filter shall be supplied and connected to the engine cooling system. The filter shall be of the screw on type for ease of field replacement.

## **FUEL SYSTEMS**

### **Fuel Line**

All fuel lines shall be rubber.

### **Fuel/Water Separator**

A Racor fuel/water separator shall be installed in place of the Cummins fuel/water separator with drain. The unit shall utilize a three-step separate process: centrifuge for primary contaminant separation, conical baffles for water coalescing, and a replaceable filter for final particulate removal. The separator shall have a bottom drain for removing contaminants, shall be heated and shall have a rated maximum flow of 3.16 GPM. A sensor with indicator light and audible alarm shall be provided for the Racor fuel/water separator. The indicator light shall be mounted in the cab visible to the driver with the unit located inside the frame rails. The unit will alert the driver of high water content in the separator bowl.

### **Fuel Shut-Off**

A shut-off valve shall be supplied to prevent drain back of fuel into the main supply line during filter changes. The valve(s) shall be located: one (1) inlet side of fuel/water separator.

### **Fuel System**

One (1) 50 gallon fuel tank shall be provided. The tank shall be of an all-welded, stainless-steel construction with anti-surge baffles and shall conform to all applicable Administration (FHWA) 393.65 and 393.67 standards. The tank shall be mounted below the frame rails at the rear of the chassis for maximum protection. The tank shall be secured with two (2) wrap-around T-bolt type stainless steel straps. Each strap shall be fitted with protective rubber insulation and shall be secured with grade 8 hardware. This design allows for tank removal from below the chassis.

The fuel tank shall be equipped with a 2" diameter filler neck. The filler neck shall extend to the rear of the vehicle behind the rear tires and away from the heat of the exhaust system as required by NFPA 1901 Standard for Automotive Fire Apparatus. The open end of the filler neck shall be equipped with a twist-off filler cap with a retaining chain.

The tank shall be plumbed with top-draw and top-return fuel lines in order to protect the lines from road debris. Bottom-draw and/or bottom-return fuel lines are not acceptable. A vent shall be provided at the top of the tank. The vent shall be connected to the filler neck to prevent splash-back during fueling operations. A .50" NPT drain plug shall be provided at the bottom of the tank.

The tank shall have a minimum useable capacity of 50 gallons of fuel with a sufficient additional volume to allow for thermal expansion of the fuel without overflowing the vent.

A mechanical fuel pump shall be provided and sized by the engine manufacturer as part of the engine.

## **ALTERNATOR**

### **360 Amp Alternator**

A Niehoff model C505 360 amp SAE (J56) rated, 320 amp at 200 degrees F NFPA 1901 rated brush-less type alternator with rectifier shall be provided. It shall be self-energized and shall have a negative voltage compensating remote solid-state voltage regulator. The alternator shall be installed in accordance with the engine manufacturer's recommendations.

## **BATTERIES**

### **Battery System**

The manufacturer shall supply five (5) heavy duty Group 31 12 volt maintenance-free batteries. Each battery shall be installed and positioned so as to allow easy replacement of any single battery. Each battery shall be equipped with carrying handles to facilitate ease of removal and replacement. There shall be two (2) steel frame-mounted battery boxes, one (1) on the left frame rail and one (1) on the right frame rail. Each battery box shall be secured to the frame rail with Grade 8 hardware. The boxes shall hold two (2) batteries on the left side and three (3) on the right side. The batteries shall have a minimum combined rating of 5,000 (5 x 1000) cold cranking amps (CCA) @ 0 degrees Fahrenheit and 1025 (5 x 205) minutes of reserve capacity for extended operation. The batteries shall have 3/8-16 threaded stud terminals to ensure tight cable connections. The battery stud terminals shall each be treated with concentrated industrial soft-seal after cable installation to promote corrosion prevention. The positive and negative battery stud terminals and the respective cables shall be clearly marked to ensure quick and mistake-proof identification.

Batteries shall be placed on non-corrosive rubber matting and secured with hold-down brackets to prevent movement, vibration, and road shock. The hold-down bracket J-hooks shall be cut to fit and shall have all sharp edges removed. The batteries shall be placed in plastic trays to provide preliminary containment should there be leakage of hazardous battery fluids. There shall be two (2) plastic trays, one (1) for each set of batteries. Each battery tray shall be equipped with a rubber hose to facilitate drainage. The rubber hose shall be routed to drain beneath the battery box. The batteries shall be positioned in well-ventilated areas.

One (1) positive and one (1) negative jumper stud shall be provided below the front driver side of body/pump module.

Batteries shall have a warranty of twelve (12) months that shall commence upon the date of delivery of the apparatus.

### **Battery Trays**

Batteries shall be placed on non-corrosive rubber matting and secured with hold-down brackets to prevent movement, vibration, and road shock. The hold-down bracket J-hooks shall be cut to fit and shall have all sharp edges removed. The batteries shall be placed in stainless steel trays to provide preliminary containment should there be leakage of hazardous battery fluids. There shall be two (2) stainless steel trays, each containing up to (3) batteries. Each battery tray shall be equipped with a rubber vent hose to facilitate drainage. The rubber vent hose shall be routed to drain beneath the battery box. The batteries shall be positioned in well-ventilated areas.

## **CHASSIS OPTIONS**

### **Engine Fan Clutch**

The engine shall be equipped with a thermostatically controlled engine cooling fan. The fan shall be belt driven and utilize a clutch to engage when the engine reaches a specified temperature and / or the water pump is engaged (if equipped).

When disengaged, the fan clutch shall allow for improved performance from optional floor heaters, reduced cab interior noise, increased acceleration and improved fuel economy.

The fan shall be equipped with a fail-safe engagement so that if the clutch fails the fan shall engage to prevent engine overheating.

### **Drivelines**

Drivelines shall have a heavy duty metal tube and shall be equipped with Spicer 1710HD universal joints to allow full-transmitted torque to the axle(s). Drive shafts shall be axially straight, concentric with axis and dynamically balanced.

### **Front Tow Eyes**

Two (2) 3/4" thick heavy duty steel tow eyes shall be securely attached to the chassis frame rails at the front of the apparatus. They shall be mounted down below the bumper / cab.

### **Rear Tow Eyes**

Two (2) heavy duty tow eyes made of 3/4" (0.75") thick steel having 2-1/2" diameter holes shall be mounted below the body at the rear of the vehicle to allow towing (not lifting) of the apparatus without damage. The tow eyes will be welded to the lower end of a 5" steel channel that is bolted at the end of the chassis frame rails. The tow eyes shall be painted chassis black.

### **Tow Blocks**

One (1) pair of towing blocks shall be provided under the front frame extensions. The tow blocks shall allow for proper alignment of towing attachments.

### **Power Steering Cooler**

A front radiator mounted power steering cooler ( model DH-073-1-1) shall be provided. The cooler shall be rated at 6300 BTU/HR @10 GPM.

## **DEF Tank**

A diesel exhaust fluid (DEF) tank with a five (5) gallon capacity shall be provided.

The DEF tank shall include a heater fed by hot water directly from the engine block to prevent the DEF from becoming too cool to operate correctly per EPA requirements. The tank shall include a temperature sensor to control the heater control valve that controls the feed of hot water from the engine to the DEF tank heater.

A sender shall be provided in the DEF tank connected to a level gauge on the cab dash.

The tank shall be located left side below rear of cab.

## **CAB MODEL**

### **Cab Typhoon X Long w/Barrier Style Doors**

The vehicle shall be distinguished by an all-welded aluminum and fully enclosed tilt cab. The cab shall be designed exclusively for fire/rescue service and shall be pre-engineered to ensure long life. It shall incorporate an integral welded substructure of high-strength aluminum alloy extrusions that creates an occupant compartment that is essentially a protective perimeter. The end result is a distinctive structure that is aesthetically appealing, functionally durable, and characterized by increased personnel safety.

The cab shall be constructed from 3/16" (0.188") 3003 H14 aluminum alloy plate roof, floor, and outer skins welded to a high-strength 6063-T6 aluminum alloy extruded subframe. Wall supports and roof bows are 6061 T6 aluminum alloy. This combination of a high-strength, welded aluminum inner structure surrounded on all sides by load-bearing, welded aluminum outer skins provides a cab that is strong, lightweight, corrosion-resistant, and durable.

The inner structure shall be designed to create an interlocking internal "roll-cage" effect by welding two (2) 3" x 3" x 0.188" wall-thickness 6063-T5 aluminum upright extrusions between the 3" x 3" x 0.375" wall-thickness 6061-T6 roof crossbeam and the 2.25" x 3" x 0.375" wall-thickness 6063-T6 subframe structure in the front. An additional two (2) aluminum upright extrusions within the back-of-cab structure shall be welded between the rear roof perimeter extrusion and the subframe structure in the rear to complete the interlocking framework. The four (4) upright extrusions -- two (2) in the front and two (2) in the rear -- shall be designed to effectively transmit roof loads downward into the subframe structure to help protect the occupant compartment from crushing in a serious accident. All joints shall be electrically seam welded internally using aluminum alloy welding wire.

The subframe structure shall be constructed from high-strength 6061-T6 aluminum extrusions welded together to provide a structural base for the cab. It shall include a side-to-side C-channel extrusion across the front, with 3/4" x 2-3/4" (.75" x 2.75") full-width crossmember tubes spaced at critical points between the front and rear of the cab.

The cab floor shall be constructed from 3/16" (0.188") 3003 H14 smooth aluminum plate welded to the subframe structure to give the cab additional strength and to help protect the occupants from penetration by road debris and under-ride collision impacts.

The cab roof shall be constructed from 3/16" (0.188") 3003 H14 aluminum treadplate supported by a grid of fore-aft and side-to-side aluminum extrusions to help protect the occupants from penetration by falling debris and downward-projecting objects. Molded fiberglass or other molded fiber-reinforced plastic roof materials are not acceptable.

The cab roof perimeter shall be constructed from 4" x 6-5/8" (4" x 6.625") 6063-T5 aluminum extrusions with integral drip rails. Cast aluminum corner joints shall be welded to the aluminum roof perimeter extrusions to ensure structural integrity. The roof perimeter shall be continuously welded to the cab roof plate to ensure a leak-free roof structure.

The cab rear skin shall be constructed from 3/16" (0.188") 3003 H14 aluminum plate. Structural extrusions shall be used to reinforce the rear wall.

The left-hand and right-hand cab side skins shall be constructed from 3/16" (0.188") 3003 H14 smooth aluminum plate. The skins shall be welded to structural aluminum extrusions at the top, bottom, and sides for additional reinforcement.

The cab front skins shall be constructed from 3/16" (0.188") 3003 H14 smooth aluminum plate. The upper portion shall form the windshield mask, and the lower portion shall form the cab front. Each front corner shall have a full 9" outer radius for strength and appearance. The left-hand and right-hand sides of the windshield mask shall be welded to the left-hand and right-hand front door frames, and the upper edge of the windshield mask shall be welded to the cab roof perimeter extrusion for reinforcement. The cab front shall be welded to the subframe C-channel extrusion below the line of the headlights to provide protection against frontal impact.

## **Cab Exterior**

The exterior of the cab shall be 94" wide x 139.5" long to allow sufficient room in the occupant compartment for up to ten (10) fire fighters. The cab roof shall be approximately 101" above the ground with the flat roof option. The back-of-cab to front axle length shall be a minimum of 67.5".

Front axle fenderette trim shall be brushed aluminum for appearance and corrosion resistance. Bolt-in front wheel well liners shall be constructed of 3/16" (0.188") composite material to provide a maintenance-free, damage-resistant surface that helps protect the underside of the cab structure and components from stones and road debris.

The cab windshield shall be of a two-piece replaceable design for lowered cost of repair. The windshield shall be made from 1/4" (0.25") thick curved, laminated safety glass with a 75% light transmittance automotive tint. A combined minimum viewing area of 2,700-sq. in. shall be provided. Forward visibility to the ground for the average (50th percentile) male sitting in the driver's seat shall be no more than 11 feet 7 inches from the front of the cab to ensure good visibility in congested areas.

## **Cab Mounts and Cab Tilt System**

The cab shall be independently mounted from the body and chassis to isolate the cab structure from stresses caused by chassis twisting and body movements. Mounting points shall consist of two (2) forward-pivoting points, one (1) on each side; two (2) intermediate rubber load-bearing cushions located midway along the length of the cab, one on each side; and two (2) combination rubber shock mounts and cab latches located at the rear of the cab, one (1) on each side.

An electric-over-hydraulic cab tilt system shall be provided to provide easy access to the engine. It shall consist of two (2) large-diameter, telescoping, hydraulic lift cylinders, one (1) on each side of the cab, with a frame-mounted electric-over-hydraulic pump for cylinder actuation.

Safety flow fuses (velocity fuses) shall be provided in the hydraulic lift cylinders to prevent the raised cab from suddenly dropping in case of a burst hydraulic hose or other hydraulic failure. The safety flow fuses shall operate when the cab is in any position, not just the fully raised position.

The hydraulic pump shall have a manual override system as a backup in the event of an electrical failure. Lift controls shall be located in a compartment to the rear of the cab on the right side of the apparatus. A parking brake interlock shall be provided as a safety feature to prevent the cab from being tilted unless the parking break is set.

The entire cab shall be tilted through a 42-45 degree arc to allow for easy maintenance of the engine, transmission and engine components. A positive-engagement safety latch shall be provided to lock the cab in the full tilt position to provide additional safety for personnel working under the raised cab.

In the lowered position, the cab shall be locked down by two (2) automatic, spring-loaded cab latches at the rear of the cab. A "cab ajar" indicator light shall be provided on the instrument panel to warn the driver when the cab is not completely locked into the lowered position.

## **Cab Interior**

The interior of the cab shall be of the open design with an ergonomically-designed driver area that provides ready access to all controls as well as a clear view of critical instrumentation.

The engine cover between the driver and the officer shall be a low-rise contoured design to provide sufficient seating and elbow room for the driver and the officer. The engine cover shall blend in smoothly with the interior dash and flooring of the cab. An all-aluminum subframe shall be provided for the engine cover for strength. The overall height of the engine enclosure shall not exceed 23" from the floor at each side and 27" in the center section. The engine cover shall not exceed 41" in width at its widest point.

The rear portion of the engine cover shall be provided with a lift-up section to provide easy access for checking transmission fluid, power steering fluid, and engine oil without raising the cab. The engine cover insulation shall consist of 3/4" dual density fiberglass composite panels with foil backing manufactured to specifically fit the engine cover without modification to

eliminate "sagging" as found with foam insulation. The insulation shall meet or exceed DOT standard MVSS 302-1 and V-0 (UI subject 94 Test).

All cab floors shall be covered with a black rubber floor mat that provides an aggressive slip-resistant surface in accordance with current NFPA 1901.

A minimum of 57.25" of floor-to-ceiling height shall be provided in the front seating area of the cab and a minimum of 55.25" floor-to-ceiling height shall be provided in the rear seating area. A minimum of 36" of seated headroom at the "H" point shall be provided over each fenderwell.

The floor area in front of the front seat pedestals shall be no less than 20.5" side to side by 25.0" front to rear for the driver and no less than 20.5" side to side by 26.0" front to rear for the officer to provide adequate legroom.

Battery jumper studs shall be provided to allow jump-starting of the apparatus without having to tilt the cab.

All exposed interior metal surfaces shall be pretreated using a corrosion prevention system.

The interior of the cab shall be insulated to ensure the sound (dbA) level for the cab interior is within the limits stated in the current edition of NFPA 1901. The insulation shall consist of 2 oz. wadding and 1/4" (0.25") foam padding. The padding board shall be backed with 1/4" (0.25") thick reflective insulation. The backing shall be spun-woven polyester. Interior cab padding shall consist of a rear cab headliner, a rear wall panel, and side panels between the front and rear cab doors.

The overhead console and heater cover shall be covered with thermoformed, non-metallic, non-fiber trim pieces to provide excellent scuff and abrasion resistance, as well as chemical stain resistance. The thermoformed material shall comply with Federal Motor Vehicle Safety Standard (FMVSS) 302 for flammability of interior materials.

The vehicle shall use a seven-position tilt and telescopic steering column to accommodate various size operators. An 18" padded steering wheel with a center horn button shall be provided.

A full-width overhead console shall be mounted to the cab ceiling for placement of siren and radio heads, and for warning light switches. The console shall be made from a thermoformed, non-metallic material and shall have easily removable mounting plates.

Storage areas, with hinged access doors, shall be provided below the driver and officer seats. The driver side compartment shall be approximately 19.25" x 17.75" x 5.75" high and the officer side compartment shall be approximately 18.25" x 22.5" x 11" high (19.25" x 17.75" x 5.75" w/ air ride).

The front cab steps shall be a minimum of 8" deep x 24" wide. The first step shall be no more than 24.0" above the ground with standard tires in the unloaded condition per NFPA 1901 standards. The rear cab steps shall be a minimum 12" deep x 21" wide. The first step shall be no more than 24.0" above the ground with standard tires in the unloaded condition per NFPA 1901

standards. The rear steps shall incorporate intermediate steps for easy access to the cab. The step surfaces shall be aluminum diamond plate with a multi-directional, aggressive gripping surface incorporated into the aluminum diamond plate in accordance with current NFPA 1901.

A black rubber grip handle shall be provided on the interior of each front door below the door window to ensure proper hand holds while entering and exiting the cab. An additional black rubber grip handle shall be provided on the left and right side windshield post for additional handholds.

An additional 12" grab handle will be provided on the officer side of the dash directly in front of the officer riding position.

### **Cab Doors**

There shall be reflective signs on each cab door in compliance with all NFPA requirements.

Four (4) side-opening cab doors shall be provided. Doors shall be constructed of a 3/16" (0.188") aluminum plate outer material with an aluminum extruded inner framework to provide a structure that is as strong as the side skins.

Front cab door openings shall be approximately 36" wide x 63" high, and the rear cab door openings shall be approximately 33.75" wide x 63" high. The front doors shall open approximately 75 degrees, and the rear doors shall open approximately 80 degrees.

The doors shall be securely fastened to the doorframes with full-length, stainless steel piano hinges, with 3/8" (0.375") diameter pins for proper door alignment, long life, and corrosion resistance. Mounting hardware shall be treated with corrosion-resistant material prior to installation. For effective sealing, an extruded rubber gasket shall be provided around the entire perimeter of all doors.

Stainless steel paddle-style door latches shall be provided on the interiors of the doors. The latches shall be designed and installed to protect against accidental or inadvertent opening as required by NFPA 1901.

The front door windows shall provide a minimum viewing area of 530 sq. in. each. The rear door windows shall provide a minimum viewing area of 500 sq. in. each. All windows shall have 75% light transmittance automotive safety tint. Full roll-down windows shall be provided for the front cab doors with worm gear drive cable operation for positive operation and long life. Scissors or gear-and-sector drives are not acceptable.

### **Cab Instruments and Controls**

Two (2) pantograph-style windshield wipers with two (2) separate electric motors shall be provided for positive operation. Air-operated windshield wipers are not acceptable because of their tendency to accumulate moisture, which can lead to corrosion or to freezing in cold weather. The wipers shall be a wet-arm type with a one (1) gallon washer fluid reservoir, an intermittent-wipe function, and an integral wash circuit. Wiper arm length shall be

approximately 28", and the blade length approximately 20". Each arm shall have a 70 degree sweep for full coverage of the windshield.

An overhead mounted heater and defroster with a minimum capacity of 60,000 Btu/hr and all necessary controls shall be mounted in the cab. The airflow system shall consist of two (2) levels, defrost and cab, and shall have fresh air and defogging capabilities.

Cab controls shall be located on the cab instrument panel in the dashboard on the driver's side where they are clearly visible and easily reachable. Emergency warning light switches shall be installed in removable panels for ease of service. The following gauges and/or controls shall be provided:

- Master battery switch/ignition switch (rocker with integral indicator)
- Starter switch/engine stop switch (rocker)
- Heater and defroster controls with illumination
- Marker light/headlight control switch with dimmer switch
- Self-canceling turn signal control with indicators
- Windshield wiper switch with intermittent control and washer control
- Master warning light switch
- Transmission oil temperature gauge
- Air filter restriction indicator
- Pump shift control with green "pump in gear" and "o.k. to pump" indicator lights • Parking brake controls with red indicator light on dash
- Automatic transmission shift console
- Electric horn button at center of steering wheel
- Cab ajar warning light on the message center enunciator

Controls and switches shall be identified as to their function by backlit wording adjacent to each switch, or indirect panel lighting adjacent to the controls.

### **Fast Idle System**

A fast idle system shall be provided and controlled by the cab-mounted switch. The system shall increase engine idle speed to a preset RPM for increased alternator output.

### **Electrical System**

The cab and chassis system shall have a centrally located electrical distribution area. All electrical components shall be located such that standard operations shall not interfere with or disrupt vehicle operation. An automatic thermal-reset master circuit breaker compatible with the alternator size shall be provided. Automatic-reset circuit breakers shall be used for directional lights, cab heater, battery power, ignition, and other circuits. An access cover shall be provided for maintenance access to the electrical distribution area.

A 6 place, constantly hot, and 6 place ignition switched fuse panel and ground for customer-installed radios and chargers shall be provided at the electrical distribution area. Radio suppression shall be sufficient to allow radio equipment operation without interference.

All wiring shall be mounted in the chassis frame and protected from impact, abrasion, water, ice, and heat sources. The wiring shall be color-coded and functionally-labeled every 3" on the outer surface of the insulation for ease of identification and maintenance. The wiring harness shall conform to SAE 1127 with GXL temperature properties. Any wiring connections exposed to the outside environment shall be weather-resistant. All harnesses shall be covered in a loom that is rated at 280 degrees F to protect the wiring against heat and abrasion.

A Vehicle Data Computer (VDC) shall be supplied within the electrical system to process and distribute engine and transmission Electronic Control Module (ECM) information to chassis system gauges, the message center, and related pump panel gauges. Communication between the VDC and chassis system gauges shall be through a 4 wire multiplexed communication system to ensure accurate engine and transmission data is provided at the cab dash and pump. The VDC shall be protected against corrosion, excessive heat, vibration, and physical damage.

Two (2) dual rectangular sealed beam halogen headlights shall be installed on the front of the cab, one (1) on each side, mounted in a polished chrome-plated bezel. The low beam headlights shall activate with the release of the parking brake to provide daytime running lights (DRL) for additional vehicle conspicuity and safety. The headlight switch shall automatically override the DRL for normal low beam/high beam operation.

### **Cab Crashworthiness Requirement**

The apparatus cab shall meet and/or exceed relevant NFPA 1901 load and impact tests required for compliance certification with the following:

#### **Side Impact Dynamic Pre-Load per SAE J2422 (Section 5).**

Testing shall meet and/or exceed defined test using 13,000 ft-lbs of force as a requirement. The cab shall be subject to a side impact representing the force seen in a roll-over. The cab shall exhibit minimal to no intrusion into the cab's occupant survival space, doors shall remain closed and cab shall remain attached to frame.

Cab testing shall be completed using 13,776 ft-lbs of force **exceeding** testing requirements.

#### **Quasi-static Roof Strength (proof loads) per SAE J2422 (Section 6) / ECE R29, Annex 3, paragraph 5.**

Testing shall meet and/or exceed defined test using 22,046 lbs of mass as a requirement. Testing shall be completed using platen(s) distributed uniformly over all bearing members of the cab roof structure.

Cab testing shall be completed using 23,561 lbs of mass **exceeding** testing requirements. The cab shall exhibit minimal to no intrusion into the cab's occupant survival space and doors shall remain closed.

Additional cab testing shall be conducted using 117,336 lbs of mass **exceeding** testing requirements by **over five (5) times**. The cab shall exhibit minimal to no intrusion into the cab's occupant survival space and the doors shall remain closed.

#### **Frontal Impact per SAE J2420.**

Testing shall meet and/or exceed defined test using 32,549 ft-lbs of force as a requirement. The cab shall be subject to a frontal impact as defined by the standard. The cab shall exhibit minimal to no intrusion into the cab's occupant survival space, doors shall remain closed and cab shall remain attached to frame.

Cab testing shall be completed using 34,844 ft-lbs of force **exceeding** testing requirements.

Additional cab testing shall be conducted using 65,891 ft-lbs of force **exceeding** testing requirements by **over two (2) times**.

The cab shall meet all requirements to the above cab crash worthiness; **NO EXCEPTIONS**.

A copy of a certificate or letter verifying compliance to the above performance by an independent, licensed, professional engineer shall be provided upon request.

For any or all of the above tests, the cab manufacturer shall provide either photographs or video footage of the procedure upon request.

## **ISO Compliance**

The manufacturer shall ensure that the construction of the apparatus cab shall be in conformance with the established ISO-compliant quality system. All written quality procedures and other procedures referenced within the pages of the manufacturer's Quality Manual, as well as all Work Instructions, Workmanship Standards, and Calibration Administration that directly or indirectly impacts this process shall be strictly adhered to. By virtue of its ISO compliance the manufacturer shall provide an apparatus cab that is built to exacting standards, meets the customer's expectations, and satisfies the customer's requirements.

## **CAB ROOF TYPE**

### **Raised Roof**

The rear portion of the cab roof shall be raised 12". This will provide at least 5' 7" standing room. The front of the vista hood shall be sloped at 45 degrees from the vertical. The slope shall begin slightly in front of the centerline of the front axle to leave room for warning lights and air conditioning in front of the vista. The main roof extrusion shall extend up into the vista to strengthen the roof perimeter. Windows shall be provided on front, side, and rear unless otherwise specified.

The rear door shall have an 85" vertical dimension for improved ingress/egress characteristics. The door shall be equipped with a dual striker bolt system.

### **Raised Roof Front Windows**

The front windows of the raised roof portion of the cab shall be deleted.

### **Raised Roof Side Windows**

The side windows of the raised roof portion of the cab ahead of the rear doors shall be deleted.

## **CAB BADGE PACKAGE**

### **Logo Package**

The apparatus shall have manufacturer logos provided on the cab and body as applicable.

## **GRILLE**

### **Cab Grille**

The front cooling air intake grille shall be constructed of stainless steel mesh and supported by a 0.80" polished stainless steel frame providing no less than 81% open area for excellent cooling performance.

## **CAB DOOR OPTIONS**

### **Rear Cab Door Position**

The cab rear doors shall be moved to the rear of the wheel opening. This door placement facilitates easier entry and egress by reducing the rear facing seat protrusion into the door opening.

Rear door position to the 58" or (medium cab).

### **Cab Front Door Windows**

Driver and officer door windows shall have the support pillar located toward the front of the window. There shall be a vent that can be opened and closed within the window itself, located towards the front.

### **Cab Front Windows**

The front windows of the cab shall be manually operated to raise and lower.

### **Cab Door Locks**

Each cab door shall have a manually operated door lock actuated from the interior of each respective door. Exterior of each cab door shall be provided with a barrel style keyed lock below the cab door handle.

### **Cab Door Locks**

The cab shall have 1250 keyed door locks provided on exterior doors to secure the apparatus.

**Cab Door Panels**

The inner door panels shall be made from 14 gauge brushed finish stainless steel for increased durability. The cab door panels shall incorporate an easily removable panel for access to the latching mechanism for maintenance or service.

**Exterior Cab Door Latches**

All exterior cab door latches shall be paddle style.

**Cab Door Stainless Steel Trim**

Each cab door shall have a stainless steel trim on the trailing edge of the door opening.

**Cab Door Area Lighting**

There shall be four (4) clear LED lights provided to illuminate the cab step well area. Each light shall be located in the cab step well area. Each light shall be activated by the cab door ajar circuit.

**Door Mounted Flashing Lights**

There shall be four (4) door mounted red LED flashing lights, one (1) per door.

The lights shall be located on each cab door in the outboard position.

Each light shall be activated by the cab door ajar circuit.

**Cab Door Reflective Material**

Reflective Red/Fluorescent Yellow Green 3M Diamond Grade material striping shall be supplied on each of the lower cab doors. The stripes shall run from the lower outer corner to the upper inside corner of the panel, forming an "A" shape when viewed from the rear. The material shall meet NFPA 1901 requirements for size (96 square inches) and reflectivity.

**Cab Door Rear Windows**

The rear cab door windows shall be manually operated to raise and lower. The rear of the window opening shall have a fixed glass panel approximately 5" wide to allow the forward section of glass to roll down completely ahead of the door latching hardware.

**Cab Cabinet Door Trim**

A stainless steel trim shall be located at the bottom edge of the over cab wheel exterior compartment opening. The trim shall be made from 22 gauge stainless steel with a #4 brushed finish. The trim shall provide added protection of the painted surface of the cab when equipment is placed or removed from the compartment.

## **MIRRORS**

### **Cab Mirrors**

Mirror Stainless Steel 8" Convex, bell type mounting, (2) piece adjustable telescoping arm head #983, arm #3983. Mirror shall be mounted horizontally above the officer's position to permit rapid viewing of the rear cab area.

### **Cab Mirrors**

There shall be two (2) Lang Mekra 300 Aero Series Technology Mirrors provided, one (1) driver's and one (1) officer's side. The mirrors shall be chrome-plated on the main head, be remote controlled with a four way power system and be heated. There shall be LED marker lights with bezel on the main head, and LED arrow lights in the mirror glass. The main flat glass shall provide 120 square inches of viewable surface space.

There shall be separate heads for the driver's and officer's side housing convex glass and provide 56 square inches of viewing surface.

The mirrors shall be mounted on the cab doors.

## **MISC EXTERIOR CAB OPTIONS**

### **Cab Canopy Window**

There shall be a fixed window provided between the front and rear doors on the officer's side of the cab.

Window dimensions shall be as follows:

- 44" C/A cab (short cab): 16"W x 24.5"H
- 58" - 80" C/A cab (medium - extended): 26.69"W x 24.5"H

### **Front Mud Flaps**

Black linear low density polyethylene (proprietary blend) mud flaps shall be installed on the rear of the cab front wheel wells. The design of the mud flaps shall have corrugated ridges to distribute water evenly.

### **Handrails**

Cab door assist handrails shall consist of two (2) 1.25" diameter x 18" long 6063-T5 anodized aluminum tubes mounted directly behind the driver and officer door openings one each side of the cab. The handrails shall be machine extruded with integral ribbed surfaces to assure a good grip for personnel safety. Handrails shall be installed between chrome end stanchions and shall be positioned at least 2" from the mounting surface to allow a positive grip with a gloved hand.

## **Handrails**

Cab door assist handrails shall consist of two (2) 1.25" diameter x 36" long 6063-T5 anodized aluminum tubes mounted directly behind the driver and officer rear door openings one each side of the cab. The handrails shall be machine extruded with integral ribbed surfaces to assure a good grip for personnel safety. Handrails shall be installed between chrome end stanchions and shall be positioned at least 2" from the mounting surface to allow a positive grip with a gloved hand.

## **Rear Cab Wall Construction**

The rear cab wall shall be constructed using formed 3/16" (.188") aluminum smooth plate interlocking in aluminum extrusions. A rear cab wall overlay constructed of 3/32" (.090") diamond plate shall be provided over the smooth plate.

## **HVAC**

### **Air Conditioning**

An overhead air-conditioner / heater system with a single radiator mounted condenser shall be supplied with an gravity fed drain (no pump). All condensation is routed through a 3" x 3" upright cab extrusion terminating beneath the cab.

The unit shall be mounted to the cab interior headliner in a mid cab position, away from all seating positions. The unit shall provide ten (10) comfort discharge louvers, four (4) to the back area of the cab and six (6) to the front. These louvers will be used for AC and heat air delivery. Two (2) additional large front louvers shall be damper controlled to provide defogging and defrosting capabilities to the front windshield as necessary.

The unit shall consist of a high output evaporator coil and heater core with one (1) high output dual blower for front air delivery, and two (2) high performance single wheel blowers for rear air delivery.

The control panel shall actuate the air-distribution system with air cylinders, which are to be separated from the brake system by an 85-90 psi pressure protection valve. A three-speed blower switch shall control air speed.

The condenser shall be radiator mounted and have a minimum capacity of 65,000 BTU's and shall include a receiver drier.

Performance Data: (Unit only, no ducting or louvers), SAE J381 Certified

AC BTU: 55,000

Heat BTU: 65,000

CFM: 1300 @ 13.8V (All blowers)

The compressor shall be a ten-cylinder swash plate type Seltec model TM-31HD with a capacity of 19.1 cu. in. per revolution.

The system shall be capable of cooling the interior of the cab from 100 degrees ambient to 75 degrees or less with 50% relative humidity in 30 minutes or less.

### **Heat, Supplemental**

A single 40,000 BTU water heater shall be supplied in the front area of the cab. The unit shall heat the lower section of the driver's and officer's footwell.

Dual 23,000 BTU water heaters with diamond plate covers shall be supplied in the rear of the cab to heat the rear cab lower section.

Dual climate control will be achieved via dual switches installed on a front instrument panel. On units with optional multiplex display climate control, the floor heaters shall be controlled through the HVAC screen in the display.

## **SEATS**

### **Cab Seats**

All cab seats shall be Bostrom brand.

### **Seat, Driver**

One (1) H. O. Bostrom Sierra EX8/ABTS seat with high back styling shall be provided for the driver's position.

The ABTS (All-Belts-To-Seat) design shall include a bright red 3-point integrated seat belt with an additional 8-12" of additional useable belt webbing for easy access and comfort—increasing seat belt usage amongst firefighters and rescue personnel.

Seat features shall include:

- Power fore/aft with 8" adjustment
- Power height with 2" adjustment
- Power front seat tilt
- Power rear seat tilt
- Power back recline
- Built in lumbar support

### **Seat, Officer**

One (1) H. O. Bostrom Tanker 450EX6/ABTS seat with high back SCBA storage shall be provided for the officer's position.

The ABTS (All-Belts-To-Seat) design shall include a bright red 3-point integrated seat belt with an additional 8-12" of additional useable belt webbing for easy access and comfort—increasing seat belt usage amongst firefighters and rescue personnel.

Seat features shall include:

- Removable "Store-All" side cushions
- Auto-pivot and return headrest to open for improved exit with SCBA
- 12.5" wide SCBA cavity to store leading SCBA Brands
- Shoulder strap holder
- Replaceable seat, side and headrest cushions
- Power fore/aft with 6" adjustment
- Power height with 2" adjustment
- Power front seat tilt
- Power rear seat tilt

### **Seat, Rear Facing**

One (1) Bostrom Tanker 450 ABTS seat with high back SCBA storage shall be provided in the rear facing position over the officer side wheel well.

The ABTS (All-Belts-To-Seat) design shall include a bright red 3-point integrated seat belt with an additional 8-12" of additional useable belt webbing for easy access and comfort—increasing seat belt usage amongst firefighters and rescue personnel.

Seat features shall include:

- Removable "Store-All" side cushions
- Auto-pivot and return headrest to open for improved exit with SCBA
- 12.5" wide SCBA cavity to store leading SCBA brands
- Shoulder strap holder
- Replaceable seat, side and headrest cushions

### **Seat Cavity Cover [Qty: 4]**

A cavity cover shall be provided for the SCBA seats. The cover shall match the seat in brand, color and material.

### **Seat Cover Material**

All seats shall have Durawear seat cover material.

### **Seat Fabric Color**

All seats shall be black in color.

### **Seating Capacity Tag**

A tag that is in view of the driver stating seating capacity of five (5) personnel shall be provided.

### **Seat, Rear Wall**

One (1) Bostrom Tanker 400 ABTS flip-up seat with high back SCBA storage shall be provided. The seat shall be located on the rear wall on the driver's side inboard, officer's side inboard position.

The ABTS (All-Belts-To-Seat) design shall include a bright red 3-point integrated seat belt with an additional 8-12" of additional useable belt webbing for easy access and comfort—increasing seat belt usage amongst firefighters and rescue personnel.

Seat features shall include:

- Seat bottom folds up automatically when not in use to provide increased room in the rear of the cab
- Removable "Store-All" side cushions
- Auto-pivot and return headrest to open for improved exit with SCBA
- 12.5" wide SCBA cavity to store leading SCBA Brands
- Shoulder strap holder
- Replaceable seat, side and headrest cushions

### **Bostrom SecureAll Locking System**

The H.O. Bostrom SecureAll™ SCBA Locking System shall be one bracket model and store all U.S. and international SCBA brands and sizes while in transit or for storage on fire trucks. The bracket shall be easily adjustable; all adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Firefighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ bracket shall fit in all H.O. Bostrom Tanker SCBA seats including ABTS and non-ABTS seats and all flip-up ABTS and non-ABTS seats. Additional seat depth shall not be required for proper bracket fit; changes to the shroud back shall not be required for proper mounting of the bracket.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The H.O. Bostrom SecureAll™ system meets NFPA 1901 standards and requirements of EN 1846-2.

Location: officer's seat, inboard driver's side rear wall, inboard officer's side rear wall, rear facing officer's side. The bracket(s) shall be located officer's seat, inboard driver's side rear wall, inboard officer's side rear wall, rear facing officer's side.

### **Department Patch on Seat [Qty: 5]**

One (1) customer supplied department patch shall be sewn on to Bostrom seat back headrest.

## **MEDICAL CABINETS**

### **Medical Storage Cabinet**

There shall be one (1) medical storage cabinet provided over the driver side wheel well of the cab. The medical storage cabinet shall be constructed of 1/8" (.125") smooth aluminum plate. The medical storage cabinet shall be approximately 42" high x 22" (25" Quest) wide x 28" deep.

There shall be two (2) adjustable shelves provided in the medical storage cabinet. The shelves shall be constructed of 1/8" (.125") smooth aluminum plate. Each shelf shall have a 1" front and rear lip for strength and reinforcement. The shelves shall be sized to the interior dimensions of the medical storage cabinet.

The medical storage cabinet shall be accessible externally of the cab by a locking double pan door and internally by a vertically hinged full height door with a locking push-button latch.

The exterior door shall be constructed using a box pan configuration. The outer door pan shall beveled and shall be constructed from 3/16" (0.188") aluminum plate. Inner door pan shall be constructed from 1/8" (0.125") smooth aluminum plate and shall have nutsert fittings to attach hold-open hardware. The inner pan shall have a 95-degree bend to form an integral drip rail.

The exterior door shall have a 1" x 9/16" (1" x 0.43") closed-cell "P" EPDM sponge gasket meeting ASTM D-1066 2A4 standards installed around the perimeter of the door to provide a seal that is resistant to oil, sunlight, and ozone.

A drain hole shall be installed in the lower corner of the inside door pan to assist with drainage.

A polished stainless steel Hansen D-ring style twist-lock door handle with a #459 latch shall be provided on the door. The 4-1/2" (4.5") D-ring handle shall be mounted directly to the door latching mechanism with screws that do not penetrate the door material for improved corrosion resistance.

The exterior door shall be securely attached to the apparatus cab with a full-length stainless steel 1/4" (0.25") rod piano-type hinge isolated from the cab and exterior door with a dielectric barrier. The door shall be attached with machine screws threaded into the door frame. The door shall have a gas shock style hold-open device.

An anodized aluminum drip rail shall be mounted over the compartment opening to assist in directing water run-off away from the compartment.

**Medical Cabinet**

A medical cabinet shall be provided for the vista area ahead of the rear cab doors. The cabinet shall be constructed of 1/8" (.125) smooth aluminum and shall include three (3) horizontally hinged single pan lift-up doors. The cabinet shall be approximately 88" wide x vista height x sloped angle deep.

**Medical Storage Cabinet Finish**

The medical storage cabinet(s) shall have a Zolatone gray finish. The finish shall be applied to the interior, exterior, shelves (if equipped) and trays (if equipped) of the cabinet.

**Medical Cabinet**

There shall be one (1) medical storage cabinet provided at the driver's side rear wall of the cab. The medical cabinet shall be constructed of 1/8" smooth aluminum plate. The medical cabinet shall be approximately 55" high (54" non-vista) x 18" wide x 12" deep exterior.

Two (2) vertically adjustable shelves shall be provided and installed in the medical cabinet. The shelves shall be constructed of 1/8" smooth aluminum plate. Each shelf shall have a 1" front for added strength and reinforcement. The shelves shall be sized to the interior dimensions of the medical cabinet. The shelves shall be mounted with extruded aluminum adjustable shelf tracking attached to the cabinet walls and the shelves to be secured with aluminum brackets to the tracks to allow for vertical height adjustment. As necessary a 3/4" x 2-3/4" aluminum extrusion shall be mounted to the underside of the shelves to provide additional reinforcement as needed.

The lower cabinet opening shall be raised approximately 12" to provide space for rear wall heaters. The raised area shall include slots for proper ventilation of heaters and a false floor to protect heaters from contents of cabinet.

There shall be a locking roll-up door provided to secure contents.

**Exterior Cab Compartment [Qty: 2]**

There shall be a storage compartment provided each side at the lower rear side of the cab with exterior access. The compartment shall have a door opening of approximately 30" high x 9" wide and be constructed of 1/8" aluminum plate. The cabinet interior shall be approximately 31" high x 11" wide x 14" deep interior. If equipped with a bench seat over the compartment, a pass through shall be provided on the upper rear wall to access the space below the seat. The pass through opening shall be a minimum of 11" high and 11" wide.

A single hinged door shall be provided on the compartment. The door shall be constructed using a box pan configuration. The outer door pan shall beveled and shall be constructed from 3/16" (0.188") aluminum plate. Inner door pan shall be constructed from 1/8" (0.125") smooth aluminum plate and shall have nutsert fittings to attach hold-open hardware. The inner pan shall have a 95-degree bend to form an integral drip rail.

The compartment door shall have a 1" x 9/16" (1" x 0.43") closed-cell "P" EPDM sponge gasket meeting ASTM D-1066 2A4 standards installed around the perimeter of the door to provide a seal that is resistant to oil, sunlight, and ozone.

A drain hole shall be installed in the lower corner of the inside door pan to assist with drainage.

A polished stainless steel Hansen D-ring style twist-lock door handle with a #459 latch shall be provided on the door. The 4-1/2" (4.5") D-ring handle shall be mounted directly to the door latching mechanism with screws that do not penetrate the door material for improved corrosion resistance.

The compartment door shall be securely attached with a full-length stainless steel 1/4" (0.25") rod piano-type hinge isolated from the body and compartment door with a dielectric barrier. The door shall be attached with machine screws threaded into the door frame. The door shall have a gas shock-style hold-open device.

An anodized aluminum drip rail shall be mounted over the compartment opening to assist in directing water run-off away from the compartment.

## **MAP BOXES**

### **Map Box**

An aluminum map/storage box shall be installed in the cab. The map box shall be constructed of 1/8" (.125) smooth aluminum. Hinged drop down doors with push-button latches shall be installed on the front of the box for the access to two (2) storage areas. Each storage area shall have three (3) fixed shelves for storage of ring binders, map books, etc. Each latch shall have a 50 lb. rating.

The map box shall be mounted on the vertical uprights in the center of the cab between the driver and officer seating positions. The map box shall be secured and tested to meet with current NFPA requirements.

Approximate dimensions:

Divided storage area - 34" W x 12.50" H x 12" D.

### **Map Box Location**

The map box suspended between the 3x3 vertical uprights shall be offset to the rear of the 3x3's. The map box shall be mounted down low as possible as space permits.

### **Map Box Finish**

The map box(es) shall have Zolatone gray 20-64 finish.

## **MISC INTERIOR CAB OPTIONS**

**Storage Under Bench Seat**

There shall be two (2) hinged doors provided on the front of the bench seat enabling access to store equipment below the rear wall bench seat.

**Cab Interior Color**

Cab instrument panel, overhead console, trim panels, headliner, and door panels shall be gray.

**Sun Visors**

Lexan sun visors shall be provided for the driver and officer matching the interior trim of the cab and shall be flush mounted into the underside of the overhead console.

**Air Horn Lanyard**

There shall be a "Y" style lanyard mounted in the center of the cab that allows the driver and officer to operate the air horns. The lanyard shall activate an electrical air switch.

**Cab Rollover Protection - Master Control Module**

A RollTek rollover occupant protection system shall be installed in the apparatus cab. The system shall include an Integrated Roll Sensor (master module), Integrated Head Curtains and Integrated Seat Belt pretensioners.

The Integrated Roll Sensor (IRS) shall be a microprocessor-controlled solid-state sensing device that utilizes vehicle-specific calibrations to detect rollovers. The IRS shall be equipped with eight (8) pyrotechnic loops for connection to the protective countermeasures (Integrated Head Curtains and Integrated Seat Belt pretensioners).

The IRS shall continually monitor the truck's acceleration and angle, and upon detection of an imminent roll-over, shall activate protective countermeasures in a pre-programmed sequence. The entire process from activation to deployment shall take less than ¼ of a second (.234).

In addition to acting as the "brain" of the RollTek system, the IRS shall also act as a "black box," recording crash events for post-crash evaluation.

**Cab Rollover Protection - Slave Module for Master Control**

A slave module shall be installed with the RollTek Integrated Roll Sensor (IRS) to expand the system's capabilities. The slave module shall include connections for up to eight (8) additional pyrotechnic loops for use with up to a total of sixteen (16) protective countermeasures (Integrated Head Curtains and Integrated Seat Belt pretensioners).

**Cab Rollover Protection - Side Air Bags [Qty: 3]**

RollTek Integrated Head Curtains (IHC) shall be installed in the apparatus cab. The pillow-shaped side air bags shall be attached either to the ABTS seats or the rear cab wall. The air bags shall be optimally placed to deploy across the window and side of the vehicle interior to protect the occupants heads during impact. The air bags shall use a combination of high-pressure stored argon and oxygen (and a pyrotechnic charge for initiation) to inflate the bags to a relatively cool (120° Fahrenheit) inflation temperature and remain inflated for several seconds.

### **Cab Rollover Protection - Seat Belt Pretensioners [Qty: 5]**

RollTek Integrated Seat Belt Pretensioners (ISB) shall be installed in the apparatus cab. The special seat belt buckles shall be designed to receive a signal from the Integrated Roll Sensor during a roll for the pretensioners on the buckles to tighten the seat belts to the occupant, better positioning the occupant in the seats.

### **Stainless Steel Window Bars**

Stainless steel bars shall be installed across the rear cab door windows.

### **Cab Dash - Severe Duty**

The center and officer side dash shall be constructed from .125" smooth aluminum plate painted to match the cab interior. A hinged access panel shall be provided on top of the center dash to provide easy access to components within.

The lower kick panels below the dash to be constructed from .125" aluminum diamond plate. The panels shall be removable to allow for servicing components that may be located behind the panels.

### **Transverse Area**

A transverse area shall be provided below the seat support channel for use with exterior riser height compartments. The transverse shall be constructed of 1/8" smooth aluminum with a finish to match the cab interior.

### **Rear Wall Toolboard**

Pac Trac tool mounting shall be provided on the rear wall of the cab. The Pac Trac shall be vertically stacked on officer side outboard of seat(s) full height of the rear cab wall.

### **Radio Cabinet**

There shall be a radio storage cabinet provided in the cab at the rear of the engine cover. The radio cabinet shall be constructed of 1/8" smooth aluminum plate. The radio cabinet shall be approximately 8" high x 44" wide x 17" deep (upper) interior. The cabinet shall include louvers for ventilation of customer provided and installed radio equipment.

The radio cabinet shall be accessed from a drop-down door with two (2) thumb latches at rear of cabinet.

## **Engine Cover**

The engine cover shall blend in smoothly with the interior dash and flooring of the cab. The upper left and right sides shall have a sloped transition surface running front to rear providing increased space for the driver and officer.

The engine cover and engine service access door cover shall be molded 18 lb/cu. ft. (+/-0.5) flexible integral skinned polyurethane foam at a Durometer of 60 (+/- 5.0) per ASTM F1957-99 and with a minimum skin thickness of 0.0625 inches and shall be provided to reduce the transmission noise and heat from the engine. The cover shall be black and feature a pebble grain finish for slip resistance.

## **Cup Holders**

Two (2) cup holders shall be provided on the cab engine cover. The cup holders shall be molded 18 lb/cu. ft. (+/-0.5) flexible integral skinned polyurethane foam at a Durometer of 60 (+/- 5.0) per ASTM F1957-99 and with a minimum skin thickness of 0.0625 inches. The outer surface of the cup holders shall be black with a pebble grain finish and shall include a removable plastic liner.

The cup holders shall be located Driver and officer side of engine cover slightly ahead of access door spaced approximately 20" apart (center to center).

## **Front Occupant Protection**

A 4Front occupant protection system shall be installed in the apparatus cab. The system shall inflate three (3) air bags in the following locations:

- Steering wheel air bag to protect the head and neck of the driver
- Knee bolster air bag to protect the driver's legs
- Knee bolster air bag to protect the officer's legs

The air bags shall use a combination of high-pressure stored argon and oxygen (and a pyrotechnic charge for initiation) to inflate the bags to a relatively cool (120° Fahrenheit) inflation temperature and remain inflated for several seconds.

The system shall be connected to the crash detection sensor that will also activate the driver and first officer Integrated Belt Pretensioners if it detects a frontal crash.

## **CAB ELECTRICAL OPTIONS**

### **Cab Dome Lights**

A Weldon LED dome light assembly with one (1) white lens and one (1) red lens and plastic housing shall be installed. The white light activates with appropriate cab door and light assembly switch, the red light activates with light assembly mounted switch only.

There shall be two (2) mounted in the front of the cab, one (1) in the driver and one (1) in the officer ceiling.

There shall be two (2) mounted in the rear of the cab, one (1) in the driver side and one (1) in the officer side ceiling.

### **Auto-Eject Battery Charger Receptacle**

The battery charger receptacle shall be a Kussmaul 20 amp NEMA 5-20 Super Auto-Eject #091-55-20-120 with a cover. The Super Auto-Eject receptacle shall be completely sealed and have an automatic power line disconnect.

The receptacle shall be located outside driver's door next to handrail and the cover color shall be Yellow.

### **Horn Button Switch**

A two (2) position rocker switch shall be installed in the cab accessible to the driver and properly labeled to enable operator to activate the OEM traffic horn or air horn from the steering wheel horn button.

### **ATC Override**

An Automatic Traction Control (ATC) override switch shall be provided. The switch shall be located within reach of the driver and allow for momentary disabling of the ATC system due to mud or snow conditions.

### **DPF Regeneration Override**

An override switch shall be provided for the Diesel Particulate Filter (DPF) regeneration. The switch will inhibit the regeneration process until the switch is reset or the engine is shut down and restarted. The switch shall be located within reach of the driver.

### **English Dominant Gauge Cluster**

The cab operational instruments shall be located in the dashboard on the driver side of the cab and shall be clearly visible. The gauges in this panel shall be English dominant and shall be the following:

- Speedometer/Odometer
- Tachometer with integral hour meter
- Engine oil pressure gauge with warning light and buzzer
- Engine water temperature gauge with warning light and buzzer
- Two (2) air pressure gauges with a warning light and buzzer (front air and rear air)
- Fuel gauge
- Voltmeter
- Transmission oil temperature gauge

This panel shall be backlit for increased visibility during day and night time operations.

### **Speedometer for Officer**

An electronic speedometer shall be mounted on the passenger's side of the cab, mounted in the overhead console.

### **Headlights**

The front of the cab shall have four (4) headlights. The headlights shall be mounted on the front of the cab in the lower position. The headlights shall be day time operational.

### **Battery Charger with Remote**

A Kussmaul Auto Charger 1200 battery charger with remote mounted bar graph display shall be installed.

The battery charger shall be completely automatic with an output of 0-40 amp @ 12 volts DC and an input current requirement of 10 amps @ 120 volts AC.

### **Pre-Wire**

The chassis shall be pre-wired for installation of tire chains.

### **Cab 12 Volt (or 24 Volt) Outlet**

A plug-in type receptacle for hand held spotlights, cell phones, chargers, etc. shall be installed In cab driver side on 3 x 3 post rear facing just above engine cover, In cab officer side on 3 x 3 post rear facing just above engine cover, officer side dash. The receptacle shall be wired battery hot.

### **Windshield Fans**

Two (2) adjustable windshield defogger fans with individual switches shall be mounted in the cab centered below the overhead console. The fans shall be 12 volt and shall each be rated at 250 cfm. Location: centered below overhead console.

### **Battery Charger Location**

The battery charger shall be located behind officer's seat.

### **Cab Turn Signals**

There shall be a pair of Whelen M6 LED (Light Emitting Diode) turn signal light heads with populated arrow pattern and amber lens mounted upper headlight bezel and wired with weatherproof connectors.

**Radio Conduit**

There shall be a 1.5" conduit provided from the radio compartment behind the engine tunnel to the cab dash for radio cables to be provided and installed by the Fire Department.

**Antenna Mounts [Qty: 5]**

There shall be a Tessco P/N 90942 universal antenna base mounted on the cab roof with a weatherproof connector. The antenna base shall be NMO Motorola Style (equivalent to a MATM style). The antenna shall be locations and coax terminations shall be determined at the pre-build conference.

**Antenna Access [Qty: 5]**

There shall be a access covers located in the headliner under each roof mounted antenna base so servicing the antennas does not require removal of the headliner.

**12 Volt Power Lead [Qty: 3]**

One (1) 12 volt 12 gauge constant hot lead shall be provided. The lead shall be 24" long and include a ground wire and fuse. Termination points for the leads shall be determined at the pre-build conference.

**BODY COMPT LEFT SIDE****Driver Side Roof Top Compartments**

Two (2) driver side roof compartments shall be provided. The compartments shall be integral to the driver side assembly.

The compartments shall be transverse front to rear and shall include flooring. The flooring shall be smooth plate and shall have drain holes to prevent the accumulation of water.

The compartment top lids shall be raised and constructed of 1/8" (.125") aluminum treadplate. The lids shall include stainless steel hinges and shall be hinged to the outside of the compartment. Each lid shall include turn latches, grab handle(s) and be wired to the door ajar indicator in the cab.

Lighting shall be provided for each compartment. The lights shall illuminate when the compartment lid is in the open position.

### **Driver Side Assembly**

The driver side assembly shall be constructed entirely of aluminum extrusions and interlocking aluminum plates. This aluminum modular design shall provide a high strength-to-weight ratio for increased equipment carrying capacity.

The driver side body corners shall be 6063-T5 extruded aluminum corner sections with a 3/16" (0.188") wall thickness. The side body extrusions shall be 6063-T5 aluminum tubing with a 3/16" (0.188") wall thickness and 3/16" (0.188") outside corner radius. The corners and sides shall be welded both internally and externally at each joint using an aluminum alloy welding wire.

The driver side body shall be completely sanded and deburred to assure a smooth finish and painted job color.

### **Driver Side Compartments**

The three (3) driver side compartments shall be constructed from 3003 H14 1/8" (.125") smooth aluminum plate. The compartments shall be modular in design and shall not be a part of the body support structure.

There shall be one (1) compartment located ahead of the rear wheels. This compartment shall be approximately 42" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 30 cu. ft. of combined storage space. The door opening shall be approximately 42" wide x 68" high.

There shall be one (1) compartment located over the rear wheel. The compartment shall be approximately 56" wide x 34" high x 12" deep and contain approximately 13.2 cu. ft. of storage space. The door opening shall be approximately 56" wide x 34" high.

There shall be one (1) compartment located behind of the rear wheels. This compartment shall be approximately 50" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 35.8 cu. ft. of combined storage space. The door opening shall be approximately 50" wide x 68" high.

Each compartment seam shall be sealed using a permanent pliable silicone caulk. The walls of each compartment shall be machine-louvered for adequate ventilation.

An externally-mounted compartment top shall be provided and constructed of a 1/8" (.125") aluminum treadplate.

## **BODY COMPT RIGHT SIDE**

### **Officer Side Assembly**

The officer side assembly shall be constructed entirely of aluminum extrusions and interlocking aluminum plates. This aluminum modular design shall provide a high strength-to-weight ratio for increased equipment carrying capacity.

The officer side body corners shall be 6063-T5 extruded aluminum corner sections with a 3/16" (0.188") wall thickness. The side body extrusions shall be 6063-T5 aluminum tubing with a 3/16" (0.188") wall thickness and 3/16" (0.188") outside corner radius. The corners and sides shall be welded both internally and externally at each joint using an aluminum alloy welding wire.

The officer side body shall be completely sanded and deburred to assure a smooth finish and painted job color.

### **Officer Side Compartments**

The two (2) officer side compartments shall be constructed from 3003 H14 1/8" (.125") smooth aluminum plate. The compartments shall be modular in design and shall not be a part of the body support structure.

There shall be one (1) compartment located ahead of the rear wheels. This compartment shall be approximately 42" wide x 30" high x 26" deep. The compartment shall contain approximately 19 cu. ft. of combined storage space. The door opening shall be approximately 42" wide x 30" high.

There shall be one (1) compartment located behind of the rear wheels. This compartment shall be approximately 50" wide x 30" high x 26" deep. The compartment shall contain approximately 22.5 cu. ft. of combined storage space. The door opening shall be approximately 50" wide x 30" high.

Each compartment seam shall be sealed using a permanent pliable silicone caulk. The walls of each compartment shall be machine-louvered for adequate ventilation.

An externally-mounted compartment top shall be provided and constructed of a 1/8" (.125") aluminum treadplate. The compartment top shall be removable for easy access to the main body wiring harness.

### **Ladder Storage**

Ladder storage shall be provided over the officer side compartment top.

There shall be two (2) aluminum adjustable ladder tracks vertically-mounted to the hosebed side. There shall be two (2) cast ladder brackets provided with spring-loaded hold-down handles mounted in the adjustable ladder tracks. Brackets shall be provided to protect the painted body side surface.

## **BODY COMPT REAR**

### **Tailboard**

**Tailboard Step**

A tailboard step shall be provided at the rear of the body. The tailboard shall 10" in depth and in accordance with NFPA in both step height and stepping surface. The maximum rear step height to the tailboard shall not exceed 24".

The tailboard step shall be formed from 3/16" (0.188") aluminum treadplate and shall be reinforced with 6063-T5 1.5" x 3" aluminum extrusion. The tailboard shall be in accordance with current NFPA requirements and shall include a multi-directional aggressive gripping surface incorporated into the diamond plate. The surface shall extend vertically from the diamond plate sheet a minimum of 1/8" (0.125"). Gripping surfaces shall be circular in design, a minimum of 1" diameter and on centers not to exceed 4".

The tailboard step shall be bolted on to the body from the underside assuring a clear surface and shall be easily removable for replacement in the case of damage.

**Rear Access Handrails**

Handrails shall be provided at the rear of the body to assist ground personnel accessing the tailboard step and hosebed area. Each handrail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, and shall be mounted between chrome stanchions.

The handrails shall be located- two (2) handrails, one (1) on each side, appropriately sized handrail mounted vertically on the trailing edge of the body and appropriately sized handrail(s) mounted horizontally below the rear hosebed opening.

**Rear Body Compartment**

The rear body shall be constructed entirely of aluminum extrusions and interlocking aluminum plates and includes a lower full height center rear compartment.

The rear body frame shall be 6063-T5 1.5" x 4" and 1.5" x 3" aluminum extrusions with a 3/16" (0.188") wall thickness and 3/16" (0.188") outside corner radius and 1/8" (0.125") aluminum plate. The rear extrusions shall be welded both internally and externally at each joint using an aluminum alloy welding wire.

**Rear Body Compartment**

The rear compartment shall be constructed from 3003 H14 1/8" (.125") smooth aluminum plate. The compartment shall be modular in design and shall not be a part of the body support structure.

The compartment shall be approximately 38" wide x 30" high x 28" deep. The compartment shall contain approximately 18.4 cu. ft. of storage space. The door opening shall be approximately 38" wide x 30" high. This compartment shall be transverse through to the side rear compartments.

The compartment seams shall be sealed using a permanent pliable silicone caulk. Machined louvers shall be provided for adequate ventilation.

## **DOORS**

### **Roll Up Compartment Door**

A ROM brand roll up door with satin finish shall be provided on a compartment up to 45" tall. The door(s) shall be installed in the following location(s): B1.

The Robinson door slats shall be double wall box frame and manufactured from anodized aluminum. The slats shall have interlocking end shoes on each slat. The slats shall have interlocking joints with a PVC/vinyl inner seal to prevent any metal to metal contact and inhibit moisture and dust penetration.

The track shall be anodized aluminum with a finishing flange incorporated to provide a finished look around the perimeter of the door without additional trim or caulking. The track shall have a replaceable side seal to prevent water and dust from entering the compartment.

The doors shall be counterbalanced for ease in operation. A full width latch bar shall be operable with one hand, even with heavy gloves. Securing method shall be a positive latch device.

A magnetic type switch integral to the door shall be supplied for door ajar indication and compartment light activation.

The door opening shall be reduced by 2" in width and approximately 8-9" in height depending on door height.

### **Keyed Latch**

A locking D-ring with two (2) #1250 keys shall be installed on a box pan compartment door.

A locking D-ring shall be located on the following door(s): L1, L2, L3, R1, R2.

### **Keyed Latch**

The roll-up door shall be provided with locking mechanism. Two (2) #1250 keys shall be provided for the roll-up compartment door.

A locking roll-up door shall be provided in the following location(s): B1.

### **Double Compartment Door**

Double compartment doors shall be constructed using a box pan configuration. The outer door pans shall beveled and shall be constructed from 3/16" (0.188") aluminum plate. The inner door pans shall be constructed from 1/8" (0.125") smooth aluminum plate and shall have nutsert

fittings to attach hold-open hardware. The inner pans shall have a 95-degree bend to form an integral drip rail.

The compartment doors shall have a 1" x 9/16" (1" x 0.43") closed-cell "P" EPDM sponge gasket meeting ASTM D-1066 2A4 standards installed around the perimeter of the doors to provide a seal that is resistant to oil, sunlight, and ozone.

A drain hole shall be installed in the lower corner of the inside door pan to assist with drainage.

A polished stainless steel Hansen D-ring style twist-lock door handle with #459 latch shall be provided on the primary door. The 4-1/2" (4.5") D-ring handle shall be mounted directly to the door latching mechanism with screws that do not penetrate the door material for improved corrosion resistance.

The secondary door shall have a dual stage rotary latch with a 750 lb rating to hold the door in the closed position. The latch shall be mounted at the top of the door. A stainless steel paddle style handle shall be mounted on the interior pan of the door to actuate the rotary latch. The paddle handle shall be connected to the rotary latch by a 5/32" (.156") diameter rod. Cable actuation shall be deemed un-acceptable due to the potential for cable stretch and slippage. The striker pin shall be 3/8" (.38") diameter with slotted mounting holes for adjustment.

The compartment doors shall be securely attached to the apparatus body with a full-length stainless steel 1/4" (0.25") rod piano-type hinge isolated from the body and compartment doors with a dielectric barrier. The doors shall be attached with machine screws threaded into the doorframe.

The doors shall have a gas shock-style hold-open device. The gas shocks shall have a 30 lb rating and be mounted near the top of the door (when possible).

An anodized aluminum drip rail shall be mounted over the compartment opening to assist in directing water runoff away from the compartment.

The door(s) shall be installed in the following location(s): L2, R1, R2

### **Double Compartment Door**

Double compartment doors shall be constructed using a box pan configuration. The outer door pans shall beveled and shall be constructed from 3/16" (0.188") aluminum plate. The inner door pans shall be constructed from 1/8" (0.125") smooth aluminum plate and shall have nutsert fittings to attach hold-open hardware. The inner pans shall have a 95-degree bend to form an integral drip rail.

The compartment doors shall have a 1" x 9/16" (1" x 0.43") closed-cell "P" EPDM sponge gasket meeting ASTM D-1066 2A4 standards installed around the perimeter of the doors to provide a seal that is resistant to oil, sunlight, and ozone.

A drain hole shall be installed in the lower corner of the inside door pan to assist with drainage.

A polished stainless steel Hansen D-ring style twist-lock door handle with #459 latch shall be provided on the primary door. The 4-1/2" (4.5") D-ring handle shall be mounted directly to the door latching mechanism with screws that do not penetrate the door material for improved corrosion resistance.

The secondary door shall have two (2) dual stage rotary latches, each with a 750 lb rating to hold the door in the closed position. The latches shall be mounted at the top and bottom of the door. A stainless steel paddle style handle shall be mounted on the interior pan of the door to actuate the rotary latches. The paddle handle shall be connected to the rotary latches by 5/32" (.156") diameter rods. Cable actuation shall not be deemed un-acceptable due to the potential for cable stretch and slippage. The striker pins shall be 3/8" (.38") diameter with slotted mounting holes for adjustment.

The compartment doors shall be securely attached to the apparatus body with a full-length stainless steel 1/4" (0.25") rod piano-type hinge isolated from the body and compartment doors with a dielectric barrier. The doors shall be attached with machine screws threaded into the doorframe.

The doors shall have a gas shock-style hold-open device. The gas shocks shall have a 30 lb rating and be mounted near the top of the door (when possible).

An anodized aluminum drip rail shall be mounted over the compartment opening to assist in directing water runoff away from the compartment.

The door(s) shall be installed in the following location(s): L1, L3

## **SHELVES**

### **Adjustable Shelf**

There shall be an aluminum adjustable shelf provided for compartment R1, R2, L1 lower, L3 lower.

The shelf shall be constructed of 3/16" (.187") smooth aluminum plate. The shelf shall have a minimum 2" front and rear lips to accommodate optional plastic interlocking compartment tile systems. For additional strength and reinforcement of the shelf a return break shall be provided on the outward lip. The adjustable shelf shall be capable of holding 250 lbs.

The shelf shall be sized, width and depth, to match the size and location in the compartment.

### **Adjustable Shelf**

There shall be an aluminum adjustable shelf provided in the upper area of compartment L1 upper, L3 upper, the shelf shall be notched into extended side compartment area.

The shelf shall be constructed of 3/16" (.187") smooth aluminum plate. The shelf shall have a minimum 2" front and rear lips to accommodate optional plastic interlocking compartment tile systems. The adjustable shelf shall be capable of holding 100 lbs.

The shelf shall be sized, width and depth, to match the size and location in the compartment.

### **Adjustable Tracks**

Tracks shall be provided in R1, R2, L1 lower, L3 lower for use with adjustable shelves and/or trays in deep non-transverse compartments. The tracks shall be vertically mounted and attached to the side and/or rear walls of the compartments.

### **Adjustable Tracks**

Tracks shall be provided in L1 upper, L3 upper for use with shallow depth adjustable shelves. The tracks shall be vertically mounted and attached to the side and/or rear walls of the compartments.

## **TRAYS / TOOLBOARDS**

### **Runningboard Suction Tray**

A running board suction hose storage tray "floating style" shall be provided and located in the driver side running board, officer side running board.

The tray shall be "floating style" mounted and constructed of 1/8" (.125") aluminum diamond plate (exterior) with a smooth sanded surface interior. The bottom of the tray shall have removable aluminum slats and drain holes to allow water drainage from hose stored in the tray. The tray shall have a 3" tapered front corner to protect tray against debris. The tray shall be removable for the running board.

### **Toolboard**

The back wall of L2 shall have PAC TRAC tool mounting provided.

### **Roll-Out Tray**

There shall be a floor mounted roll-out tray provided in compartment B1.

The roll-out tray shall be constructed of 3/16" (.187") smooth aluminum plate with a sanded finish and welded corners for increased strength and rigidity. The tray shall be sized in width and depth as applicable.

For greater tray accessibility, the drawer slides shall feature one hundred percent extension. The tray shall utilize a gas spring to secure the tray in the open or closed position.

The tray shall have a total capacity of 500 lbs.

### **Swing-out Tool Board**

An swing out aluminum tool board(s) shall be provided for compartment(s) L2.

The tool board shall be constructed of 1/4" (.25") smooth aluminum plate. The board shall contain a 90 degree bend top and bottom for rigidity. The tool board shall have a sanded finish and be sized in height and depth as applicable.

The tool board shall be mounted on a stainless steel hinge (stainless steel plate welded to a 1/2" stainless steel rod), attached to a 1.5" x 3" extrusion, that will permit the board to swing out of the compartment for easier access to tools and/or equipment. The tool board shall latch to a 3" x 3" extrusion, with a D-Ring latch utilized to secure the toolboard in the closed position.

The tool board shall be mounted centered front to rear of the compartment.

## **COVERS**

### **Hose Bed Cover**

A cover constructed of Black 18 oz. PVC vinyl coated polyester shall be installed over the apparatus hose bed. The base fabric shall be 1000 x 1300 Denier Polyester with a fabric count of 20 x 20 square inch.

The front edge of the cover shall be mechanically attached to the body. The sides of the cover shall be held in place with heavy duty Velcro strips running the length of the hose bed.

### **Hose bed Cover – Forward Section**

Front of hose bed to have a hinged hose bed deflector of 3/16" aluminum tread plate approx. 20" long x width of hose bed. Rear of deflector to have a slotted extrusion to hold front of vinyl hose bed cover. Cover to include a hold-open, chrome handle at front, and "No Step" sign with approx.. 3" high letters.

### **Rear Hose Bed Cover**

A cover constructed of heavy duty black nylon cargo netting shall be installed at the rear apparatus hose bed.

The bottom of the cargo netting shall be mechanically attached to the hose bed. The cover shall be attached to comply with the latest edition of NFPA 1901.

### **Crosslay Cover [Qty: 2]**

A crosslay cover shall be provided for the crosslay storage area of the pump module. The crosslay cover shall be provided in compliance with NFPA 1901.

The crosslay cover shall be constructed from 3/16" (.187") aluminum treadplate. The cover shall include a full-length stainless steel 1/4" (0.25") rod piano-type hinge. The cover shall be hinged to open and not interfere with applicable plumbing components on the apparatus.

The crosslay cover shall include applicable grab handle(s) and two (2) hold downs to secure the cover in the closed position. The cover shall be labeled as a non-stepping surface in non-aerial applications.

### **Crosslay Cover Hinge [Qty: 2]**

The crosslay cover shall be hinged along the forward edge of the crosslay area.

### **Running Board Tray Securing Strap**

A heavy duty black nylon strap with an aluminum quick-release buckle shall be provided for the running board hose tray(s). The strap shall be attached to the inboard side of the tray as low as practical to allow cinching of strap for securing tray contents and shall not reduce the overall tray capacity.

Location: driver side running board, officer side running board.

### **Hold Open [Qty: 2]**

Hold open device(s) shall be provided for aluminum crosslay (single or bi-fold) cover.

### **Crosslay Cover Side Panels [Qty: 2]**

Liftup hinged diamond plate side panels for single diamond plate crosslay cover. Hinged across the top on each end, with gasket around sides and bottom. Includes center grab handle above butterfly latch located at lower center of side panels to hold closed.

## **PUMP MODULE**

### **Pump Module Width**

Pump module shall be 76" wide.

### **Pump Module**

An aluminum extruded pump module shall be provided and located forward of the body. The pump module shall be provided with a forward area for a triple crosslay, backboard storage and dunnage storage shall be provided. The pump module shall be constructed entirely of aluminum extrusions and interlocking aluminum plates. The pump module design and mounting shall be separate from the body to allow the pump module and body to move independently of each other in order to reduce stress from frame twisting and vibration. The exterior surface of the pump module shall have a sanded finish. The pump module panel opening shall be 51" in width. Lower module shall be shortened to allow 68" high crosslay height from ground.

### **Crosslay Triple Preconnect Storage**

The module design shall include an area for a single stacked 1.5" double crosslay at approximately 71" off the ground and the 2.5" deadlay double stack, backboard storage stepped up 7' rearward. The forward two (2) crosslay areas shall have a capacity of 200 ft. of 1.75" double jacket hose. The rearward deadlay area shall be for 2.5" double jacket hose. The crosslay floor shall be constructed of 3/16" (.188) smooth aluminum plate and shall be slotted to prevent the accumulation of water and allow for ventilation of wet hose. One (1) 1/4" (.25") smooth aluminum plate non-adjustable dividers with a sanded finish shall be provided to separate the forward hose storage area.

### **Backboard Storage**

The module design shall include a backboard storage area rearward of the crosslays. The storage area shall have an opening of approximately 20" high x 5" wide. The backboards shall be secured with 1/8" (.125) aluminum treadplate vertically hinged doors on each end of the compartment.

### **Dunnage Pan**

A dunnage pan constructed of 3/16" (.188") aluminum treadplate shall be located rearward of the backboard storage. The dunnage pan shall be sized to maximize available storage space.

### **Pump Module Running Boards**

The pump module shall include a running board on each side of the pump module. The running boards shall be in accordance with NFPA in both step height and stepping surface. The maximum step height to each running board shall not exceed 24". The running boards shall be formed from 1/8" (.125") aluminum treadplate. Each running board shall include a multi-directional, aggressive gripping surface incorporated into the treadplate. The surface shall extend vertically from the diamond plate sheet a minimum of 1/8" (.125"). Gripping surfaces shall be circular in design, a minimum of 1" diameter and on centers not to exceed 4". Each running board shall be bolted on to the pump module and be easily removable for replacement in the case of damage.

## **PUMP PANELS**

### **Side Mount Pump Panels**

The driver and officer side pump panels shall be constructed of 14 gauge stainless steel. Each panel shall have the ability to be removed from the module for easier access and for maintenance in the pump area.

### **Hinged Gauge Panel**

The driver side stainless steel single gauge panel shall be positioned where it can be opened downward for access to gauges and other interior pump module mounted items. The gauge panel shall include latches to secure the panel in the closed position. Two (2) cable tethers shall be provided to hold the panel in the open position.

## **Pump Access Door**

The officer side pump panel shall be vertically hinged.

The pump panels shall be securely attached with a vertical stainless steel piano type hinge with 1/4" pins along the forward edge of the pump module. The hinge shall be "staked" on every other knuckle to prevent the pin from sliding. The panels shall have push button style latches to secure the panels in the closed position and one (1) pneumatic shock to hold the upper panel in the open position.

## **MISC PUMP PANEL OPTIONS**

### **Pump Panel Tags**

Color coded pump panel labels shall be supplied to be in accordance with NFPA 1901 compliance.

### **Special Color Pump Panel Tags.**

The pump panel tags shall be color coded per customer specifications.

## **PUMP MODULE OPTIONS**

### **Pump Module Crosslay Divider Notch**

The crosslay divider(s) shall be notched on both ends for line(s) nozzle end storage with NFPA cover(s) in the closed position.

### **Preconnect Storage Flooring**

The preconnect hose storage area(s) shall include removable maintenance-free flooring constructed of 3/4" x 2-3/4" (0.75" x 2.75") hollow aluminum extrusions.

### **Module Logos**

Logos with the OEM brand name shall be provided and shall be mounted one (1) each side on pump module/pre-connect panels. Logos shall be sized as applicable to available space on panel(s).

### **Air Horn Switch**

A heavy duty weatherproof push-button switch shall be installed at the pump operator's panel to operate the air horns.

The switch shall be labeled "Evacuation Alert".

Location: driver side pump panel.

## **WATER TANK**

### **1030 Gallon Water Tank**

A 1030 gallon (U.S.) "L" booster tank shall be supplied.

The booster tank shall be constructed of polypropylene material. The booster tank shall be completely removable without disturbing or dismounting the apparatus body structure. The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal.

The booster tank top, sides, and bottom shall be constructed of a minimum 1/2" (0.50") thick black UV-stabilized copolymer polypropylene. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The tank cover shall be constructed of 1/2" thick polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions.

The tank shall have a combination vent and manual fill tower with a hinged lid. The fill tower shall be constructed of 1/2" polypropylene and shall be a typical dimension of 8" x 8" outer perimeter (subject to change for specific design applications). The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall have a 1/4" thick removable polypropylene screen and a polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid.

The booster tank shall have two (2) tank plumbing openings. One (1) for a tank-to-pump suction line with an anti-swirl plate, and one (1) for a tank fill line. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates per the tank fill inlet size.

The sump shall be constructed of a minimum of 1/2" polypropylene. The sump shall have a minimum 3" N.P.T. threaded outlet for a drain plug per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3" above the inside floor.

The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength.

Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with an I.D. of 3" or larger that is designed to run through the tank. This outlet shall direct the draining of overflow water past the rear axle, thus reducing the possibility of freeze-up of these components in cold environments. This drain configuration shall also assure that rear axle tire traction shall not be affected when moving forward.

The booster tank shall undergo extensive testing prior to installation in the truck. All water tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale.

Each tank shall be weighed empty and full to provide precise fluid capacity. Each tank shall be delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight. Engineering estimates for capacity calculations shall not be permitted for capacity certification. The tank must be designed and fabricated by a tank manufacturer that is ISO 9001:2008 certified in each of its locations. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.

A tag shall be installed on the apparatus in a convenient location and contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include the capacity of the water and foam (s), the maximum fill and pressure rates, the serial number of the tank, the date of manufacture, the tank manufacturer, and contact information. The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

The tank shall have a limited Lifetime warranty that provides warranty service for the life of the fire apparatus in which the tank is installed. Warranties are transferable if the apparatus ownership changes by requesting the transfer from the tank manufacturer.

Tank capacity is 1030 US gallon / 857 Imperial gallons / 3898 Liters.

### **Fill Tower Location**

Fill tower(s) shall be located offset to officer side of water tank.

## **TANK PLUMBING**

### **Tank Fill 2 Akron Handwheel**

One (1) 2" pump-to-tank fill line having a 2" handwheel operated full flow valve. The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.

The valve shall be an Akron 8600HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The handwheel valve control shall have the following features:

- Handwheel driven worm gear rotates a gear sector for smoother and easier operation under pressure.
- A 50:1 ratio
- 4" handwheel
- 12 1/2 turns for full open/close.
- Opening and closing speed complies with the current edition of NFPA.
- Portrait position indicator which shows the position of the valve ball to meet NFPA 1901.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

### **Tank To Pump 3 Akron Valve**

One (1) manually operated 3" Akron valve shall be installed between the pump suction and the booster tank, 4" piping, with flex hose and stainless steel hose clamps connect to the tank. The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

## **FOAM TANK**

### **30 Gallon Foam Tank**

A 30 gallon (U.S.) foam cell for Class B foam shall be supplied. The foam cell shall be integral to the water tank.

The integral tank top, sides, and bottom shall be constructed of black polypropylene material. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The copolymer polypropylene material shall be used for its high strength and corrosion resistance for a prolonged tank life.

The foam tank shall have a manual fill tower. The fill tower shall be constructed of 1/2" polypropylene and shall be a typical dimension of 8" x 8" outer perimeter (subject to change for specific design applications). Foam fill tower shall be constructed of a Yellow colored material indicating type of foam utilized. The capacity of the tank shall be engraved on the top of the fill tower lid. The fill tower shall be located in the forward area of the tank. The tower shall have a 1/4" thick removable polypropylene screen. Inside the fill tower, approximately 1.5" down from the top, there shall be an anti-foam fill tube that extends down to the bottom of the tank. A pressure vacuum vent shall be provided in the lid of the fill tower. The foam fill tower shall be removable to facilitate the cleaning of the foam tank.

The foam tank shall undergo extensive testing prior to installation in the truck. All foam tanks shall be tested and certified as to capacity. The tank must be designed and fabricated by a tank manufacturer that is ISO 9001:2008 certified in each of its locations. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.

The tank shall have a limited Lifetime warranty that provides warranty service for the life of the fire apparatus in which the tank is installed. Warranties are transferable if the apparatus ownership changes by requesting the transfer from the tank manufacturer.

## **20 Gallon Foam Tank**

A 20 gallon (U.S.) foam cell for Class A foam shall be supplied. The foam cell shall be integral to the water tank.

The integral tank top, sides, and bottom shall be constructed of black polypropylene material. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The copolymer polypropylene material shall be used for its high strength and corrosion resistance for a prolonged tank life.

The foam tank shall have a manual fill tower. The fill tower shall be constructed of 1/2" polypropylene and shall be a typical dimension of 8" x 8" outer perimeter (subject to change for specific design applications). Foam fill tower shall be constructed of a Green colored material indicating type of foam utilized. The capacity of the tank shall be engraved on the top of the fill tower lid. The fill tower shall be located in the forward area of the tank. The tower shall have a 1/4" thick removable polypropylene screen. Inside the fill tower, approximately 1.5" down from the top, there shall be an anti-foam fill tube that extends down to the bottom of the tank. A pressure vacuum vent shall be provided in the lid of the fill tower. The foam fill tower shall be removable to facilitate the cleaning of the foam tank.

The foam tank shall undergo extensive testing prior to installation in the truck. All foam tanks shall be tested and certified as to capacity. The tank must be designed and fabricated by a tank manufacturer that is ISO 9001:2008 certified in each of its locations. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.

## **FOAM TANK OPTIONS**

## **B Foam Tank Panel Outlet**

A quick-connect foam outlet shall be provided. The outlet shall be for use with a Class B external foam eductor application. The outlet shall be a 1" male disconnect with a 1" valve. The connection between the foam tank and valve shall be a flex line with a strainer. A check valve shall be provided so water cannot enter into the foam tank once the external water line is connected.

A 1" female fitting shall be provided and shipped loose with the apparatus.

The outlet shall be located driver side pump panel.

## **Waterous Aux Pickup**

The apparatus shall have a Electronic Dual Tank Selector, used with Waterous Advantus® Foam Systems. Equipped with a quick-connect type connector for quick and easy hose connection. Also equipped with a dust cap when the Overboard Pick-Up Kit is not in use.

A Stainless Steel Pick-Up Wand and Hose A stainless steel pick-up wand and 6 feet of reinforced hose equipped with a 1", non-drip, hydraulic quick-connect type connector constructed of brass or optional stainless steel with a spring-loaded release collar is used to draw the Class B foam into the foam system through the Auxiliary Foam Connection.

## **LADDER STORAGE / RACKS**

### **Ladder Storage**

#### **Recessed Ladder Storage**

A recessed ladder storage compartment shall be provided. The storage compartment shall store one (1) folding attic ladder with feet.

The storage compartment shall be accessed through a hinged 1/8" (.125") aluminum tread plate door with a push button latch. The door shall be wired to the door ajar indicator light in the cab and shall be interlocked with the parking brake per NFPA.

The storage compartment shall be located below officer side compartment top.

#### **Hard Suction Hose Rack [Qty: 2]**

One (1) hard suction hose storage rack shall be provided above the officer side adjustable ladder tracks.

The storage rack shall be constructed of anodized extruded aluminum and includes two (2) spring-mounted latch handles.

The storage rack shall be capable of storing one (1) 6" x 10' hard suction hose.

### **Hold Downs**

The ladder brackets/rack to store one (1) 2-section extension and one (1) roof ladder.

### **Ladder Brand**

The ladder brand capable of being carried on the unit shall be Alco-Lite.

### **Pike Pole Storage**

Two (2) aluminum tubes shall be mounted for storing two (2) pike poles.

Location: officer side compartment top.

### **Pike Pole**

The pike pole(s) capable of being stored shall be the following length: (2) 10' pike poles.

### **Ladders**

The length of ladders capable of being stored shall be the following: 24' 2-section and 14' roof ladder.

### **Storage Tube Retaining Pin**

The storage tube(s) shall have a secondary retaining pin with cable. This retaining pin shall provide additional securing of the tube contents while the apparatus is in transit and on scene.

## **HANDRAILS / STEPS**

### **Hose Bed Folding Steps**

Dual lighted LED folding steps shall be positioned to the driver side rear of the body. The steps shall be NFPA compliant for access to the hose bed storage area and in step height and surface area. The steps shall be staggered stepped as applicable with tailboard depth, not applicable with recessed step mounting.

Dual lighted LED folding step with LED lights integral to the step on the top to provide NFPA requirements of 2 FC on the stepping surface. Each step shall also have a LED light integral to the bottom of the step to meet NFPA requirements of a stepping surface up to 18" below the step.

The folding step shall sustain a minimum static load of 500 lbs. The folding step shall also meet NFPA slip resistance qualifications.

One (1) hand rail shall be installed (as applicable) in compliance with current NFPA. The hand rail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, mounted between chrome stanchions.

### **Folding Steps**

Dual lighted LED folding step(s) shall be located officer side front compartment face, driver side front compartment face. The folding step(s) shall meet current NFPA in step height and surface area.

Dual lighted LED folding step with LED lights integral to the step on the top to provide NFPA requirements of 2 FC on the stepping surface. Folding step shall also have a LED light integral to the bottom of the step to meet NFPA requirements of a stepping surface up to 18" below the step. The folding step shall sustain a minimum static load of 500 lbs. The folding step shall also meet NFPA slip resistance qualifications.

One (1) hand rail shall be installed in compliance with current NFPA. The hand rail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, mounted between chrome stanchions.

## **MISC BODY OPTIONS**

### **Rear Mud Flaps**

The rear tires shall have a set of black mud flaps mounted behind the rear chassis wheels with E-ONE logo.

### **Body Height and Mainframe Construction**

The body mainframe shall be entirely constructed of aluminum. The complete framework shall be constructed of 6061T6 and 6063T5 aluminum alloy extrusions welded together using 5356 aluminum alloy welding wire.

The body mainframe shall include 3" x 3" 6061-T6 aluminum 3/8" (0.375") wall crossmember extrusion or 3" x 3" I-beam section aluminum extrusion depending on the application at the front of the body. A solid 3" x 3" "I-beam" section aluminum extrusion shall be provided the full width of the body forward and rearward of the rear wheel well. The crossmembers shall be designed to support the compartment framing and shall be welded to 1-3/16" x 3" (1.188" x 3") solid 6063-T5 aluminum frame sill extrusions. The frame sill extrusions shall be shaped to contour with the chassis frame rails and shall be protected from contact with the chassis frame rails by 5/16" x 2" (0.31" x 2") fiber-reinforced rubber strips to prevent wear and galvanic corrosion caused when dissimilar metals come in contact.

### **Body Mounting System**

The main body shall be attached to the chassis frame rails with six (6) of 5/8" (0.625") diameter steel U-bolts. The rear of the body shall be spring mounted to allow for chassis flex. This body

mounting system shall be used to allow easy removal of the body for major repair or disassembly.

### **Water Tank Mounting System**

The body design shall allow the booster tank to be completely removable without disturbing or dismounting the apparatus body structure. The water tank shall rest on top of a 3" x 3" frame assembly covered with rubber shock pads and corner braces formed from 3/16" angled plate to support the tank. The booster tank mounting system shall utilize a floating design to reduce stress from road travel and vibration. To maintain low vehicle center of gravity the water tank bottom shall be mounted within 5" of the frame rail top.

### **Hosebed Side Assembly**

The hosebed side assemblies shall be made of 3" x 3" slotted aluminum extrusion and 3/16" (.188") smooth plate. The hosebed side assemblies shall provide a 90" high body.

The exterior hosebed side surface shall be completely sanded and deburred to assure a smooth finish and painted job color. The interior hosebed side surface shall be completely sanded and deburred to assure a smooth sanded finish.

### **Hose Bed Capacity**

The hose bed shall have the capacity to store the following hose from the driver side to the officer side. 600' x 1.75" DJ, 1200' x 5", 500' x 2.5"

### **Hosebed**

The area above the booster tank shall have a hose storage area provided. The hosebed shall be constructed entirely from maintenance-free, 3/4" deep x 7.5" wide, extruded aluminum slats that shall be pop-riveted into a one-piece grid system. Each slat shall have all sharp edges removed and have an anodized ribbed top surface that shall prevent the accumulation of water and allow for ventilation of wet hose.

The hosebed shall include an open area for the fill tower(s). The hosebed design shall incorporate adjustable tracks in the forward area rearward of the fill tower(s) and the rearward area of the hosebed for the installation of an adjustable divider(s). The adjustable tracks shall hold an adjustable divider(s) mounting nut straight, so only a philips head screwdriver is required to adjust a divider(s) from side to side (as is practical with other hosebed mounted equipment).

The hosebed shall be easily removable to allow access to the booster tank below.

Hosebed height from ground is to be approximately 63".

### **Hose Bed Divider [Qty: 3]**

There shall be a hose bed divider provided the full fore-aft length of the hose bed.

The hose bed divider shall be constructed of 1/4" (0.25") smooth aluminum plate with an extruded aluminum base welded to the bottom. The rear end of the divider shall have a 3" radius corner to protect personnel. The divider shall be natural finish aluminum for long-lasting appearance and shall be sanded and de-burred to prevent damage to the hose.

The divider shall be adjustable from side to side in the hose bed to accommodate varying hose loads.

### **Storage Pan**

A storage pan shall be provided in the forward area of the hosebed.

The storage pan shall be constructed of 3/16" (.188") aluminum treadplate.

### **Hose Bed Divider Hand Hold**

There shall be a hand hole cut-out(s) on the trailing edge of each hose bed divider. The cut-out(s) is specifically sized for use in adjusting of the hose bed divider.

### **Divider Support**

Divider Support shall run full width of hosebed (side to side) at the front of the hosebed and towards the rear of the hosebed at top of the divider(s). Attach to each hosebed divider to provide additional support.

### **Overall Height Restriction**

The completed unit shall have an overall height shall of 9' 9" (+/- 2")

### **Overall Length Restriction**

The completed unit shall have an overall length of 32' 10" (+/- 2")

### **Stainless Steel Trim**

A stainless steel trim shall be located at the bottom edge of compartment L1, L2, L3, R1, R2 opening. The trim shall provide added protection of the painted surface of the body when equipment is removed from the compartment.

### **Fuel Fill**

A recessed fuel fill shall be provided at the driver side rear wheel well area.

**Fill Tower Location**

The fill tower(s) shall be located inside the hose bed storage pan.

**Interior Body Compartment Finish**

The body compartment interiors shall have a Zolatone gray finish. Includes inner pan of hinged doors and floors (if smooth plate).

**Body Wheel Well**

The body wheel well frame shall be constructed from 6063-T5 aluminum extrusion with a slot the full length to permit an internal fit of 1/8" (0.125") aluminum treadplate. The wheel well trim fenderett shall be constructed from 6063-T5 formed aluminum extrusion. The wheel well liners shall be constructed of a 3/16" (.187") composite material. The liners shall be bolt-on and shall provide a maintenance-free and damage-resistant surface.

**Rubrail**

The pump area module(s) and body shall have rubrails mounted along the sides and at the rear.

The rubrail shall be C-channel in design and constructed of 3/16" thick 6463T6 anodized aluminum extrusion. The rubrail shall be 2.75" high x 1.25" deep and shall extend beyond the body width to protect compartment doors and the body side. The rubrail depth shall allow marker and/or warning lights to be recessed inside for protection.

The top surface of the rubrail shall have minimum of five (5) raised serrations. Each serration being a minimum of .1" in height and with cross grooves to provide a slip-resistant edge for the tailboard step and pump module running board areas. The rubrail shall be mounted a minimum of 3/16" off the pump module and body with nylon spacers. The ends of each section shall be provided with a finished rounded corner piece.

**Compartment Partitions**

Removable partitions shall be provided to separate the two side lower rearward compartments from the lower center rear compartment.

**SCBA BOTTLE STORAGE****Wheel Well SCBA Storage**

The body wheel well area shall store up to seven (7) SCBA bottles- four (4) on the officer side and three (3) on the driver side. The bottles shall be secured in each storage area by a vertically hinged door which shall be secured in the closed position by a push button latch. The doors shall match the wheel well area material and finish.

**PUMPS**

## **Fire Pump System**

The pump shall be a midship mounted Waterous CSU 1500-2250 single stage centrifugal pump. The pump shall be mounted on the chassis frame rails and shall be split-shaft driven.

The entire pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 psi (207 (MPa). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump body shall be horizontally split in two (2) sections, for easy removal of impeller assembly including wear rings and bearings from beneath the pump without disturbing pump mounting or piping.

The pump impeller shall be hard, fine grain bronze of the mixed flow design and shall be individually ground and hand balanced. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency.

The impeller shaft shall be stainless steel, accurately ground with a 2-3/4" diameter spline shaft, and shall be rigidly supported at each end by oil or grease-lubricated anti-friction ball bearings for rigid and precise support. Bearings shall be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. The remaining bearings shall be heavy duty, deep groove ball bearings in the gearbox and shall be splash lubricated. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of the gearbox.

Two (2) 6" diameter suction ports with 6" NST male threads and removable screens shall be provided, one each side. The ports shall be mounted one on each side of the midship pump and shall extend through the side pump panels. Inlets shall come equipped with long handle chrome caps.

Stuffing boxes shall be integral with the pump body and be equipped with two-piece glands to permit adjustment or replacement of packing without disturbing pump. Lantern rings shall be located at inner ends of stuffing boxes so that all rings of packing can be removed without removal of the lantern rings. Water shall be fed into stuffing box lantern rings for proper lubrication and cooling when pump is operating.

### **Discharge Manifold**

The pump system shall utilize a stainless steel discharge manifold system that allows a direct flow of water to all discharge valves. The manifold and fabricated piping systems shall be constructed of a minimum of Schedule 10 stainless steel to reduce corrosion.

The apparatus manufacturer shall provide a full 10 year stainless steel plumbing components warranty. This warranty shall cover defects in materials or workmanship of apparatus manufacturer designed foam/water plumbing system stainless steel components for 10 years. A copy of the warranty document shall be provided with the proposal.

### **Priming System**

The oil-free electrically driven priming pump shall be a positive displacement vane type. One (1) priming control, located at the pump operator's position, shall open the priming valve and start the priming motor. The priming valve shall be electronically interlocked to the "Park Brake" circuit to allow priming of the pump before the pump is placed in gear.

### **Pump Shift**

The pump shift shall be pneumatically controlled using a power shifting cylinder.

The power shift control valve shall be mounted in the cab, and be labeled "PUMP SHIFT". The apparatus transmission shift control shall be furnished with a positive lever, preventing accidental shifting of the chassis transmission.

A green indicator light shall be located in the cab, and be labeled "PUMP ENGAGED". The light shall not activate until the pump shift has completed its full travel into pump engagement position.

A second green indicator light shall be located in the cab and be labeled "OK TO PUMP". This light shall be energized when both the pump shift has been completed and the chassis automatic transmission has obtained converter lock-up (4th gear lock-up).

### **Systems**

Two (2) test plugs shall be pump panel mounted for third party testing of vacuum and pressures of the pump.

A master drain valve shall be installed and operated from the pump operator's panel. The master pump drain assembly shall consist of a Class 1 bronze master drain with a rubber disc seal and turning handle.

The manual master drain valve shall have six individually sealed ports that allow quick, simultaneous, draining of multiple intake and discharge lines. It shall be constructed of corrosion resistant material and be capable of operating at a pressure of up to 600 PSI.

The master drain shall provide independent ports for low point drainage of the fire pump and auxiliary devices.

### **Auxiliary Engine Cooler**

An engine cooler used to lower engine water temperature during prolonged pumping operations and controlled at the pump operator's panel shall be provided.

The engine cooler shall be installed in the engine coolant system in such a manner as to allow cool pump water to circulate around engine water, thus forming a true heat exchanger action. Cooler inlet and outlet shall be continuous, preventing intermixing of engine coolant and pump water.

### **Pump Rating**

The fire pump shall be rated at 1500 GPM.

## **PUMP CERTIFICATION**

### **Pump Certification**

The pump, when dry, shall be capable of taking suction and discharging water in accordance with current NFPA 1901. NFPA testing and certification to be conducted by Underwriter's Laboratory (UL). The conditions of the pump test shall be as outlined in current NFPA 1901.

The tests shall include, at a minimum, the pump test, the pumping engine overload test, the pressure control system test, the priming device tests, the vacuum test, and the water tank to pump flow test as outlined in current NFPA 1901.

A piping hydrostatic test shall be performed as outlined in current NFPA 1901.

The pump shall deliver the percentage of rated capacities at pressures indicated below:

- 100% of rated capacity at 150 psi net pump pressure
- 100% of rated capacity at 165 psi net pump pressure
- 70% of rated capacity at 200 psi net pump pressure
- 50% of rated capacity at 250 psi net pump pressure

A test plate, installed at the pump panel, shall provide the rated discharges and pressures together with the speed of the engine as determined by the certification test, and the no-load governed speed of the engine.

A Certificate of Inspection certifying performance of the pump and all related components shall be provided at time of delivery. Additional certification documents shall include, but not limited to, Certificate of Hydrostatic Test, Electrical System Performance Test, Manufacturer's Record of Pumper Construction, and Certificate of Pump Performance from the pump manufacturer.

## **PUMP OPTIONS**

### **Pump Cooler**

The pump shall have a 3/8" line installed from the pump discharge to the booster tank to allow a small amount of water to circulate through the pump casing in order to cool the pump during sustained periods of pump operation when water is not being discharged. The pump cooler line shall be controlled from the pump operator's panel by a 1/4" snubber valve.

### **Steamers, Flush+1**

The pump 6" steamer intake(s) shall be mounted approximately 1" from the pump panel to back of cap when installed. The "Flush+1" dimension can vary + or - 1-1/4" or as practicable depending on the pump module width and options selected. (Example 72" or 76" modules.)

Location: driver's side, officer's side.

### **Anodes, Waterous Pump**

The anodes help prevent damage caused by galvanic corrosion within the pump. The system provides a sacrificial metal which helps to diminish or prevent pump and pump shaft galvanic corrosion. One (1) anode will be located on the suction side and one (1) will be located on the discharge side of the pump.

### **Pump Seal, Mechanical**

A mechanical seal shall be supplied with the pump and shall include an alternate seal housing that shall be equipped with self-adjusting, maintenance-free, mechanical shaft seals which eliminates the need for packing.

### **Monarch Waterous Electric Actuated Valve**

A 12 volt electric actuated Waterous Monarch intake valve shall be provided including an extra short intake fitting, an intake butterfly valve and a Waterous relief valve.

The Waterous Monarch intake valve shall include an extra short intake fitting, an intake butterfly valve and an intake nipple with integral relief valve mounting pad, all designed to fit behind the pump panel. The Waterous Monarch shall feature a Jamesbury Wafer Sphere high performance butterfly valve. The Monarch valve shall also have a pre-set relief valve.

A Waterous intake relief valve, designed to dump excess pressure from the inlet side of the pump shall be provided.

Features:

- Flexible lip seat allows tight shut-off and compensates for wear. Does not require additional O-rings or fillers to maintain tightness.
- Stainless-backed TFE shaft bearings are self-lubricating and provide high corrosion resistance.
- Offset shaft and patented seat design reduces opening and closing torque.
- Easy seat maintenance. Remove the body's insert and replace the seat. Disassembly of the disc and shaft connection is not required.
- A 1/4" air bleeder valve shall be provided and controlled at the pump operator's position.

A 3/4" drain/bleeder valve shall be provided at the side pump panel.

Location: 5 in. front intake.

### **Master Drain Valve**

A manual master drain valve shall be installed on the pump panel. The master pump drain assembly shall consist of a Class 1 bronze master drain with a rubber disc seal. The master drain shall have a rubber seal to prevent water from running out on the running board.

The manual master drain valve shall have twelve (12) individually-sealed ports that allow quick and simultaneous draining of multiple intake and discharge lines. It shall be constructed of corrosion-resistant material and be capable of operating at a pressure of up to 600 PSI.

The master drain shall provide independent ports for low point drainage of the fire pump and auxiliary devices.

### **Pump Primer**

The priming pump shall be a Trident Emergency Products compressed air powered, high efficiency, multi-stage, venturi based AirPrime™ System.

All wetted metallic parts of the priming system are to be of brass and stainless steel construction. A single panel mounted control will activate the priming pump and open the priming valve to the pump.

The priming system shall have a five (5) year warranty.

## **INTAKES**

### **Left Intake 2.5 Akron Valve**

One (1) 2-1/2" suction inlet with a manually operated 2-1/2" Akron valve shall be provided on the left side pump panel.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The outlet of the valve shall be connected to the suction side of the pump with the valve body located behind the pump panel. The valve shall come equipped with a brass inlet strainer, 2-1/2" NST female chrome inlet swivel, and shall be equipped with a chrome plated rockerlug plug with a retainer device.

The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance, and decreased friction loss.

A 3/4" bleeder valve assembly will be installed on the left side pump panel.

### **Front Intake 5"**

A 5" stainless steel pipe shall extend from the right suction side of the pump to the front of the apparatus. All fabricated piping used in the front suction shall be constructed of a minimum of Schedule 10 stainless steel pipe to reduce corrosion of the lines. 3/4" valve(s) shall be provided to allow water to be drained.

## **INTAKE OPTIONS**

### **Intake Relief Valve**

The pump shall be equipped with an Elkhart cast brass, variable pressure setting suction side relief valve. The valve shall be normally closed and shall limit pressures in the pumping system. When excessive intake pressures are received, the water shall be directed below the body to an area visible to the pump operator. The outlet shall terminate with a male 2-1/2" NST threaded fitting.

### **Front Intake Swivel, 5"**

A heavy duty 5" 90 degree cast brass elbow designed and constructed specifically for fire/emergency vehicle usage shall serve as the auxiliary front suction inlet. The elbow, also referred to as the "swivel", shall be attached to the front suction piping. This component shall have the following features:

- 1) The ability to rotate 180 degrees.
- 2) A rugged twist-lock mechanism to hold the elbow in place at the desired position.
- 3) A double-ball race with bronze balls.
- 4) A 5" NPT free swivel female inlet.
- 5) A 5" NST male outlet with strainer.
- 6) Cast brass with polished chrome finish.

The elbow/swivel shall be mounted so that it extends above the extended front bumper.

### **Adapter 5FNST x 4.5MNST Front Intake**

A 5" female NST x 4-1/2" male NST chrome-plated adapter with suction strainer and 4-1/2" long handle chrome cap shall be installed on the front suction piping.

### **Access Door**

Access door for intake relief valve on officer side pump panel.

## **DISCHARGES AND PRECONNECTS**

### **Deck Gun 3 Akron Handwheel**

One (1) 3" deck gun discharge outlet with a handwheel operated Akron valve and 3" stainless steel pipe shall be provided above the pump compartment.

The valve shall be an Akron 8600HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The handwheel valve control shall have the following features:

- Handwheel driven worm gear rotates a gear sector for smoother and easier operation under pressure.
- A 50:1 ratio
- 4" handwheel
- 12-1/2 turns for full open/close.
- Opening and closing speed complies with the current edition of NFPA.
- Portrait position indicator which shows the position of the valve ball to meet NFPA 1901.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

### **Front Bumper 2.5 Akron Handwheel**

One (1) 2-1/2" preconnect outlet with a handwheel operated Akron valve shall be supplied to the extended front bumper. The preconnect shall consist of a 2-1/2" heavy-duty hose coming from the pump discharge manifold to a 2-1/2" FNPT x 2-1/2" MNST mechanical swivel hose connection to permit the use of the hose from either side of the apparatus.

The valve shall be an Akron 8600HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The handwheel valve control shall have the following features:

- Handwheel driven worm gear rotates a gear sector for smoother and easier operation under pressure.
- A 50:1 ratio
- 4" handwheel
- 12 1/2 turns for full open/close.
- Opening and closing speed complies with the current edition of NFPA.
- Portrait position indicator which shows the position of the valve ball to meet NFPA 1901.

An air blowout valve shall be installed between the chassis air reservoir and the front jump line. The control shall be installed on the pump operator's panel.

The discharge shall be supplied with a Class 1 automatic 3/4" drain valve assembly. The automatic drain shall have an all-brass body with stainless steel check assembly. The drain shall normally be open and automatically close when the pressure is greater than 6 psi.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

### **Swivel Elbow, Polished Stainless Steel**

There shall be a polished stainless steel swivel elbow provided for the front bumper discharge located on top of the bumper driver's side of center tray.

### **Crosslay 1.5 Akron Handwheel [Qty: 2]**

One (1) crosslay discharge shall be provided at the front area of the body. The crosslay shall include one (1) 2" brass swivel with a 1-1/2" hose connection to permit the use of hose from either side of the apparatus.

The crosslay hosebed shall consist of a 2" heavy duty hose coming from the pump discharge manifold to the 2" swivel. The hose shall be connected to a handwheel operated 2" Akron valve. The valve shall be an Akron 8600HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The handwheel valve control shall have the following features:

- Handwheel driven worm gear rotates a gear sector for smoother and easier operation under pressure.

- A 50:1 ratio
- 4" handwheel
- 12 1/2 turns for full open/close.
- Opening and closing speed complies with the current edition of NFPA.
- Portrait position indicator which shows the position of the valve ball to meet NFPA 1901.

The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance, and decreased friction loss.

Location: crosslay 1 & 2

### **Left Panel 2.5 Discharge Akron Valve**

One (1) 2-1/2" discharge outlet with a manually operated Akron valve shall be provided at the left hand side pump panel.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

Location: left side discharge 1.

### **Discharge 2.5 Right Panel Akron Handwheel**

One (1) 2-1/2" discharge outlet with a handwheel operated Akron valve shall be provided at the right side pump panel.

The valve shall be an Akron 8600HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The handwheel valve control shall have the following features:

- Handwheel driven worm gear rotates a gear sector for smoother and easier operation under pressure.
- A 50:1 ratio
- 4" handwheel
- 12 1/2 turns for full open/close.
- Opening and closing speed complies with the current edition of NFPA.
- Portrait position indicator which shows the position of the valve ball to meet NFPA 1901.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

Location: right side discharge 2

### **Discharge 2.5 Left Rear Akron Handwheel**

One (1) 2-1/2" discharge outlet with a handwheel operated Akron valve shall be supplied to the left rear of the apparatus by a 2-1/2" stainless steel pipe.

The valve shall be an Akron 8600HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The handwheel valve control shall have the following features:

- Handwheel driven worm gear rotates a gear sector for smoother and easier operation under pressure.
- A 50:1 ratio
- 4" handwheel
- 12 1/2 turns for full open/close.
- Opening and closing speed complies with the current edition of NFPA.
- Portrait position indicator which shows the position of the valve ball to meet NFPA 1901.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

Location: left rear discharge

### **Discharge 2.5 Right Rear Akron Handwheel**

One (1) 2-1/2" discharge outlet with a handwheel operated Akron valve shall be supplied to the right rear of the apparatus by a 2-1/2" stainless steel pipe.

The valve shall be an Akron 8600HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The handwheel valve control shall have the following features:

- Handwheel driven worm gear rotates a gear sector for smoother and easier operation under pressure.
- A 50:1 ratio
- 4" handwheel
- 12 1/2 turns for full open/close.
- Opening and closing speed complies with the current edition of NFPA.
- Portrait position indicator which shows the position of the valve ball to meet NFPA 1901.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

Location: right rear discharge

### **Right Side 4 Handwheel Discharge**

One (1) 4" diameter discharge outlet with a handwheel controlled Akron valve shall be provided at the side pump panel.

The valve shall be an Akron 8840HD series with a bronze flat ball design for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the brass ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The handwheel valve control shall have the following features:

- Handwheel driven worm gear rotates a gear sector for smoother and easier operation under pressure.
- A 50:1 ratio.
- 6" handwheel.
- 12-1/2 turns for full open/close.
- Opening and closing speed complies with the current edition of NFPA.
- Portrait position indicator which shows the position of the valve ball to meet NFPA 1901.

The valve controls and indicators shall be located at the pump operator's panel.

Location: right side discharge 1, right side discharge 3.

### **Deck Gun Location**

Deck gun piping shall be positioned dunnage pan centered. This location shall allow for optimal operation of a deck gun monitor once installed.

## **DISCHARGE OPTIONS**

### **Controls, Push-Pull T Handle**

Control handles for tank supply, tank fill and all discharges shall be Push-Pull "T" style controls. The valve control levers shall be a chrome push-pull locking "T" handle located at the pump operator's panel and shall visibly indicate the position of the valves at all times. The control levers shall be located directly adjacent to one another and shall be mounted in line so they are in the same position when shut off. The control lever shall be connected directly to its respective valve by a .718" OD rod to form a direct linkage control system.

### **Deck Gun Flange**

Deck Gun Pipe. The piping for the deck gun shall terminate with a 4 bolt flange.

### **Bleeder Drain Valve**

A 3/4" bleeder valve shall be provided for the noted discharge(s). The bleeder valve lever shall be stainless steel and shall be a lift style handle for ease of operation. The drain shall be located at the main pump panel.

Bleeder shall be plumbed for use with the: front bumper discharge, left rear discharge, right rear discharge, deck gun, crosslay preconnect, left discharge, right discharge.

## **PRESSURE GOVERNORS**

## FRC PumpBoss Pressure Governor

Fire Research PumpBoss model PBA400 pressure governor and monitoring display kit shall be installed. The standard kit shall include a control module, pump discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6-3/4" high by 4-5/8" wide by 1-3/4" deep. Inputs for engine information shall be from a J1939 databus or from independent sensors and pump discharge pressure input shall be from a pressure sensor.

The following continuous displays shall be provided:

- \* CHECK ENGINE and STOP ENGINE warning LEDs.
- \* Engine RPM; shown with four daylight bright LED digits more than 1/2" high.
- \* Engine OIL PRESSURE; shown on an LED bar graph display in 10 psi increments.
- \* Engine TEMPERATURE; shown on an LED bar graph display in 10 degree increments.
- \* BATTERY VOLTAGE; shown on an LED bar graph display in 0.5 volt increments.
- \* PSI / RPM setting; shown on a dot matrix message display.
- \* PSI and RPM mode LEDs.
- \* THROTTLE READY LED.

A dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator.

The program shall store the accumulated operating hours for the pump and engine, previous incident hours, and current incident hours in a non-volatile memory. Stored elapsed hours shall be displayed at the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- \* Low Oil Pressure
- \* High Engine Coolant Temperature
- \* High Transmission Temperature
- \* Low Battery Voltage (Engine Off)
- \* Low Battery Voltage (Engine Running)
- \* High Battery Voltage
- \* High Engine RPM

The governor shall operate in two control modes; pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A control knob that uses optical technology shall adjust pressure or RPM settings. It shall be 2" in diameter with no mechanical stops, a serrated grip, and have a red idle push button in the center.

A throttle ready LED shall light when the pump engaged interlock signal is recognized. The governor shall be in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 PSI. Other safety features shall include recognition

of no water conditions with an automatic programmed response and a push button to return the engine to idle.

The pressure governor and monitoring display shall be programmed to interface with a specific engine.

The display module shall be mounted at the pump operator's panel.

## **GAUGES**

### **Compound Pressure Gauge [Qty: 2]**

A Class 1 weatherproof 6" compound vacuum pressure gauge with a range of 30-0-600 shall be installed on the pump panel in place of the standard 4.5" gauges. The gauge shall be filled with a liquid solution.

### **GAUGE IC 10 LED FOAM TANK LEVEL [Qty: 2]**

One (1) Innovative Controls brand foam tank level gauge shall be located at the pump operator's panel to provide a high-visibility display of the foam tank level. Ten (10) high-intensity light emitting diodes (LEDs) on the display module shall have a 3-dimensional lens allowing the full, 3/4, 1/2, 1/4, and refill levels to be easily distinguished at a glance within full 180 degree visibility.

The display module shall be protected from vibration and contamination with the components being encased in an encapsulated plastic housing. The long life and extreme durability of LED indicators eliminates light bulb replacement and maintenance. Color coded cover plates shall complete the assembly of the display module to the pump panel. Each display level can be set independently for maximum reliability.

The display shall provide a steady indication of fluid level despite sloshing inside of the tank when the vehicle is in motion due to an "anti-slosh" feature.

### **GAUGE IC 10 LED TANK LEVEL WATER/PSTANK**

One (1) Innovative Controls brand water tank level gauge shall be located at the pump operator's panel to provide a high-visibility display of the water tank level. Ten (10) high-intensity light emitting diodes (LEDs) on the display module shall have a 3-dimensional lens allowing the full, 3/4, 1/2, 1/4, and refill levels to be easily distinguished at a glance within full 180 degree visibility.

The display module shall be protected from vibration and contamination with the components being encased in an encapsulated plastic housing. The long life and extreme durability of LED indicators eliminates light bulb replacement and maintenance. Color coded cover plates shall complete the assembly of the display module to the pump panel. System calibration shall be accomplished via supplied magnet. Each display level can be set independently for maximum reliability.

The display shall provide a steady indication of fluid level despite sloshing inside of the tank when the vehicle is in motion due to an "anti-slosh" feature.

In addition to the pump panel mounted lights there shall be one (1) Whelen PSTank series LED (Light Emitting Diode) strip light installed each side as specified.

The system shall be controlled by an Innovative Control tank level driver module that is integral of the NFPA required pump panel mounted tank level light assembly.

The additional tank level system shall be interlocked through the parking brake assembly so as not to be on while the vehicle is in motion.

The remote strip light shall be arranged as follows:

Full Green  
3/4 Blue  
1/2 Amber  
1/4 Red

Location of Whelen PSTank Strip Lights: each side of cab towards rear.

### **Compound Pressure Gauge**

A Class 1 weatherproof 2-1/2" compound vacuum pressure gauge with a range of 30-0-600 shall be installed on the pump panel. The gauge shall be filled with a liquid solution to assure visual reading to within 1% accuracy.

Gauge shall be provided for the following discharge(s): front bumper discharge, left rear discharge, right rear discharge, 1.5 in. crosslay preconnect, deck gun, left side discharge 1, right side discharge 1, right side discharge 2, right side discharge 3.

## **FOAM SYSTEMS**

### **Foam System Certification**

The foam system performance shall be tested and certified in compliance with 2009 NFPA 1901.

### **Foam System**

There shall be a Waterous Advantus 3.0 fully automatic electronic direct injection foam proportioning system furnished and installed on the apparatus for the specified discharge(s). The system shall be capable of Class A foam concentrates and most Class B foam concentrates. The proportioning operation shall be based on an accurate direct measurement of water flow with no restriction. The proportioning system shall meet NFPA standards for foam proportioning systems and the design shall have passed testing against SAE automotive reliability standards appropriate for the application. The foam system shall be installed in accordance with the manufacturer recommendations.

The system shall be equipped with a digital electronic control display. It shall be installed on the pump operator's panel and enable the pump operator to perform the following control and operation functions:

- Activate the foam system.
- Change foam concentrate proportioning rates from .1% to 3% in .1% increments.
- From discharges plumbed after the paddlewheel type flow meter: show current flow in gpm, show total volume of water pump, show total amounts of foam concentrate used.
- Provide simulated flow for manual operation.
- Perform set-up and diagnostic functions.
- Flash a "low-concentrate" warning for two minutes when the foam concentrate tank(s) run low of concentrate.
- Flash "no concentrate" warning if foam concentrate tank was not changed or foam concentrate was not added to the low tank and shut down foam concentrate pump.
  
- Display which foam concentrate tank is selected (tank A: PA or tank B: PB)
- Separate default setting for foam concentrate injection rate.
- Total amount of foam concentrate used from selected tank.
- Dual foam concentrate foam pump calibration.

The foam system shall have a 12 volt, 1hp electric motor designed for wet and high humidity environments, direct coupled to a positive displacement piston type foam pump with a rated capacity of .01 to 3.0 gpm with operating pressures up to 450 psi.

## **FOAM SYSTEM OPTIONS**

### **Foam System Plumbing**

The specified foam system shall be plumbed to left rear discharge, 1.5 first crosslay, driver's side front jump line.

### **Hale EZ-Fill Foam Tank Refill System**

A Hale EZ-Fill foam pump shall be provided. The system shall include a 12 volt, self-priming pump that shall fill at up to 5 GPM for a single cell. The system shall be controlled by a control panel that shall feature smart-switch technology for easy "Fill/Flush/Fill" functions.

A cam-lock quick-connect port shall be provided on the pump panel as applicable and shall connect with a clear wand suction hose for use with 5-gallon pail drafting operations. The suction hose shall be stored as required on the unit by the department and shall be equipped with integral strainer to prevent intake of unwanted debris.

The control and quick-connect shall be located driver's side pump panel.

### **Foam Refill System**

Foam refill system to plumbed to class A tank only.

## Foam Outlet

### **Elkhart Foam Supply Kit Type #1 part #81231001 on the pump operator's panel.**

This kit allows the use of an on-board foam concentrate tank with a portable foam eductor attached to a pump side discharge.... A quick-connect, pick-up tube assembly permits easy switching from 5 gal. pails/buckets to the on-board supply tank and back again if necessary..... The kit includes the following parts: one .750", quarter turn, inlet valve assembly with elbow, quick-connect female coupling and quick-connect plug with chain; a brushed stainless steel escutcheon plate; and a foam pick-up hose assembly with quickconnect coupling between the hose and the pick-up tube..... Finish cast brass with chrome plated trim.

Location: driver's side pump panel.

## **ELECTRICAL SYSTEMS**

### **Vehicle Data Recorder**

A vehicle data recorder system shall be provided to comply with NFPA 1901, 2009 edition. The following data shall be monitored:

- Vehicle speed MPH
- Acceleration (from speedometer) MPH/Sec.
- Deceleration (from speedometer) MPH/Sec.
- Engine speed RPM
- Engine throttle position % of full throttle
- ABS Event On/Off
- Seat occupied status Occupied Yes/No by position
- Seat belt status Buckled Yes/No by position
- Master Optical Warning Device Switch On/Off
- Time: 24 hour time
- Date: Year/Month/Day

### **Occupant Detection System**

There shall be a visual and audible warning system installed in the cab that indicates the occupant buckle status of all cab seating positions that are designed to be occupied during vehicle movement.

The audible warning shall activate when the vehicle's park brake is released and a seat position is not in a valid state. A valid state is defined as a seat that is unoccupied and the seat belt is unbuckled, or one that has the seat belt buckled after the seat has been occupied.

The visual warning shall consist of a graphical display that will continuously indicate the validity of each seat position.

The system shall include a display panel with LED back-lit ISO indicators for each seating position, seat sensor and safety belt latch switch for each cab seating position, audible alarm and braided wiring harness.

The display panel shall be located Driver side of center dash electrical cover.

## **Multiplex Electrical System**

### **Electrical System**

The apparatus shall incorporate a Weldon V-MUX multiplex 12 volt electrical system. The system shall have the capability of delivering multiple signals via a CAN bus. The electrical system installed by the apparatus manufacturer shall conform to current SAE standards, the latest FMVSS standards, and the requirements of the applicable NFPA 1901 standards.

The electrical system shall be pre-wired for optional computer modem accessibility to allow service personnel to easily plug in a modem to allow remote diagnostics.

The electrical circuits shall be provided with low voltage over-current protective devices. Such devices shall be accessible and located in required terminal connection locations or weather-resistant enclosures. The over-current protection shall be suitable for electrical equipment and shall be automatic reset type and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. The system shall have electro-magnetic interference suppression provided as required in applicable SAE standards.

Any electrical junction or terminal boxes shall be weather-resistant and located away from water spray conditions.

### **Multiplex System**

For superior system integrity, the networked multiplex system shall meet the following minimum component requirements:

- The network system must be Peer to Peer technology based on RS485 protocol. No one module shall hold the programming for other modules. One or two modules on a network referred to as Peer to Peer, while the rest of the network consists of a one master and several slaves is not considered Peer to Peer for this application.
- Modules shall be IP67 rated to handle the extreme operating environment found in the fire service industry.
- All modules shall be solid state circuitry utilizing MOS-FET technology and utilize Deutsch series input/output connectors.
- Each module that controls a device shall hold its own configuration program.
- Each module should be able to function as a standalone module. No “add-on” module will be acceptable to achieve this form of operation.
- Load shedding power management (8 levels).
- Switch input capability for chassis functions.
- Responsible for lighting device activation.

- Self-contained diagnostic indicators.
- Wire harness needed to interface electrical devices with multiplex modules.
- The grounds from each device should return to main ground trunk in each sub harness by the use of ultrasonic splices.

### **Wiring**

All harnessing, wiring and connectors shall be manufactured to the following standards/guidelines. No exceptions.

- NFPA 1901-Standard for Automotive Fire Apparatus
- SAE J1127 and J1127
- IPC/WHMA-A-620 – Requirements and Acceptance for Cable and Wire Harness Assemblies. (Class 3 – High Performance Electronic Products)

All wiring shall be copper or copper alloys of a gauge rated to carry 125 of the maximum current for which the circuit is protected. Insulated wire and cable 8 gauge and smaller shall be SXL, GXL, or TXL per SAE J1128. Conductors 6 gauge and larger shall be SXL or SGT per SAE J1127.

All wiring shall be colored coded and imprinted with the circuits function. Minimum height of imprinted characters shall not be less than .082” plus or minus .01”. The imprinted characters shall repeat at a distance not greater than 3”.

A coil of wire shall be provided behind electrical appliances to allow them to be pulled away from mounting area for inspection and service work.

### **Wiring Protection**

The overall covering of the conductors shall be loom or braid.

Braid style wiring covers shall be constructed using a woven PVC-coated nylon multifilament braiding yarn. The yarn shall have a diameter of no less than .04” and a tensile strength of 22 lbs. The yarn shall have a service temperature rating of -65 F to 194 F. The braid shall consist of 24 strands of yarn with 21 black and 3 yellow. The yellow shall be oriented the same and be next to each other.

Wiring loom shall be flame retardant black nylon. The loom shall have a service temperature of -40 F to 300 F and be secured to the wire bundle with adhesive-backed vinyl tape.

### **Wiring Connectors**

All connectors shall be Deutsch series unless a different series of connector is needed to mate to a supplier’s component. The connectors and terminals shall be assembled per the connector/terminal manufacturer’s specification. Crimble/Solderless terminals shall be acceptable. Heat shrink style shall be utilized unless used within the confines of the cab.

### **NFPA Required Testing of Electrical System**

The apparatus shall be electrical tested upon completion of the vehicle and prior to delivery. The electrical testing, certifications, and test results shall be submitted with delivery documentation per requirements of NFPA 1901. The following minimum testing shall be completed by the apparatus manufacturer:

**1. Reserve capacity test:**

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test fail.

**2. Alternator performance test at idle:**

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

**3. Alternator performance test at full load:**

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system shall be permitted during this test. However, an alarm sounded by excessive battery discharge, as detected by the system required in NFPA 1901 Standard, or a system voltage of less than 11.7 volts DC for a 12 volt nominal system, for more than 120 seconds, shall be considered a test failure.

**4. Low voltage alarm test:**

Following the completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts DC for a 12 volt nominal system shall be considered a test failure. The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

**NFPA Required Documentation**

The following documentation shall be provided on delivery of the apparatus:

- A. Documentation of the electrical system performance tests required above.
- B. A written load analysis, including:

- a. The nameplate rating of the alternator.
- b. The alternator rating under the conditions.
- c. Each specified component load.
- d. Individual intermittent loads.

## **Multiplex Display**

The V-MUX multiplex electrical system shall include a text display.

The display shall have the following features:

- Rugged vacuum fluorescent technology
- Two twenty character lines
- Programmed to show door ajar status and diagnostic information

The display shall be located center of dash.

## **LIGHT BARS**

### **Light Bar**

A Whelen Freedom series model FN72VLED 72" all LED light bar shall be installed.

The light bar shall have clear lenses and contain four (4) corner mounted red LED modules and eight (8) front LED modules, six (6) red and two (2) white. The front LED colors shall be (from left to right) R/R/W/R/R/W/R/R. The lightbar shall be equipped with MKEZ7 mounts.

The white LEDs shall be switched off in blocking right of way mode.

The lightbar shall be installed centered on the front cab roof.

### **Light Bars**

A pair of Whelen 24" Mini-Freedom LED light bars (Model FNMINI) with clear lenses and MKEZ7 mounts shall be provided. The light bar shall consist of two (2) front corner red linear LEDs, one (1) white front linear LED and one (1) end red linear LED.

No rear facing LEDs.

The clear LED shall be switched off in blocking right of way mode.

The light bars shall be installed in the following location: each side over front cab doors.

## **WARNING LIGHT PACKAGES**

### **Lower Level Warning Light Package**

Eight (8) Whelen M6RC Super LED red light heads with clear lens and two (2) Whelen M2RC Super LED red light heads with clear lens shall be provided.

The lights shall include chrome flanges where applicable. The lights shall be wired with weatherproof connectors and shall be mounted as close to the corner points of the apparatus as is practical as follows:

- Two (2) Whelen M6RC Super LED Red lights on the front of the apparatus facing forward
- Two (2) Whelen M6RC Super LED Red lights on the rear of the apparatus facing rearward
- Two (2) lights each side of the apparatus, one (1) Whelen M6RC Super LED Red each side at the forward most point (as practical), and one (1) Whelen M2RC Super LED Red each side at the rearward most point (as practical).
- One (1) Whelen M6RC Super LED Red light each side of the apparatus centrally located to provide mid ship warning light.

The side facing lights shall be located at forward most position, centered in rear wheel well, and side facing at rear of body in rubrail if equipped.

All warning devices shall be surface mounted in compliance with NFPA standards.

## **WARNING LIGHTS**

### **Upper Rear Warning Lights**

Whelen model B6LED beacons shall be supplied on polished aluminum mounts. Each unit shall consist of a LED upper beacon with red dome and a 700 series Super LED with Red lens.

The lights shall be located rear upper body on aerial style brackets to meet upper Zone C requirements.

### **Hazard (Door Ajar) Light (**

There shall be two (2) 2" red LED hazard light installed as specified. Door open indicator light shall be programmed one (1) for driver side doors and extendable devices and rear compartment door and one (1) for officer side doors and extendable devices.

### **Warning Lights**

Two (2) Whelen 500 series TIR6 Super LED light heads with red lens shall be provided. The rectangular lights shall include model 5TSMAC chrome flanges where applicable.

Location: (1) each side in pump module rubrail if equipped.

### **Warning Lights**

Two (2) Whelen M6 series Linear Super LED red light heads with red lens shall be provided. The rectangular lights shall include chrome flanges where applicable.

Location: (1) each side of cab, rwd of rwd doors, above compt doors.

## **DIRECTIONAL LIGHT BARS**

### **Directional Light Bar Control Location**

The directional light bar control head shall be located in the center overhead console offset to officer side.

### **Directional Traffic Warning Light**

One (1) Whelen model TADP8 LED Dominator™ Plus Traffic Advisor™ with clear lenses shall be provided. The light bar shall include eight (8) LINZ6™ Super-LED® lamps.

The directional bar shall include a TACTLD1 control head. The control head shall include a remote flash control and end lamp enable/disable feature.

The light shall be installed at rear of body to direct traffic around the apparatus.

Dimensions: 1.75" high x 2.17" deep x 30.36" long.

## **SIRENS**

### **Electronic Siren**

A Powercall model DX5200 siren shall be installed in the cab. The siren shall feature an illuminated control panel with rotary switch for mode selection, three (3) push button switches for air horn, phaser and intersection modes, and a noise cancelling PA microphone.

Operating modes include Manual, Radio, Stand By, Wail, Yelp, Intersection Tone, Powercall, Powercall Plus and shall include a Tap feature.

Siren is to be connected to one (1) 200 watt or up to two (2) 100W RMS speaker(s).

### **Mechanical Siren**

A chrome plated and pedestal mounted Federal Q2B-P coaster siren shall be installed on top of the front bumper extension. An electric siren brake switch shall be located in the cab accessible to the driver.

The siren shall be located driver side front bumper.

### **Electronic Siren Control Location**

The electronic siren control shall be located in the center of center dash electrical cover.

## **SPEAKERS**

### **Siren Speaker**

One (1) Federal Signal model ES100 Dynamax 100 watt speaker shall be flush mounted as far forward and as low as possible on the front of the vehicle. A polished model MSFMT with "E-ONE" grille shall be provided on the outside of the speaker to prevent road debris from entering the speaker.

Speaker dimensions shall be: 5.5 in. high x 5.9 in. wide x 2.5 in. deep. Weight = 5.5 lbs.

The speaker shall produce a minimum sound output of 120 dB at 10 feet to meet current NFPA 1901 requirements.

The speaker shall be located driver side front bumper, officer side front bumper.

## **DOT LIGHTING**

### **License Plate Light**

One (1) Truck-Lite model 15905 white LED license plate light mounted in a Truck-Lite model 15732 chrome plated plastic license plate housing shall be mounted at the rear of the body.

### **LED Marker Lights**

LED clearance/marker lights shall be installed as specified.

#### **Upper Cab:**

- Five (5) amber LED clearance lights on the cab roof.

#### **Lower Cab:**

- One (1) amber LED side turn/marker each side of cab ahead of the front door hinge.

#### **Upper Body:**

- One (1) red Trucklite LED clearance light each side, rear of body to the side.

#### **Lower Body:**

- Three (3) red Trucklite LED clearance lights centered at rear, recessed in the rubrail.
- One (1) red Trucklite LED clearance light each side at the trailing edge of the apparatus body, recessed in the rubrail.
- One (1) amber Trucklite LED clearance/auxiliary turn light each side front of body/module, recessed in the rubrail.

### **Marker Lights**

One (1) pair of Britax model L427.203L.12V LED amber/red marker rubber housed lights shall be provided. The lights shall be located on the rear body corners mounted in the down angle

position. The red lenses shall illuminate to the rear of the apparatus and the amber shall illuminate to the front of the apparatus. The lights shall be wired to the marker light circuit.

### **Tail Lights**

Three (3) Whelen model M6 series LED (Light Emitting Diode) lights shall be installed in a four (4) light vertical housing each side at rear and wired with weatherproof connectors.

Light functions shall be as follows:

- LED red running light with red brake light in upper position.
- LED amber populated arrow pattern turn signal in middle position.
- LED clear back-up light in lower position.

A one-piece chrome plastic housing shall be mounted around the three (3) individual lights in a vertical position. The lower space will be used by the M6 or equivalent lower NFPA warning light.

### **Third Brake Light**

One (1) Whelen model PSR00XRR LED red 3rd brake light shall be provided. The light shall be located center rear upper body.

### **Turn Signals**

A pair of Weldon model 9186-8580-29 bubble style LED amber auxiliary turn signals with stainless steel bezels shall be installed.

Location: (1) each side in body wheel well offset forward.

## **LIGHTS - COMPARTMENT, STEP & GROUND**

### **Medical Cabinet Light [Qty: 3]**

One (1) Amdor Luma-Bar LED compartment light strip shall be mounted in the medical cabinet.

The light shall be wired to the compartment light rocker switch in the cab.

### **Ground Lights**

The apparatus shall be equipped with a sufficient quantity of lights to properly illuminate the ground areas around the apparatus in accordance with current NFPA requirements. The lights below the bumper (if applicable), body and cab doors shall be 12" long Amdor Luma-Bar H2O LED with clear lenses. The lights shall be water resistant and mounted in an extruded under truck bracket. The wiring connections shall be made with a weather resistant plug in style connector.

Ground area lights shall be switched from the cab dash with the work light switch.

One (1) ground light shall be supplied under each side of the front bumper extension if equipped.

Lights in areas under the driver and crew area exits shall be activated automatically when the exit doors are opened.

### **Compartment Light Package**

Two (2) Amdor Luma-Bar LED compartment light strips shall be mounted in each body compartment greater than 4 cu. ft. Transverse compartments shall have four (4) lights, located two (2) each side.

Compartment lights shall be wired to a master on/off rocker switch on the cab switch panel.

The wiring connection for the compartment lights shall be made with a weather-resistant plug in style connector. A single water and corrosion-resistant switch with a polycarbonate actuator and sealed contacts shall control each compartment light. The switch shall allow the light to illuminate if the compartment door is open.

### **Medical Cabinet Light**

Two (2) Amdor Luma-Bar LED compartment light strips shall be mounted in the medical cabinet.

The light shall be wired to the compartment light rocker switch in the cab.

## **LIGHTS - DECK AND SCENE**

### **Hose Bed Light [Qty: 2]**

One (1) Federal Signal GHSCENE flush-mounted scene light with a clear lens shall be installed at the front area of the hose bed to provide hose bed lighting per current NFPA 1901. The light shall include (2) 20 watt halogen light fixtures within the light housing. The two light fixtures shall be adjustable horizontally and vertically to provide the desired coverage. All electrical connectors are to be enclosed in the housing providing protection against the elements.

The hose bed light shall be switched with work light switch in the cab.

### **Deck/Scene Light Wired to Back-Up Lights**

The rear deck or scene lights shall be activated when the chassis is placed in reverse to provide additional lighting, in addition to the back-up lights, when backing the vehicle.

### **Rear Work Lights**

Two (2) FireTech LED lights model FT-WL3500-60 shall be installed. The lights shall be switched with work light switch in the cab.

Location: High (1) on each side of hosebed

### **Scene Lights**

Two (2) Whelen model M6ZC series Linear Super LED clear scene lights shall be provided.

Each shall have Linear Super LED diodes with internal light deflecting optics. The internal light deflecting optics shall redirect the light without the use of angle brackets.

The lights shall be located (1) each side rear compartment face up high and be controlled by a switch in cab accessible to driver (lights on sides of apparatus to be switched separately).

### **Crosslay Light**

A Truck-Lite round LED light model 81380 shall be installed at the rear area of the crosslay to provide crosslay lighting per current NFPA 1901. The crosslay light shall be switched with the work light switch in the cab.

## **LIGHTS - NON-WARNING**

### **Engine Compartment Light**

There shall be LED lighting provided in compliance with NFPA to illuminate the engine compartment area.

### **Light Wiring**

Forward pump panel light at the pump operator's panel shall be wired to the pump shift to provide pump panel illumination when the pump is placed into gear. Top mount application center light at the pump operator's panel shall be wired to the pump shift to provide pump panel illumination when the pump is placed into gear.

### **Pump Compartment LED Light**

A LED light shall be provided in the pump compartment area for NFPA compliance.. The light shall be wired to operate with the work light switch in the cab.

### **Map Light**

A Sunnex 742-20 map light shall be supplied.

The map light shall be a 12 volt, 20" flexible gooseneck. A 20 watt halogen bulb and spot reflector with clear lens shall be supplied. An on-off switch shall be supplied on the base of the light.

The map light shall have a matte black finish.

Location: at officer's A post.

### **Hand Held Spotlight**

A Collins model CL-12-M hand held 12 volt spotlight shall be provided. The light shall be hardwired and mounted on the officer's side cab dash with a PAC Handlelok 1004 bracket.

### **LED Pump Panel Light Package**

Three (3) Amdor H2O LED lights shall be mounted under a light shield directly above each side pump panel. The work light switch in the cab shall activate the lights when the park brake is set.

## **CONTROLS / SWITCHES**

### **Door Ajar Override**

There shall be a momentary switch provided in the cab that when activated shall disable the door ajar alarm. The switch will re-set once the park brake is set.

### **Foot Switch**

A heavy duty metal floor mounted foot switch shall be installed to operate the Q2B siren. It shall be located driver's side, officer's side.

### **Rocker Switch**

A 12 volt rocker switch shall be installed.

The switch shall be located driver rear of body for rear work lights.

### **Rocker Switch**

A 12 volt momentary rocker switch shall be installed.

The switch shall be located driver side overhead for door ajar audible alarm and door ajar light test.

### **Rocker Switch**

A 12 volt rocker switch shall be installed.

The switch shall be located officer's side switch panel for Q2B brake.

### **Three Way Switching [Qty: 3]**

An additional momentary switch with circuitry shall be provided to allow on/off operation of specified device from remote locations. The remote switch shall be mounted officer's side switch panel for driver side 12V cab/body scene lights, officer's side switch panel for officer side 12V cab/body scene lights, officer's side switch panel for front brow lights.

## **INTERCOM**

### **Intercom Wireless 4 Cab**

A FireCom wireless intercom package shall be installed within the cab interior. One (1) model 5100D digital intercom with touch pad adjustable volume with advanced digital noise reduction circuitry. The intercom uses a durable membrane switch plate to control volume and change radios.

This intercom provides hearing loss protection that can occur from exposure to high noise levels.

The system contains:

- One (1) FireCom model 5100D single radio monitor shall be provided in the cab (two (2) year limited warranty).
- Two (2) base transmit units with radio transmission, FireCom part number 106-3089-00 shall be included.
- One (1) base transmit unit, intercom only (no radio), FireCom part number 106-3086-00 shall be included.
- Four (4) NFPA compliant headset hooks, FireCom part number 108-0678-00 shall be provided at each seated position.

**Headsets shall be ordered separately and are not included as part of the Intercom package.**

## **MISC ELECTRICAL**

### **Alternating Headlights**

The chassis high beam headlights shall alternately flash and shall be controlled by a rocker switch mounted inside the cab.

### **12 Volt DC Power Distribution Module**

There shall be a 12 place 12 volt DC power distribution module installed as specified.

The module will have six (6) circuits wired directly to the battery and have six (6) circuits wired through the master battery switch with 12 positions for grounds. Connection to the power module circuit will be through a .250 female spade connector. Each buss will be protected with

a 50 amp circuit breaker for overload protection. The module will accept ATC blade type fuses or 22X series circuit breakers.

The module shall be located behind officer's seat, driver side back wall of radio box.

### **Back-Up Alarm**

A Ecco electronic back-up alarm model SA917 shall be supplied. The self adjusting 87-112 dB(A) alarm shall be wired into the chassis back-up lights to signal when the vehicle is in reverse.

## **LIGHTS - QUARTZ**

### **Cab Brow Light**

One (1) FireTech 12V LED model FT-B-72-ML-W 72" white housing brow light with integral marker lights shall be provided. The light shall be installed on the front cab brow in place of the standard DOT marker lights. The light shall feature 54 LEDs producing 19,665 usable lumens and five (5) DOT approved marker lights. The 285W 12V light shall draw 23.75 amps.

### **Pioneer Flood Light [Qty: 2]**

Whelen Pioneer Plus 150W 12V LED light fixture(s) with Whelen 3100 series through body pull-up pole shall be supplied. The rectangular extruded light fixture with die cast end caps shall measure 14" wide by 4-5/8" high by 3" deep and have a white powder coat finish. The light fixture shall have a dual panel (4) clusters of LED lamps (1 flood and 1 spot) with molded vacuum metalized reflector that draws 12 amps. The light shall be mounted with a locking swivel joint to allow the lights to be manually tilted up/down and locked in position by the operator. Handle standard.

The light assembly shall be internally mounted as specified. The pole shall allow for 360-degree rotation of the light. A locking knob shall hold the pole at the desired height.

Location: driver and officer side of pump module forward area.

### **12V LED Flood Light [Qty: 2]**

Fire Research Spectra model SPA802-Q20-02 contour roof mount light. Each light to have 3-way switching from driver and officer switch panels. The mounting brackets shall attach to the lamp head and attached to the roof radius. Wiring shall extend from a weatherproof strain relief at the rear of the lamp head.

The lamp head shall have eighty four (84) ultra-bright white LEDs, 72 for flood lighting and 12 to provide a spot light beam pattern. It shall operate at 12/24 volts DC, draw 18/9 amps, and generate 20,000 lumens of light. The lamp head shall have a unique lens that directs flood lighting onto the work area and focuses the spot light beam into the distance. The lamp head shall be no more than 5-7/8" high by 14" wide by 3-1/2" deep and have a heat resistant handle.

The lamp head and mounting arm shall be powder coated. The LED scene light shall be for fire service use.

Location: driver and officer side over rear cab door.

## **RECEPTACLES**

### **Receptacle**

A 20 amp, 110 volt 3-prong straight blade NEMA 5-20 duplex household receptacle with stainless steel cover plate shall be installed in a non-weather exposed area as specified by the department. The receptacle shall be wired to the inlet receptacle where it will have overcurrent protection from an external source.

Location: In cab driver side on 3 x 3 post rear facing just above engine cover, L1 high on forward wall.

## **ELBOWS**

### **Elbow 30 2.5FNST x 2.5MNST [Qty: 4]**

This unit shall be supplied with one (1) elbow 30 degree swivel 2.5" FNST x 2.5" MNST.

## **ADAPTERS**

### **Adapter [Qty: 2]**

Adapter 4" FNST x 4.5" MNST swivel with a 30 degree droop and cap.

### **Reducer Adapter [Qty: 3]**

All 2.5" discharges shall have reducers provided and shipped loose with the apparatus. The adapters shall be 2.5" female NST threads by 1.5" male NH threads and include caps.

## **MISC LOOSE EQUIPMENT**

### **DOT Required Drive Away Kit**

Three (3) triangular warning reflectors with carrying case shall be supplied to satisfy the DOT requirement.

## **EXTERIOR PAINT**

### **Painted Pump/Pre-Connect Module(s)**

The apparatus pump/pre-connect module(s) shall be painted job color.

The paint process shall match what is applied to the body.

### **Paint Custom Cab**

The apparatus cab shall be painted Sikkens FLNA3225E-1 Red. The paint process shall meet or exceed current state regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water, and soil. Contractor shall, upon demand, provide evidence that the manufacturing facility is in compliance with State EPA rules and regulations.

The aluminum cab exterior shall have no mounted components prior to painting to assure full coverage of metal treatments and paint to the exterior surfaces. Cab doors and any hinged smooth-plate compartment doors shall be painted separately to assure proper paint coverage on cab, door jambs and door edges.

Paint process shall feature Sikkens high solid LV products and be performed in the following steps:

- Corrosion Prevention - all aluminum surfaces shall be pre-treated with the Alodine 5700 conversion coating to provide superior corrosion resistance and excellent adhesion of the base coat.
- Sikkens Sealer/Primer LV - acrylic urethane sealer/primer shall be applied to guarantee excellent gloss hold-out, chip resistance and a uniform base color.
- Sikkens High Solid LVBT650 (Base coat) - a lead-free, chromate-free high solid acrylic urethane base coat shall be applied, providing excellent coverage and durability. A minimum of two (2) coats shall be applied.
- Sikkens High Solid LVBT650 (Clear coat) - high solid LV clear coat shall be applied as the final step in order to ensure full gloss and color retention and durability. A minimum of two (2) coats shall be applied.

Any location where aluminum is penetrated after painting, for the purpose of mounting steps, hand rails, doors, lights, or other specified components shall be treated at the point of penetration with a corrosion inhibiting pre-treatment (ECK Corrosion Control). The pre-treatment shall be applied to the aluminum sheet metal or aluminum extrusions in all locations where the aluminum has been penetrated. All hardware used in mounting steps, hand rails, doors, lights, or other specified components shall be individually treated with the corrosion inhibiting pre-treatment.

After the paint process is complete, the gloss rating of the unit shall be tested with a 20 degree gloss meter. Coating thickness shall be measured with a digital MIL gauge and the orange peel with a digital wave scan device.

### **Paint Body Small**

The apparatus body shall be painted Sikkens FLNA3225E-1 Red. The paint process shall meet or exceed current state regulations concerning paint operations. Pollution control shall include

measures to protect the atmosphere, water, and soil. Contractor shall, upon demand, provide evidence that the manufacturing facility is in compliance with State EPA rules and regulations.

The aluminum body exterior shall have no mounted components prior to painting to assure full coverage of metal treatments and paint to the exterior surfaces of the body. Any vertically or horizontally hinged smooth-plate compartment doors shall be painted separately to assure proper paint coverage on body, door jambs and door edges.

Paint process shall feature Sikkens high solid LV products and be performed in the following steps:

- Corrosion Prevention - all aluminum surfaces shall be pre-treated with the Alodine 5700 conversion coating to provide superior corrosion resistance and excellent adhesion of the base coat.
- Sikkens Sealer/Primer LV - acrylic urethane sealer/primer shall be applied to guarantee excellent gloss hold-out, chip resistance and a uniform base color.
- Sikkens High Solid LVBT650 (Base coat) - a lead-free, chromate-free high solid acrylic urethane base coat shall be applied, providing excellent coverage and durability. A minimum of two (2) coats shall be applied.
- Sikkens High Solid LVBT650 (Clear coat) - high solid LV clear coat shall be applied as the final step in order to ensure full gloss and color retention and durability. A minimum of two (2) coats shall be applied.

Any location where aluminum is penetrated after painting, for the purpose of mounting steps, hand rails, doors, lights, or other specified components shall be treated at the point of penetration with a corrosion inhibiting pre-treatment (ECK Corrosion Control). The pre-treatment shall be applied to the aluminum sheet metal or aluminum extrusions in all locations where the aluminum has been penetrated. All hardware used in mounting steps, hand rails, doors, lights, or other specified components shall be individually treated with the corrosion inhibiting pre-treatment.

After the paint process is complete, the gloss rating of the unit shall be tested with a 20 degree gloss meter. Coating thickness shall be measured with a digital MIL gauge and the orange peel with a digital wave scan device.

### **Paint Rear Body**

Rear body surface shall have a painted job color finish. Includes hinged doors that do not have discrete sales codes and removable panels.

## **INTERIOR PAINT**

### **Cab Interior Paint**

The interior of the cab shall be painted Zolatone gray #20-64. Prior to painting, all exposed interior metal surfaces shall be pretreated using a corrosion prevention system.

## **LETTERING**

### **Sign Gold Letter [Qty: 60]**

3" high Sign Gold letter(s) shall be applied as specified.

### **Lettering Shade and Outline [Qty: 60]**

Existing letter shall be shaded and outlined in black to contrast the letters.

### **Scotchlite Letter [Qty: 3]**

White 8" Scotchlite letters shall be applied per department specifications.

### **Scotchlite Letter [Qty: 9]**

White 18" Scotchlite letters shall be applied per department specifications.

## **STRIPING**

### **Trim Stripes**

A 1" Scotchlite stripe shall be applied above and below the existing stripe. The stripes shall be spaced 1" away from the main stripe.

The stripe shall be Blue.

### **Scotchlite Stripe**

A "Hockey Stick" Scotchlite reflective stripe, 6" minimum in width, shall be applied horizontally across the front of cab and shall contour as it transitions from cab to body to comply with NFPA 1901. The color and location of the stripe to be specified by the purchaser.

Location: bottom of stripe flush with top of bumper and straight back.

Color: White.

### **Front Bumper 3M Diamond Grade Striping**

Chevron style 3M Diamond Grade striping shall be provided on the front bumper of the apparatus. The stripes shall consist of 6" Red/Fluorescent Yellow Green alternating stripes in an "A" pattern.

### **Rear Body 3M Diamond Grade Striping**

Chevron style 3M Diamond Grade striping shall be provided on the rear of the apparatus. The stripes shall consist of 6" Red/Fluorescent Yellow Green alternating stripes in an "A" pattern. The striping shall be located on the rear facing extrusions, panels and doors inboard and outboard of the beavertails if applicable.

## **WARRANTY / STANDARD & EXTENDED**

### **Standard 1 Year Warranty**

#### Statement of Warranty

##### 1-Year Standard

The apparatus manufacturer shall provide a full 1-year standard warranty. All components manufactured by the apparatus manufacturer shall be covered against defects in materials or workmanship for a 1-year period. All components covered by separate suppliers such as engines, transmissions, tires, and batteries shall maintain the warranty as provided by the component supplier. A copy of the warranty document shall be provided with the proposal.

### **Lifetime Frame Warranty**

The apparatus manufacturer shall provide a full lifetime frame warranty. This warranty shall cover all apparatus manufacturer designed frame, frame members, and cross-members against defects in materials or workmanship for the lifetime of the covered apparatus. A copy of the warranty document shall be provided with the proposal. Frame warranties that do not cover cross-members for the life of the vehicle shall not be acceptable.

### **10 Year 100,000 Mile Structural Warranty**

The apparatus manufacturer shall provide a comprehensive 10 year/100,000 mile structural warranty. This warranty shall cover all structural components of the cab and/or body manufactured by the apparatus manufacturer against defects in materials or workmanship for 10 years or 100,000 miles, whichever occurs first. Excluded from this warranty are all hardware, mechanical items, electrical items, or paint finishes. A copy of the warranty document shall be provided with the proposal.

### **10 Year Stainless Steel Plumbing Warranty**

The apparatus manufacturer shall provide a full 10-year stainless steel plumbing components warranty. This warranty shall cover defects in materials or workmanship of apparatus manufacturer designed foam/water plumbing system stainless steel components for 10 years. A copy of the warranty document shall be provided with the proposal.

### **10 Year Paint and Corrosion Warranty**

The apparatus manufacturer shall provide a 10-year limited paint and corrosion perforation warranty. This warranty shall cover paint peeling, cracking, blistering, and corrosion provided the vehicle is used in a normal and reasonable manner.

The paint shall be prorated for 10 years as follows:

Topcoat & Appearance: Gloss, Color Retention, Cracking		Coating System, Adhesion & Corrosion: Includes Dissimilar metal corrosion, Flaking, Blistering, Bubbling	
0 to 72 months	100%	0 to 36 months	100%
73 to 120 months	50%	37 to 84 months	50%
		85 to 120 months	25%

Corrosion perforation shall be covered 100% for 10 years. Corrosion perforation is defined as complete penetration through the exterior metal of the apparatus.

The warranty period shall begin upon delivery of the apparatus to the original user-purchaser. A copy of the warranty document shall be provided with the proposal.

UV paint fade shall be covered in a separate warranty supplied by Akzo Nobel (Sikkens) and shall be for a minimum of 10 years.

## **SUPPORT, DELIVERY, INSPECTIONS AND MANUALS**

### **Approval Drawings**

A general arrangement drawing depicting the vehicles appearance shall be provided. The drawing shall consist of left side, right side, front, and rear elevation views.

Vehicles requiring pump controls shall include a general arrangement view of the pump operator's position, scaled the same as the elevation views.

### **Electronic Manuals**

Two (2) copies of all operator, service, and parts manuals **MUST** be supplied at the time of delivery in electronic format (CD-ROMs) -**NO EXCEPTIONS!** The electronic manuals shall include the following information:

Operating Instructions, descriptions, specifications, and ratings of the cab, chassis, body, installed components, and auxiliary systems.

Warnings and cautions pertaining to the operation and maintenance of the fire apparatus and fire fighting systems.

Charts, tables, checklists, and illustrations relating to lubrication, cleaning, troubleshooting, diagnostics, and inspections.

Instructions regarding the frequency and procedure for recommended maintenance.

Maintenance instructions for the repair and replacement of installed components.

Parts listing with descriptions and illustrations for identification.

Warranty descriptions and coverage.

The CD-ROM shall incorporate a navigation page with electronic links to the operators manual, service manual, parts manual, and warranty information, as well as instructions on how to use the manual. Each copy shall include a table of contents with links to the specified documents or illustrations.

The CD must be formatted in such a manner as to allow not only the printing of the entire manual, but to also the cutting, pasting, or copying of individual documents to other electronic media, such as electronic mail, memos, and the like.

A find feature shall be included to allow for searches by text or by part number.

These electronic manuals shall be accessible from any computer operating system capable of supporting portable document format (PDF). Permanent copies of all pertinent data shall be kept file at both the local dealership and at the manufacturer's location.

NOTE: Engine overhaul, engine parts, transmission overhaul, and transmission parts manuals are not included.

### As Built Electrical Drawings

(2) As built electrical drawings in CD format will be supplied with the apparatus.

## Dealer Supplied Items (DSI)

QUANT	SPEC
<b>TRUCK ACCESSORIES - CHASSIS</b>	
1	Wheel Chocks, two (2), Ziamatic #SAC-44 folding chocks with underbody mounting brackets, installed under the compartment forward of the driver's side rear axle.
6	Zico UHH-1 Helmet Mount, shipped loose for installation by the Fire Dept.
1	Equipment mounting plate of .25" smooth aluminum Zolatone painted to match cab, located on top of the engine cover for mounting fire department electronics and equipment. Plate spaced up approximately 1.25 to allow wiring to be run under the plate.
<b>TRUCK ACCESSORIES - BODY</b>	
1	Universal SCBA Bracket with heavy-duty web strap, mounted in body compartment(s) as directed by the Fire Dept. Zico KD-FHLP-6-SFPHS
2	Turtle Tile decking shall be installed on the exposed floors and all shelves/trays in all compartments of the apparatus body.

1	Bolts, stainless steel, generous bag similar to those used in the construction of the apparatus for use in mounting equipment and as spares.
2	Intercom, Firecom, UHW51 Wireless Headset Only, Radio push-to-talk, Driver or Officer Position, each. For E-One installed intercom systems.
2	Intercom, Firecom, UHW52 Wireless Headset Only, Rear Crew Position, each. For E-One installed intercom systems.
<b>LIGHTS, CORDS, GENERATORS</b>	
2	Handlight, battery, LED rechargeable, 12V charger, mounted as directed by the Fire Dept. Streamlight #44451 Fire Vulcan LED.
<b>TOOLS</b>	
1	Pike Pole, 10' , Fiberglass I-beam handle, standard cast head. Akron IB-10
<b>LETTERING AND STRIPING</b>	
1	Graphics Allowance - Not including lettering
1	Stop Signs, 12" x 12" reflective, mounted inside of cab doors.
<b>MISC. SERVICES</b>	
1	Pre-delivery Inspection - Pumper or Aerial - After transportation from the factory and immediately prior to delivery to the fire department, the local dealer shall provide the following service: complete inspection and operational check including chassis, cab, body, pump and aerial (as applicable), and all electrical and mechanical devices; correction of any issues and leaks; fluid level checks and top off; and complete cleaning and detailing of the apparatus.

## OPTIONS

### **Jake Brake**

One (1) Jacobs engine brake shall be installed to assist in slowing and controlling the vehicle as required by NFPA 1901 for vehicles with gross vehicle weight ratings (GVWR) of 36,000 lbs. or greater. An on-off control switch and a high-medium-low selector switch shall be mounted in the cab accessible to the driver.

When activated, the Jacobs engine brake shall cut off the flow of fuel to the cylinders and alter the timing of the exhaust valves. This shall transform the engine into a high-pressure air compressor, driven by the wheels, and the horsepower absorbed by the engine in this mode shall slow the vehicle. The selector switch allows the driver to select the amount of retarding power.

When the on-off switch is in the "on" position, the engine brake shall be automatically applied whenever the accelerator is in the idle position and the automatic transmission is in the lock-up mode. If the accelerator is depressed or if the on-off switch is placed in the "off" position, the engine brake shall immediately release and allow the engine to return to its normal function.

Replaces the Telma Retarder included in the base bid.

**Powertrain Upgrade**

Cyclone Chassis with Cummins ISX12-450 hp engine, Allison EVS4000 transmission, and Spicer 1810 drivelines in place of Typhoon Chassis with Cummins ISL-450 hp engine and Allison EVS3000 transmission and Spicer 1710 drivelines included in the base bid.

**Aluminum Treadplate Hosebed Cover**

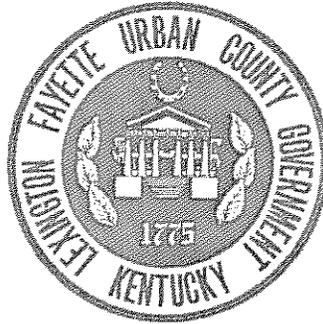
(2) piece aluminum hose bed cover. Includes center hose bed divider with notched rear (as applicable), fill tower(s) access door(s) (as applicable), gas shocks, positive hold opens/hold closed at rear, (2) grab handles front and (2) hand rails rear. Includes black nylon cargo net restraints at rear of treadplate cover covering the end of hosebed.

**LED Backlit 2.5" Gauges**

Class 1 weatherproof 2-1/2" compound vacuum/pressure gauge with a range of 30-0-400 shall be installed on the pump panel. The gauge shall be lighted utilizing LEDs for back lighting of the liquid filled gauge. Gauge colors to be determined at pre-build conference. Replaces Class 1 non-lit 2-1/2" gauges included in the base bid.

# Lexington Fayette Urban County Government

Division of Central Purchasing



Lexington Kentucky

Horse Capital of the World

## INVITATION TO BID #115-2013

### Firetruck – Triple Combination Pumper

#### NOTICE TO BIDDERS

Sealed Specification Opening Date:	Friday, October 4, 2013
Sealed Specification Opening Time:	2:00 PM
Address:	200 East Main Street, 3 <sup>rd</sup> Floor, Room 338 Lexington, KY 40507
Online Pricing Event Date:	Monday, October 14, 2013
Online Pricing Event Time:	2:00 PM

## INVITATION TO BID

Bid Invitation Number: #115-2013

Date of Issue: 09/18/2013

**This is an Electronic Bid Event.** The Division of Central Purchasing, 200 East Main Street, Lexington, Kentucky will be accepting bids for this commodity online. **Sealed specification responses, excluding pricing, must be received by LFUCG no later than Friday, October 4, 2013 at 2:00 PM EDT.**

**Registered suppliers will receive a formal invitation to bid** in the specified event via email and may receive other invitations to bid in future events as those opportunities arise.

**Suppliers who accept their formal invitation to bid will be contacted by Buy Rite Technologies LLC with login information and instructions.**

### **LEGAL ANNOUNCEMENT OF REVERSE AUCTION BID**

**Lexington-Fayette Urban County Government has contracted with Buy Rite Technologies LLC, to conduct an Online Bid Event at <http://www.lfucgsourcing.com>**

Buy Rite Technologies LLC will work directly with the successful bidder regarding collection of all Reverse Auction Fees.

Buy Rite Technologies LLC shall bill for only those goods or services accepted by the County and correctly billed for by the awarded bidder. Depending on the bid, Buy Rite Technologies may request that the successful bidder send "shadow invoices" to Buy Rite Technologies so Buy Rite is aware of all invoices being sent to Lexington-Fayette Urban County Government related to this bid.

The fee is collectable from the awarded bidder within 30 days after receipt of payment by LFUCG.

Volume of Award	% Cost per Auction Event	Dollar Amount Not To Exceed
\$0.00 to \$2,000,000.00	2.00%	\$2,000,000.00
\$2,000,000.01 to \$5,000,000.00	1.50%	\$5,000,000.00
\$5,000,000.01 and up	1.00%	N/A

These fees should be sent to:

Buy Rite Technologies LLC  
18 Cattano Avenue  
Morristown, NJ 07960  
ATTN: Accounting Department

## Milestones:

Milestone	Date/Time
Bid Package Released to Potential Suppliers	By: Wednesday, September 18, 2013
Pre-Bid Meeting	On: Thursday, September 26, 2013 at 10AM EDT
Pre-Bid Meeting Location	Where: Purchasing Conference Room 3 <sup>rd</sup> Floor, Government Center Building at 200 East Main Street, Lexington, KY 40507
Sealed Specification Responses	Received By: Friday, October 4, 2013, by 2:00 PM EDT
Electronic Bidding Event	On: Monday, October 14, 2013, beginning at 2:00 PM EDT
Bids Verified & Contract Awarded (If Awarded)	<b>October 2013</b>
Anticipated Deliveries begin	<b>ASAP</b>

## **MILESTONE EXPLANATIONS:**

### **BID PACKAGE DISTRIBUTED TO POTENTIAL SUPPLIERS:**

This is the release date of the item to be bid.

### **SEALED SPECIFICATION RESPONSE:**

This refers to the date and time that all information **other than pricing** must be returned to the buyer. Traditionally this would be the same information submitted to the buyer in a normal paper bid, again without pricing. This allows the buyer to pre-approve those suppliers who participate in the actual live bid.

### **ELECTRONIC BIDDING EVENT:**

The day, date and time of the start of the actual live bidding event.

Sealed Specification responses **will be received in the office of the Division of Central Purchasing, 200 East Main Street, Lexington, Kentucky, until 2:00 PM EST on Friday, October 4, 2013.** All Specification Proposals must be attached to this proposal. Specification submittals must indicate any and all exceptions to the specifications, as well as any option packages or prepayment discounts. **DO NOT SUBMIT BID PRICING WITH YOUR SPECIFICATIONS PACKAGE.**

Sealed Specification Responses should be sent to:

**Division of Central Purchasing  
Todd Slatin, Director  
200 East Main Street, Room 338  
Lexington, KY 40507, (859) 258-3320**

**The Lexington-Fayette Urban County Government assumes no responsibility for Sealed Specification**

**Responses that are not addressed and delivered as indicated above. Sealed Specification Responses that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.**

All bids must have the company name and address, bid invitation number, and the commodity/service on the outside of the envelope.

Bids are to include all shipping costs to the point of delivery located at: See Specifications.

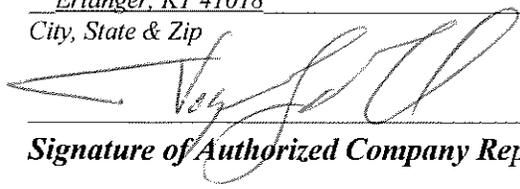
Bid Security Required:  Yes  No Performance Bond Required:  Yes  No  
*Cashier Check, Certified Check, Bid Bond (Personal checks and company checks will not be acceptable).*

Quantity	Commodity/Service
PCT	Firetruck Triple Combination Pumper
	See specifications.

<p style="text-align: center;"><b><u>Check One:</u></b></p> <p><input type="checkbox"/> Bid Specifications Met</p> <p><input checked="" type="checkbox"/> Exceptions to Bid Specifications. <i>Exceptions shall be itemized and attached to bid proposal submitted.</i></p>	<p style="text-align: center;"><b><u>Proposed Delivery:</u></b></p> <p><u>240-270</u> days after acceptance of bid.</p>
<p><b><u>Procurement Card Usage</u></b></p> <p><input checked="" type="checkbox"/> Yes The Lexington-Fayette Urban County Government will be using Procurement Cards to purchase goods and services and also to make payments. Will you accept Procurement Cards?</p> <p><input type="checkbox"/> No</p>	

Submitted by: Vogelpohl Fire Equipment Inc.  
 Firm  
2770 Circleport Dr.  
 Address  
Erlanger, KY 41018  
 City, State & Zip

***Bid must be signed:  
 (original signature)***

  
 \_\_\_\_\_  
***Signature of Authorized Company Representative – Title***  
Todd Vogelpohl  
 Representative's Name (Typed or printed)  
859-282-1000                      859-282-1550  
 Area Code - Phone – Extension                      Fax #  
toddv@vogelpohlfire.com  
 E-Mail Address

***The Affidavit in this bid must be completed before your firm can be considered for award of this contract.***

**AFFIDAVIT**

Comes the Affiant, Todd Vogelpohl, and after being first duly sworn under penalty of perjury as follows:

1. His/her name is Todd Vogelpohl and he/she is the individual submitting the bid or is the authorized representative of Vogelpohl Fire Equipment, Inc.

the entity submitting the bid (hereinafter referred to as "Bidder").

2. Bidder will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the bid is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.

3. Bidder will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.

4. Bidder has authorized the Division of Central Purchasing to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.

5. Bidder has not knowingly violated any provision of the campaign finance laws of the Commonwealth of Kentucky within the past five (5) years and the award of a contract to the Bidder will not violate any provision of the campaign finance laws of the Commonwealth.

6. Bidder has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as "Ethics Act."

7. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

Further, Affiant sayeth naught.

Todd Vogelpohl

STATE OF

Boone

COUNTY OF

KENTUCKY

The foregoing instrument was subscribed, sworn to and acknowledged before me

by TODD VOGELPOHL on this the 3 day of OCT, 2013.

My Commission expires:

1/24/15



DAVID McCLANAHAN  
NOTARY PUBLIC  
STATE OF KENTUCKY  
NOTARY ID #435504  
MY COMMISSION EXPIRES  
JANUARY 24, 2015

[Signature]  
NOTARY PUBLIC, STATE AT LARGE

***Please refer to Section II. Bid Conditions, Item "U" prior to completing this form.***

## **I. GREEN PROCUREMENT**

### **A. ENERGY**

The Lexington-Fayette Urban County Government is committed to protecting our environment and being fiscally responsible to our citizens.

The Lexington-Fayette Urban County Government mandates the use of Energy Star compliant products if they are available in the marketplace (go to [www.Energystar.gov](http://www.Energystar.gov)). If these products are available, but not submitted in your pricing, your bid will be rejected as non-compliant.

ENERGY STAR is a government program that offers businesses and consumers energy-efficient solutions, making it easy to save money while protecting the environment for future generations.

#### Key Benefits

These products use 25 to 50% less energy  
Reduced energy costs without compromising quality or performance  
Reduced air pollution because fewer fossil fuels are burned  
Significant return on investment  
Extended product life and decreased maintenance

### **B. GREEN SEAL CERTIFIED PRODUCTS**

The Lexington-Fayette Urban County Government is also committed to using other environmentally friendly products that do not negatively impact our environment. Green Seal is a non-profit organization devoted to environmental standard setting, product certification, and public education.

Go to [www.Greenseal.org](http://www.Greenseal.org) to find available certified products. These products will have a reduced impact on the environment and on human health. The products to be used must be pre-approved by the LFUCG prior to commencement of any work in any LFUCG facility. If a Green Seal product is not available, the LFUCG must provide a signed waiver to use an alternate product. Please provide information on the Green Seal products being used with your bid response.

### **C. GREEN COMMUNITY**

**The Lexington-Fayette Urban County Government (LFUCG) serves as a principal, along with the University of Kentucky and Fayette County Public Schools, in the Bluegrass Partnership for a Green Community. The Purchasing Team component of the Partnership collaborates on economy of scale purchasing that promotes and enhances environmental initiatives. Specifically, when applicable, each principal is interested in obtaining best value products and/or services which promote environment initiatives via solicitations and awards from the other principals.**

**If your company is the successful bidder on this Invitation For Bid, do you agree to extend the same product/service pricing to the other principals of the Bluegrass Partnership for a Green Community (i.e. University of Kentucky and Fayette County Schools) if requested?**

Yes   X              No

## II. Bid Conditions

- A. No bid may be withdrawn for a period of sixty (60) days after the date and time set for the live bid event.
- B. No bid may be altered after the date and time set for opening. In the case of obvious errors, the Division of Central Purchasing may permit the withdrawal of a bid. The decision as to whether a bid may be withdrawn shall be that of the Division of Central Purchasing.
- C. Acceptance of this proposal shall be enactment of an Ordinance by the Urban County Council.
- D. The bidder agrees that the Urban County Government reserves the right to reject any and all bids for either fiscal or technical reasons, and to award each part of the bid separately or all parts to one vendor.
- E. Minor exceptions may not eliminate the bidder. The decision as to whether any exception is minor shall be entirely that of the head of the requisitioning Department or Division and the Director of the Division of Central Purchasing. The Urban County Government may waive technicalities and informalities where such waiver would best serve the interests of the Urban County Government.
- F. Manufacturer's catalogue numbers, trade names, etc., where shown herein are for descriptive purposes and are to guide the bidder in interpreting the standard of quality, design, and performance desired, and shall not be construed to exclude proposals based on furnishing other types of materials and/or services. However, any substitution or departure proposed by the bidder must be clearly noted and described; otherwise, it will be assumed that the bidder intends to supply items specifically mentioned in this Invitation for Bids.
- G. The Urban County Government may require demonstrations of the materials proposed herein prior to acceptance of this proposal.
- H. Bids must be submitted on this form and must be signed by the bidder or his authorized representative. Unsigned bids will not be considered. **Pricing is to be submitted online ONLY.**
- I. Sealed Specifications must be submitted prior to the date and time indicated for opening. Sealed Specifications submitted after this time will not be considered.
- J. All Sealed Specification Responses mailed must be marked on the face of the envelope:

**“Bid on #115-2013 Firetruck Triple Combination Pumper”**

and addressed to:      Division of Central Purchasing  
   200 East Main Street, Room 338  
   Lexington, Kentucky 40507

**The Lexington-Fayette Urban County Government assumes no responsibility for Sealed Specification Responses that are not addressed and delivered as indicated above. Sealed Specification Responses that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.**

- K. Bidder is requested to show both unit prices and lot prices. In the event of error, the unit price shall prevail.

- L. A certified check or Bid Bond in the amount of \$22,500 percent of the bid price must be attached hereto. This check must be made payable to the Lexington-Fayette Urban County Government, and will be returned when the material and/or services specified herein have been delivered in accordance with specifications. In the event of failure to perform within the time period set forth in this bid, it is agreed the certified check may be cashed and the funds retained by the Lexington-Fayette Urban County Government as liquidated damages. Checks of unsuccessful bidders will be returned when the bid has been awarded.
- M. The delivery dates specified by bidder may be a factor in the determination of the successful bidder.
- N. Tabulations of bids received may be mailed to bidders. Bidders requesting tabulations must enclose a stamped, self-addressed envelope with the bid.
- O. The Lexington-Fayette Urban County Government is exempt from Kentucky Sales Tax and Federal Excise Tax on materials purchased from this bid invitation. Materials purchased by the bidder for construction projects are not tax exempt and are the sole responsibility of the bidder.
- P. All material furnished hereunder must be in full compliance with OSHA regulations.
- Q. If more than one bid is offered by one party, or by any person or persons representing a party, all such bids shall be rejected.
- R. Signature on the face of this bid by the Bidder or his authorized representative shall be construed as acceptance of and compliance with all terms and conditions contained herein.
- S. The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, creed, national origin, sex or age, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.
- T. The Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any county, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

- (1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;*
- (2) The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;*
- (3) The contractor will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and*
- (4) The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.*

The Act further provides:

KRS 45.610. Hiring minorities - Information required

- (1) *For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.*
- (2) *Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.*

KRS 45.620. Action against contractor - Hiring of minority contractor or subcontractor

- (1) *If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.*
- (2) *If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 to 45.640.*
- (3) *The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.*

KRS 45.630 Termination of existing employee not required, when

*Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.*

KRS 45.640 Minimum skills

*Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.*

It is recommended that all of the provisions above quoted to be included as special conditions in each contract. In the case of a contract exceeding \$250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

- U. Any party, firm or individual submitting a proposal pursuant to this invitation must be in compliance with the requirements of the Lexington-Fayette Urban County Government regarding taxes and fees before they can be considered for award of this invitation and must maintain a "current" status with regard to those taxes and fees throughout the term of the contract. The contractor must be in compliance with Chapter 13 from the Code of Ordinances of the Lexington-Fayette Urban County Government. The contractor must be in compliance with Ordinance 35-2000 pursuant to contractor registration with the Division of Building Inspection. If applicable, said business must have a Fayette County business license.

Pursuant to KRS 45A.343 and KRS 45A.345, the contractor shall

- (1) *Reveal any final determination of a violation by the contractor within the previous five year period pursuant to KRS Chapters 136 (corporation and utility taxes), 139 (sales and use taxes), 141 (income taxes), 337 (wages and hours), 338 (occupational safety and health of employees), 341 (unemployment and compensation) and 342 (labor and human rights) that apply to the contractor; and*
- (2) *Be in continuous compliance with the above-mentioned KRS provisions that apply to the contractor for the duration of the contract.*

A contractor's failure to reveal the above or to comply with such provisions for the duration of the contract shall be grounds for cancellation of the contract and disqualification of the contractor from eligibility for future contracts for a period of two (2) years.

- V. Vendors who respond to this invitation have the right to file a notice of contention associated with the bid process or to file a notice of appeal of the recommendation made by the Director of Central Purchasing resulting from this invitation.

Notice of contention with the bid process must be filed within 3 business days of the bid/proposal opening by (1) sending a written notice, including sufficient documentation to support contention, to the Director of the Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his/her contention with the bid process. After consulting with the Commissioner of Finance the Chief Administrative Officer and reviewing the documentation and/or hearing the vendor, the Director of Central Purchasing shall promptly respond in writing findings as to the compliance with bid processes. If, based on this review, a bid process irregularity is deemed to have occurred the Director of Central Purchasing will consult with the Commissioner of Finance, the Chief Administrative Officer and the Department of Law as to the appropriate remedy.

Notice of appeal of a bid recommendation must be filed within 3 business days of the bid recommendation by (1) sending a written notice, including sufficient documentation to support appeal, to the Director, Division of Central Purchasing or (2) submitting a written request for a meeting with the Director of Central Purchasing to explain his appeal. After reviewing the documentation and/or hearing the vendor and consulting with the Commissioner of Finance and the Chief Administrative Officer, the Director of Central Purchasing shall in writing, affirm or withdraw the recommendation.

### III. Procurement Contract Bid Conditions

- A. The terms of this agreement shall be for **1 year** from the date of acceptance of this contract by the Lexington-Fayette Urban County Government.
- B. Price Changes (**Space Checked Applies**)
  - 1. Prices quoted in response to the Invitation shall be firm prices for the first 180 days of the Procurement Contract. After 180 days, prices may be subject to revision and such changes shall be based on general industry changes. Revision may be either increases or decreases and may be requested by either party. There will be no more than one (1) price adjustment per 6 month period. Requests for price changes shall be received in writing at least twenty (20) days prior to the effective date and are subject to written acceptance before becoming effective. Proof of the validity of a request for revision shall be the responsibility of the requesting party. The Lexington-Fayette Urban County Government shall receive the benefit of any decline that the seller shall offer his other accounts.
  - 2. No provision for price change is made herein. Prices are to be firm for the term of this contract.
  - 3. Procurement Level Contract
  - 4. See Specification Document for Price Change Information
- C. If any contract item is not available from the vendor, the Lexington-Fayette Urban County Government, at its option, may permit the item to be back-ordered or may procure the item on the open market.
- D. All invoices must bear reference to the Lexington-Fayette Urban County Government Purchasing document numbers which are being billed.
- E. This contract may be canceled by either party thirty (30) days after delivery by canceling party of written notice of intent to cancel to the other contracting party.
- F. This contract may be canceled by the Lexington-Fayette Urban County Government if it is determined that the Bidder has failed to perform under the terms of this agreement, such cancellation to be effective upon receipt of written notice of cancellation by the Bidder.
- G. No substitutions for articles specified herein may be made without prior approval of the Division of Central Purchasing.

**EQUAL OPPORTUNITY AGREEMENT**

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The Law

Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.

Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and sub-contractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.

Section 503 of the Rehabilitation Act of 1973 states:

*The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.*

Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal contracts.

Section 206(A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:

*The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.*

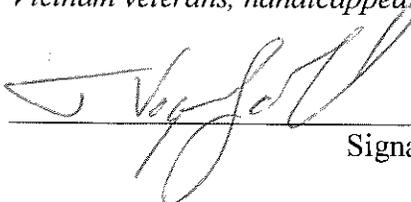
\*\*\*\*\*

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors and all supervisory personnel. In following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractors may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

*I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped and aged persons.*

  
\_\_\_\_\_  
Signature

\_\_\_\_\_  
Vogelpohl Fire Equipment  
Name of Business

**SPECIAL INSTRUCTIONS TO THE BIDDER**

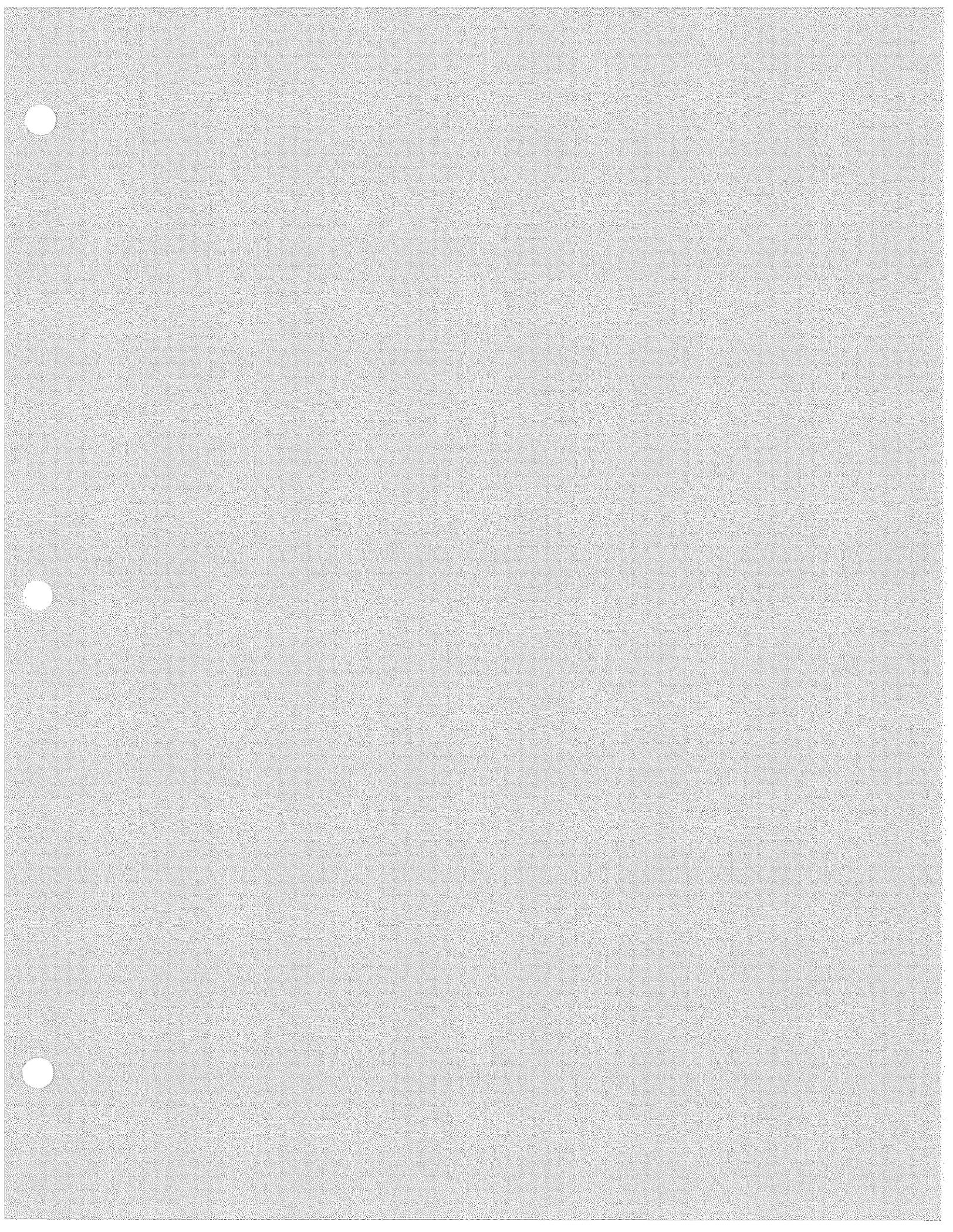
**(DO NOT SUBMIT PERFORMANCE SECURITY WITH BID)**

**Performance Security:** The **APPARENT LOW BIDDER** shall furnish, before recommendation by the Division of Central Purchasing to the Urban County Council that the **BIDDER'S** bid be accepted, a **Performance Bond, Certified Check or Cashier's Check**, payable to the Lexington-Fayette Urban County Government, in the penal sum of **100%** of the price of the materials and/or services proposed in the bid.

The performance bond will not be returned to the bidder after delivery of the materials/services specified herein unless the bidder requests that the performance bond be returned.

The certified / cashier's check will be returned when the materials and/or services specified herein have been delivered.

In the event of bidder's failure to perform as specified herein, it is agreed that the monies represented by the performance bond or certified / cashier's check shall be retained by the Lexington-Fayette Urban County Government as liquidated damages.



# Specifications

Bidder  
Complies

Yes No

## SPECIFICATIONS FOR ONE (1) TRIPLE COMBINATION PUMPER FOR THE LEXINGTON KY FIRE DEPARTMENT

Provide one original and one copy of your bid.

### INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to cover the furnishing and delivery of one complete apparatus equipped as hereinafter specified. These specifications cover only the general requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. Apparatus and loose equipment proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current editions at time of contract execution. Loose equipment shall be provided only as stated in the following pages.

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 20 years. Further, bidder shall maintain dedicated service facilities for the repair and service of products. Evidence of such a facility shall be included in bidder proposal.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built. The bidder shall also show that the company is in position to render prompt service and to furnish replacement parts for said apparatus.

Each bid shall be accompanied by a set of "Contractor's Specifications" consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under contract shall conform. These specifications shall indicate size, type, model and make of all component parts and equipment. A drawing of the proposed apparatus shall be provided with each bid.

Manufacturers shall provide specifics of construction, construction methods, components and operational data with bid.

### PROJECT FUNDING

Fulfillment of this project will be contingent on funding avenues yet to be determined and committed. Final Project funding may potentially be dependent upon bid pricing. Once the bid is submitted and opened, time, date and location provided by the Lexington Fayette Urban County Government, the bid may **not** be withdrawn and will stand for ninety (90) calendar days.

Fifty percent (50%) of bid price will be issued upon completion of the chassis; final payment will be issued upon apparatus delivery and satisfactory inspection by the Division of Fire.

# Specifications

## Bidder Complies

Yes

No

Chassis completion is estimated to occur four (4) months post issuance by the Lexington Fayette Urban County Government of the purchasing requisition to the awarded vendor. Final payment post acceptance will occur approximately six (6) months after initial requisition issuance.

### QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility of the various units that require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under "Performance Tests and Requirements". Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any component part for service or repair. All steel welding shall follow American Welding Society recommendations for structural steel welding. All aluminum welding shall be done to American Welding Society and ANSI recommendations for structural welding of aluminum. The manufacturer is required to have an American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

### DELIVERY SCHEDULE

The apparatus shall be delivered to the Lexington Fire Department within 200 days of bid acceptance or the bidder shall be penalized \$500.00 per day for each day over the number of days specified in the bid the apparatus is not delivered.

### DELIVERY

Apparatus, to ensure proper break in of all components while still under warranty, **shall be delivered under its own power** - rail or truck freight shall not be acceptable. A qualified delivery engineer representing the contractor shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in the proper operation, care and maintenance of the equipment delivered.

### APPARATUS AND RELATED COMPONENT TRAINING

Training shall be provided by the manufacturer for three consecutive days at a designated time and location determined by the fire department on the operation of the apparatus and associated components. Target audience to include service and operational personnel.

### MANUFACTURER SPONSORED TRAINING

The manufacturer will provide to the Lexington KY Division of Fire's Mechanical Bureau, factory level or equivalent repair and or maintenance related training on fire apparatus and or apparatus components within one year of delivery. This training will be the equivalent of eight (8) man days.

All expenses associated with providing this training including registration, travel, lodging, meals course materials, etc. shall be the sole responsibility of the manufacturer.

# Specifications

Bidder  
Complies

Yes No

## INFORMATION REQUIRED

The manufacturer shall supply at time of delivery, complete operation and maintenance manuals covering the completed apparatus as delivered. A Copy of the manuals shall be provided in DVD format. A permanent plate shall be mounted in the driver's compartment which specifies the quantity and type of fluids required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

## SAFETY VIDEO

Documentation provided at the time of delivery shall also include an apparatus safety video, in DVD format. This video shall address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus. Safety procedures for the following shall be included: vehicle pre-trip inspection, chassis operation, pump operation, and maintenance.

## PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. Vehicle shall adhere to the following parameters:

A) The apparatus, when fully equipped and loaded, shall have not less than 25% nor more than 50% of the weight on the front axle, and not less than 50% nor more than 75% on the rear axle.

B) The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.

C) The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.

D) The apparatus, fully loaded, shall be capable of obtaining a speed of 67 to 70 mph on a level concrete highway with the engine not exceeding its governed rpm (full load).

E) The apparatus shall be tested and approved in accordance with NFPA Standard Practices and Federal Motor Vehicle Safety Standards (FMVSS).

## FAILURE TO MEET TEST

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes,

# Specifications

## Bidder Complies

Yes

No

shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

### LIABILITY

The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

### INDEMNIFICATION AND HOLD HARMLESS PROVISION

- (1) It is understood and agreed by the parties that Vendor hereby assumes the entire responsibility and liability for any and all damages to persons or property caused by or resulting from or arising out of any act or omission on the part of Vendor or its employees, agents, servants, owners, principals, licensees, assigns or subcontractors of any tier (hereinafter "Vendor") under or in connection with this agreement and/or the provision of goods or services and the performance or failure to perform any work required thereby.
- (2) Vendor shall indemnify, save, hold harmless and defend the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, volunteers, and successors in interest (hereinafter "LFUCG") from and against all liability, damages, and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, from or by Vendor's performance or breach of the agreement and/or the provision of goods or services provided that: (a) it is attributable to personal injury, bodily injury, sickness, or death, or to injury to or destruction of property (including the loss of use resulting therefrom), or to or from the negligent acts, errors or omissions or willful misconduct of the Vendor; and (b) not caused solely by the active negligence or willful misconduct of LFUCG.
- (3) In the event LFUCG is alleged to be liable based upon the above, Vendor shall defend such allegations and shall bear all costs, fees and expenses of such defense, including but not limited to, all reasonable attorneys' fees and expenses, court costs, and expert witness fees and expenses, using attorneys approved in writing by LFUCG, which approval shall not be unreasonably withheld.
- (4) These provisions shall in no way be limited by any financial responsibility or insurance requirements, and shall survive the termination of this agreement.

### FINANCIAL RESPONSIBILITY

<b>Specifications</b>	<b>Bidder Complies</b>	
	Yes	No
<p>BIDDER/VENDOR understands and agrees that it shall, prior to final acceptance of its bid and the commencement of any work, demonstrate the ability to assure compliance with the above Indemnity provisions and these other risk management provisions.</p> <p><b><u>INSURANCE REQUIREMENTS</u></b></p> <p>YOUR ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW, AAND YOU MAY NEED TO CONFER WITH YOUR INSURANCE AGENTS, BROKERS, OR CARRIERS TO DETERMINE IN ADVANCE OF SUBMISSION OF A RESPONSE THE AVAILABILITY OF THE INSURANCE COVERAGES AND ENDORSEMENTS REQUIRED HEREIN. IF YOU FAIL TO COMPLY WITH THE INSURANCE REQUIREMENTS BELOW, YOU MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.</p> <p><u>Required Insurance Coverage</u></p> <p>Vendor shall procure and maintain for the duration of this contract the following or equivalent insurance policies at no less than the limits shown below and cause its subcontractors to maintain similar insurance with limits acceptable to LFUCG in order to protect LFUCG against claims for injuries to persons or damages to property which may arise from or in connection with the provision of equipment or goods or the performance of the work or services hereunder by Vendor. The cost of such insurance shall be included in any bid:</p> <p><b><u>SPECIFICATION BID REQUIREMENTS</u></b></p> <p>Bidders shall also indicate in the "yes/no" column if their bid complies <b>on each item</b> (PARAGRAPH) specified. Exceptions shall be listed and fully explained on a separate page. Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page. The decision as to whether any exception is approved as being equivalent shall be entirely that of the Chief of the Division of Fire.</p> <p><b>Proposals taking total exception to specifications shall not be acceptable.</b></p> <p>Also, bidders shall submit a detailed proposal. A letter only, even though written on a company letterhead, shall not be sufficient. Bid proposals shall be submitted in the same sequence as specifications for ease of evaluation, comparison and checking of compliance. <b>An exception to these requirements shall not be acceptable.</b></p> <p>Any bid indicating that the manufacturer's proposal shall supersede the purchaser's specifications will be immediately rejected</p> <p><b><u>EXCEPTIONS</u></b></p> <p>All exceptions shall be stated no matter how seemingly minor. Any exceptions not taken shall be assumed by the purchaser to be included in the proposal, regardless of the cost to the bidder.</p>	<p>✓</p>	<p>✓</p>

# Specifications

## Bidder Complies

Yes No

### COMMERCIAL GENERAL LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

Products/Completed Operations Aggregate	\$2,000,000
Personal and Advertising Injury	\$1,000,000
Each Occurrence	\$1,000,000

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage for bodily injury and property damage subject to the terms and conditions of the policy. The policy shall include owner as an additional insured when required by written contract.

The policy shall include owner as an additional insured as their interest may appear.

The required limits can be provided by one or more policies provided all other insurance requirements are met.

A carrier(s) rated "Excellent" by A.M. Bests shall provide coverage

### COMMERCIAL AUTOMOBILE INSURANCE

The successful bidder shall, during the performance of the contract keep in force at least the following minimum limits of commercial automobile insurance:

Combined Single Limit: \$1,000,000

Coverage shall be written on a Commercial Automobile form.

### UMBRELLA/EXCESS LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

Aggregate: \$25,000,000  
Each Occurrence: \$25,000,000

The policy shall be written on an occurrence basis and at a minimum provide the same coverage's as Bidder's General Liability, Automobile Liability and Employer's Liability policies. Owner shall be included as an additional insured on the General Liability and Automobile Liability policies as their interest may appear. The required limits can be provided by one or more policies provided all other insurance requirements are met.

<b>Specifications</b>	<b>Bidder Complies</b>	
	Yes	No
<p>Bidder agrees to furnish owner with a current Certificate of Insurance with the coverage's listed above along with its bid. The certificate shall be made out to the purchaser and be an original, no photocopies shall be accepted. The Certificate of Insurance shall provide that owner be given 30 days advance notice of cancellation, nonrenewal or material change in coverage.</p>	✓	
<p><b><u>ISO COMPLIANCE</u></b>  The manufacturer shall operate a Quality Management System under the requirements of ISO 9001. These standards specify the quality systems that shall be established by the manufacturer for design, manufacture, installation and service. A copy of the certificate of compliance shall be included with the bid.</p>	✓	
<p><b><u>SINGLE SOURCE MANUFACTURER</u></b>  Bids shall only be accepted from a single source apparatus manufacturer. The definition of single source is a manufacturer that designs and manufactures their products using an integrated approach, including the chassis, cab and body being fabricated and assembled on the bidder's premises. The warranties relative to the chassis and body design (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body and chassis). The bidder shall provide evidence that they comply with this requirement.</p>	✓	
<p><b><u>NFPA 2009 STANDARDS</u></b>  This unit shall comply with the NFPA standards effective January 1, 2009, except for fire department specifications that differ from NFPA specifications. These exceptions shall be set forth in the Statement of Exceptions.</p> <p>Certification of slip resistance of all stepping, standing and walking surfaces shall be supplied with delivery of the apparatus.</p> <p>A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating.</p> <p>The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications.</p> <p>An official of the company shall designate, in writing, who is qualified to witness and certify test results.</p>	✓	
<p><b><u>NFPA COMPLIANCY</u></b>  Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications shall be indicated in the proposal as "non-NFPA".</p>	✓	

# Specifications

## Bidder Complies

Yes No

### TOTAL VEHICLE ASSESSMENT CERTIFICATION

The apparatus shall be third-party, independent, audit-certified through Underwriters Laboratory (UL) to the current edition of NFPA 1901 standards. The certification includes: all design, production, operational, and performance testing of the apparatus. (No exception)

### PUMP TEST

The pump shall be tested, approved, and certified by Underwriter's Laboratory at the manufacturer's expense. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the manufacturer's record of pump construction details shall be forwarded to the Fire Department.

### INSPECTION TRIPS

The bidder shall provide three (3) factory inspection trips for four (4) customer representatives. The inspection trip(s) shall be scheduled at times mutually agreed upon between the manufacturer's representative and the customer, typically pre-construction, post paint and final inspection. All costs such as travel, lodging and meals shall be the responsibility of the bidder. Transportation is to be commercial air from Lexington, Kentucky to the nearest commercial airport and ground transportation from the time of arrival until departure.

### AFTERMARKET SUPPORT WEBSITE

A Customer Service website shall provide authorized dealers access to comprehensive information pertaining to the maintenance and service of their customer's apparatus. This tool shall provide the authorized dealer the ability to service and support their customers to the best of their ability with factory support at their fingertips.

### **This website shall also be accessible to the end user through the guest login.**

Limited access is available and vehicle specific parts information accessible by entering a specific VIN number. All end users should see their local authorized dealer for additional support and service.

The website shall provide the following to the designated individuals:

Ability to access truck detail information on the major components of the vehicle, warranty information, available vehicle photographs, vehicle drawings, sales options, applicable vehicle software downloads, etc.

Parts look-up capability, with the aid of digital photographs, part drawings assembly drawings.

Ability to electronically submit warranty claims directly to the factory for reimbursement.

Accessibility to multiple dealer reports that allow the dealership to maintain communication with the customer on the status of orders, claims, and phone contacts.

Access to all currently published Operation and Maintenance and Service publications.

✓  
✓  
✓  
✓

# Specifications

## Bidder Complies

Yes No

Access to manufacturer Service Bulletins and Work Instructions containing information on current service topics and recommendations provided.

Access to upcoming training classes offered by the manufacturer.

Access to interactive electronic learning modules (Operators Guides) covering the operation of major vehicle components.

Access to customer service articles, corporate news, quarterly newsletters, and key contacts.

### APPROVAL DRAWING

A drawing of the proposed apparatus shall be provided for approval before construction begins. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing.

### WARRANTY

Each piece of new fire or rescue apparatus shall be warranted to be free from defects in materials or workmanship under normal use and service. Each manufacturer shall supply, as a part of their bid package, a copy of the warranty or warranties that they propose to provide. The following minimum warranties shall be furnished:

01. Cab - Ten (10) year warranty.
02. Chassis Frame Rails-Lifetime warranties.
03. Body - Ten (Ten) year warranty.
04. Pump – Manufacturers maximum warranty shall be provided.
05. Paint – Ten (10) Non Prorated year warranty.
06. Corrosion – Ten (10) year warranty.
07. Engine – Five (5) year warranty
08. Axles – Three (3) years + two (2) years parts warranty.
09. Transmission – Five (5) year warranty.
10. Load Manager – Three (3) year warranty.

# Specifications

## Bidder Complies

Yes No

The bidder shall provide all optional warranty packages, such as extended warranties, etc., bid to include the cost of said packages.

All other warranties, as outlined in these specifications shall be provided in writing as a part of the bid package.

Failure to provide the warranties as outlined throughout these specifications shall be cause for rejection of the bid package.

### **BID BOND**

All bidders shall provide a bid bond as security for the bid in the form of a \$22,500 bid bond to accompany their bid. This bid bond shall be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond shall be issued by an authorized representative of the Surety Company and shall be accompanied by a certified power of attorney dated on or before the date of bid. The bid bond shall include language, which assures that the bidder/principal shall give a bond or bonds as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic One (1) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract.

Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle shall apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle shall not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision shall prevail.

### **PERFORMANCE BOND**

The successful bidder shall provide, within thirty (30) days after award of contract, and along with a signed copy of the contract, a performance bond, which guarantees performance of all terms and conditions of the contract and warranty agreement. The performance bond will specifically cover the performance of the contract according to its terms and conditions, as well as payment of all related bills and encumbrances. This performance bond shall be issued by a surety company who is listed by the U.S. Treasury Department's list of approved sureties, as published in Circular 570, as of the bid date. The performance bond shall be issued in an amount equal to 100% of the contract amount and shall be dated concurrent to, or subsequent to, the date of the contract.

### **GENERAL CONSTRUCTION**

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association. All piping, lighting and other vehicle accessories shall be mounted in a manner that provides the maximum ground

Specifications	Bidder Complies	
	Yes	No
clearance.		
<b><u>CORROSION PROTECTION</u></b> There shall be a system to prevent corrosion of all underbody components. The builder shall provide a detailed description of the corrosion protection process.	✓	
<b><u>SEATING CAPACITY</u></b> The seating capacity in the cab shall be five (5).	✓	
<b><u>MAXIMUM OVERALL HEIGHT</u></b> The maximum overall height of the apparatus shall be 114 inches.		✓
<b><u>MAXIMUM OVERALL LENGTH</u></b> The maximum overall length of the apparatus shall be approximately 32 feet	✓	
<b><u>WHEELBASE</u></b> The wheelbase of the vehicle shall be no greater than 212.00 inches.	✓	
<b><u>GVW RATING</u></b> The gross vehicle weight rating shall be a minimum of 46,500 pounds.	✓	
<b><u>FRAME</u></b> Each Apparatus shall have continuous frame rails that are sturdy enough to support the apparatus for the intended use. Frame rails shall be of one continuous piece without splices, formed from a minimum 110,000 psi yield heat treated steel.  RBM: Shall be no less then 3,200,000 inch-pounds as measured at wheelbase center.  The frame rails shall have corrosion protection process applied. The builder shall provide a detailed description of the corrosion protection process.  Wheelbase shall be as short as possible and stated in the bid questionnaire.		✓
<b><u>FRONT NON DRIVE AXLE</u></b>  The front axle shall be a Meritor (Rockwell) MFS-20 with 20,000-pound capacity. It shall be equipped with oil seals and transparent cover for oil level inspection. If a heavier axle is required it shall be the responsibility of the builder to propose it.		✓
<b><u>REAR AXLE</u></b> The rear axle shall be a Meritor™, Model RS-25-160, with a capacity of 27,000 pounds. Oil seals shall be provided on the rear axle. If a heavier axle is required it shall be the responsibility of the builder to propose it.	✓	
<b><u>TOP SPEED OF VEHICLE</u></b> A rear axle ratio shall be furnished to allow the vehicle to reach a top speed of 67 MPH.	✓	

# Specifications

Bidder  
Complies

Yes No

**FRONT SUSPENSION**

The front suspension shall be parabolic (taper leaf) spring type, with three-(3) leaves 20,000 pounds capacity. The leaves shall be a minimum of 4" wide x 54" long (flat), with grease fittings for lubrication installed in the spring pins. Axle stops with energy absorbing jounce bumpers shall be supplied on the spring top pad. Double acting Koni shock absorbers shall be installed.

✓

**REAR SUSPENSION**

Rear Suspension shall be a Hendrickson FMX 272 EX, air ride with a ground rating of 27,000 pounds.

The suspension shall have the following features.

Heavy-duty shock absorbers to protect air springs from overextension

Heavy-duty torque rods and bushings

Premium, heavy duty rubber bushings that require no lubrication

Integrated stabilizer design for greater stability

Low spring rate air springs for excellent ride quality

Dual height control valves to maintain level vehicle from side to side

✓

**ELECTRONIC STABILITY CONTROL**

A vehicle control system shall be provided as an integral part of the ABS brake system from Meritor Wabco.

✓

The system shall monitor and update the lateral acceleration (cornering) of the vehicle and compare it to a critical threshold where a side roll event may occur. If the critical threshold is met, the vehicle control system shall automatically reduce engine RPM, engage the engine retarder (if equipped), and selectively apply brakes to the individual wheel ends of the front and rear axles to reduce the possibility of a side roll event.

The system shall monitor directional stability through an electronic lateral accelerometer, steer angle sensor and yaw rate sensor. If spinout or drift out is detected, the vehicle control system shall selectively apply brakes to the individual wheel ends of the front and rear axles to assist in bringing the vehicle back to its intended direction. The operator shall continue to provide steering input in the desired direction as the system compensates.

**ANTI-LOCK BRAKE SYSTEM**

The vehicle shall be equipped with a Wabco 4S4M, anti-lock braking system. The ABS shall provide a four (4) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology shall control the anti-lock braking system.

✓

Each wheel shall be monitored by the system. When any wheel begins to lockup, a signal shall be sent to the control unit. This control unit shall then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

Specifications	Bidder Complies	
	Yes	No
<p><b><u>AUTOMATIC TRACTION CONTROL</u></b>  An anti-slip feature shall be included with the ABS. The Automatic Traction Control shall be used for traction in poor road and weather conditions. The Automatic Traction Control shall act as an electronic differential lock that shall not allow a driving wheel to spin, thereby supplying traction at all times. The ABS electronic control unit (ECU) shall work with the engine ECU, sharing information concerning wheel slip. Engine ECU shall use information to control engine speed, allowing only as much throttle application as required for the available traction, regardless of how much the driver is asking for. An "Off Road Traction" switch shall be provided on the instrument panel. Activation of the switch shall allow additional tire slip to let the truck climb out and get on top of deep snow or mud.</p>	✓	
<p><b><u>ELECTRONIC STABILITY CONTROL SYSTEM, ANTI-LOCK BRAKE SYSTEM &amp; AUTOMATIC TRACTION CONTROL WARRANTY</u></b>  The Wabco ABS/ATC system shall come with a <b>three (3) year or 300,000 mile parts and labor</b> warranty provided by Meritor Wabco Vehicle Control Systems.</p>	✓	
<p><b><u>BRAKES</u></b>  The service brake system shall be full air type.</p> <p>The front brakes shall be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.</p> <p>The rear brakes shall be Meritor™ 16.50" x 7.00" cam operated outboard drums with automatic slack adjusters.</p> <p>The brake system shall be certified, third party inspected, for improved stopping distance.</p>		✓
<p><b><u>ELECTROMAGNETIC BRAKE</u></b>  A Telma electromagnetic, driveline retarder shall be furnished and mounted within the driveline system. This system shall automatically activate in four-stages to achieve 100% capacity when the brake pedal is applied. The system shall have an on/off switch and a four-stage indicator to show retarder activation stages mounted on the dash.</p> <p>The magnetic retarder control shall be through a switch on the dash, with activation of the retarder in conjunction with the brake pedal. The application shall be in progressive stages, (1/4, 1/2, 3/4 &amp; 100 percent).</p> <p>System shall disengage with the activation of ABS.</p>	✓	
<p><b><u>JAKE BRAKE (Optional)</u></b>  A Jacobs engine brake is to be installed with the control located on the instrument panel with in easy reach of the driver.</p> <p>The brake shall be installed in such a manner that when the vehicle is slowing the vehicle brake lights are activated.</p> <p>The ABS system shall automatically disengage the auxiliary braking device, when required.</p>	✓	

# Specifications

## Bidder Complies

Yes No

### AIR COMPRESSOR, BRAKE SYSTEM

The air compressor shall be a Cummins/Wabco with 18.7 cubic feet per minute output or sized to the demands of the air primer.

✓

### BRAKE SYSTEM

The brake system shall include:

Bendix-Westinghouse dual brake treadle valve with vinyl covered foot surface

Total air system capacity of 4,362 cubic inch

Two (2) air pressure gauges with red warning light and audible alarm that activates when air pressure falls below 60 psi

MGM spring set parking brake system

Parking brake operated by a Bendix-Westinghouse PP-1 control valve

A parking "brake on" indicator light on instrument panel

Bendix-Westinghouse SR-1 valve, in conjunction with a double check valve system, shall be provided with an automatic spring brake application at 40 psi

The air tanks shall be primed and painted. To reduce the effects of corrosion, the air tank shall be mounted with stainless steel brackets. No Exceptions.

A heated automatic moisture ejector on air dryer

Wabco System Saver 1200 air dryer with spin-on coalescing filter cartridge

✓

### BRAKE LINES

Color-coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis.

✓

### AIR INLET

One (1) air inlet with male coupling shall be provided. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall be located in the driver side lower step well of cab. A check valve shall be provided to prevent reverse flow of air. The inlet shall discharge into the "wet" tank of the brake system.

A mating female coupling shall also be provided with the loose equipment.

✓

### AIR OUTLET

One (1) female coupling shall be provided adjacent to the Air Inlet. Air supply shall be dried and filtered.

✓

### AIR TANK, ADDITIONAL

An additional air tank with 1454 cubic inch displacement shall be provided to increase the capacity of the air system. This tank shall be dedicated for air horn and air primer use.

✓



# Specifications

## Bidder Complies

Yes No

### ENGINE AIR INTAKE

A dry-type air cleaner, suitable for the engine being proposed, shall be installed and mounted as to provide easy access for serviceability.

An air restriction indicator shall be mounted in the dash panel to provide a warning indication of a clogged air filter.

The air intake with ember separator shall be provided and be easily accessible through a hinged stainless steel grille, with a flush quarter turn latch.

### EXHAUST SYSTEM

The exhaust system shall be stainless steel from the turbo to the inlet of the selective catalytic reduction (SCR) device, and shall be 4.00" in diameter. The exhaust system shall include a diesel particulate filter (DPF) and an SCR device to meet current EPA standards. An insulation wrap shall be provided on all exhaust pipe between the turbo and SCR to minimize the transfer of heat to the cab. The exhaust shall terminate horizontally ahead of the passenger side rear wheels. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust at the exit. Heat deflector shields shall be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

### EXHAUST MODIFICATION

The exhaust pipe shall be brought out from under the body at a 90 degree angle from the truck. The tail pipe shall extend a minimum of 2.00" past the body, adaptable for the Plymovent system. The diameter of the pipe shall be 6.00". There shall be a clearance of 4.00" completely around the pipe once past the side of the body. A stop shall be provided on the tail pipe that shall prevent the nozzle from sliding too far on.

### DIESEL EXHAUST FLUID TANK

A minimum 4.2 gallon diesel exhaust fluid (DEF) tank shall be provided and mounted in the driver's side rear cab step area. The tank shall be constructed of stainless steel.

A .50" drain plug shall be provided in a low point of the tank for drainage.

The tank shall meet the engine manufacturer's requirement for 10% expansion space in the event of tank freezing.

The tank shall include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

### COOLANT LINES

Silicone hoses shall be used for all engine/heater coolant lines installed by the chassis manufacturer.

Hose clamps shall be stainless steel "constant torque type" to prevent coolant leakage. They shall react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose.

# Specifications

Bidder  
Complies

Yes No

## RADIATOR

The radiator and the complete cooling system shall meet or exceed NFPA and engine manufacturer cooling system standards.

For maximum cooling performance, the radiator core shall be made of copper fins having a serpentine design, soldered to brass tubes. The tubes shall be welded to brass headers using the patented "Beta-Weld" process for increased strength, longer road life and solder-bloom corrosion protection.. Steel supply and return tanks shall be bolted to the core headers and steel side channels to complete the radiator assembly. The radiator shall be compatible with commercial antifreeze solutions.

The radiator shall be mounted in such a manner as to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator assembly shall be isolated from the chassis frame rails with rubber isolators.

The radiator shall include an integral de-aeration tank, with a remote-mounted overflow tank. For visual coolant level inspection, the radiator shall have a built-in sight glass. The radiator shall be equipped with a 15 psi pressure relief cap.

A drain port shall be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

A heavy-duty fan shall draw in fresh, cool air through the radiator. Shields or baffles shall be provided to prevent recirculation of hot air to the inlet side of the radiator.

## CLUTCH FAN

A Horton fan clutch shall be provided. The fan clutch shall be automatic when the pump transmission is in "Road" position, and fully engaged when parking brake is set.

## ACCESS TO ENGINE DIPSTICKS

For access to the engine oil and transmission fluid dipsticks, there shall be a door on the engine tunnel, inside the crew cab.

The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling. An additional tube shall be provided for filling the engine oil.

The door shall have a rubber seal for thermal and acoustic insulation. One (1) flush latch shall be provided on the access door.

## FUEL TANK

A minimum 65-gallon fuel tank shall be provided and mounted at rear of chassis. The tank shall be constructed of stainless steel. It shall be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank shall be mounted with stainless steel straps. No Exceptions.

A drain plug shall be provided in a low point of the tank for drainage.

A fill inlet shall be located on the driver's side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Diesel Fuel Only".

A .50" diameter vent shall be provided running from top of tank to just below fuel fill inlet.



Specifications	Bidder Complies	
	Yes	No
The tank shall meet all FHWA 393.67 requirements including a fill capacity of 95% of tank volume.		
All fuel lines shall be provided as recommended by the engine manufacturer.		
The fuel tank pickup tube shall be accessible without having to remove the tank		
<b><u>FUEL SEPARATOR</u></b>	✓	
The engine shall be equipped with a Racor in-line spin-on fuel and water separator in addition to the engine fuel filters.		
An LED warning light and buzzer shall be provided in the cab to indicate water in the fuel system		
<b><u>FUEL COOLER</u></b>	✓	
An air to fuel cooler shall be installed in the engine fuel return line.		
<b><u>TRANSMISSION</u></b>	✓	
An Allison electronic automatic transmission shall be provided. The transmission shall be the most current generational design by Allison.		
The transmission shall be of heavy duty design.		
The transmission shall be rated to handle the weight of the apparatus when fully loaded.		
The transmission shall be rated to handle the maximum rated torque output as produced by the chassis engine in all power ranges.		
A transmission temperature gauge shall be installed on the cab instrument panel.		
<b><u>TRANSMISSION SHIFTER</u></b>	✓	
A six (6)-speed push button shift module with the 4 + 2 "Mode" button shall be mounted to right of driver on console. Shift position indicator shall be indirectly lit for after dark operation.		
The Allison shifter shall be a "double-digit" display model.		
The transmission ratio shall be 1st - 3.49 to 1.00, 2nd - 1.86 to 1.00, 3rd - 1.41 to 1.00, 4th - 1.00 to 1.00, 5th - 0.75 to 1.00, 6th - 0.65 to 1.00, R - 5.03 to 1.00.		
<b><u>TRANSMISSION COOLER</u></b>	✓	
A transmission oil cooler shall be provided in the lower tank of the radiator. Purchaser would prefer external mounted transmission cooler.		
<b><u>TRANSMISSION WARRANTY</u></b>	✓	
The transmission shall have a <b>five (5) year/unlimited mileage</b> warranty covering 100% parts and labor.		

Specifications	Bidder Complies	
	Yes	No
<p><b><u>DRIVELINE</u></b>            Drivelines shall be a heavy-duty metal tube and be equipped with Spicer 1710 universal joints.</p> <p>The shafts shall be dynamically balanced before installation.</p> <p>A splined slip joint shall be provided in each driveshaft, slip joint shall be coated with Glide coat or equivalent.</p>	✓	
<p><b><u>STEERING</u></b>            The apparatus shall be equipped with an integral power steering unit which is rated to steer the front axle capacity.</p> <p>The system will operate mechanically should the hydraulic system fail.</p> <p>The steering wheel shall be capable of tilting and telescoping.</p>	✓	
<p><b><u>POWER STEERING COOLER</u></b>            A power steering cooler shall be provided. Power steering oil temperature shall not exceed 225°F with an ambient air temperature of 115°F under any operating conditions.</p>	✓	✓
<p><b><u>STEERING WARRANTY</u></b>            The steering gear shall have a three (3) year parts and labor warranty.</p>		✓
<p><b><u>TIRES</u></b>            The front tires shall be Michelin radials sized for the front axle load, with all position XZY tread.</p> <p>The tires shall be mounted on Alcoa polished aluminum disc-type wheels</p> <p>Rear tires shall be four (4) Michelin sized for the rear axle load with XZT-2 all position tread.</p> <p>Tires shall be mounted on Alcoa polished aluminum disc wheels with a ten (10)-stud 11.25" bolt circle.</p>	✓	
<p><b><u>TIRE BALANCE</u></b>            All tires shall be balanced with Counteract balancing beads. The beads shall be inserted into the tire and eliminate the need for wheel weights.</p>	✓	
<p><b><u>LUG NUT COVERS</u></b>            Chrome plated lug nut covers shall be installed on all lug nuts.</p>	✓	
<p><b><u>HUB COVERS (front)</u></b>            Stainless steel hub covers shall be provided on the front axle. An oil level viewing window shall be provided.</p>	✓	
<p><b><u>HUB COVERS (rear)</u></b>            A pair of stainless steel high hat hub covers shall be provided on rear axle hubs.</p>	✓	

Specifications	Bidder Complies	
	Yes	No
<p><b><u>MUD FLAPS</u></b> Mud flaps shall be installed behind the front and rear wheels of the apparatus.</p>	✓	
<p><b><u>TIRE CHAINS, WIRING ONLY</u></b> A locking style switch shall be installed on the instrument panel for activation of future installed tire chains. All wiring shall be provided from power distribution to switch and from the switch to the rear axle.</p>	✓	
<p><b><u>TIRE PRESSURE MANAGEMENT</u></b> There shall be a LED tire alert pressure management system provided that shall monitor each tire's pressure. A chrome plated brass sensor shall be provided on the valve stem of each tire for a total of six (6) tires.</p> <p>The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor shall activate an integral battery operated LED when the pressure of that tire drops 8 psi.</p> <p>Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start blinking.</p>	✓	
<p><b><u>CAB</u></b> The cab shall be designed specifically for the fire service and shall be manufactured by the chassis builder.</p> <p>Construction of the cab shall consist of stainless steel or aluminum.</p> <p>The cab shall be built by the apparatus manufacturer in a facility located on the manufacturer's premises (no exceptions).</p> <p>The cab shall be a minimum of 100" wide</p> <p>The crew cab section shall have a 10.00" raised roof. The overall height listed shall be calculated based on a truck configuration with the lowest suspension weight ratings, the smallest diameter tires for the suspension, no water weight, no loose equipment weight and no personnel weight.</p> <p>The raised roof section shall have a shelf that extends from the distance between drivers rearward facing seat to officers rearward facing seat that shall be determined at the preconstruction meeting. Cargo netting shall be provided to secure items in the compartment.</p> <p>The cab shall be a full tilt cab style. The engine shall be easily accessible and capable of being removed with the cab tilted. The cab shall be capable of tilting 45 degrees and 90 degrees with crane assist.</p> <p>The cab shall have a 3-point rubber mounting and shall be tilted by a hydraulic pump connected to two (2) cab lift cylinders. The cab shall then be locked down by a 2-point automatic locking mechanism that actuates after the cab has been lowered.</p>		✓
<p><b><u>INTERIOR CAB INSULATION</u></b> The cab shall include minimum 1.50" insulation in the ceiling and side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.</p>	✓	

Specifications	Bidder Complies	
	Yes	No
<p><b><u>ENGINE TUNNEL</u></b>  The engine tunnel shall have Line-X or a similar material applied. This is to provide high resistance to abrasion and tearing. If a material similar to Line-X is used it must be solvent free and free of VOC or CFC hazards.</p> <p>The coating should be as smooth as possible so as to not cause abrasions to personnel.</p> <p>The engine hood shall be insulated for protection from heat and sound. The noise insulation keeps the DBA level within the limits stated in the current NFPA series 1900 pamphlet.</p> <p>A solid .25" painted aluminum plate shall be affixed to the top of the engine tunnel with 1.25" spacers to allow for mounting of Mobile Data Terminals and other such equipment without drilling through the top of the engine hood.</p>	✓	
<p><b><u>FENDER LINERS</u></b>  Full circular inner fender liners in the wheel wells shall be provided.</p>	✓	
<p><b><u>REAR WALL COVERING</u></b>  Bright aluminum tread plate shall be overlaid on the outside rear wall of the crew cab except for areas that are not typically visible when the cab is lowered.</p>	✓	
<p><b><u>WINDSHIELD</u></b>  The cab windshield shall have bright trim inserts in the rubber molding holding the glass in place. Economical windshield replacement glass shall be readily available from local auto glass suppliers. All cab glass shall be tinted.</p>	✓	
<p><b><u>AUXILIARY FANS</u></b>  Two auxiliary fans for providing additional windshield defogging capability shall be provided, one on the passenger side and one on the driver side. Each fan shall be controlled by a switch integral to the fan. The auxiliary fans shall not interfere with the operation of the sun visors, and shall not be placed so as to interfere with the driver's field of vision through the windshield.</p>	✓	
<p><b><u>SUN VISORS</u></b>  Two (2) smoked Lexan sun visors shall be provided. The sun visors shall be located above the windshield with one (1) mounted on each side of the cab.</p>	✓	
<p><b><u>WINDSHIELD WIPERS</u></b>  Two (2) electric windshield wipers with washer shall be provided that meet FMVSS and SAE requirements.</p> <p>The washer reservoir shall be able to be filled without raising the cab.</p>	✓	
<p><b><u>WINDSHIELD WIPER DURABILITY CERTIFICATION</u></b>  Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers shall survive a 3 million cycle durability test in accordance with section 6.2 of SAE</p>	✓	

# Specifications

## Bidder Complies

Yes No

J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles*. The bidder shall certify that the wiper system design has been tested and that the wiper system has met these criteria.

### GLOVE BOX

A glove box with a drop-down door shall be installed in the front dash panel in front of the officer's position.

Provision for the installation of a mobile data computer shall be provided above the glove box.

### CAB STEPS

The forward cab and crew cab access steps shall be a full size two-step design to provide largest possible stepping surfaces for safe ingress and egress.

### CAB INTEGRITY CERTIFICATION

The fire apparatus manufacturer shall provide a cab crash test certification with this proposal. The certification states that the cab must meet or exceed the requirements below:

European Occupant Protection Standard ECE Regulation No.29

SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks

SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks

### Roof Crush

The cab shall be subjected to a roof crush force of 100,000 lbs.

### Side Impact

The cab shall be subjected to dynamic preload with a 13,275 lb moving barrier is slammed into the side of the cab at 5.5 mph, striking with an impact of 13,000 ft-lbs of energy. This test shall closely represent the forces a cab shall see in a rollover incident.

### Frontal Impact

The cab shall withstand a frontal force produced from 65,200 ft-lbs of energy using a swing-bob type platen.

The same cab shall withstand all tests without any measurable intrusion into the survival space of the occupant area.

There shall be no exception to any portion of the cab integrity certification. Nonconformance shall lead to immediate rejection of bid.

### Flooring

✓

✓

✓

# Specifications

## Bidder Complies

Yes No

The cab and crew cab floor areas shall be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler. A similar material shall be allowed.

The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has .25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels

### CAB DOORS

All of the personnel cab doors shall be "barrier style".

All cab and crew cab entry doors shall contain a conventional roll down window.

A flush mounted, chrome plated paddle type door handle shall be provided on the exterior of each cab door. Each door shall also be provided with an interior flush paddle handle.

The cab doors shall be provided with interior (rotary knob) locks as required by FMVSS 206. All cab doors shall be able to be locked and unlocked from the interior only. Design shall be approved by the Fire Department.

A full length, heavy duty, stainless steel, piano-type hinge shall be provided on all cab doors. There shall be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

Full height polished stainless steel scuff plates shall be installed on the inside of all cab doors. Cab door panels shall be removable without disconnecting door and window mechanisms.

A bright stainless steel grab rail shall be installed on the rear doors at the height where the window stops it travel when open.

Flush mounted red LED warning lights shall be installed on the inside of the cab doors to warn approaching traffic that the door is open.

Red and white reflective stripe shall be installed on the inside of each cab door to warn approaching traffic. The stripe shall be a minimum of 96 sq. in. as per NFPA 1901.

Door latches shall be accessible without removing the door panel

### STORAGE COMPARTMENT

There shall be a compartment provided on each side of the cab, below the cab floor, to the rear of the crew cab access doors.

The compartment on officer side shall be capable of carrying one 2.5 gallon water can.

### DOOR JAM SCUFF PLATES

All cab door jambs shall be furnished with a stainless steel scuff plate, mounted on the striker side of the jam.

# Specifications

## Bidder Complies

Yes No

### FENDER CROWNS

The cab wheel well openings shall be trimmed with replaceable, bolt-in, molded black rubber fenderettes. The fenderettes shall be secured to the cab with stainless steel threaded fasteners along the internal perimeter of the wheel well. Rubber welting shall be installed between the fenderettes and the cab side panel.

### MAP STORAGE COMPARTMENT

Mounted in the cab, over the engine cover shall be an enclosed Map storage cabinet constructed of 1/8" smooth aluminum plate and painted to match the cab interior.

**The exact design and location of the map storage cabinet shall be discussed at the pre-construction meeting.**

### HAND HELD LIGHT

There shall be two (2) hand lights provided, Streamlight Vulcan lights with the orange thermoplastic body and a 20-watt spot bulb. The two (2) hand lights shall be mounted rear crew cab area. **The exact location of the hand lights shall be discussed at the pre-construction meeting.**

### CAB LIFT

A hydraulic cab lift system shall be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.

Lift controls shall be on a panel located on the pump panel or front area of the body in a convenient location.

Cab shall be locked down by a two (2)-point automatic spring-loaded hook mechanism that actuates after the cab has been lowered.

The hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the control is located in the tilt position.

For increased safety, an automatic mechanical stay arm shall be provided that will automatically fall into place on the driver side between the chassis and cab frame when cab is in the raised position. This device shall be manually stowed to its original position before the cab can be lowered.

A manual override shall be provided to lift the cab in the event of an electric failure.

### INTERLOCK CAB LIFT TO PARKING BRAKE

The cab lift system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the ignition switch is in the on position, if the parking brake is released the cab tilt mechanism shall be disabled. The cab lift control connection shall be moisture proof.

### MIRRORS

Two (2) Lang Mekra 300 Aero Series Technology Mirrors shall be mounted on each side of the front cab door. Mirror shall be chrome plated, heated, and with four way power system

# Specifications

## Bidder Complies

Yes No

remote control that is convenient to the driver. The main flat mirror shall provide 120 inches of viewable surface area.

There shall be separate heads for the driver's and officer's side housing convex glass and provide 56 square inches of viewing surface.

### EYE BALL MIRROR

An eight (8) inch "eyeball" mirror (K-10 P/N 512115-50S) will be installed on cab officer's side top corner that will allow the driver to have visual access of front bumper from the seated position.

### BUMPER

A one (1) piece bumper shall be provided. The bumper shall be a minimum of 10.00" high with a 1.50" top and bottom flange, and shall extend 19.00" from the face of the cab. The bumper shall have 45 degree corners and side plates. The bumper shall be metal finished and painted job color. The top flange shall have a coating of Black Line-X or other similar material.

To provide adequate support strength, the bumper shall be mounted directly to the front of the C channel frame. The frame shall be a bolted modular extension frame constructed of 50,000 psi tensile steel.

### LIFT AND TOW MOUNTS

Mounted to the frame extension shall be lift and tow mounts. The lift and tow mounts shall be designed and positioned to adapt to certain tow truck lift systems.

The lift and tow mounts with eyes shall be painted the same color as the frame.

### GRAVEL PAN

A gravel pan, constructed of bright aluminum tread plate, shall be furnished between the bumper and the cab face. The pan shall be properly supported from the underside to prevent flexing and vibration.

### HOSE TRAY (left / drivers side)

A hose tray, constructed of aluminum, shall be placed in the left / drivers side of the bumper extension.

The tray shall have a capacity of 100' of 1.75" double jacket cotton-polyester hose.

Black rubber grating shall be provided at the bottom of the tray. Drain holes are also to be provided.

The edge of the tray openings shall be angled to prevent hose couplings from snagging on the tray opening.

### HOSE TRAY (center)

A hose tray, constructed of aluminum, shall be placed in the center of the extended bumper.

The tray shall have a capacity of 20' of 5.00" double jacket cotton-polyester hose. The tray shall also hold couplings and other small equipment (spanners, hydrant wrenches)



# Specifications

## Bidder Complies

Yes No

flip up headrest and Secure/ALL Bracket designed to accommodate a Scott 1,800 liter @4,500 psi cylinder. A removable padded cover shall be supplied over SCBA cavity.

✓

### **FORWARD FACING CENTER SEATS**

There shall be two (2) forward facing seats provided at the center position in the crew cab. The seats shall be Bostrom model Tanker 450 non-suspension seats. Seat backs shall include spring loaded flip up head rest and Secure/All brackets designed to accommodate a Scott 1,800 liter @4,500 psi cylinder. Removable covers shall be supplied over SCBA cavities.

### **SEAT UPHOLSTERY**

The seats shall be covered with Turnout TUF material.

✓

A department provided patch shall be fixed to center head rest on all seats.

### **SEAT BELTS**

All seats shall be equipped with a three-point seat belt.

✓

All seating positions in the cab and crew cab shall have **red** seat belts, equipped with the IMMI ReadyReach system, and provided with automatic retractor that is positioned to prevent the seatbelt from being damaged from being caught in latch/nader pin mechanism

### **SHOULDER HARNESS HEIGHT ADJUSTMENT**

All seating positions furnished with three (3)-point shoulder type seat belts shall include a height adjustment. This adjustment shall optimize the belts effectiveness and comfort for the seated firefighter.

✓

### **SEAT MOUNTING STRENGTH**

Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design shall be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder shall certify that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

✓

### **SEAT BELT MONITORING SYSTEM**

A seat belt monitoring system (SBMS) shall be provided. The SBMS shall be capable of monitoring and indicating the status of each seat position with a green or red LED indicator as follows:

✓

#### Driver Seat:

Seat Occupied    Buckled    Green

No Occupant    Unbuckled    Not Illuminated

The driver seat shall not include an occupant sensor. The display indication for the driver seat shall illuminate red any time the parking brake is released and the driver seat belt is not buckled.

#### All Other Seats:

# Specifications

Bidder  
Complies

Yes No

- Seat Occupied Buckled Green
- Seat Occupied Unbuckled Red
- No Occupant Buckled Red
- No Occupant Unbuckled Not Illuminated

Alarm:

The SBMS shall include an audible alarm that shall be activated when a red illumination condition exists and the parking brake is released, or a red illumination condition exists and the transmission is not in park.

**PPE COMPARTMENT INSIDE/OUTSIDE**

A compartment shall be located on left side of cab between front and rear doors.

The compartment shall have a vertical hinged door that will provide maximum opening.

The door latches shall match all other latches used on apparatus doors. The compartment shall have 25" interior height by approximately 24" deep.

This compartment shall hold 1 Scott AirPak 50 model SCBA in a bracket and 1 complete set of turn out gear.

The compartment shall be constructed of smooth aluminum, and painted to match the cab interior.

**This storage compartment shall be compliant per NFPA standard for automotive fire apparatus.**

**UTILITY COMPARTMENT**

A utility compartment shall be provided under the officer's seat. A drop-down door with a chrome plated lift and turn latch shall be provided for access. The compartment shall be constructed of smooth aluminum and painted with gray vinyl texture paint.

**EMS COMPARTMENT**

A Compartment shall be furnished on the rear wall driver side outboard located between the seat and the door.

The compartment shall not extend in front of the door impeding egress from the cab.

It will be made of smooth aluminum and shall have a removable cargo net across the front of the opening.

The compartment shall be provided with three aluminum shelves. Each shelf will be infinitely adjustable by means of a threaded fastener which slides in a strut style track.

**PAC TRAC Rear Interior Wall**

Pac Trac Panels (2) to be placed outboard of the forward facing jump seat on the officer side



# Specifications

## Bidder Complies

Yes No

on the rear wall.

### HELMET HOLDER

There shall be six (6) Zico UHH-1 helmet holder brackets provided in the cab. The brackets shall provide quick access and secure storage of the helmets. The bracket locations shall be determined at time of final inspection.

### FRONTAL IMPACT PROTECTION

The cab shall be equipped with a frontal impact protection system consisting of a minimum one (1) air bag in front of the driver, one (1) knee bolster air bag in front of the forward passenger seating position. The air bags shall be designed specifically for the cab configurations.

The driver side air bag shall be mounted in the steering wheel and shall be designed to protect the head and upper torso of the occupant, when used in combination with the 3-point seat belt, in the event of a frontal or oblique impact.

The passenger side knee bolster air bag shall be mounted in the modesty panel below the dash panel and shall be designed to protect the legs of the occupant, when used in combination with the 3-point seat belt, in the event of a frontal or oblique impact.

In the event of a frontal or oblique impact, the system shall deploy the front driver and passenger side air bags, and activate the following components integrated into the driver and front passenger cab seats:

Suspension seats shall be retracted to lowest travel position using a seat repositioning system.

Seat belts shall be pre-tensioned to firmly hold the occupants in place.

### SIDE ROLL PROTECTION PACKAGE

An advanced side roll protection system shall be provided. The package shall be a supplemental restraint system designed for use with the seat belts. The system shall be designed for a fast or slow 90-degree roll in which the vehicle comes to rest on its side.

The supplemental restraint system shall include:

Air cushions which are designed to protect the head and torso

Suspension seats which will retract to the lowest travel position

Seat belts which are pre-tensioned to firmly hold the occupant in place

A fault-indicating light shall be provided on the vehicle's instrument panel.

### ENGINE COMPARTMENT LIGHT

An engine compartment light shall be installed under the cab, of which the switch is an integral part. Light shall be a sealed water proof LED to prevent moisture retention.

### CAB INTERIOR LIGHTING

Auxiliary lights shall be provided in the cab and consisting of:

✓

✓

✓

✓

✓

# Specifications

## Bidder Complies

Yes No

Four (4) Weldon, Model 8081, red/clear dome light.

Clear forward light controlled by the door switch and the lens switch.

Red rearward light controlled by the lens switch.

One (1) Adjustable Map Light: Sunnex model SL9-200B10L will be mounted in a position on the passenger side to allow reading of maps.

Final position of map light and interior cab lights to be determined at preconstruction meeting

### STEP LIGHTS

There shall be four (4) Ri-tar, Model M27HW2, LED, step lights provided. The lights shall be installed at each cab and crew cab door, one (1) per step, in the driver side front doorstep, driver side crew cab doorstep, passenger side front doorstep and passenger side crew cab doorstep. These lights shall be installed in such a way to provide a well-lit step while being in a protected position from damage.

The lights shall be activated when the adjacent door is opened.

### CLIMATE CONTROL SYSTEM

A high-performance, customized air conditioning system shall be furnished inside the cab and crew cab.

The air conditioning system shall be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 75 degrees Fahrenheit at 50% relative humidity within 30 minutes. The cooling performance test shall be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours.

The evaporator unit shall be all metal design. It should be painted to match the interior of the cab.

The A/C shall drain manually without the use of pumps (No Exceptions). Draining condensation into the interior of the cab or onto the occupants, headliner, roof or windshield will not be acceptable under any conditions. Detailed description of how builder proposes to drain A/C is required.

The air conditioner shall be provided with adjustable air outlets strategically located to direct air flow to the driver, officer and crew cab area.

All hose used shall be class 1 type to reduce moisture ingress into the air conditioning system.

The air conditioner refrigerant shall be R-134A and shall be installed by a certified technician.

The air conditioner shall be controlled by a single electronic control panel. For ease of operation, the control panel shall include variable adjustment for temperature and fan control and be conveniently located on the dash in clear view of the driver. The control panel shall include robust knobs for both fan speed and temperature adjustment.

### CAB/CREW CAB HEATER

# Specifications

Bidder  
Complies

Yes No

Two (2) auxiliary heaters with a minimum of 32,000 BTU/hr each shall be provided in the cab. The heaters shall have a three (3) speed blower, and temperature controls accessible to the driver and officer.

Auxiliary blower and control in place operable by and to service cab crew area (rear).

The heaters shall be mounted, one (1) within each rear facing seat riser.

### CAB HEATER CERTIFICATION

Adequate cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters shall warm the cab 75 F from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder shall certify that a substantially similar cab has been tested and has met these criteria.

### CAB DEFROSTER

There shall be a 41,000 BTU/hr defroster in the cab located under the engine tunnel.

The defroster ventilation shall be built into the design of the cab dash instrument panel and shall be easily removable for maintenance.

The defroster shall have a three (3) speed blower, and temperature controls accessible to the driver and officer.

The defroster ducts shall be designed to provide maximum defrosting capabilities for the front cab windows

### CAB DEFROSTER CERTIFICATION

Visibility during inclement weather is essential to safe apparatus performance. The defroster system shall clear the required windshield zones in accordance with SAE J381 *Windshield Defrosting Systems Test Procedure and Performance Requirements - Trucks, Buses, and Multipurpose Vehicles*. The bidder shall certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

### CAB INSTRUMENTATION

The cab instrument panel shall include gauges, telltale indicator lamps, control switches, alarms, and a diagnostic panel. The function of the instrument panel controls and switches shall be identified by a label adjacent to each item. Actuation of the headlight switch shall illuminate the labels in low light conditions. Telltale indicator lamps shall not be illuminated unless necessary. The cab instruments and controls shall be conveniently located within the forward cab section, forward of the driver. The gauge assembly and switch panels are designed to be removable for ease of service and low cost of ownership.

A "Do Not Move Apparatus" red flashing indicator shall be located in the driver's compartment to indicate that any passenger door, compartment door or hose bed covers (if equipped) not in the closed or stowed position. The light shall be activated only when the parking brake is released.

### MULTIPLEX ELECTRICAL SYSTEM

# Specifications

Bidder  
Complies

Yes No

A multiplexed electrical system shall be provided with a LCD screen on the dash. The builder's proposal will include a detailed description of the multiplexed electrical system.

Multiplex nodes shall not be located on the bottom of the apparatus where they are exposed to road spray and grime. They shall be easily accessible for ease of maintenance.

## GAUGES

The gauge panel shall include the following ten (10) black faced gauges with black bezels to monitor vehicle performance:

### Voltmeter Gauge (volts):

Low volts (11.8 VDC)

Amber telltale light on indicator light display with steady tone alarm

High volts (15.5 VDC)

Amber telltale light on indicator light display with steady tone alarm

### Engine Tachometer (RPM)

### Speedometer MPH

### Fuel Level Gauge

Low fuel (1/8 full)

Amber telltale light on indicator light display with steady tone alarm

### Engine Oil Pressure Gauge (PSI):

Low oil pressure to activate engine warning lights and alarms

Red telltale light on indicator light display with steady tone alarm

### Front Air Pressure Gauges (PSI):

Low air pressure to activate warning lights and alarm

Red telltale light on indicator light display with steady tone alarm

### Rear Air Pressure Gauges (PSI):

Low air pressure to activate warning lights and alarm

Red telltale light on indicator light display with steady tone alarm

### Transmission Oil Temperature Gauge (Fahrenheit):

High transmission oil temperature activates warning lights and alarm

Amber telltale light on indicator light display with steady tone alarm

### Engine Coolant Temperature Gauge (Fahrenheit):



# Specifications

## Bidder Complies

Yes

No

High engine temperature activates an engine warning light and alarms

Red telltale light on indicator light display with steady tone alarm

### Diesel Exhaust Fluid Level Gauge

Low fluid (1/8 full)

Amber telltale light on indicator light display

### INDICATOR LAMPS

To promote safety, the following telltale indicator lamps shall be located on the instrument panel in clear view of the driver. The indicator lamps shall be "dead-front" design that is only visible when active. The colored indicator lights shall have descriptive text or symbols.

### The following amber telltale lamps shall be present:

Low coolant

Trac cntl (traction control) (where applicable)

Check engine

Check Trans (check transmission)

Air rest (air restriction)

Driver door open

Passenger door open

DPF (engine diesel particulate filter regeneration)

HET (engine high exhaust temperature) (where applicable)

ABS (antilock brake system)

MIL (engine emissions system malfunction indicator lamp) (where applicable)

Regen inhibit (engine emissions regeneration inhibit) (where applicable)

Trans temp (transmission temperature)

Side roll fault (where applicable)

Front air bag fault (where applicable)

DEF (low diesel exhaust fluid level)

### The following red telltale lamps shall be present:

Parking brake

Stop engine

### The following green telltale lamps shall be present:



# Specifications

Bidder  
Complies

Yes No

Left turn

Right turn

Battery on

Ignition

Aux brake (auxiliary brake engaged) (where applicable)

The following blue telltale lamps shall be present:

High beam

### ALARMS

Audible steady tone warning alarm: A steady audible tone alarm shall be provided whenever a warning message is present.

An override switch to silence an audible alarm in case of malfunction shall be provided.

### INDICATOR LAMP AND ALARM PROVE-OUT

A system shall be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms shall perform prove-out when the ignition switch is held in the up position for three (3) to five (5) seconds to ensure proper performance.

### CONTROL SWITCHES

For ease of use, the following controls shall be provided immediately adjacent to the cab instrument panel within easy reach of the driver. All switches shall have backlit labels for low light applications.

Headlight/Parking light switch: A three (3)-position maintained rocker switch shall be provided. The first switch position shall deactivate all parking and headlights. The second switch position shall activate the parking lights. The third switch shall activate the headlights.

Panel backlighting intensity control switch: A variable voltage control switch shall be provided. The switch moved in the up direction increases the panel backlighting intensity to a maximum and the switch moved in a down direction decreases the panel backlighting intensity to a minimum level.

Ignition switch: A three (3)-position maintained/momentary rocker switch shall be provided. The first switch position shall deactivate vehicle ignition. The second switch position shall activate vehicle ignition. The third momentary position shall perform prove-out on the telltale indicators and alarms when the ignition switch is held in the up position for three (3) to five (5) seconds to ensure proper performance. A green indicator lamp is activated with vehicle ignition.

Engine start switch: A two (2)-position momentary rocker switch shall be provided. The first switch position is the default switch position. The second switch position shall activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.

✓

✓

✓

# Specifications

## Bidder Complies

Yes

No

Hazard switch shall be incorporated into the steering column.

Heater and defroster controls.

Turn signal arm: A self-canceling turn signal with high beam headlight controls.

Windshield wiper control shall have high, low, and intermittent modes.

Parking brake control: An air actuated push/pull park brake control.

Chassis horn control: Activation of the chassis horn control shall be provided through the center of the steering wheel.

### CUSTOM SWITCH PANELS

The design of cab instrumentation shall allow for emergency lighting and other switches to be placed within easy reach of the operator, thus improving safety. There shall be positions for up to three (3) switch panels in the overhead console on the driver's side, up to five (5) switch panels in the engine tunnel console, and up to three (3) switch panels in the overhead console between the driver and officer. All switches have backlit labels for low light applications.

High idle engagement switch: A maintained rocker switch with integral indicator lamp shall be provided. The switch shall activate and deactivate the high idle function. The "Ok To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch shall indicate when the high idle function is engaged.

"Ok To Engage High Idle" indicator lamp: A green indicator light shall be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.

Diesel particulate filter regeneration switch (where applicable).

Diesel particulate filter regeneration inhibit switch (where applicable).

### SWITCH PANELS

The built-in emergency light switch panel shall have a master switch plus individual switches for selective control. The switch panel shall be located in the "overhead" position above the windshield on the driver's side to allow for easy access. Switches shall be rocker type with an indicator light, of which is an integral part of the switch.

### SECOND SWITCH PANEL

There shall be a switch panel located in the overhead area of the cab above the windshield that is within reach of the driver and officer. Switches shall be rocker type with an indicator light of which is an integral part of switch. The switches in this panel will control the front cab brow light and the side mounted cab flood lights.

### DIAGNOSTIC PANEL

A diagnostic panel shall be accessible while standing on the ground and shall be located inside the driver's side door, left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved

✓

✓

✓

✓



# Specifications

## Bidder Complies

Yes

No

service the underside of antenna mounts.

All factory installed antenna mounts shall have an antenna or an antenna mount rain cap installed to protect the antenna mount from damage.

### DEDICATED RADIO EQUIPMENT CONNECTION POINTS

The primary radio connection point shall be on top of the PPE compartment located behind the driver. The top of the compartment shall be flat and suitable for mounting radio equipment. There shall be an enclosure, approximately eight inches deep, with a bolt down louvered lid. There shall be four (4) studs provided in the primary power distribution center located in the enclosure.

The studs shall consist of the following:

- 12-volt 40-amp battery switched power
- 12-volt 100-amp ground
- 12-volt 60-amp ignition switched power
- 12-volt 60-amp direct battery power

Wiring of appropriate size shall be provided from this primary power distribution center to the locations in the apparatus cab that are selected by the Radio Communications Section for the mounting of the radios and radio controls. The power required at each location will be provided by the Division's Radio Communications personnel.

### RADIO INTERFACE CABLE

The body builder shall supply and install the required radio interface cables, before delivery of the vehicle, as specified by the Division's Radio Communications Section.

A raceway, with a minimum of 1 inch tall and 1 ½ inches, wide shall be provided running from the dedicated radio connection enclosure behind the driver seat to the switch panel area above the windshield. The raceway shall not be visible from inside the cab.

A second raceway, with a minimum of 1 inch tall and 1 ½ inches, wide shall be provided running from the dedicated radio connection enclosure behind the driver seat to the switch panel area on the engine tunnel. The raceway shall not be visible from inside the cab.

### SECOND CIRCUIT

There shall be two (2) pair of wires installed in officer dash area.

The above wires shall have the following features:

- Wires shall be connected directly to the battery switched power.
- Wires are fused at 15 amps.
- Power and ground will end at a location to be designated at the pre-construction conference.
- Termination is with water resistant male and female plugs.
- Wires shall be sized to 125% of the protection.

### SECOND SPARE CIRCUIT

<b>Specifications</b>	<b>Bidder Complies</b>	
	Yes	No
<p>There shall be two (2) pair of wires installed.</p> <p>The above wires shall have the following features:</p> <ul style="list-style-type: none"> <li>Wires shall be connected directly to the battery power.</li> <li>Wires shall be fused at 15 amps.</li> <li>Power and ground shall end at a location to be designated at the pre-construction conference.</li> <li>Termination shall be with water resistant male and female plugs.</li> <li>Wires shall be sized to 125% of the protection.</li> </ul> <p><b><u>THIRD SPARE CIRCUIT</u></b></p> <p>There shall be two (2) pair of wires installed.</p> <p>The above wires shall have the following features:</p> <ul style="list-style-type: none"> <li>Wires shall be connected directly to the battery power.</li> <li>Wires shall be fused at 15 amps.</li> <li>Power and ground shall end at a location specified by the fire department at pre-construction conference.</li> <li>Termination shall be with water resistant male and female plugs.</li> <li>Wires shall be sized to 125% of the protection.</li> </ul> <p><b><u>ELECTRICAL POWER CONTROL SYSTEM</u></b></p> <p>A compartment shall be provided in or under the cab to house the vehicle's electrical power and signal circuit protection and control components. The power and signal protection and control compartment shall contain circuit protection devices and power control devices. Power and signal protection and control components shall be protected against corrosion, excessive heat, excessive vibration, physical damage and water spray.</p> <p>Serviceable components shall be readily accessible.</p> <p>Circuit protection devices, which conform to SAE standard, shall be utilized to protect each circuit. All circuit protection devices shall be sized to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers shall be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258. PTO power circuits shall be protected by Type III manual reset non-cycling circuit breakers conforming to SAE J553 or J258 which remain open until manually reset. When required, automotive type fuses conforming to SAE J554, J1284, J1888 or J2077 shall be utilized to protect electronic equipment.</p> <p>Power control relays and solenoids shall have a direct current (dc) rating of 125 percent of the maximum current for which the circuit is protected.</p> <p>Visual status indicators shall be supplied to identify control safety interlocks and vehicle status. In addition to visual status indicators, audible alarms designed to provide early warning of problems before they become critical shall be used.</p>	<p>✓</p> <p>✓</p>	

# Specifications

## Bidder Complies

Yes No

### VOLTAGE MONITOR SYSTEM

A voltage monitor system shall be provided to indicate the status of each battery system connected to the vehicles electrical load. The monitor system shall provide visual and audio warning when the system voltage is above or below optimum levels.

### EMI/RFI PROTECTION

The electrical system proposed shall include means to control undesired electromagnetic and radio frequency emissions. State of the art electrical system design and components shall be used to ensure radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions are suppressed at their source.

The apparatus proposed shall have the ability to operate in the electromagnetic environment typically found in fire ground operations. The contractor shall be able to demonstrate the EMI and RFI testing has been done on similar apparatus and certifies that the vehicle proposed meets SAE J551 requirements.

EMI/RFI susceptibility shall be controlled by applying immune circuit designs, shielding, twisted pair wiring and filtering. The electrical system shall be designed for full compatibility with low level control signals and high powered two-way radio communication systems. Harness and cable routing shall be given careful attention to minimize the potential for conducting and radiated EMI-RFI susceptibility.

### VEHICLE DATA RECORDER

A vehicle data recorder (VDR) shall be provided. The VDR shall be capable of reading and storing vehicle information. The VDR shall be capable of operating in a voltage range from 8VDC to 16VDC. The VDR shall not interfere with, suspend, or delay any communications that may exist on the CAN data link during the power up, initialization, runtime, or power down sequence. The VDR shall continue operation upon termination of power or at voltages below 8VDC for a minimum of 10ms.

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A CD provided with the apparatus shall include the programming to download the information from the VDR. A USB cable can be used to connect the VDR to a laptop to retrieve required information.

The vehicle data recorder shall be capable of recording the following data via hardwired and/or CAN inputs:

Vehicle Speed - MPH

Acceleration - MPH/sec

Deceleration - MPH/sec

Engine Speed - RPM

Engine Throttle Position - % of Full Throttle

ABS Event - On/Off

Seat Occupied Status - Yes/No by Position (7-12 Seating Capacity)

✓

✓

✓

Specifications	Bidder Complies	
	Yes	No
<p>Seat Belt Buckled Status - Yes/No by Position (7-12 Seating Capacity)</p> <p>Master Optical Warning Device Switch - On/Off</p> <p>Time - 24 Hour Time</p> <p>Date - Year/Month/Day</p> <p><b><u>INTERCOM SYSTEM</u></b></p> <p>A Fire-Com, Model 5100 D single radio interface intercom system shall be provided. Headset charging cords shall be provided for the driver, officer, and two (2) crew positions. All headsets shall be wireless.</p> <p><u>The following components shall be supplied with this system:</u></p> <p>One (1) 5100D Intercom Unit</p> <p>One (1) Multi Channel Base</p> <p>Two (2) Single Wireless Base Stations</p> <p>Two (2) UHW-51 under Helmet Radio Transmit Wireless Headsets</p> <p>One (1) WBMC Wireless Base Station (Multiple Channel)</p> <p>Two (2) UHW-J4 under Helmet Wireless Intercom only Headsets</p> <p>All necessary wiring and headset charging drops</p> <p><b><u>BATTERY SYSTEM</u></b></p> <p>Six (6) 12 volt, batteries that include the following features shall be provided:</p> <p>950 CCA, cold cranking amps</p> <p>190 amp reserve capacity</p> <p>High cycle</p> <p>Group 31</p> <p>Rating of 3800 CCA at 0 degrees Fahrenheit</p> <p>760 minutes of reserve capacity</p> <p>Threaded stainless steel studs</p> <p>Each battery case shall be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover shall be manifold vented with a central venting location to allow a 45 degree tilt capacity.</p> <p>The inside of each battery shall consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.</p> <p><b><u>BATTERY SYSTEM</u></b></p> <p>A single starting system shall be provided.</p>	✓	✓

<b>Specifications</b>	<b>Bidder Complies</b>	
	Yes	No
An ignition switch and starter button shall be located on the instrument panel.	✓	
<b><u>MASTER BATTERY SWITCH</u></b> A master battery switch, to activate the battery system, shall be provided inside the cab within easy reach of the driver.		
An indicator light shall be provided on the instrument panel to notify the driver of the status of the battery system.	✓	
<b><u>BATTERY COMPARTMENTS</u></b> Batteries shall be stored in well-ventilated compartments that are located under the cab and bolted directly to the chassis frame. The battery compartments shall be constructed of stainless steel plate and be designed to accommodate a maximum of two (2) group 31 batteries in each compartment. The battery hold-downs shall be of a non-corrosive material. All bolts and nuts shall be stainless steel.		
Heavy-duty battery cables shall be used to provide maximum power to the electrical system. Cables shall be color-coded.		
Battery terminal connections shall be coated with anti-corrosion compound. Battery solenoid terminal connections shall be encapsulated with semi-permanent rubberized compound.	✓	
<b><u>BATTERY TRAYS AND COVER</u></b> Formed fit heavy-duty roto-molded polyethylene battery trays with drain tubes shall be provided for the batteries to sit in.		
There shall be a cover over the batteries	✓	
<b><u>JUMPER STUDS</u></b> One (1) set of battery jumper studs with plastic color-coded covers labeled positive and negative shall be installed on the bottom of the driver's side battery box. This shall provide for easy jumper cable access.		
<b><u>BATTERY CHARGER</u></b> A Kussmaul Auto charge 1200, Model 091-53-12-Remote battery charger shall be provided. A bar graph display indicating the state of charge shall be provided.	✓	
The charger shall have a maximum output of 40 amps and a fully automatic regulation.		
The battery charger shall be wired to the AC shoreline inlet through an AC receptacle adjacent to this battery charger.		
Battery charger shall be located in the front left body compartment, mounted as high as possible forward on the water tank wall.		
The battery charger indicator shall be located behind the driver's door on the outside of the cab.		
<b><u>ALTERNATOR</u></b> A C.E. Niehoff, Model C620, alternator shall be provided. It shall have a rated output current of 340 amp as measured by SAE method J56. Also, it shall have a custom three (3)-set point		✓

# Specifications

Bidder  
Complies

Yes

No

voltage regulator, manufactured by C. E. Niehoff. The alternator shall be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output. Its the responsibility of builder to recommend larger alternator if one is needed.

## ELECTRONIC LOAD MANAGEMENT

A Kussmaul electronic load management (ELM) system shall be provided that monitors the vehicles 12-volt electrical system, and automatically reduces the electrical load in the event of a low voltage condition and by doing so, ensures the integrity of the electrical system.

The ELM shall monitor the vehicle's voltage while at the scene (parking brake applied). It shall sequentially shut down individual electrical loads when the system voltage drops below a preset value. Five (5) separate electrical loads shall be controlled by the load manager. The ELM shall sequentially re-energize electrical loads as the system voltage recovers.

The (ELM) also includes sequencer function for the five (5) managed loads and two (2) additional.

## AMP DRAW REPORT

The bidder shall provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus shall provide the following:

- 1) Documentation of the electrical system performance tests.
- 2) A written load analysis, which shall include the following:
  - A) The nameplate rating of the alternator.
  - B) The alternator rating under the conditions specified per:
    - Applicable NFPA 1901 or 1906 (Current Edition).
  - C) The minimum continuous load of each component that is specified per:
    - Applicable NFPA 1901 or 1906 (Current Edition).
  - D) Additional loads that, when added to the minimum continuous load, determine the total connected load.
  - E) Each individual intermittent load.

All of the above listed items shall be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).

## EXTERIOR LIGHTING FRONT

Exterior lighting shall meet or exceed Federal Department of Transportation, Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements in effect at time of proposal.

Front headlights shall be halogen, rectangular shaped, and mounted in front trim housing.

✓

✓

✓

<b>Specifications</b>	<b>Bidder Complies</b>	
	Yes	No
Headlights shall be wired for daytime driving lights function.		
The headlight and LED directional lights shall be in the same assembly.		
Five (5) LED clearance and marker lights shall be installed across the leading edge of the cab.	✓	
<b><u>WARNING LIGHTS (Cab Face)</u></b>		
Two (2) pair of Whelen Model M6* C LED lights shall be installed on the cab face, above the headlights, mounted in a common bezel.		
The color of these LEDs shall be red Super Linear LED/clear lens.		
The inner LEDs shall be additional lighting.		
The color of these lights shall be red Super Linear LED/clear lens.		
Both sets of lights shall be activated by the same switch in the cab.	✓	
<b><u>ELECTRICAL WIRING DIAGRAMS</u></b>		
Two (2) electrical wiring diagrams, prepared for the model of chassis and body, shall be provided. The diagrams shall show the truck wiring <u>as built</u> .	✓	
<b><u>BODY</u></b>		
Body shall be constructed of aluminum. Body shall be designed and built to acceptable industry standards and shall be of sufficient construction and integrity to prevent cracking at welds, warping, metal fatigue and stress under rough road conditions and extreme temperatures encountered in our area. Body shall be designed and constructed to provide an expected service life of at least 25 years.	✓	
<b><u>TESTING OF BODY DESIGN</u></b>		
Body structural analysis shall be fully tested. Proven engineering and test techniques such as finite element analysis, stress coating and strain gauging shall be performed with special attention given to fatigue, life and structural integrity of the cab, body and substructure.	✓	
Body shall be tested while loaded to its greatest in-service weight.		
The criteria used during the testing procedure shall include:		
The raising of opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.		
Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions.		
Driving the vehicle at 35 mph on a "washboard" road.		
Driving the vehicle at 55 mph on a smooth road.		
Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement.		
Evidence of actual testing techniques shall be made available upon request.	✓	
<b><u>WATER TANK</u></b>		

# Specifications

## Bidder Complies

Yes No

Booster tank shall have a capacity of 1000 gallons and be constructed of polypropylene plastic by United Plastic Fabricating, Incorporated.

The tank shall be designed to achieve a low hose bed. Tank design shall be a stepped design with the forward section of the tank higher than the section of the tank that is below the hose bed.

Tank joints and seams shall be nitrogen welded inside and out.

Tank shall be baffled in accordance with NFPA Bulletin 1901 requirements.

Baffles shall have vent openings at both the top and bottom to permit movement of air and water between compartments.

Longitudinal partitions shall be constructed of .38" polypropylene plastic and shall extend from the bottom of the tank through the top cover to allow for positive welding.

Transverse partitions shall extend from 4.00" off the bottom of the tank to the underside of the top cover.

All partitions shall interlock and shall be welded to the tank bottom and sides.

Tank top shall be constructed of .50" polypropylene. It shall be recessed .38" and shall be welded to the tank sides and the longitudinal partitions.

Tank top shall be sufficiently supported to keep it rigid during fast filling conditions.

Construction shall include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions. Two (2) of the dowels shall be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump that is 8.00" long x 8.00" wide x 6.00" deep shall be provided at the bottom of the water tank.

Sump shall include a drain plug and the tank outlet.

Sufficient cross members shall be provided to properly support bottom of tank. Cross members shall be constructed of steel bar channel or rectangular tubing.

Tank shall "float" in cradle to avoid torsional stress caused by chassis frame flexing. Rubber cushions, .50" thick x 3.00" wide, shall be placed on all horizontal surfaces that the tank rests on.

Stops or other provision shall be provided to prevent an empty tank from bouncing excessively while moving vehicle.

Mounting system shall be approved by the tank manufacturer.

Fill tower shall be constructed of .50" polypropylene and shall be a minimum of 8.00" wide x 14.00" long.

Fill tower shall be furnished with a .25" thick polypropylene screen and a hinged cover.

Specifications	Bidder Complies	
	Yes	No
<p>Fill tower not to interfere with hose loads.</p> <p>An overflow pipe, constructed of 4.00" schedule 40 polypropylene, shall be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.</p> <p>A Tanknology Tag shall be installed on the pump panel. The information on the tag shall contain pertinent information regarding the tank.</p> <p><b><u>WATER TANK RESTRAINT</u></b> A heavy-duty water tank restraint shall be provided.</p> <p><b><u>HOSE BED</u></b> The hose bed shall be a maximum of 70" from the ground.</p> <p>Hose body width shall be a minimum of 68.00" inside.</p> <p>Flooring of the hose bed shall be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats shall have spacing between slats for hose ventilation.</p> <p>Hose bed shall accommodate 1200' of 5.00" Double Jacketed Triple Duty Hose. The hose is 100ft lengths and will be packed in a single slot, flat loaded 5 tiers wide.</p> <p>600' of 1.75" Double Jacketed Hose it shall be packed in two separate slots, each flat loaded two tiers wide.</p> <p>500' of 2.50" Double Jacket Hose shall be packed in a single slot, flat loaded two tiers wide.</p> <p>Three (3) adjustable hose bed dividers shall be furnished for separating hose.</p> <p>Each divider shall be constructed of a .125" brushed aluminum sheet fitted and fastened into a slotted, 1.50" diameter radius extrusion along the top, bottom, and rear edge.</p> <p>Partition shall be fully adjustable by sliding in tracks, located at the front and rear of the hose bed.</p> <p>Divider shall be held in place by tightening bolts, at each end.</p> <p>Acorn nuts shall be installed on all bolts in the hose bed which have exposed threads.</p> <p><b><u>HOSE RESTRAINT (REAR)</u></b> The hose in the hose bed shall be restrained by black nylon Velcro straps at the top of the hose bed and a black nylon web strap netting at the top and rear of the hose bed. The netting shall include quick release fasteners.</p> <p><b><u>HOSE BED DEFLECTOR</u></b> A hose bed wind deflector shall be provided at the front of the hose bed.</p> <p>The cover shall be 20.00" long x full width of the hose bed.</p> <p>The cover shall be constructed of .19" bright aluminum tread plate, hinged to the hose bed</p>	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>	

# Specifications

## Bidder Complies

Yes

No

cross divider with a full length stainless steel piano hinge and resting on the hose bed dividers and side sheets. The cover shall have a 1.00" upward "Lazy Bend" at the rear with additional bracing underneath for stiffening.

A chrome grab handle shall be provided in the rear center of the cover to assist in opening and closing.

The hose bed wind deflector shall have a keep open mechanism when in the open position.

The cover shall be labeled "NO STEP" using 3.00" lettering.

### **TREADPLATE HOSE BED COVER (OPTIONAL)**

A hose bed cover constructed bright aluminum tread plate shall be installed. The hose bed cover shall be two sections and hinged at the outside edge by a full-length stainless steel piano hinge.

The sides shall be slanted down with the center of the cover supported by a stationary bridgework support. The cover shall be reinforced so that it can support the weight of a person walking on it.

Gas shock type-holding devices shall hold the cover open for hose loading.

Each section to have chrome handles for lifting, and a handrail shall be provided at the rear, in the center of the support, to assist in opening the cover.

The top surface shall be a metallic non-slip surface.

A red vinyl flap shall be installed at the rear of the tread plate cover. It shall be secured at the bottom to prevent unintentional deployment of the hose.

Hose bed doors to be wired to "Do Not Move" apparatus warning light system.

### **RUNNING BOARDS**

Running boards shall be fabricated of .125" bright aluminum tread plate.

Each running board shall be supported by a welded 2.00" square tubing and channel assembly, which shall be bolted to the pump compartment substructure.

Running boards shall be 12.75" deep and spaced .50" away from the pump panel.

A splashguard shall be provided above the running board tread plate.

A hose tray shall be provided on each side of truck below the pump panels. The hose trays shall be constructed of aluminum tread plate and shall have the capacity of 30 ft. of double jacketed 5" hose.



<b>Specifications</b>	<b>Bidder Complies</b>	
	Yes	No
<p>compartment. These louvers shall be formed into the metal and not added to the compartment as a separate plate.</p> <p><b><u>COMPARTMENTS</u></b></p> <p>The purchaser requires the maximum compartment space possible while keeping the apparatus within the specified maximum length, height, and wheelbase.</p> <p>The apparatus shall be of "flat panel" rear design to maximize compartment space. No beaver tail shall be provided.</p> <p>Compartment floors shall be flush "sweep-out" design with the floor higher than the compartment door lip.</p> <p>All compartment seams shall be fully waterproofed.</p> <p>All compartments shall contain stamped louvers for ventilation in the interior rear walls.</p> <p>A polished stainless steel scuff plate with a lip down shall be provided below all compartment doors to protect the finish.</p> <p>The top of the compartment shall be covered with bright aluminum tread plate. The corners shall be TIG welded</p> <p>The front facing compartment bulkheads shall be covered with bright aluminum tread plate.</p> <p>Drip protections shall be provided over all doors.</p> <p>The compartment floors shall be reinforced to hold heavy equipment.</p> <p>Interior of compartments shall be painted with gray spatter type paint.</p> <p>The rear compartment shall be open across the body</p> <p><b><u>COMPARTMENT DOORS</u></b></p> <p>All side compartments on the apparatus body shall be provided with painted, lap style vertically hinged double panel doors with polished stainless steel "D" ring handles and #106 locks.</p> <p>A positive door holder shall be installed on each hinged compartment door.</p> <p>Automotive rubber molding shall be installed on the compartment door framing to ensure a weather resistant compartment seal.</p> <p><b><u>COMPARTMENTATION, DRIVER'S SIDE</u></b></p> <p><u>Forward of rear Wheels</u></p>	✓	✓

<b>Specifications</b>	<b>Bidder Complies</b>	
	Yes	No
<p>A full height, compartment ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be approximately 44.00" wide x 58.00" high x 25.00" deep in the lower 26.00" of the compartment and 12.00" deep in the remaining upper portion.</p> <p><u>Above Rear Wheels</u>  A compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be a minimum of 66.00" wide x 25.00" high x 12.00" deep.</p> <p>The compartment shall be equipped with PAC Tool board mounting system 7000 along the back wall.</p> <p>The compartment shall have a swing out tool board that is no greater than 1" wide.</p> <p><u>Behind Rear Wheels</u>  A full height compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be a minimum 47.00" wide x 58.00" high x 12.00" deep. A section of this compartment shall be a minimum 25.00" deep x 47.00" wide x 26.00" high directly behind the rear wheels.</p> <p><b><u>COMPARTMENTATION, PASSENGER'S SIDE</u></b></p> <p><u>Forward Rear Wheels</u>  A compartment in the lower area ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be a minimum of 44.00" wide x 26.00" high x 25.00" deep.</p> <p><u>Behind Rear Wheels</u>  A compartment in the lower area behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 47.00" wide x 26.00" high x 12.00" deep.</p> <p><b><u>COMPARTMENTATION, REAR</u></b>  Interior dimensions of this compartment shall be minimum 40.00" wide x 30.00" high x 25.00" deep</p> <p>A louvered, removable access panel shall be furnished on the back wall of the compartment.</p> <p>Rear compartment shall be open into the rear side compartments.</p> <p><b><u>COFFIN COMPARTMENT</u></b>  A coffin compartment shall be provided on driver side above the side compartments. The compartment shall be as large as possible as not to interfere with the hose bed height or the maximum height of the apparatus.</p> <p>The compartment shall be equipped with two hatch style compartment doors on top.</p> <p><b><u>ADJUSTABLE SHELVES</u></b>  There shall be <b>six (6)</b> shelves, with a minimum capacity of 215 pounds provided. The shelf construction shall consist of .125" pan-shaped aluminum with 2.00" sides. Each shelf shall be infinitely adjustable by means of a threaded fastener which slides in a strut style track.</p>	✓	✓

# Specifications

## Bidder Complies

Yes

No

The locations shall be determined at the pre-construction meeting.

### RUB RAIL

There shall be a rub rail installed on both sides of the lower body compartments. The rub rail shall be constructed polypropylene. The rub rail shall be bolted in place with stainless steel bolts, and spaced from the fire body to provide body protection. The solid rub rail shall serve as protection to the side doors when encountering close objects.

### BODY FENDER CROWNS

The cab wheel well openings shall be trimmed with replaceable, bolt-in, molded black rubber fenderettes. The fenderettes shall be secured to the cab with stainless steel threaded fasteners along the internal perimeter of the wheel well. Rubber welting shall be installed between the fenderettes and the cab side panel.

### HOSE TROUGHS

Suction hose (5" diameter with 4.5" NST couplings) shall be carried above the ladders. Troughs shall be constructed of aluminum and painted to match the truck.

### HANDRAILS

The handrails shall be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface. Location of handrails shall be finalized at the pre-construction conference.

Chrome plated end stanchions shall support the handrail. Plastic gaskets shall be used between end stanchions and any painted surfaces.

Drain holes shall be provided in the bottom of all vertically mounted handrails.

Four (4) handrails shall be provided, two above each side pump panel.

Two (2) handrails shall be provided on the cab face, one above each warning light combination.

One (1) vertical handrail shall be provided on the driver's side body, on the front bulkhead door frame.

One (1) vertical handrail, not less than 29.00" long, shall be located on each rear beavertail.

One (1) full width horizontal handrail shall be provided below the hose bed at the rear of the apparatus.

### EXTINGUISHER STORAGE

Two (2) extinguisher compartments shall be provided. Both compartments shall be located on the passenger side, one behind the rear wheels and one in front of the rear wheels.

The compartments shall be of adequate depth to accommodate different size extinguishers.

Flooring shall be rubber lined and have a drain hole.

✓

✓

✓

✓

✓

Specifications	Bidder Complies	
	Yes	No
<p>A stainless steel door with a chrome-plated latch shall be provided to contain the extinguisher.</p> <p>A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.</p> <p>The purchaser desires the largest compartment possible in this location. It is acceptable if these compartments can be designed to carry two (2) extinguishers in each compartment.</p> <p><b><u>AIR CYLINDER STORAGE (Double)</u></b></p> <p>A total of two (2) air cylinder compartments shall be provided. The air cylinder compartments shall be located on driver side one in front of the rear wheels and one behind the rear wheels.</p> <p>Each air cylinder compartment shall be of adequate size to accommodate two (2) air cylinders.</p> <p>Flooring shall be rubber lined and furnished with a drain hole.</p> <p>A stainless steel, full width door with a chrome-plated latch shall be provided to contain the air cylinder. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.</p>		✓
<p><b><u>AIR CYLINDER STORAGE INSERT</u></b></p> <p>A total of two (2) inserts shall be provided for the air cylinder storage compartments. The inserts shall be formed in a "W" shape to help contain the cylinders.</p>		✓
<p><b><u>EXTENSION LADDER</u></b></p> <p>There shall be a 24', two (2) sections, Duo-Safety Series 900-A extension ladder provided.</p>		✓
<p><b><u>ROOF LADDER</u></b></p> <p>There shall be a 14' Duo-Safety Series 775-A roof ladder provided.</p>		✓
<p><b><u>LADDER BRACKETS</u></b></p> <p>The ladders shall be installed on the right side of the hose body in lined brackets and held in place by chrome plated, quarter-turn spring loaded clamps. The extension ladder shall be mounted in the outboard position. The clamps shall be such that when the extension ladder is removed, the clamps can be moved a half turn to hold the roof ladder in place. The ladder brackets shall be adjustable up and down.</p>		✓
<p><b><u>FOLDING LADDER</u></b></p> <p>One (1) 10' aluminum folding ladder, Series 585-A Duo-Safety folding ladder shall be installed behind the ladders. A method shall be provided to remove this ladder from the rear.</p>		✓
<p><b><u>PIKE POLE MOUNTING</u></b></p> <p>Two (2) aluminum tubes shall be installed behind the ladders to allow storage of pike poles. The pike poles shall be removable from the rear of the truck</p>		✓

Specifications	Bidder Complies	
	Yes	No
<p><b><u>REAR STEPS</u></b> Diamond plate solid corner steps shall be provided in both rear corners. All steps shall provide adequate surface for stepping.</p>		✓
<p><b><u>ADDITIONAL STEPS</u></b> Two (2) additional folding Eberhard steps, shall be located Driver side front bulkhead.</p>	✓	
<p><b><u>PUMP</u></b> Pump shall be a Waterous CSU, 1500 gpm single (1) stage midship mounted centrifugal type. Pump shall be the class "A" type. Pump shall deliver the percentage of rated discharge at pressures indicated below: - 100% of rated capacity at 150 psi net pump pressure. - 70% of rated capacity at 200 psi net pump pressure. - 50% of rated capacity at 250 psi net pump pressure. Pump body shall be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings). Pump shall be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping. Pump case halves shall be bolted together on a single horizontal face to minimize chance of leakage and facilitate ease of reassembly. No end flanges shall be used. Discharge manifold of the pump shall be cast as an integral part of the pump body assembly and shall provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency. The three (3) 3.50" openings shall be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the discharge manifold. Impeller shaft shall be stainless steel, accurately ground to size. It shall be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller shall have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply. Bearings shall be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. No special or sleeve type bearings shall be used. Pump shall be equipped with a self-adjusting, maintenance-free, mechanical shaft seal. The mechanical seal shall consist of a flat, highly polished, spring fed carbon ring that rotates with the impeller shaft. The carbon ring shall press against a highly polished stainless steel stationary ring that is sealed within the pump body.</p>	✓	

# Specifications

## Bidder Complies

Yes No

In addition, a throttling ring shall be pressed into the steel chamber cover, providing a very small clearance around the rotating shaft in the event of a mechanical seal failure. The pump performance shall not deteriorate, nor shall the pump lose prime, while drafting if the seal fails during pump operation.

Wear rings shall be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear.

### PUMP TRANSMISSION

Pump transmission shall be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump shall be through a high strength Morse HY-VO silent drive chain.

Drive shafts shall be a minimum of 2.35" diameter hardened and ground alloy steel. All shafts shall be ball bearing supported. The case shall be designed as to eliminate the need for water cooling.

### AIR PUMP SHIFT

Pump shift engagement shall be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control shall also be located on the driver's side pump panel.

Two (2) indicator lights shall be provided adjacent to the pump shift inside the cab. One (1) green light shall indicate the pump shift has been completed and be labeled "pump engaged". The second green light shall indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light shall be labeled "OK to pump".

Another green indicator light shall be installed adjacent to the hand throttle on the pump panel and indicate either the pump is engaged and the road transmission is in pump gear, or the road transmission is in neutral and the pump is not engaged. This indicator light shall be labeled "Warning: Do not open throttle unless light is on".

The pump shift control in the cab shall be illuminated to meet NFPA requirements.

### TRANSMISSION LOCK-UP

The direct gear transmission lock-up for the fire pump operation shall engage automatically when the pump shift control, in the cab, is activated.

### AUXILIARY COOLING SYSTEM

A supplementary heat exchange cooling system shall be provided to allow the use of water from the discharge side of the pump for cooling the engine water. Heat exchanger shall be cylindrical type and shall be a separate unit. It shall be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger shall be plumbed to the master drain valve.

### INTAKE RELIEF VALVE

An Elkhart relief valve shall be installed on the suction side of the pump preset at 125 psig.

Relief valve shall have a working range of 75 psig to 250 psig.



Specifications	Bidder Complies	
	Yes	No
All water carrying gauge lines shall be of flexible polypropylene tubing.	✓	
<b><u>PUMP PLUMBING WARRANTY</u></b> The stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of <b>ten (10) years or 100,000 miles</b> . This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of delivery. A copy of the warranty shall be submitted with the bid. (No exception)		
<b><u>MAIN PUMP INLETS</u></b> A 6.00" pump manifold inlet shall be provided on each side of the vehicle. The suction inlets shall include removable die cast zinc screens that are designed to provide cathode protection for the pump, thus reducing corrosion in the pump.	✓	
The main pump inlets shall have National Standard Threads with a long handle chrome cap.	✓	
<b><u>SHORT SUCTION TUBE</u></b> The suction tubes on the midship pump shall have "short" suction tubes to allow for installation of adapters without excessive overhang.		
<b><u>VALVES</u></b> All ball valves shall be Akron Brass in-line valves. The Akron valves shall be the 8000 series heavy-duty style with a composite ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.	✓	
Valves shall have a ten (10) year warranty.		
<b><u>INLET (Left side)</u></b> On the left side pump panel shall be one (1) 2.50" auxiliary suction, terminating in 2.50" female NST. The auxiliary suction shall be provided with a strainer, chrome swivel and chrome plated lightweight plug and heavy duty cable.	✓	
Inlet valve location shall be outside of the pump panel.	✓	
<b><u>INLET CONTROL</u></b> Control for the side auxiliary inlet shall be located at the inlet valve.		
<b><u>INLET (Front)</u></b> A 4.50" front inlet with die cast zinc screens shall be provided using 5.00" stainless steel pipe and a 5.00" butterfly valve. Only radiused elbows shall be used in the piping, no mitered joints.		✓
Drains are furnished in all the low points of piping and have 3/4" valves with swing handle. The drain in front of the front wheel shall be installed into the side of the piping to maximize approach clearance to sloped grades.		
A bleeder valve shall be located at the threaded connection.		

Specifications	Bidder Complies	
	Yes	No
The front suction shall be located on the passenger's side of the front bumper extension and equipped with a swivel.		
The front suction shall be controlled by a manually operated hand wheel valve mounted at the pump operator's panel.		
The front suction shall have a chromed 4 1/2" male NST adapter.		
<b><u>INTAKE RELIEF VALVE</u></b>	✓	
An intake relief valve, preset at 125 psig, shall be installed on the inlet side of the valve.		
Relief valve shall have a working range of 75 psig to 250 psig.		
Outlet shall terminate below the frame rails.		
<b><u>INLET BLEEDER VALVE</u></b>	✓	
A .75" bleeder valve shall be provided for the side gated inlet. The valves shall be located behind the panel with a swing style handle control extended to the outside of the panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders shall be routed below the chassis frame rails.		
<b><u>TANK TO PUMP</u></b>	✓	
The booster tank shall be connected to the intake side of the pump with 4.00" heavy-duty piping and a quarter turn 3.50" Akron 8800 with composite ball valve. The control shall be equipped with a hand wheel remotely located at the operator's panel. The tank to pump line shall run straight, without elbows, from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing.		
A check valve shall be provided in the tank to pump supply line to prevent the possibility of back filling the water tank.		
<b><u>TANK REFILL</u></b>	✓	
A 3.00" combination tank refill and pump recirculation line shall be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel, with a hand wheel.		
<b><u>DISCHARGE OUTLET CONTROLS</u></b>	✓	
The discharge outlets shall incorporate a hand wheel for all discharges. With the control located at the pump operator's panel. All valves, unless otherwise specified, shall be manually operated.		
<b><u>DISCHARGE CAPS (light weight with heavy duty cables)</u></b>	✓	
Red Head chrome plated rocker lug caps with vinyl covered cables shall be furnished for all side discharge outlets.		
<b><u>DISCHARGE OUTLET (Left Side)</u></b>		✓
There shall be one (1) discharge outlet on the left side of the apparatus, terminating with a		

# Specifications

Bidder  
Complies

Yes

No

male 2.50" National Standard hose thread adapter. This discharge shall be operated with a 2.50" full flow ball valve with a hand wheel control from the pump operator's panel.

### ELBOW, LEFT SIDE OUTLET

The 2.50" discharge outlet, located on the left side pump panel, shall be furnished with a 2.50"(F) National Standard hose thread x 2.50"(M) National Standard hose thread, chrome plated, 30 degree elbow.

### DISCHARGE OUTLETS ( Right Side)

There shall be two (2) - 4.00" discharge outlets with 4.00" Akron valves, installed on the right side of the apparatus, terminating with a male 4.00" National Standard hose thread adapter. This discharge outlet(s) shall be actuated with a hand wheel control at the pump operator's control panel.

### ELBOWS LDH DISCHARGE OUTLETS ( Right Side)

One 4.00" discharge shall be furnished with 4.0"(F) NST swivel x 4.5"(F)NST swivel and the other with 4.0"(F) NST swivel X 4.5"(M) NST Red Head Brass anodized aluminum elbow.

### DISCHARGE OUTLETS (Right Side)

There shall be one (1) discharge outlets on the right side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter. This discharge shall be operated with a 2.50" full flow ball valve with a hand wheel control from the pump operator's panel.

### ELBOW, RIGHT SIDE OUTLET

The 2.50" discharge outlet, located on the right side pump panel, shall be furnished with a 2.50"(F) National Standard hose thread x 2.50"(M) National Standard hose thread, chrome plated, 30 degree elbow.

### DISCHARGE OUTLET (Front)

There shall be a 2.50" gated discharge outlet plumbed to the top of the bumper beside the tray in the driver's side front bumper extension.

The discharge shall have a 90-degree swivel and terminate with 2.50" NST with a 2.5" x 1.5" reducer.

Plumbing shall consist of 2.00" piping with a 2.00" full flow ball valve controlled at the pump operator's panel with a hand wheel control.

Automatic drains shall be provided at all low points in the plumbing.

✓

✓

✓

✓

✓

Specifications	Bidder Complies	
	Yes	No
<p><b><u>DISCHARGE OUTLETS (Rear)</u></b></p> <p>There shall be two (2) discharge outlets piped to the rear of the hose bed, one (1) each side, installed 4 inches from the inside of the rear inner bulkhead to center of the pipe, so proper clearance is provided for spanner wrenches or adapters.</p> <p>Plumbing shall consist of 2.50" piping along with a 2.50" full flow ball valve with the with a hand wheel control from the pump operator's panel, terminating with 2.5" male NST.</p>	✓	
<p><b><u>ELBOWS, REAR OUTLETS</u></b></p> <p>The two (2) 2.50" discharge outlets, located at the rear of the apparatus, shall be furnished with a 2.50" FNST x 2.50" MNST, chrome plated, 30 degree elbows.</p> <p>There shall be two (2) adapters equipped with 2.50" FNST x 1.50" MNST threads installed one each on the rear (side) 2.50" outlets elbows.</p>	✓	
<p><b><u>OUTLET BLEEDER VALVE</u></b></p> <p>A .75" bleeder valve shall be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.</p> <p>The valves shall be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders shall be located at the bottom of the pump panel. They shall be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders shall be routed below the chassis frame rails.</p>	✓	
<p><b><u>DELUGE RISER</u></b></p> <p>A 3.00" deluge riser shall be installed above the pump in such a manner that a monitor can be mounted near the center of the dunnage area and used effectively. Piping shall be installed securely so no movement develops when the line is charged. The riser shall be gated and controlled immediately below the monitor four (4) bolt mounting flange by a hand wheel or other slow operating quarter turn ball valve. A hand wheel control shall also be at the pump panel.</p>	✓	
<p><b><u>CROSSLAY HOSE BED</u></b></p> <p>Three (3) cross lays shall be provided, two (2) with 1.50" outlets.</p> <p>The two plumbed beds shall be capable of carrying 200 feet of 1.75" double jacketed hose, flat loaded in a two tiers, with (ELKHART STSM-20 FGATLP) nozzles.</p> <p>Third crosslay will not be plumbed and shall be wide enough for 2.5" hose flat loaded in two tiers. This crosslay is for the storage of hose bundles.</p> <p>The center cross lay dividers shall be fabricated of .25" aluminum and shall provide adjustment from side to side. The divider shall be unpainted with a brushed finish. The remainder of the cross lay bed shall be painted job color.</p>		✓

# Specifications

## Bidder Complies

Yes No

Vertical scuff plates, constructed of stainless steel, shall be provided at the front and rear ends of the bed on each side of vehicle.

Cross lay bed flooring shall consist of removable perforated brushed aluminum.

Cross lays should be located as low as possible. Maximum height from the ground is 68" from the ground.

### CROSSLAY DISCHARGE OUTLETS

The front two crosslay hose beds shall be plumbed for pre connected hose lines.

The discharges shall be plumbed with 2.00" id. pipe and gated with a 2.00" quarter turn ball valve with a hand wheel control from the pump operator's panel.

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

### CROSSLAY ROLLER

A stainless steel roller shall be mounted horizontally across the bottom of each crosslay bed to aid in hose removal. The crosslay designed for hose bundles does not need horizontal rollers.

### CROSSLAY ROLLERS

A stainless steel roller shall be mounted vertically on each side of the crosslay openings to aid in hose removal.

### CROSSLAY COVER

A hinged aluminum tread plate cover shall be installed over the top of the cross lay hose beds. This cover shall include spring assisted hinged lift up aluminum tread plate doors on both sides to prevent pre connected crosslay from falling from the apparatus. Lift and turn latches shall be provided for the ends.

### BACKBOARD COMPARTMENT

There shall be a backboard compartment provided which is located to the rear of the cross lays. It shall accommodate one (1) standard plastic long spine board. The backboard shall be accessible from either side of apparatus. There will be a aluminum door with push latch.

### FOAM TANK- Class A

The foam tank shall be an integral portion of the polypropylene water tank. The cell shall have a capacity of 20 gallons of foam with the intended use of Class "A" foam. The brand of foam stored in this tank shall be to be provided by the fire department. The foam cell shall not reduce the capacity of the water tank. The foam cell shall have a screen in the fill dome and a breather in the lid.

### FOAM TANK- Class B

The foam tank shall be an integral portion of the polypropylene water tank. The cell shall have a capacity of 30 gallons of foam with the intended use of Class "B"

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# Specifications

## Bidder Complies

Yes

No

foam. The brand of foam stored in this tank shall be provided by the fire department. The foam cell shall not reduce the capacity of the water tank. The foam cell shall have a screen in the fill dome and a breather in the lid.

### Class B Foam System

One (1) Elkhart Brass Model 81231001 external pickup attachment quick connection will be provided on driver side pump panel in area adjacent to the 2.5 discharge.

A quarter turn shutoff valve adjacent to the pickup attachment on the panel for shutting off the flow of foam from the on board foam tank to the quick connection shall be provided.

An Elkhart Model 241-95 inline foam eductor, with a rating of 95GPM, with a detachable chrome wand equipped with clear tubing and a mating quarter turn connection will be provided on the educator.

### Class A/B FOAM PROPORTIONER

A foam proportioning system shall be provided that is an on demand, automatic proportioning, single point, direct injection system suitable for all types of Class "A" & "B" foam concentrates, including the high viscosity, alcohol resistant Class B foams. The design of the system shall allow operation from draft, hydrant, or relay operation.

### Waterway check valve

A full flow brass body waterway check valve at the inlet end of the foam manifold waterway to prevent contamination of the fire pump and water supply shall be provided.

### Control System

The system shall be equipped with a digital electronic control display located on the pump operator's panel. Push button controls shall be integrated into the panel to turn the system on/off, control the foam percentage, and to set the operation modes.

### Foam Pump

The foam concentrate pump shall be powered by an electric over hydraulic drive system. The hydraulic system and motor shall be integrated into one unit. The portion of the pump in contact with the foam should be constructed of brass and stainless steel.

The foam concentrate pump shall have minimum capacity for 3 gpm with all types of foam concentrates. The foam concentrate pump shall be self-priming and have the ability to draw foam concentrate from external supplies such as drums or pails.

### External Foam Concentrate Connection

An external foam pick-up shall be provided to enable use of a foam agent that is not stored on the vehicle. The external foam pick-up shall be designed to allow continued operation after the on-board foam tank is empty, or the use of foam different than the foam in the foam tank.

✓

✓

# Specifications

## Bidder Complies

Yes

No

A bronze three way valve shall be provided. The unit shall be mounted to the pump panel. The valve unit shall function as the foam system tank to pump valve and external suction valve. The external foam pick-up shall be one 3/4" male connection GHT (garden hose thread) with a cap.

### Pick-Up Hose

A 3/4" flexible hose with an end for insertion into foam containers shall be provided.

### Discharges

The foam system shall be plumbed to three discharges. The discharges capable of dispensing foam shall be the front crosslay, the front bumper line and the left rear 2.5" discharge.

### Refill, Single Foam Tank

The foam system's proportioning pump shall be used to fill the foam tank. This shall allow use of the auxiliary foam pick-up to pump the foam from pails or a drum on the ground into the foam tank.

### Foam Tank Drain

The foam tanks shall have a 1.00" drain valve located inside the pump compartment accessible through a door on the passenger's side pump panel.

### **PUMP COMPARTMENT**

The pump compartment shall be separate from the hose body and compartments so that each may flex independently of the other. It shall be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.

The pump compartment shall be mounted on the chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist.

Pump compartment, pump, plumbing and gauge panels shall be removable from the chassis in a single assembly.

### **PUMP CONTROL PANELS (Side Control)**

All pump controls and gauges shall be located at the left (driver's) side of the apparatus and properly marked.

The pump panel on the right (passenger's) side shall be split in two (2) sections. The upper section hinged and lower section completely removable. The left (driver's) side is fastened with screws.

The control panels shall be 48.00" wide.

The gauge and control panels shall be two (2) separate panels for ease of maintenance.

The side gauge panel shall be hinged at the bottom with a full length stainless steel hinge. The fasteners used to hold the panel in the upright position shall be quarter

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✓

# Specifications

## Bidder Complies

Yes No

turn type. Vinyl covered cable or chains shall be used to hold the gauge panel in the dropped position.

Polished stainless steel trim collars shall be installed around all inlets and outlets.

The identification tag for each valve control shall be recessed in the face of the tee handle.

All discharge outlets shall have color coded identification tags, with each discharge having its own unique color. Color coding shall include the labeling of the outlet and the drain for each corresponding discharge.

<u>Discharge</u>	<u>Tag color</u>	<u>Discharge</u>	<u>Tag Color</u>
Front Bumper	Purple	#1 (2 ½")	Red
Front Crosslay	Yellow	#2 (2 ½")	Blue
Rear Crosslay	White	LDH A	Grey
Driver's side rear	Tan	LDH B	Teal
Officer's side rear	Green		

All line pressure gauges shall be mounted in individual chrome plated castings with the identification tag recessed in the casting below the gauge.

All remaining identification tags shall be mounted on the pump panel in chrome plated bezels. Mounting of the castings and identification bezels shall be done with a threaded peg cast on the back side of the bezel or screws.

### PUMP PANEL CONFIGURATION

The pump panel configuration shall be neat and orderly.

### PUMP AND GAUGE PANEL

The pump and gauge panels shall be constructed of stainless steel with a brushed finish. A polished aluminum trim molding shall be provided on both sides of the pump panel.

Engine monitoring graduated LED indicators shall be incorporated with the pressure controller.

### AIR HORN SWITCH

An air horn control switch shall be provided at the pump operator's control panel. This switch shall be red and properly labeled and put within easy reach of the operator in the electrical switch panel.

### GAUGES, VACUUM and PRESSURE

The pump pressure and vacuum gauges shall be installed adjacent to each other at the pump operator's control panel.

# Specifications

## Bidder Complies

Yes

No

If the pump vacuum and pressure master gauges are above eye level, they shall be placed in housing with a downward angle for ease of viewing.

The pump vacuum and pressure gauges shall be silicone filled and manufactured by Class 1, Inc.

The gauges shall be a minimum of 6.00" in diameter and shall have white faces with black lettering, with a pressure range of 30.00"-0-600#.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

### TEST PORT CONNECTIONS

Test port connections shall be provided at the pump operator's panel. One shall be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They shall have 0.25" standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They shall be marked with a label.

### PRESSURE GAUGES (REQUIRED)

The individual "line" pressure gauges for the discharges shall be interlube filled and manufactured by Class 1.

They shall be a minimum of 2.50" in diameter and shall have white faces with black lettering.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

Gauges shall have a pressure range of 0-400 psi.

The individual pressure gauge shall be installed as close to the outlet control as practical.

This gauge shall include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

### PRESSURE GAUGES (OPTIONAL)

Individual line pressure gauges for cross lays, bumper line, and rear pre connects shall be Class 1 gauges, 2.5" in diameter, with a dial face that is internally illuminated using LED installed to the rear of the dial face. Colors of LEDs to be determined at pre-construction conference.

Remaining individual line pressure gauges and master pump vacuum and pressure gauges to be internally illuminated using white LEDs.



# Specifications

## Bidder Complies

Yes No

### WATER LEVEL GAUGE

An electronic water level gauge shall be provided on the operator's panel that registers water level by means of five colored LED lights. The lights shall be durable, ultra-bright five LED design viewable through 180 degrees. The water level indicators shall be as follows:

- 100% = Green
- 75% = Yellow
- 50% = Yellow
- 25% = Yellow
- Refill = Red

The light shall flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights shall flash sequentially when the water tank is empty.

The level measurement shall be based on the sensing of head pressure of the fluid in the tank.

The display shall be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components.

The encapsulated design shall provide complete protection from water and environmental elements.

An industrial pressure transducer shall be mounted to the outside of the tank.

The field calibratable display measures head pressure to accurately show the tank level.

### FOAM LEVEL GAUGE /A TANK

An electronic foam level gauge shall be provided on the operator's panel that registers foam level by means of five colored LED lights. The lights shall be durable, ultra-bright five LED design viewable through 180 degrees. The foam level indicators shall be as follows:

- 100% = Green
- 75% = Yellow
- 50% = Yellow
- 25% = Yellow
- Refill = Red



# Specifications

## Bidder Complies

Yes

No

The light shall flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights shall flash sequentially when the foam tank is empty.

The level measurement shall be based on the sensing of head pressure of the fluid in the tank.

The display shall be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components.

The encapsulated design shall provide complete protection from foam and environmental elements.

An industrial pressure transducer shall be mounted to the outside of the tank.

The display shall be able to be calibrated in the field and shall measure head pressure to accurately show the tank level.

### WATER LEVEL LIGHT CAB

Two (2) Whelen model PSTANK, LED water level strip lights shall be provided. One shall be positioned on each side of the cab in a high position to allow the lights to be seen by personnel from a distance.

### LIGHT SHIELD DRIVER SIDE PUMP PANEL

Pump panel illumination shall be provided by AMDOR Luma bar, Model Superbright LED lights to illuminate controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus and the equipment provided on it.

Lights shall be installed under a stainless steel shield.

A light shall come on above the pump panel light switch when the parking brake is set. This is to afford the operator some illumination when first approaching the control panel.

A green pump engaged indicator shall come on at the operator's panel when the pump is shifted into gear from inside the cab.

The remaining lights to be actuated from a switche located on the pump panel.

### ADDITIONAL LIGHT SHIELD PASSENGER SIDE PUMP PANEL

An Amdor Luma Bar model SuperBright LED light shield LED light shield shall be provided above passenger's side pump panel.

Lights shall be installed under a stainless steel shield.

The lights shall be operated from a switch on the pump panel.

# Specifications

Bidder  
Complies

Yes No



**ELECTRICAL HARNESSING INSTALLATION**

To ensure rugged dependability, all 12-volt wiring harnesses installed by the apparatus manufacturer shall conform to the following specifications:

SAE J1128 - Low tension primary cable

SAE J1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring

SAE J163 - Low tension wiring and cable terminals and splice clips

SAE J2202 - Heavy duty wiring systems for on-highway trucks

NFPA 1901 - Standard for automotive fire apparatus

FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses

SAE J1939 - Serial communications protocol

SAE J2030 - Heavy-duty electrical connector performance standard

SAE J2223 - Connections for on board vehicle electrical wiring harnesses

NEC - National Electrical Code

SAE J561 - Electrical terminals - Eyelet and spade type

SAE J928 - Electrical terminals - Pin and receptacle type A

Wiring shall be run in loom where exposed, and have grommets or other edge protection where wires pass through metal. Automatic reset circuit breakers shall be provided which conform to SAE standards. Wiring shall be color, function and number coded. Wire colors shall be integral to each wire insulator and run the entire length of each wire. Harnessing containing multiple wires and uses a single wire color for all wires shall not be allowed. Function and number codes shall be continuously imprinted on all wiring harness conductors at 2.00" intervals. All wiring installed between the cab and into doors shall be enclosed within an expandable rubber boot to protect the wiring. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Electrical wiring and equipment shall be installed utilizing the following guidelines:

- All wire ends not placed into connectors shall be sealed with a heat shrink end cap. Wires without a terminating connector or sealed end cap shall not be allowed.
- All holes made in the roof shall be caulked with silicon (no exception). Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.
- Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in

# Specifications

## Bidder Complies

Yes

No

it. Exposed area shall be defined as any location outside of the cab or body.

- For low cost of ownership, electrical components designed to be removed for maintenance shall be quickly accessible. For ease of use, a coil of wire shall be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.
- Corrosion preventative compound shall be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation of the plug.
- Any lights containing non-waterproof sockets in a weather-exposed area shall have corrosion preventative compound added to the socket terminal area.
- All electrical terminals in exposed areas shall have DOW 1890 protective Coating applied completely over the metal portion of the terminal.
- Rubber coated metal clamps shall be used to support wire harnessing and battery cables routed along the chassis frame rails.
- Heat shields shall be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust shall be protected by a heat shield.
- All braided wire harnesses shall have a permanent label attached for easy identification of the harness part number and fabrication date.

### **BATTERY CABLE INSTALLATION**

All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer shall conform to the following requirements:

SAE J1127 - Battery Cable

SAE J561 - Electrical terminals, eyelets and spade type

SAE J562 - Nonmetallic loom

SAE J836A - Automotive metallurgical joining

SAE J1292 - Automotive truck, truck-tractor, trailer and motor coach wiring

NFPA 1901 - Standard for automotive fire apparatus

Battery cables and battery cable harnessing shall be installed utilizing the following guidelines:

- All battery cables and battery harnesses shall have a permanent label attached for easy identification of the harness part number and fabrication date.
- Splices shall not be allowed on battery cables or battery cable harnesses.

Specifications	Bidder Complies	
	Yes	No
<ul style="list-style-type: none"> <li>• For ease of identification and simplified use, battery cables shall be color coded. All positive battery cables shall be red in color or wrapped in red loom the entire length of the cable. All negative battery cables shall be black in color.</li> <li>• For ease of identification, all positive battery cable isolated studs throughout the cab and chassis shall be red in color.</li> <li>• For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus shall be coated to prevent corrosion.</li> </ul>	✓	
<p><b><u>ELECTRICAL COMPONENT INSTALLATION</u></b></p> <ul style="list-style-type: none"> <li>• All lighting used on the apparatus shall be, at a minimum, a two (2) wire light grounded through a wired connection to the battery system. Lights using an apparatus metal structure for grounding shall not be allowed.</li> <li>• Lights and wiring mounted in rear bulkheads shall be protected from damage by installing a false bulkhead inside the rear compartments.</li> <li>• An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order. The results of the tests shall be recorded and provided to the purchaser at time of delivery.</li> </ul>		✓
<p><b><u>STEP LIGHTS</u></b></p> <p>Two (2) Ri-Tar, Model M27HW2 Super LED, step lights shall be provided. One (1) step light shall be provided on each side, on the front compartment face and two (2) step lights at the rear to illuminate the rear step.</p> <p>Two (2) Whelen Model PELOC Step lights shall be placed on the rear of the apparatus to illuminate the rear step.</p> <p>These step lights shall be actuated with the pump panel light switch.</p> <p>All other steps on the apparatus shall be illuminated per the current edition of NFPA 1901.</p>		
<p><b><u>LIGHTING BEZEL</u></b></p> <p>Two (4) light aluminum housings shall be provided for mounting the Rear FMVSS lighting. (Combination brake – back up – turn signals – and warning)</p>	✓	
<p><b><u>REAR FMVSS LIGHTING</u></b></p> <p><u>The rear stop/tail and directional lighting shall consist of the following:</u></p> <p>Two (2) Whelen, Model M6BTT, red Super LED combination stop/tail lights.</p> <p>Two (2) Whelen, Model M6T, amber Super LED arrow shape turn signal lights.</p> <p>Two (2) Whelen, Model M6BUW, Super LED backup lights shall be provided.</p> <p>One (1) Whelen, Model PSROCXRR, LED Third brake strip will be provided and mounted above the rear compartment doors and centered.</p>	✓	



# Specifications

## Bidder Complies

Yes No

The lighting shall be capable of providing illumination at a minimum level of two (2) foot-candles on ground areas within 30.00" of the edge of the apparatus in areas which personnel climb in or out of the apparatus or descend from the apparatus to the ground level.

### PERIMETER SCENE LIGHTS, BODY

There shall be a total of five (5) AMDOR, LUMA BAR, Model H2O LED lights provided on the apparatus. Two (2) lights shall be provided under the rear step area and two (2) lights shall be provided under the pump panel running boards. The lights shall be spaced one (1) each side of apparatus. One (1) shall be placed and centered under the front bumper. The perimeter scene lights shall be activated by the parking brake.

The lighting shall be capable of providing illumination at a minimum level of two (2) foot-candles on ground areas within 30.00" of the edge of the apparatus in areas designed for personnel to climb onto the apparatus or descend from the apparatus to the ground level.

### 12 VOLT LIGHTING

There shall be two (2) Whelen Model PCP2 LED Combination flood/spot top raise, side mount; 12V LED floodlights provided on the apparatus located one (1) each side in the dunnage area.

These lights will be mounted on telescoping pole.

Each light shall be controlled from switches located at the pump operator's panel.

### 12 VOLT LIGHTING – (cab brow)

There shall be one (1) 72" LED HIVIZ, FIRE TECH Model FT-B-72 floodlight provided centered on the front visor.

The lights shall be controlled by a switch located panel located between driver and officer.

This light may be load managed when the parking brake is set.

### 12 VOLT LIGHTING

There shall be one (1) FRC Spectra Surface Mount Model (SPA 260-Q15) 12V LED floodlight located on the driver's side top corner of the crew cab.

The lights shall be controlled by a switch located panel located between driver and officer.

These lights may be load managed when the parking brake is set.

### 12 VOLT LIGHTING

There shall be one (1) FRC Spectra Surface Mount Model (SPA 260-Q15) 12V LED floodlight located on the passenger side top corner of the crew cab.

The lights shall be controlled by a switch located panel located between driver and officer.

# Specifications

## Bidder Complies

Yes No

These lights may be load managed when the parking brake is set.

### 12 VOLT LIGHTING

There shall be one Whelen M6 Super LED Scenelight mounted rear facing at the top of the driver side rear compartment.

The lights shall be wired to automatically come on when transmission is placed in reverse.

There shall also be a switch on the rear of the apparatus to control these lights with the Deck Lights (below) from the ground.

### DECK LIGHTS

Two (2) HIVIZ LED, FIRETECH, Model FT-WL 3500-FT, lights shall be mounted, one (1) each side, at the rear inner bulkhead of the hose bed. Deck lights shall be wired to automatically come on when transmission is placed in reverse. There shall also be a switch on the rear of the apparatus to control these lights with the Rear 12V scene light (above) from the ground.

### SWITCH, BACK-UP LIGHTS

A switch shall be provided in the cab to activate the back-up lights, rear 12V scene, and deck lights. The switch shall only be active when the parking brake is applied.

### HAND HELD SPOTLIGHT

There shall be one (1) Nova Tech Lighting Systems series 2000-103, hand held spotlight installed on the officer's side cab dash panel. The light shall be furnished with a 2-foot coil cord (12-foot extended) and a momentary switch. The housing shall be made from one piece unibody UV treated black neoprene. The mounting bracket shall be fabricated from stainless steel.

### AIR HORN SYSTEM

Two (2) Grover Stuttertone air horns shall be provided and located, in the front bumper, recessed in the passenger side of frame rail. The horn system shall be piped to the air brake system wet tank utilizing .38" tubing. A pressure protection valve shall be installed in-line to prevent loss of air, in the air brake system.

### AIR HORN CONTROL

Two (2) lanyard rope pull controls shall be provided, one (1) within reach of the driver and one (1) within reach of the officer.

### MECHANICAL SIREN

A Federal Q2B siren shall be furnished. A siren brake button shall be installed on the switch panel.

The control solenoid shall be powered up after the emergency master switch is activated.

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# Specifications

## Bidder Complies

Yes No

The mechanical siren shall be mounted on the bumper deck plate. It shall be mounted on the left side, between the left and center hose trays. The siren mounting shall include a reinforcement plate.

The mechanical siren shall be actuated by two (2) foot switches, one (1) located on the officer's side and one (1) on the driver's side.

### ELECTRONIC SIREN

A Powercall DX 5200 electronic siren with noise canceling microphone shall be provided. Siren head shall be located in the switch panel above windshield.

### SPEAKERS

There shall be two (2) speakers provided and recessed in the bumper extension. Each speaker shall be a Federal, Model MS100, 100 watt, bumper mount. Each speaker shall use a Federal, Model MSFMT-EF, flush mount, bumper bracket with stainless steel grille. Each speaker shall be connected to the siren amplifier

### WARNING LIGHTS

There shall be a 72.00" Whelen Ultra Freedom Super LED Light Bar, Model: FN72VLED light bar mounted on the cab roof. The light bar shall include the following:

- Six (6) red flashing forward facing LED modules.
- Two (2) white flashing forward facing LED modules.
- Two (2) red flashing front corner LED modules.
- Two (2) red flashing rear corner LED modules.

All the lenses shall be clear.

There shall be one (1) switch located in the cab, on the switch panel, shall control this light bar.

The white warning lights shall be controlled by a switch in the cab switch panel and disabled when the parking brake is set

### WARNING LIGHTS MIMI LIGHT BARS

There shall be two (2) Whelen Model FNMINI, NFPA Mini Ultra Freedom LED light bars provided. These lights shall be positioned above the passenger front cab door and the driver side front cab door facing to the side. The light bar shall include:

- 3 red flashing LED modules.
- 1 white flashing LED module

All the lenses shall be clear.

There shall be one (1) switch located in the cab, on the switch panel, to control these light bars.



# Specifications

## Bidder Complies

Yes No

The white warning lights shall be controlled by a switch in the cab switch panel and disabled when the parking brake is set.

These lights are dependent on room on the cab roof and meeting the overall height of the cab limits.

### HEADLIGHT FLASHER

The high beam headlights shall flash alternately between the left and right side, with a control switch located on the cab instrument panel.

The flashing shall automatically cancel when the headlight switch is activated or when the parking brake is set.

### SIDE ZONE LOWER LIGHTING

Six (6) Whelen Model M6\*C, red flashing super linear LED lights with clear lens shall be located at the following positions

Two (2) lights locate one (1) each side on the front bumper extension.

Two (2) lights one (1) located each side on the lower rear corners of the crew cab.

Two (2) lights one (1) located each side over the rear wheels in the rear fender panels.

The lights shall be controlled by a lighted switch on the cab switch panel.

These lights shall be installed with polished trim flange kits.

### REAR ZONE LOWER LIGHTING

Two (2) Whelen M 6\*C LED shall be located at the rear of the apparatus required to meet or exceed the lower level optical warning and optical power requirements of NFPA.

Each light shall be mounted in the 4 light housing.

The rear zone lower lighting and the rear of hose bed warning lights described below shall be controlled by one lighted switch in on the cab switch panel.

### WARNING LIGHTS (Rear of Hose Bed)

Two (2) Whelen B6MMRRP LED warning beacons shall be provided at the rear of the apparatus located one (1) each side. These lights shall be activated by a lighted switch on the instrument panel.

The color of the lights shall be red LEDs with both domes red.

The driver's side rear warning light shall be mounted on top of the compartments with all wiring totally enclosed. The clearance/marker light shall be mounted to the side of the compartment ridge.

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✓

✓

✓

# Specifications

Bidder  
Complies

Yes

No

The passenger's side rear warning light shall be mounted on a low mount stainless steel bracket with all wiring totally enclosed. These brackets shall also support the clearance/marker light.

## DIRECTIONAL WARNING LIGHT

A Whelen L1NZ6 Dominator Plus series Model TADP8, LED amber in color directional arrow will be installed on the rear of the apparatus, located above the rear compartment doors and below the hose bed.

The directional warning light shall be mounted with the end cap mount option and installed in protective aluminum tread plate housing.

Directional arrow will be controllable from the driver's position.

## 110 VOLT INTERIOR RECEPTACLE

The receptacle shall be a NEMA 5-15, 120 volt, 15 amp, three (3) wire duplex household type connected to the shoreline.

There shall be one (1) receptacle provided located in a body compartment as determined at pre-construction meeting.

## KUSSMAUL AUTO EJECT FOR SHORELINE

One (1) shoreline receptacle shall be provided to operate the dedicated 120-volt circuits on the truck without the use of the generator.

The shoreline receptacle (s) shall be provided with a NEMA 5-20, 120 volt, 20 amp, straight blade Kussmaul auto eject plug with a red weatherproof cover. The cover is spring loaded to close, preventing water from entering when the shoreline is not connected.

A solenoid wired to the vehicle's starter is energized when the engine is started. This instantaneously drives the plug from the receptacle.

The shoreline shall be connected to the battery charger.

A mating connector body shall also be supplied with the loose equipment.

The shoreline receptacle shall be located on the driver's side exterior of the cab, behind the crew cab door.

## PAINT

The exterior custom cab and body painting procedure shall consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body shall be thoroughly cleaned and prepared for painting. Surfaces that shall not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum tread plate. Each imperfection on the exterior metal surface shall be removed or filled and then sanded smooth for a smooth appearance. All seams shall be sealed before painting.

✓

✓

✓

✓

# Specifications

Bidder  
Complies

Yes

No

2. Chemical cleaning and Treatment - The metal surfaces shall be properly cleaned using a high pressure and high temperature cleaning system. Surfaces are chemically cleaned to remove all dirt, oil, grease and metal oxides to ensure the subsequent coatings bond well. An ultra pure water final rinse shall be applied to all metal surfaces at the conclusion of the metal treatment process.

3. Primer/Surfacer Coats - A two (2) component urethane primer/surfacer shall be hand applied to the chemically treated metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface.

4. Hand Sanding - The primer/surfacer coat shall be lightly sanded to an ultra smooth finish.

5. Sealer Primer Coat - A two (2) component sealer primer coat shall be applied over the sanded primer.

6. Topcoat Paint - Urethane base coat shall be applied to opacity for correct color matching.

7. Clear coat - Two (2) coats of an automotive grade two (2) component urethane shall be applied. Lap style doors shall be clear coated to match the body. Roll-up doors shall not be clear coated and the standard roll-up door warranty shall apply.

## PAINT

All removable items such as brackets, compartment doors, door hinges, trim, etc. shall be removed and painted separately to insure paint behind all mounted items. Body assemblies that cannot be finish painted after assembly shall be finish painted before assembly.

The cab and the body shall be painted single color dark red to be approved by the Fire Chief prior to construction. **Paint number shall be FLNA 3235.**

Prior to reassembly and reinstallation of lights, handrails, door hardware and any miscellaneous items an isolation tape, gasket or dielectric material shall be used to prevent damage to the finish painted surfaces (no exceptions). A nylon washer shall be installed under each acorn nut or metal screw that is fastened directly to an exterior painted surface.

## PAINT CHASSIS FRAME ASSEMBLY

The chassis frame assembly shall be painted black before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc. Components that are included with the chassis frame assembly that shall be painted black are frame rails, cross members, axles, suspension, steering gear, fuel tank, body substructure supports, miscellaneous mounting brackets, etc.

## PAINT, COMPARTMENT INTERIOR

Interior of compartments shall be painted with gray spatter type paint.



Specifications	Bidder Complies	
	Yes	No
<p><b><u>GRAPHICS</u></b> Detailed description of all graphics to be determined at pre-construction conference.</p>	✓	
<p><b><u>REFLECTIVE STRIPES</u></b> Three (3) reflective stripes shall be provided across the front of the vehicle and along the sides of the chassis cab and apparatus body. The reflective band shall consist of a 1.00" blue stripe at the top with a 1.00" gap then a 6.00" white stripe with a 1.00" gap and a 1.00" blue stripe on the bottom.</p> <p>The reflective band provided on the cab face shall be at the headlight level.</p>	✓	
<p><b><u>JOG, IN REFLECTIVE STRIPE</u></b> A jog in the reflective stripe shall be located each side of the vehicle at the rear. The stripe shall be angled upward at approximately a 45 degree angle.</p>	✓	
<p><b><u>CHEVRON STRIPING, REAR</u></b> There shall be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The entire rear surface, excluding the rear compartment door, shall be covered.</p> <p>The colors shall be red and fluorescent yellow green diamond grade.</p> <p>Each stripe shall be 6.00" in width.</p> <p>This shall meet the requirements of NFPA 1901, 2009 edition, which states that 50% of the rear surface shall be covered with chevron striping.</p>	✓	
<p><b><u>CHEVRON STRIPING, FRONT BUMPER</u></b> There shall be alternating chevron striping located on the front-facing vertical surface of the front bumper.</p> <p>The colors shall be red and fluorescent yellow green diamond grade.</p> <p>Each stripe shall be 6.00" in width.</p>	✓	
<p><b><u>STOP SIGN, REFLECTIVE, CAB DOORS</u></b> A 12.00" x 12.00" reflective stop sign shall be provided on the interior of each cab door. The stop sign shall be located on the stainless steel door panel.</p> <p>This sign shall meet the NFPA 1901 requirement.</p>	✓	
<p><b><u>LETTERING</u></b> The lettering shall be totally encapsulated between two (2) layers of clear vinyl.</p>	✓	
<p><b><u>LETTERING</u></b> Forty-one (41) to sixty (60) genuine gold leaf letters, 3.00" high, with outlining and shading shall be provided.</p>	✓	

Specifications	Bidder Complies	
	Yes	No
<p><b><u>LETTERING ADDITIONAL</u></b>  8.00" white reflective letters/numbers shall be installed on the passenger cab front (E-8)  16.00" white reflective letters/numbers shall be installed on the rear side compartment doors and rear tailboard compartment (E-8 )</p>	✓	
<p><b><u>ONE (1) YEAR MATERIAL AND WORKMANSHIP</u></b>  Each new piece of apparatus shall be provided with a minimum one (1) year basic apparatus material and workmanship limited warranty. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (No Exception).</p>	✓	
<p><b><u>FIFTY (50) YEAR STRUCTURAL INTEGRITY</u></b>  The chassis frame shall be provided with a fifty (50) year material and workmanship limited warranty. The warranty shall cover the chassis frame as being free from defects in material and workmanship that would arise under normal use and service.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (No Exception).</p>	✓	
<p><b><u>FRONT/REAR AXLE TWO (2) YEAR MATERIAL AND WORKMANSHIP WARRANTY</u></b>  A Meritor™ Axle 2 year limited warranty shall be provided.</p>	✓	
<p><b><u>TEN (10) YEAR STRUCTURAL INTEGRITY</u></b>  The new cab shall be provided with a ten (10) year material and workmanship limited warranty. The warranty shall cover such portions of the cab built by the manufacturer as being free from structural failures caused by defects in material and workmanship that would arise under normal use and service.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (No Exception).</p>	✓	
<p><b><u>LIFETIME MATERIAL AND WORKMANSHIP</u></b>  The UPF poly water tank shall be provided with a lifetime material and workmanship limited warranty.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (No Exception).</p>	✓	
<p><b><u>TEN (10) YEAR STRUCTURAL INTEGRITY</u></b>  Each new piece of apparatus shall be provided with a ten (10) year material and workmanship limited warranty on the apparatus body. The warranty shall cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service.</p> <p>A copy of the warranty certificate shall be submitted with the bid package (No Exception).</p>	✓	

# Specifications

Bidder  
Complies

Yes No

## PUMP WARRANTY

A Waterous five (5) year warranty shall be provided for the pump.

## TEN (10) YEAR NON-PRO-RATED PAINT AND CORROSION

Each new piece of apparatus shall be provided with a ten (10) year non-pro-rated paint and corrosion limited warranty on the apparatus cab. The warranty shall cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

## THREE (3) YEAR MATERIAL AND WORKMANSHIP

The gold leaf lamination shall be provided with a three (3) year material and workmanship limited warranty. The warranty shall cover the gold leaf lamination as being free from defects in material and workmanship that would arise under normal use and service.

A copy of the warranty certificate shall be submitted with the bid package (No Exception).

## LOOSE EQUIPMENT

The following equipment shall be furnished with the completed unit:

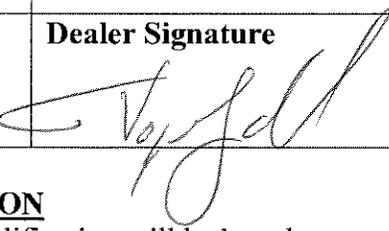
1. One bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit
2. One set of Zico folding wheel chocks with under body mounting brackets
3. Dri-dek shall be provided for all compartment floors.
4. One 10 foot fiberglass I-beam handle pike pole

## ENGINE QUESTIONNAIRE

Vendors must complete the questionnaire below regarding manufacturer, dealer and service center information:

<b>MANUFACTURER</b> E-ONE, Inc.	<b>DEALER</b> Vogelpohl Fire Equipment Inc.	<b>SERVICE CENTER</b> Vogelpohl Fire Equipment Inc.
<b>Address</b> 1601 Southwest 37th Ave	<b>Address</b> 2770 Circleport Dr.	<b>Address</b> 2770 Circleport Dr.
<b>City/State/Zip</b> Ocala, FL 34474	<b>City/State/Zip</b> Erlanger, KY 41018	<b>City/State/Zip</b> Erlanger, KY 41018

Specifications	Bidder Complies	
	Yes	No

<b>Phone</b> 352-237-1122	<b>Phone</b> 859-282-1000	<b>Phone</b> 859-282-1000
<b>Apparatus Model Name</b> Mainline Typhoon Pumper	<b>Number of Days: Contract Award to Delivery</b> 240-270	<b>Driving miles from LFD to Service Center</b> 75 Miles
<b>Overall Length</b> 32' 10"	<b>Transmission Make and Model</b> Allison 3000EVS	<b>Service Center Sq. Ft.</b> 15,000
<b>Overall Height</b> 9'9" (117")	<b>Pump Make and Model</b> Waterous CSU 1500gpm	<b>Number of Factory Trained Technicians</b> 4
<b>Overall Width</b> 8' 4"	<b>Front Axle Capacity</b> 20,000	<b>Number of Mobile Service Units</b> 3
<b>Wheelbase</b> 204"	<b>Front Axle Loaded Weight(Est.)</b> 18,900	<b>Number of Indoor Service Bays</b> 5
<b>Curb-to-Curb Turning Radius</b> 23.1'	<b>Rear Axle Capacity</b> 27,000	<b>Frame Dimension</b> 10.25 x 3.5 x .375 (Galvanized) Frame liner 9.375 x 3.125 x .375. (Galvanized)
<b>Engine Make &amp; Model</b> Cummins ISL 450hp	<b>Rear Axle Loaded Weight(Est.)</b> 25,700	<b>Frame Resistance To Bending</b> 3,161400
<b>Engine Torque Rating</b> 1250 lb.-ft. peak torque at 1400 rpm	<b>Hose Bed Height from Ground</b> 63"	
<b>Bidder</b> Vogelpohl Fire Equipment	<b>Dealer Signature</b> 	<b>Date</b> October 4, 2013

**VENDOR QUALIFICATION**

Determination of vendor qualification will be based on compliance with this specification

# Specifications

Bidder  
Complies

Yes No

Qualified vendors(based on submitted sealed specifications) will be asked to participate in an online reverse auction pricing event on October 14, 2013 at 2:00PM. At that time, qualified vendors will submit pricing for the items listed below. It is anticipated that an initial purchase of one truck will take place in the 4<sup>th</sup> quarter of 2013 however, depending on funding, two additional trucks may be purchased over the next 3 to 9 months.

Pricing Sheet					
Item #	Description	Quantity	Order Placed By	Price Each	
Item 1	Triple Combination Firetruck per the specifications	1	12/31/2013	Do Not Submit Pricing With Sealed Specifications	
Item 2	Triple Combination Firetruck per the specifications	2	12/31/2013	Do Not Submit Pricing With Sealed Specifications	
Item 3	Triple Combination Firetruck per the specifications	3	12/31/2013	Do Not Submit Pricing With Sealed Specifications	
Item 4	Triple Combination Firetruck per the specifications	2	6/30/2014	Do Not Submit Pricing With Sealed Specifications	
Item 5	Triple Combination Firetruck per the specifications	3	6/30/2014	Do Not Submit Pricing With Sealed Specifications	
<b>Optional Items</b>					
Item 6	Jake Brake (see page 13 of the specifications)	1 to 3	6/30/2014	Do Not Submit Pricing With Sealed Specifications	
Item 7	Powertrain Upgrade (see page 15 of the specifications)	1 to 3	6/30/2014	Do Not Submit Pricing With Sealed Specifications	
Item 8	Treadplate Hose Bed Cover (see page 46 of the specifications)	1 to 3	6/30/2014	Do Not Submit Pricing With Sealed Specifications	
Item 9	Optional Pressure Gauges ( see page 63 of the specifications)	1 to 3	6/30/2014	Do Not Submit Pricing With Sealed Specifications	



## STATEMENT OF WARRANTY 1 YEAR STANDARD



E-ONE (the "Company") warrants each new item of fire and rescue apparatus manufactured by it against defects in material and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of one year from the date of delivery to the original user-purchaser.

E-ONE'S obligation under this warranty is strictly limited to replacing or repairing, as the Company may elect, any part or parts of such apparatus which the Company's examination discloses to be defective in material or workmanship.

The Company reserves the right to require any such repairs to be made either at a Company owned service facility or another approved service facility at the Company's option. Transportation cost to and from the servicing location are the responsibility of the user-purchaser.

The E-ONE warranty shall not apply to:

1. Major components or trade accessories such as purchased chassis, engines, transmissions, tires, pumps, signaling devices, or batteries that have a separate warranty by the original manufacturer or to ancillary equipment used in fire fighting.
2. Normal adjustments and maintenance services.
3. Replacement of consumable parts including, but not limited to; filters, lubricants, belts, light bulbs, wiper blades, brake linings and brake pads.
4. Failure resulting from the apparatus being operated in a manner or for a purpose not recommended by E-ONE.
5. Any apparatus, which shall have been repaired, modified or altered in any way so as, in the Company's sole judgment, to have adversely affected the unit's stability or reliability.
6. Items subjected to misuse, negligence, accident or improper maintenance.
7. Loss of time or use of the vehicle, inconvenience or other incidental expenses.

Nothing contained in this warranty shall make E-ONE liable beyond the express limitations hereof, for loss, injury or damage of any kind to any person or entity resulting from any defect or failure in this vehicle.

To the extent permitted by law, THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

To the extent permitted by law, this warranty is also in lieu of all other obligations or liabilities on the part of E-ONE or the Seller, including liability for incidental and consequential damages.

E-ONE makes no representation that the vehicle has the capacity to perform any functions other than as contained in the Company's written literature, catalogs or specifications accompanying delivery of the vehicle.

No person or affiliated Company representative is authorized to give any other warranties or to assume any other liability on behalf of E-ONE in connection with sale, service or repair of any apparatus manufactured by the Company.

E-ONE reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

Whenever a performance bond is required under a contract or purchase order, coverage under the performance bond shall only extend for one year from the delivery date of the equipment. This limitation under the performance bond shall not affect any extended warranties offered by E-One or any OEM's.



## STATEMENT OF WARRANTY LIFETIME FRAME WARRANTY



E-ONE (the "Company") warrants to the original user-purchaser only of an E-ONE chassis that the frame and frame members are free of defects in material and workmanship, ordinary wear and tear excepted, for the lifetime of the vehicle.

E-ONE'S obligation under this warranty is strictly limited to replacing or repairing, as the Company may elect, any part or parts of such frame or frame members which the Company's examination discloses to be defective in material or workmanship. This company reserves the right to require any such repairs to be made either at a Company owned service facility or another approved service facility at the Company's option. Transportation cost to and from the servicing location are the responsibility of the user-purchaser.

This warranty shall be null and void if the frame shows any evidence of alterations, cutting, splicing, welding or drilling of rails or flanges without the written authorization of E-ONE. Further, this warranty shall be void if the vehicle is involved in an accident, shows signs of abuse, neglect, or evidence of being operated in a manner or purpose not recommended by E-ONE.

Nothing contained in this warranty shall make E-ONE liable beyond the express limitations hereof, for loss, injury or damage of any kind to any person or entity resulting from any defect or failure of the chassis.

To the extent permitted by law, THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATIONS, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

To the extent permitted by law, this warranty is also in lieu of all other obligations or liabilities on the part of E-ONE or the Seller, including liability for incidental and consequential damages.

E-ONE makes no representation that any E-ONE chassis has the capacity to perform any functions other than as contained in the Company's written literature, catalogs or specifications accompanying delivery of the vehicle.

No person or affiliated Company representative is authorized to give any other warranties or to assume any other liability on behalf of E-ONE in connection with sale, service or repair of any apparatus manufactured by the Company.

E-ONE reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

REV C  
2/7/05

*NOTE: Surety bond, if required, applies only to E-ONE's Basic One Year Limited Warranty, and not to this or any other extended warranty made by E-ONE or any of E-ONE's suppliers.*



**STATEMENT OF WARRANTY  
STAINLESS STEEL PLUMBING COMPONENTS  
10 YEAR WARRANTY POLICY**



E-ONE (the "Company") warrants all E-ONE manufactured stainless steel plumbing components used in the construction of E-ONE fire apparatus water/foam plumbing systems against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended to the original user-purchaser for a period of ten years from the date of delivery to the original user-purchaser, whichever occurs first.

The Company reserves the right to require any such repairs to be made either at a Company owned service facility or another approved service facility at the Company's option. Transportation cost to and from the servicing location are the responsibility of the user-purchaser.

E-ONE will repair, or replace the specific E-ONE manufactured stainless steel plumbing component, at our option, with a new E-ONE manufactured stainless steel plumbing component. E-ONE will cover all customary and reasonable costs to remove and install the E-ONE manufactured stainless steel plumbing component. This warranty will not cover components that have been misused or abused, or due to accident or natural disaster. E-ONE will not cover any unauthorized third party repairs or alterations. Any of these actions may void the warranty.

Nothing contained in this warranty shall make E-ONE liable beyond the express limitations hereof, for loss, injury or damage of any kind to any person or entity resulting from any defect or failure in the E-ONE manufactured stainless steel plumbing components.

To the extent permitted by law, THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

To the extent permitted by law, this warranty is also in lieu of all other obligations or liabilities on the part of E-ONE or the Seller, including liability for incidental and consequential damages.

E-ONE makes no representation that the E-ONE manufactured stainless steel plumbing components have the capacity to perform any functions other than as contained in the Company's written literature, catalogs or specifications accompanying delivery of the apparatus.

No person or affiliated Company representative is authorized to give any other warranties or to assume any other liability on behalf of E-ONE in connection with sale, service or repair of any apparatus manufactured by the Company.

E-ONE reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

REV C  
2/7/05

*NOTE: Surety bond, if required, applies only to E-ONE's Basic One Year Limited Warranty, and not to this or any other extended warranty made by E-ONE or any of E-ONE's suppliers.*



## STATEMENT OF WARRANTY

### 10 YEAR/100,000 MILE STRUCTURAL WARRANTY



The STATEMENT OF WARRANTY ensures the original user-purchaser that any E-ONE manufactured cab and/or body is, and will remain free of structural defects, provided they are used in a normal and reasonable manner. The cab and body are defined as modular structures, fabricated with aluminum extrusion and plate. Excluded is all hardware, mechanical items, electrical items or paint finishes. Structural componentry is defined as the body/cab supports and mountings as identified in E-ONE's specifications.

The STATEMENT OF WARRANTY is strictly limited to the repairing or replacing, as E-ONE (the "Company") may elect, any part or parts of such apparatus which the Company's examination discloses to be defective in material or workmanship.

The STATEMENT OF WARRANTY shall extend for a period of 10 years/100,000 miles from the delivery date to the original user-purchaser. The Company reserves the right to require any such repairs to be made either at a Company owned service facility or another approved service facility at the Company's option. Transportation cost to and from the servicing location is the responsibility of the user-purchaser.

The STATEMENT OF WARRANTY shall not cover the following:

1. Damage caused by fire, misuse, negligence, or accident.
2. Damage caused by theft, vandalism, riot or explosion.
3. Damage caused by lightning, earthquake, windstorm, hail, water or flood.
4. Any body and/or cab, which shall have been repaired, modified or altered without the Company's authorization.
5. Damage caused from exposure to road de-icing compounds or use in an acidic environment.
6. Damage from lack of maintenance or cleaning.
7. Loss of time, loss of use of the product, inconvenience, lodging, food or other consequential loss that may result from a failure.

Nothing contained in the STATEMENT OF WARRANTY shall make E-ONE liable beyond the express limitations hereof, for loss, injury or damage of any kind to any person or entity resulting from any defect or failure in the cab and/or body.

E-ONE reserves the right to make design changes or improvements in its products without imposing any obligation upon itself to change or improve previously manufactured products.

REV C  
2/27/06

*NOTE: Surety bond, if required, applies only to E-ONE's Basic One Year Limited Warranty, and not to this or any other extended warranty made by E-ONE or any of E-ONE's suppliers.*



## STATEMENT OF WARRANTY

### TEN YEAR LIMITED PAINT AND PERFORATION



E-ONE, warrants each new fire and rescue apparatus during the warranty period, when used in normal and reasonable manner. All apparatus shall be warranted against peeling, cracking, blistering and corrosion. This warranty shall provide for repair or replacement at E-One's option, any claim in accordance with the following terms and conditions.

#### WHAT IS COVERED

- **WARRANTY APPLIES** - This warranty is for all new fire and rescue apparatus manufactured by E-ONE and is extended only to the original user-purchaser. The warranty registration must be received by E-ONE within 30 days of the in-service for the warranty to apply.
- **REPAIRS COVERED** -The warranty covers repair or replacement at E-ONE'S option. Repairs shall be made at an E-ONE owned service facility or another approved service facility at E-ONE's option.
- **OBTAINING REPAIRS** -The original user-purchaser must notify E-ONE in writing within 30 days after any claimed defect has appeared. Transportation costs to and from the servicing center shall be the responsibility of the user-purchaser.
- **WARRANTY PERIOD** -The warranty period shall begin upon delivery of the apparatus to the original user-purchaser. Corrosion perforation shall be covered for **TEN YEARS**. Corrosion perforation is defined as **complete penetration** through the exterior metal of the apparatus. The following percentages apply:

<b>Topcoat &amp; Appearance:</b> Gloss, Color Retention, Cracking	<b>Coating System, Adhesion &amp; Corrosion:</b> Includes Dissimilar metal corrosion, Flaking, Blistering, Bubbling
0 to 72 months    100%	0 to 36 months    100%
73 to 120 months    50%	37 to 84 months    50%
	85 to 120 months    25%

#### NOTES:

- Under carriage, cab and body interiors are covered under our standard one year warranty.
- Demonstration vehicles sold to an end user will have the full warranty, if sold within one year of demonstration service, and will be prorated if sold after the first year

#### WHAT IS NOT COVERED

- Any cab not manufactured by E-ONE.
- Damage caused by fire, misuse, negligence or accident.
- Damage caused by theft, vandalism, riot or explosion.
- Damage caused by lightning, earthquake, windstorm, hail, flood or use in an acidic environment.
- Any repairs, modifications, alterations or after market parts added after manufacture without the authorization of E-ONE.
- Damage from lack of, or poor maintenance and cleaning.
- Gold leaf or striping except that which is affected by repair. (Gold leaf or striping must have been installed during manufacturing to be covered under this limited warranty).
- Loss of time, loss of use of the product, inconvenience, lodging, food or other consequential or incidental loss that may result from a failure.
- UV paint fade (UV paint fade is covered by a separate Sikkens Warranty. Refer to Sikkens Warranty for complete details).

REV B  
4-16-09

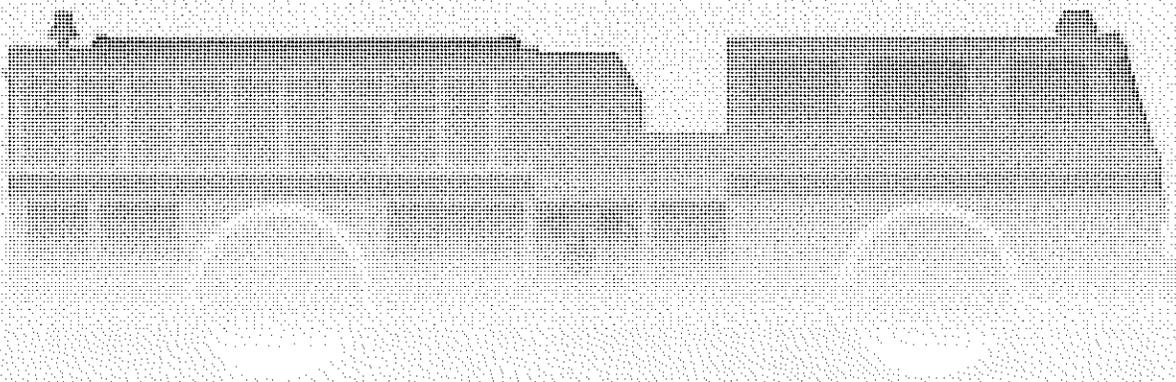
*NOTE: Surety bond, if required, applies only to E-ONE's Basic One Year Limited Warranty, and not to this or any other extended warranty made by E-ONE or any of E-ONE's suppliers.*



# Cummins Warranty

Worldwide

Fire Apparatus/Crash Trucks



# Coverage

## Products Warranted

This Warranty applies to new diesel Engines sold by Cummins and delivered to the first user on or after April 1, 2007, that are used in fire apparatus truck and crash truck\* applications Worldwide.

## Base Engine Warranty

The Base Engine Warranty covers any failures of the Engine which result, under normal use and service, from a defect in material or factory workmanship (Warrantable Failure). This Coverage begins with the sale of the Engine by Cummins and ends five years or 100,000 miles (160,935 kilometers), whichever occurs first, after the date of delivery of the Engine to the first user.

Engine aftertreatment components included in the Cummins Critical Parts List (CPL) and marked with a Cummins part number are covered under Base Engine Warranty.

Additional Coverage is outlined in the Emission Warranty section.

**These Warranties are made to all Owners in the chain of distribution and Coverage continues to all subsequent Owners until the end of the periods of Coverage.**

# Cummins Responsibilities

Cummins will pay for all parts and labor needed to repair the damage to the Engine resulting from a Warrantable Failure.

Cummins will pay for the lubricating oil, antifreeze, filter elements, belts, hoses and other maintenance items that are not reusable due to the Warrantable Failure.

Cummins will pay for reasonable labor costs for Engine removal and reinstallation when necessary to repair a Warrantable Failure.

Cummins will pay reasonable costs for towing a vehicle disabled by a Warrantable Failure to the nearest authorized repair location. In lieu of the towing expense, Cummins will pay reasonable costs for mechanics to travel to and from the location of the vehicle, including meals, mileage and lodging when the repair is performed at the site of the failure.

# Owner Responsibilities

Owner is responsible for the operation and maintenance of the Engine as specified in Cummins Operation and Maintenance Manuals. Owner is also responsible for providing proof that all recommended maintenance has been performed.

Before the expiration of the applicable Warranty, Owner must notify a Cummins distributor, authorized dealer or other repair location approved by Cummins of any Warrantable Failure and make the Engine available for repair by such facility. Except for Engines disabled by a Warrantable Failure, Owner must also deliver the Engine to the repair facility.

Service locations are listed on the Cummins Worldwide Service Locator at [cummins.com](http://cummins.com).

Owner is responsible for the cost of lubricating oil, antifreeze, filter elements and other maintenance items provided during Warranty repairs unless such items are not reusable due to the Warrantable Failure.

Owner is responsible for communication expenses, meals, lodging and similar costs incurred as a result of a Warrantable Failure.

Owner is responsible for non-Engine repairs and for "downtime" expenses, cargo damage, fines, all applicable taxes, all business costs and other losses resulting from a Warrantable Failure.

Owner is responsible for a \$100 (U.S. Dollars) deductible per each service visit under this plan in the 3rd, 4th and 5th years of Base Engine Warranty. The deductible will not be charged during the first 2 years of the Base Engine Warranty.

# Limitations

Cummins is not responsible for failures or damage resulting from what Cummins determines to be abuse or neglect, including, but not limited to: operation without adequate coolants or lubricants; overfueling; overspeeding; lack of maintenance of lubricating, cooling or intake systems; improper storage, starting, warm-up, run-in or shutdown practices; unauthorized modifications of the Engine.

Any unauthorized modifications to the aftertreatment could negatively effect emissions certification and void Warranty.

Cummins is also not responsible for failures caused by incorrect oil, fuel or diesel exhaust fluid or by water, dirt or other contaminants in the fuel, oil or diesel



exhaust fluid.

This Warranty does not apply to accessories supplied by Cummins which bear the name of another company. Such non-warranted accessories include, but are not limited to: alternators, starters, fans, air conditioning compressors, clutches, filters, transmissions, torque converters, vacuum pumps, power steering pumps, fan drives and air compressors. Cummins branded alternators and starters are covered for the first two years from the date of delivery of the Engine to the first user, or the expiration of the Base Engine Warranty, whichever occurs first.

Failures resulting in excessive oil consumption are not covered beyond the duration of the Coverage or 100,000 miles (160,935 kilometers) or 7,000 hours from the date of delivery of the Engine to the first user, whichever of the three occurs first. Before a claim for excessive oil consumption will be considered, Owner must submit adequate documentation to show that consumption exceeds Cummins published standards.

Failures of belts and hoses supplied by Cummins are not covered beyond the first year from the date of delivery of the Engine to the first user or the duration of the Warranty, whichever occurs first.

Parts used to repair a Warrantable Failure may be new Cummins parts, Cummins approved rebuilt parts or repaired parts. Cummins is not responsible for failures resulting from the use of parts not approved by Cummins.

A new Cummins or Cummins approved rebuilt part used to repair a Warrantable Failure assumes the identity of the part it replaced and is entitled to the remaining Coverage hereunder.

Cummins Inc. reserves the right to interrogate Electronic Control Module (ECM) data for purposes of failure analysis.

**CUMMINS DOES NOT COVER WEAR OR WEAROUT OF COVERED PARTS.**

**CUMMINS IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

**THIS WARRANTY AND THE EMISSION WARRANTY SET FORTH HEREINAFTER ARE THE SOLE WARRANTIES MADE BY CUMMINS IN REGARD TO THESE ENGINES. CUMMINS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

# Emission Warranty

## Products Warranted

This Emission Warranty applies to new Engines marketed by Cummins that are used in the United States\*\* in vehicles designed for transporting persons or property on a street or highway. This Warranty applies to Engines delivered to the first user on or after September 1, 1992.

## Coverage

Cummins warrants to the first user and each subsequent purchaser that the Engine is designed, built and equipped so as to conform at the time of sale by Cummins with all U.S. federal emission regulations applicable at the time of manufacture and that it is free from defects in material or factory workmanship which would cause it not to meet these regulations within the longer of the following periods: (A) Five years or 100,000 miles (160,935 kilometers) of operation, whichever occurs first, as measured from the date of delivery of the Engine to the first user or (B) The Base Engine Warranty.

If the vehicle in which the Engine is installed is registered in the state of California, a separate California Emission Warranty also applies.

## Limitations

Failures, other than those resulting from defects in material or factory workmanship, are not covered by this Warranty.

Cummins is not responsible for failures or damage resulting from what Cummins determines to be abuse or neglect, including, but not limited to: operation without adequate coolants or lubricants; overfueling; overspeeding; lack of maintenance of lubricating, cooling or intake systems; improper storage, starting, warm-up, run-in or shutdown practices; unauthorized modifications of the Engine.

Any unauthorized modifications to the aftertreatment could negatively effect emissions certification and void Warranty.

Cummins is also not responsible for failures caused by incorrect oil, fuel or diesel exhaust fluid or by water, dirt or other contaminants in the fuel, oil or diesel exhaust fluid.

Cummins is not responsible for non-Engine repairs, "downtime" expenses, cargo damage, fines, all applicable taxes, all business costs or other losses resulting from a Warrantable Failure.

**CUMMINS IS NOT RESPONSIBLE FOR INCIDENTAL  
OR CONSEQUENTIAL DAMAGES.**

\* Airport operated crash trucks and fire department  
operated trucks employed to respond to fires,  
hazardous material releases, rescue and other  
emergency-type situations.

\*\* United States includes American Samoa, the  
Commonwealth of Northern Mariana Islands, Guam,  
Puerto Rico and the U.S. Virgin Islands.



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## NEW PRODUCT WARRANTY



PARTICIPATING OEM SALES  
DISTRIBUTOR SALES

### LIMITED WARRANTY ON NEW ALLISON AUTOMATIC TRANSMISSIONS USED IN AUTOMOTIVE FIRE APPARATUS APPLICATIONS

Allison Transmission will provide for repairs or replacement, at its option, during the warranty period of each new Allison transmission listed below that is installed in an Automotive Fire Apparatus in accordance with the following terms, conditions, and limitations.

#### WHAT IS COVERED

- **WARRANTY APPLIES** — This warranty is for new Allison transmission models listed below installed in an Automotive Fire Apparatus and is provided to the original and any subsequent owner(s) of the vehicle during the warranty period.
- **REPAIRS COVERED** — The warranty covers repairs or replacement, at Allison Transmission's option, to correct any transmission malfunction resulting from defects in material or workmanship occurring during the warranty period. Needed repairs or replacements will be performed using the method Allison Transmission determines most appropriate under the circumstances.
- **TOWING** — Towing is covered to the nearest Allison Transmission Distributor or authorized Dealer only when necessary to prevent further damage to your transmission.
- **PAYMENT TERMS** — Warranty repairs, including parts and labor, will be covered per the schedule shown in the chart contained in section "APPLICABLE MODELS, WARRANTY LIMITATIONS, AND ADJUSTMENT SCHEDULE."
- **OBTAINING REPAIRS** — To obtain warranty repairs, take the vehicle to any Allison Transmission Distributor or authorized Dealer within a reasonable amount of time and request the needed repairs. A reasonable amount of time must be allowed for the Distributor or Dealer to perform necessary repairs.
- **TRANSMISSION REMOVAL AND REINSTALLATION** — Labor costs for the removal and re-installation of the transmission, when necessary to make a warranty repair, are covered by this warranty.
- **WARRANTY PERIOD** — The warranty period for all coverages shall begin on the date the transmission is delivered to the first retail purchaser, with the following exception:

Demonstration Service - A transmission in a new truck or bus may be demonstrated to a total of 5000 miles (8000 kilometers). If the vehicle is within this limit when sold to a retail purchaser, the warranty start date is the date of purchase. Normal warranty services are applicable to the demonstrating Dealer. Should the truck or bus be sold to a retail purchaser after these limits are reached, the warranty period will begin on the date the vehicle was first placed in demonstration service and the purchaser will be entitled to the remaining warranty.

#### APPLICABLE MODELS, WARRANTY LIMITATIONS, AND ADJUSTMENT SCHEDULE

APPLICABLE MODELS	WARRANTY LIMITATIONS (Whichever occurs first)		ADJUSTMENT CHARGE TO BE PAID BY THE CUSTOMER	
	Months	Transmission Miles Or Kilometers	Parts	Labor
MT, MD 3000, 3200, 3500, 3700	0-24	No Limit	No Charge	No Charge
HT with Hydraulic Controls	0-24	No Limit	No Charge	No Charge
AT, 1000 Series™, 2000 Series™, 2400 Series™	0-36	No Limit	No Charge	No Charge
HT with Electronic Controls	0-60	No Limit	No Charge	No Charge
HD 1000 EVS, 2100 EVS, 2200 EVS, 2350 EVS, 2500 EVS, 2550 EVS, 3000 EVS, 3500 EVS, 4000 4000 EVS, 4500, 4500 EVS, 4700 EVS 4800 EVS	0-60	No Limit	No Charge	No Charge

## WHAT IS NOT COVERED

- **DAMAGE DUE TO ACCIDENT, MISUSE, or ALTERATION** — Defects and damage caused as the result of any of the following are not covered:
  - Flood, collision, fire, theft, freezing, vandalism, riot, explosion, or objects striking the vehicle;
  - Misuse of the vehicle;
  - Installation into unapproved applications and installations;
  - Alterations or modification of the transmission or the vehicle, and
  - Damage resulting from improper storage (refer to long-term storage procedure outlined in the applicable Allison Service Manual)
  - Anything other than defects in Allison Transmission material or workmanship

NOTE: This warranty is void on transmissions used in vehicles currently or previously titled as salvaged, scrapped, junked, or totaled.

- **CHASSIS, BODY, and COMPONENTS** — The chassis and body company (assemblers) and other component and equipment manufacturers are solely responsible for warranties on the chassis, body, component(s), and equipment they provide. Any transmission repair caused by an alteration(s) made to the Allison transmission or the vehicle which allows the transmission to be installed or operated outside of the limits defined in the appropriate Allison Installation Guideline is solely the responsibility of the entity making the alteration(s).
- **DAMAGE CAUSED by LACK of MAINTENANCE or by the USE of TRANSMISSION FLUIDS NOT RECOMMENDED in the OPERATOR'S MANUAL** — Defects and damage caused by any of the following are not covered:
  - Failure to follow the recommendations of the maintenance schedule intervals applicable to the transmission;
  - Failure to use transmission fluids or maintain transmission fluid levels recommended in the Operator's Manual.
- **MAINTENANCE** — Normal maintenance (such as replacement of filters, screens, and transmission fluid) is not covered and is the owner's responsibility.
- **REPAIRS by UNAUTHORIZED DEALERS** — Defects and damage caused by a service outlet that is not an authorized Allison Transmission Distributor or Dealer are not covered.
- **USE of OTHER THAN GENUINE ALLISON TRANSMISSION PARTS** — Defects and damage caused by the use of parts that are not genuine Allison Transmission parts are not covered.
- **EXTRA EXPENSES** — Economic loss and extra expenses are not covered. Examples include but are not limited to: loss of vehicle use; inconvenience; storage; payment for loss of time or pay; vehicle rental expense; lodging; meals; or other travel costs.
- **"DENIED PARTY" OWNERSHIP** — Warranty repair parts and labor costs are not reimbursed to any participating or non-participating OEMs, dealers or distributors who perform warranty work for, or on behalf of, end users identified by the United States as being a "denied party" or who are citizens of sanctioned or embargoed countries as defined by the U.S. Department of Treasury Office of Foreign Assets Control. Furthermore, warranty reimbursements are not guaranteed if the reimbursement would be contrary to any United States export control laws or regulations as defined by the U.S. Department of Commerce, the U.S. Department of State, or the U.S. Department of Treasury.

## OTHER TERMS APPLICABLE TO CONSUMERS AS DEFINED by the MAGNUSON-MOSS WARRANTY ACT

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Allison Transmission does not authorize any person to create for it any other obligation or liability in connection with these transmissions. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO THESE TRANSMISSIONS IS LIMITED IN DURATION TO THE DURATION OF THIS WRITTEN WARRANTY. PERFORMANCE OF REPAIRS AND NEEDED ADJUSTMENTS IS THE EXCLUSIVE REMEDY UNDER THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY. ALLISON TRANSMISSION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (SUCH AS, BUT NOT LIMITED TO, LOST WAGES OR VEHICLE RENTAL EXPENSES) RESULTING FROM BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.\*\*

\*\* Some states do not allow limitations on how long an implied warranty will last or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

## OTHER TERMS APPLICABLE TO OTHER END-USERS

THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THE ALLISON TRANSMISSION MODELS LISTED ABOVE AND IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ALLISON TRANSMISSION DOES NOT AUTHORIZE ANY PERSON TO CREATE FOR IT ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH SUCH TRANSMISSIONS. ALLISON TRANSMISSION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM BREACH OF THIS WARRANTY OR ANY IMPLIED WARRANTY.

## QUESTIONS

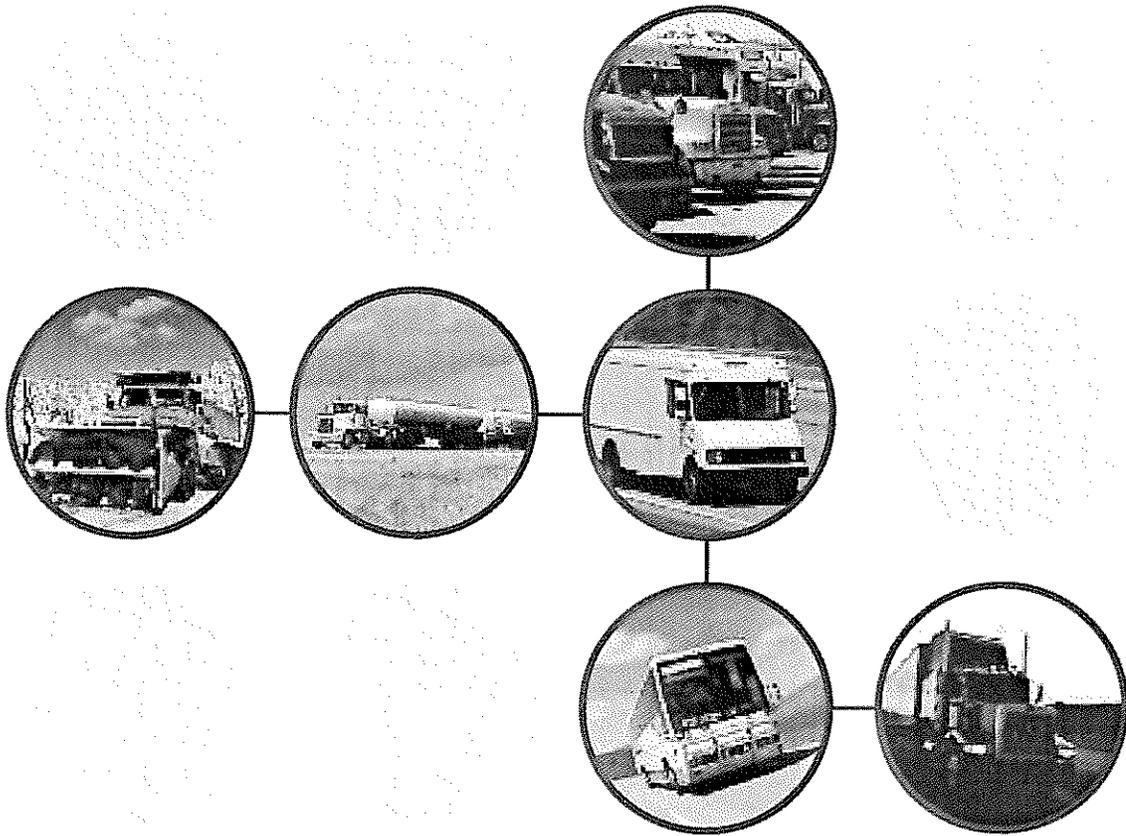
If you have any questions regarding this warranty or the performance of warranty obligations, you may contact any Allison Transmission Distributor or Dealer or write to:

Allison Transmission  
General Motors Corporation  
P.O. Box 894  
Indianapolis, IN 46206-0894  
Attention: Warranty Administration 462-470-PF9

Form SE0616EN (200606)

# Commercial Vehicle Systems

Warranty / Model Year 2011 Vehicles



## Simpler is better.

Warranty coverage is essential to protecting your investment. But understanding the full details of your coverage can be challenging. This straightforward approach allows you, our valued customer, to better understand how your specific vehicle applications will be covered.

### **Advantage Program**

Purchasing additional coverage on select components will continue to safeguard your investment against major repair costs after the initial base coverage expires. You can find out more about the Advantage Program by visiting [www.arvinmeritor.com](http://www.arvinmeritor.com) or by contacting ArvinMeritor at 800-535-5560.

■ <b>Linehaul</b> .....	<b>4-5</b>
■ <b>General Service</b> .....	<b>6-7</b>
■ <b>Heavy Service</b> .....	<b>8-9</b>
■ <b>Restricted Service</b> .....	<b>10</b>
■ <b>Terms and Conditions</b> .....	<b>11</b>

### How to Read Warranty Coverage:

Number of Years / Mileage (in thousands) / P=Parts Only  
Unl=Unlimited / P&L=Parts & Labor

Models or components that are approved for use by ArvinMeritor's vocational guidelines contained in ArvinMeritor Publication TP-9441 for axles, SP-8320 for trailer axles, which are not specifically listed, are warranted for one year, unlimited miles, parts only (1/Unl/P).

**ArvinMeritor**<sup>TM</sup>

# Linehaul Warranty Information



## Linehaul Vehicles:

- |                |                   |                    |                        |
|----------------|-------------------|--------------------|------------------------|
| ■ Auto Hauler  | ■ Flatbed         | ■ Livestock Hauler | ■ Refrigerated Freight |
| ■ Bulk Hauler  | ■ General Freight | ■ Moving Van       | ■ Tanker               |
| ■ Chip Hauler* | ■ Grain Hauler    | ■ Pipe Hauler      | ■ Triples              |
| ■ Doubles      |                   |                    |                        |

\* Chip Hauler vehicles require specific axle models listed below and Linehaul condition to be eligible for Linehaul warranty consideration.

## Linehaul Typically Is:

- High mileage operation (over 60,000 miles/year)
- Operation on road surfaces made of concrete, asphalt, maintained gravel, crushed rock, hard packed dirt or other similar surfaces (moderate grades)
- Greater than 30 miles between starting and stopping

Coverage under ArvinMeritor's warranty requires that the application of products be properly approved pursuant to OEM, ArvinMeritor, Meritor WABCO, and ZF engineering approvals. Refer to TP-9441 for axles, SP-8320 for trailer axles, and/or contact ArvinMeritor regarding specific application approval questions on any product line.

## Front Non-Drive Steer Axles – 5/750/P&L

FD-965	FF-943	FF-966	FG-943	MFS-10-144A-N	MFS-13-143A-N
FF-941	FF-944	FF-967	MFS-10-122A	MFS-12-143A-N	MFS-13-144A-N
FF-942	FF-961	FG-941	MFS-10-143A-N	MFS-12-144A-N	MFS-14-143A-N

## Composite Truck/Tractor Springs 3/300/P, 1/Uni/P&L

### Clutches

15.5" Manual-Adjust Clutch <sup>1</sup>	1/100/P&L
15.5" TwinXTend Self-Adjust Clutch <sup>1</sup>	3/350/P&L
17" FreedomLine Clutch <sup>1,2</sup>	3/350/P&L

<sup>1</sup> Clutches are warranted by ZF Sachs and administered by ArvinMeritor.

<sup>2</sup> Freedomline clutch consists of cover assembly and disc assembly.

### Transmissions – 5/750/P&L

ZF-FreedomLine 12-Speed<sup>1,2,3,4,5</sup>

<sup>1</sup> With approved synthetic lube (Without – 3/300/P&L).

<sup>2</sup> Multiple engine retarders are not approvable.

<sup>3</sup> Electronic shift systems 3/300/P&L.

<sup>4</sup> Hard surface applications only.

<sup>5</sup> Output seal 3/300/P&L.

## Drivelines

RPL	4/400/P, 1/Uni/P&L
92N	1/Uni/P
RN (155N - 18N)	1/Uni/P

### Meritor® XTended Lube – MXL™ Drivelines

17XN/17XT	3/350/P, 1/Uni/P&L
176XN/176XT	3/350/P, 1/Uni/P&L
18XN/18XT	3/350/P, 1/Uni/P&L

## Rear Drive Single Axles – 5/750/P&L

MFS-13-122	RS-21-145	RH-23-161
RS-19-144/145/A	RS-21-160	RS-23-161/A
MS-19-14X	RH-23-160	RS-23-180
MS-21-144MA-N	RS-23-160/A	RS-23-186

## Rear Drive Tandem/Tridem Axles – 5/750/P&L

RT-34-144/P/A	RT-50-160/P/A <sup>1,2,3</sup>	MT-40-943
RT-40-145/P/A	MT-34-14X/P	RZ-166 <sup>2,3</sup>
RT-40-160/P/A <sup>1,2,3</sup>	MT-40-14X/P	RZ-186
RT-46-160/P/A <sup>1,2,3</sup>	MT-40-143	RZ-188
RT-46-164EH/P/A <sup>1,2,3</sup>	MT-40-144/P	

<sup>1</sup> These models required for Chip Hauler and Linehaul warranty consideration.

<sup>2</sup> Warranty is 3/300/P&L when used with 2050 lb.ft. engines. Refer to Product Information Letter #293 for further details.

<sup>3</sup> Each vehicle must have a Request for Application Recommendation (RAR) approved by ArvinMeritor prior to vehicle build.

All RARs must identify the chassis number or VIN. Refer to Product Information Letter #303 and #396 for further details.

## Brake Components

Cam Q Series Trailer Brakes	5/500/P, 1/100/L
LX500 Feature <sup>2</sup>	5/750/P&L
Cam <sup>1</sup> Q Plus™	5/500/P, 1/Unl/P&L
ASA <sup>1</sup>	5/500/P, 1/Unl/P&L
Hubs/Cast Drums and Other Wheel-end Components	1/Unl/P
Hydraulic Disc Brakes	1/Unl/P
All Other Brakes	1/Unl/P
X30™ Drums <sup>3</sup>	12-Years or Wearable Life/P

<sup>1</sup> First year P&L.

<sup>2</sup> Includes: bushing, seal, cam, ASA lubrication and wear coverage of 3/500/P&L.

<sup>3</sup> Based on stamped wear diameter max.

## Trailer Axles

Wheel End Systems <sup>1</sup>	
Beam and Brackets	5/500/P, 1/100/L
Standard System <sup>2</sup>	1/100/P&L
PreSet by Meritor <sup>3</sup>	5/500/P&L
AxlePak4 <sup>4</sup>	4P/3L
Beam and Brackets	5/500/P, 1/100/L
AxlePak6 <sup>5</sup>	6P/5L
Beam and Brackets	6/600/P, 1/100/L

<sup>1</sup> Includes hub, wheel seals and wheel bearings—all systems require annual inspections and proper documentation to ensure full coverage.

<sup>2</sup> When installed by ArvinMeritor.

<sup>3</sup> Requires approved hubcap stating PreSet by Meritor on hubcap face.

<sup>4</sup> Applies to STEMCO Guardian HP Seal, STEMCO Pro-Torq nut, STEMCO Integrated Sentinel Hub Cap, and Meritor bearings.

<sup>5</sup> Applies to STEMCO Guardian HP Seal, STEMCO Pro-Torq nut, STEMCO Integrated Sentinel Hub Cap, and STEMCO matched bearing sets.

(For brake components and ABS coverage, refer to appropriate product warranties.)

## TAG/ Pusher Axles<sup>1</sup>

TQ, TQD, TR, TRD Beam and Brackets	3/300/P, 1/100/L
------------------------------------	------------------

<sup>1</sup> For brake components and ABS Coverage, refer to appropriate product warranties.

## Meritor® Tire Inflation System by PSI 3/500/P&L

## Trailer Air Suspension Systems

### MPA38/40 (Tandem Axle Parallelogram)

Major Structural Components	5/500/P, 1/100/L
Height Control Valve	1/100/P&L
Shock Absorbers	2/200/P&L
Air Springs	2/200/P, 1/100/L
Bushings	7/Unl/P, 5/Unl/L
PinLoc Air Controls	1/100/P&L
PinLoc Actuator	3/300/P&L

### MPA20 (Single Axle Parallelogram)

Major Structural Components	5/500/P, 1/100/L
Height Control Valve	1/100/P&L
Shock Absorbers	2/200/P&L
Air Springs	2/200/P, 1/100/L
Bushings	7/Unl/P, 5/Unl/L

### RFS/MTA

Major Structural Components	5/500/P, 1/100/L
Height Control Valve	1/100/P&L
Shock Absorbers	2/200/P&L
Air Springs & Rebound Straps	2/200/P, 1/100/L
Bushings	5/500/P, 3/300/L

(For axle and ABS coverage, refer to appropriate product warranties.)

## Meritor WABCO Components<sup>1</sup>

ABS (Anti-Lock Braking System) Air/Hydraulic	3/300/P&L
Hydraulic Power Brake (HPB)	3/300/P&L
ATC (Automatic Traction Control)	3/300/P&L
EX and PAN Air Disc Brake <sup>3,4</sup>	2/Unl/P&L
Air Dryers (All)	1/Unl/P&L, 3/300/P
Leveling Valves	1/Unl/P&L
Air Brake Valves	1/Unl/P&L, 3/300/P
Emissions Valve	2/200/P
Emission SCR Air Control Unit <sup>5</sup>	2/200/P
Clutch Controls	2/200/P&L
ECAS (Electronic Controlled Air Suspension)	3/300/P&L
Air Compressors (ALL) <sup>2</sup>	3/300/P&L
Electronic Stability Control (ESC)	3/300/P&L
Roll Stability Control (RSC)	3/300/P&L
OnGuard™	3/300/P&L
Trailer Roll Stability Support (RSS)	3/300/P&L
Trailer Control Line Filter	1/100/P&L
Trailer Control Line Filter with ABS Valve	4/400/P, 1/100/L
Trailer ABS Valve with Control Line Filter	4/400/P, 3/300/L

<sup>1</sup> Warranted by Meritor WABCO Vehicle Control Systems.

<sup>2</sup> WABCO compressors installed on Cummins, Mercedes, and DDC engines are not warranted or serviced by Meritor WABCO. Please contact your respective dealer/distributor of those engines for warranty and servicing.

<sup>3</sup> Brake warranty coverage is 5/750/P when using a Meritor WABCO chamber. For other chambers, brake coverage is 1/Unl/P.

<sup>4</sup> Meritor WABCO chamber warranty is 1/Unl/P.

<sup>5</sup> Must have an oil coalescing device installed in the air system located before the Air Control Unit.

# General Service Warranty Information



## General Service Vehicles:

■ Aerial Ladder Truck	■ Front Engine Commercial Chassis	■ Moving Van	■ Recreational Vehicles
■ Aerial Platform	■ Front Engine Integral Coach	■ Municipal Truck	■ Refrigerated Truck
■ Ambulance	■ General Freight	■ Newspaper Delivery	■ School Bus
■ Auto Hauler	■ Intercity Coach	■ Pick-Up and Delivery	■ Stake Truck
■ Beverage Truck	■ Intermodal Chassis	■ Pipe Hauler	■ Tanker
■ Chip Hauler	■ Livestock Hauler	■ Platform Auto Hauler	■ Tanker Truck
■ Cross Country Coach	■ Meat Packer	■ Pumper	■ Tour Bus
■ Flatbed		■ Rear Engine Integral Coach	■ Wrecker

## General Service Typically Is:

- Lower mileage operations (less than 60,000 miles/year)
- Generally, on-road service (less than 10% off-road)
- An average of three (3) miles between starting and stopping

Coverage under ArvinMeritor's warranty requires that the application of products be properly approved pursuant to OEM, ArvinMeritor, Meritor WABCO, and ZF engineering approvals. Refer to TP-9441 for axles, SP-8320 for trailer axles, and/or contact ArvinMeritor regarding specific application approval questions on any product line.

## Front Drive/Non-Drive Steer Axles – 2/Uni/P&L

FD-965	FF-966	17100	MFS-6-153C-N	MFS-8-163B-N	MFS-13-144A-N
FF-941	FF-967	17101	MFS-6-162C-N	MFS-10-122A	MFS-14-143A-N
FF-942	FG-941	FL-941	MFS-7-113C-N	MFS-10-143A-N	MFS-16-122A-N
FF-943	FG-943	FL-943	MFS-7-153C-N	MFS-10-144A-N	MFS-16-143A-N
FF-944	FG-952 <sup>1</sup>	MFS-6-151A-N	MFS-7-163C-N	MFS-12-143A-N	MFS-18-133A-N
FF-946	FH-941	MFS-6-153B-N	MFS-8-113B-N	MFS-12-144A-N	MFS-20-133A-N
FF-961	FH-945 <sup>1</sup>	MFS-6-162B-N	MFS-8-153B-N	MFS-13-143A-N	

<sup>1</sup> Can be used in front or tag position.

## Front Non-Drive Steer Axles

### with Unitized Wheel Ends – 3/Uni/P&L<sup>1</sup>

FG-952  
FH-941  
FH-946

<sup>1</sup> Includes: hub, wheel seals and wheel bearings.

## Clutches

15.5" HD Clutch<sup>1</sup> 1/100/P&L  
15.5" TwinXTend 1/100/P&L  
17" FreedomLine Clutch<sup>1</sup>/100/P&L

<sup>1</sup> Products with an in-service date prior to 11/01/02 warranted by Meritor Clutch Company.

## Transmissions – 3/Uni/P&L

ZF-FreedomLine 12-Speed<sup>1,2,3</sup>

<sup>1</sup> Multiple engine retarders are not approvable.

<sup>2</sup> Electronic shift systems 3/300/P&L.

<sup>3</sup> Hard surface applications only.

## Composite Truck/Tractor Springs 3/300/P, 1/Uni/P&L

## Drivelines

RPL 4/400/P, 1/Uni/P&L	Meritor® XTended Lube – MXL™ Drivelines
92N 1/Uni/P	17XN/17XT 3/350/P, 1/Uni/P&L
RN (155N - 18N) 1/Uni/P	176XN/176XT 3/350/P, 1/Uni/P&L
	18XN/18XT 3/350/P, 1/Uni/P&L

## Rear Drive Single Axles – 2/Uni/P&L

MS-10-113	MS-21-144MA-N	RH-23-161	RS-30-185
MS-11-113	RS-21-145	RS-23-160	MS-30-616
MS-12-113	RS-21-145/A	RS-23-160/A	MS-35-380
MFS-13-122	RS-21-160	RS-23-161	61142
MS-17-14X	RC-22-145	RS-23-161/A	61143
MS-19-14X	RC-22-145/A	RS-23-186	61152
RS-13-120	RC-23-160	RS-24-160/A	61153
RS-15-120	RC-23-161	RC-25-160	71063
RS-17-144/145/A	RC-23-162 <sup>1</sup>	RS-25-160/A	71162
RS-19-144/145/A	RC-23-165 <sup>1</sup>	RS-26-185	71163
MS-21-14X	RH-23-160	MS-26-616	

<sup>1</sup> 3/Uni/P&L if PreSet by ArvinMeritor.

## Rear Drive Tandem/Tridem Axles – 3/Uni/P&L

RT-40-160/P/A	RT-46-164EH/P/A
RT-46-160/P/A	RT-50-160/P/A

## Bus & Coach, Recreational Vehicle Suspensions – 2/200/P&L<sup>1,2</sup>

RIS07EF	RIS09EF	RIS10EF	RIS12EF
RIS16EF	RIS18EF	RTA20ER	RTA13EA
RFA20ER	RFA23ER	RFA25ER	RTA28ER
RAL12EF			

<sup>1</sup> Coverage includes frames, brackets, arms, knuckles and seats.

<sup>2</sup> See limitations for minor component coverage.

## Rear Drive Tandem/Tridem Axles – 2/Uni/P&L

MT-34-14X/P	RT-40-145/P/A	MT-58-616
RT-34-144/P/A	MT-44-14X/P	RT-58-185 <sup>2</sup>
MT-40-14X/P	RT-44-145/P	MT-70-380
MT-40-143DA-N	RT-46-169	RZ-166
MT-40-143MA-N <sup>1</sup>	MT-52-616	RZ-186
MT-40-144/P	RT-52-185 <sup>2</sup>	RZ-188

<sup>1</sup> Axle model designated will vary according to options and variations specified on these axles. Contact ArvinMeritor Axle Applications Engineering for details.

<sup>2</sup> Each vehicle must have a Request for Application Recommendation (RAR) approved by ArvinMeritor prior to vehicle build. All RARs must identify the chassis number or VIN. Refer to Product Information Letter #303 and #396 for further details.

## Brake Components

Cam Q Series Trailer Brakes	3/Unl/P, 1/Unl/L
LX500 Feature <sup>1</sup>	3/Unl/P&L
Cam P <sup>3</sup>	2/200/P
Cam	3/Unl/P
Cam Q Plus™	3/Unl/P&L
Cam Q Plus™ <sup>3</sup>	2/200/P&L
ASA	3/Unl/P
ASA <sup>3</sup>	2/200/P
Hubs/Cast Drums and Other Wheel-end Components	1/Unl/P
Hydraulic Disc Brakes	1/Unl/P
All Other Brakes	1/Unl/P
X30™ Drums <sup>2</sup>	12-Years or Wearable Life/P

<sup>1</sup> Includes: bushing, seal, cam, ASA lubrication and wear coverage of 1/Unl/P.

<sup>2</sup> Based on stamped wear diameter max.

<sup>3</sup> Applies to Tour Bus and Cross Country Coach only.

## Trailer Axles

Wheel End Systems <sup>1</sup>	
Beam and Brackets	5/500/P, 1/100/L
Standard System <sup>2</sup>	1/Unl/P&L
AxlePak4 <sup>4</sup>	4P/3L
Beam and Brackets <sup>3</sup>	5/500/P, 1/100/L
AxlePak6 <sup>5</sup>	6P/5L
Beam and Brackets <sup>3</sup>	6/600/P, 1/100/L

<sup>1</sup> Includes hub, wheel seals and wheel bearings—all systems require annual inspections and proper documentation to ensure full coverage.

<sup>2</sup> When installed by ArvinMeritor.

<sup>3</sup> 9000 Series is 3/Unl/P, 1/Unl/L.

<sup>4</sup> Applies to STEMCO Guardian HP Seal, STEMCO Pro-Torq nut, STEMCO Integrated Sentinel Hub Cap, and Meritor bearings.

<sup>5</sup> Applies to STEMCO Guardian HP Seal, STEMCO Pro-Torq nut, STEMCO Integrated Sentinel Hub Cap, and STEMCO matched bearing sets.

(For brake components and ABS coverage, refer to appropriate product warranties.)

## Air Link™ 2/200/P&L<sup>1,2</sup>

MWA46
MWA52

<sup>1</sup> Coverage includes Hangers, Trailing Arms, Walking Beams

<sup>2</sup> Bushings, Air Bag, Shock Absorbers 1/50/P

## Chassis Axles (2000 Series)

Beam and Brackets	
TN, TP	6/Unl/P, 1/Unl/L
Wheel End Systems <sup>1</sup>	
TN, TP	1/Unl/P&L
CN <sup>2</sup>	4P/3L
Beam and Brackets	7/Unl/P, 1/Unl/L

<sup>1</sup> Includes hub, wheel seals and wheel bearings—all systems require annual inspections and proper documentation to ensure full coverage.

<sup>2</sup> Applies to STEMCO Guardian HP Seal, STEMCO Pro-Torq nut, STEMCO Integrated Sentinel Hub Cap, and Meritor bearings.

## TAG/Pusher Axles<sup>1</sup>

TQ, TQD, TR, TRD	Beam and Brackets	3/Unl/P, 1/Unl/L
MC12002 <sup>1</sup> , MC16003 <sup>2</sup>		2/Unl/P&L

(For brake components and ABS coverage, refer to appropriate product warranties.)

<sup>1</sup> 3/UNL/P&L if sold with PreSet by ArvinMeritor.

<sup>2</sup> 3/UNL/P&L if sold w/unlitzed wheel ends.

## Trailer Air Suspension Systems

### MPA38/40 (Tandem Axle Parallelogram)

Major Structural Components	5/Unl/P, 1/Unl/L
Height Control Valve	1/Unl/P&L
Shock Absorbers	2/Unl/P&L
Air Springs	2/Unl/P, 1/Unl/L
Bushings	7/Unl/P, 5/Unl/L
Air Controls	1/100/P&L
Air Actuator	3/300/P&L

### MPA20 (Single Axle Parallelogram)

Major Structural Components	5/Unl/P, 1/Unl/L
Height Control Valve	1/Unl/P&L
Shock Absorbers	2/Unl/P&L
Air Springs	2/Unl/P, 1/Unl/L
Bushings	7/Unl/P, 5/Unl/L

### RFS/MTA

Height Control Valve	1/Unl/P&L
Shock Absorbers	2/Unl/P&L
Air Springs and Rebound Straps	2/Unl/P, 1/Unl/L
Bushings <sup>1</sup>	5/Unl/P, 3/Unl/L

(For axle and ABS coverage, refer to appropriate product warranties.)

<sup>1</sup> Raw wood applications 3/Unl/P, 1/Unl/L

## Meritor WABCO Components<sup>1</sup>

ABS (Anti-Lock Braking System) Air/Hydraulic	3/300/P&L
Hydraulic Power Brake (HPB)	3/300/P&L
ATC (Automatic Traction Control)	3/300/P&L
EX <sup>4,5</sup> and PAN Air Disc Brake	2/Unl/P&L
All Other Air Disc Brakes	1/Unl/P
Air Dryers (ALL)	1/Unl/P&L, 2/200/P
Leveling Valves	1/Unl/P&L
Air Brake Valves	1/Unl/P&L, 2/200/P
Emissions Valve	2/200/P
Emission SCR Air Control Unit <sup>6</sup>	2/200/P
Clutch Controls	2/200/P&L
ECAS (Electronically Controlled Air Suspension)	3/300/P&L
Air Compressors (ALL) <sup>2</sup>	2/200/P&L
Electronic Stability Control (ESC)	3/300/P&L
Truck Roll Stability Control (RSC)	3/300/P&L
Trailer Roll Stability Support (RSS)	3/300/P&L
Trailer Control Line Filter	1/100/P&L
Trailer Control Line Filter with ABS Valve	4/400/P, 1/100/L
Trailer ABS Valve with Control Line Filter	4/400/P, 3/300/L

<sup>1</sup> Warranted by Meritor WABCO Vehicle Control Systems.

<sup>2</sup> WABCO compressors installed on Cummins, Mercedes, and Volvo engines are not warranted or serviced by Meritor WABCO. Please contact your respective dealer/distributor of those engines for warranty and servicing.

<sup>3</sup> Applies to Tour Bus and Cross Country Coach only.

<sup>4</sup> Brake warranty coverage is valid when using a Meritor WABCO chamber. For other chambers, brake coverage is 1/Unl/P.

<sup>5</sup> Meritor WABCO chamber warranty is 1/Unl/P.

<sup>6</sup> Must have an oil coalescing device installed in the air system located before the Air Control Unit.

## Meritor® Tire Inflation System by PSI 3/500/P&L

# Heavy Service Warranty Information



## Heavy Service Vehicles:

■ Airport Rescue Fire (ARF)	■ Dump	■ Michigan Special Steel Hauler	■ Side Loader
■ Airport Shuttle	■ Emergency Service	■ Michigan Special Waste Vehicle	■ Snowplow/Snowblower
■ Asphalt Truck	■ Equipment Hauling	■ Municipal Dump	■ Steel Hauling
■ Block Truck	■ Flatbed Trailer Hauler	■ Rapid Intervention Vehicle (RIV)	■ Tanker
■ Bottom Dump Trailer	■ Flatbed Truck	■ Rear Loader	■ Tank Truck
■ Combination	■ Fracturing Truck	■ Recycling Truck	■ Tractors with Pole Trailers
■ Cementing Vehicle	■ Front Loader	■ Residential Pick-Up	■ Tractor/Trailer with Jeeps
■ City Bus	■ Geophysical Exploration	■ Rigging Truck	■ Transfer Dump
■ Commercial Pick-Up	■ Hopper Trailer Combinations	■ Roll-Off	■ Transfer Vehicle
■ Concrete Pumper	■ Landscaping Truck	■ Scrap Truck	■ Transit Bus
■ Construction Material Hauler	■ Liquid Waste Hauler	■ Semi-End Dump	■ Trolley
■ Crash Fire Rescue (CFR)	■ Log Hauling	■ Sewer/Septic Vacuum	■ Utility Truck
■ Mixer	■ Lowboy	■ Shuttle Bus	■ Winch Truck
■ Demolition	■ Michigan Special Gravel Trains		
■ Drill Rig	■ Michigan Special Log Hauler		

## Heavy Service Typically Is:

- Moderate mileage operation (less than 60,000 miles per year)
- On/Off road vocations (10% or more off-road)
- Moderate to frequent stops/starts (up to 10 stops per mile)

Coverage under ArvinMeritor's warranty requires that the application of products be properly approved pursuant to OEM, ArvinMeritor, Meritor WABCO, and ZF engineering approvals. Refer to TP-9441 for axles, SP-8320 for trailer axles, and/or contact ArvinMeritor regarding specific application approval questions on any product line.

## Front Drive/Non-Drive Steer Axles – 2/Unl/P&L

FD-965	FF-966	FL-941	MFS-6-153B	MFS-8-153B-N	MFS-13-143A-N	MFS-20-133A-N	MX-19-140
FF-941	FF-967	FL-943	MFS-6-162B	MFS-8-163B-N	MFS-13-144A-N	RF-21-160	MX-21-140
FF-942	FG-941	17100	MFS-6-162C	MFS-10-122A	MFS-14-143A-N	MX-10-120	MX-21-160
FF-943	FG-943	17101	MFS-7-113C-N	MFS-10-143A-N	MFS-16-122A-N	MX-12-120	MX-23-160
FF-944	FH-941	17110	MFS-7-153C-N	MFS-10-144A-N	MFS-16-143A-N	MX-14-120	
FF-946	FH-945	17111	MFS-7-163C-N	MFS-12-143A-N	RF-16-145	MX-16-120	
FF-961	FH-946	MFS-6-151A-N	MFS-8-113B-N	MFS-12-144A-N	MFS-18-133A-N	MX-17-140	

## Bus & Coach Suspensions – 2/200/P&L<sup>1,2</sup>

RIS07EF	RIS09EF	RIS10EF	RIS12EF
RIS16EF	RIS18EF	RTA20ER	RTA13EA
RFA20ER	RFA23ER	RFA25ER	RTA28ER
RAL12EF			

<sup>1</sup> Coverage includes frames, brackets, arms, knuckles and seats.  
<sup>2</sup> See limitations for minor component coverage.

## Clutches

15.5" HD Clutch <sup>1</sup>	1/100/P&L
15.5" TwinXTend	1/100/P&L
17" FreedomLine Clutch	1/100/P&L

<sup>1</sup> Products with an in-service date prior to 11/01/02 warranted by Meritor Clutch Company.

## Transmissions – 2/Unl/P&L

ZF-FreedomLine 12-Speed<sup>1,2,3</sup>

<sup>1</sup> Multiple engine retarders are not approvable.  
<sup>2</sup> 12-speed transmission not approved for off-road vocations.  
<sup>3</sup> Hard surface application only.

## Drivelines – 1/Unl/P&L

RPL	92N	RN	MXL
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## Rear Drive Single Axles – 2/Unl/P&L

MS-10-113	MS-19-14X	RS-21-160	RC-23-161	RS-24-160/A	RH-30-185	RC-26-720	61153
RS-13-120	RS-19-144	RC-22-145	RH-23-161	RS-25-160/A	RS-30-185/380	59732	71162
MFS-13-122	MS-21-114	RC-23-160	RS-23-161/A	RH-26-185	MS-35-380	59733	71163
RS-15-120	MS-21-14X	RH-23-160	RS-23-186/380	MS-26-616	RS-38-380	61142	
MS-17-14X	RS-21-145	RS-23-160	RC-23-162	RS-26-185/380	RC-25-160	61143	
RS-17-144/145/A	RS-21-145/A	RS-23-160/A	RC-23-165	MS-30-616	RC-26-633	61152	

## Rear Drive Tandem/Tridem Axles – 2/Unl/P&L

MT-34-14X/P	MT-40-143DA-N	MT-40-144/P	RT-44-145/P	RT-52-185/380 <sup>2,3,4,5</sup>	RT-70-380 <sup>5</sup>	RZ-186 <sup>5</sup>
RT-34-144/P/A	MT-40-143MA-N <sup>1</sup>	RT-40-145/P/A	RT-46-169	MF-58-616	MT-70-380	RZ-188 <sup>5</sup>
MT-40-14X/P	MT-40-144	MT-44-14X/P	MT-52-616	RT-58-185/380 <sup>2,3,4,5</sup>	RZ-166 <sup>5</sup>	

<sup>1</sup> U.S. only. Canadian warranty – 1/Unl/P for combination vehicles only.

<sup>2</sup> Axle model designated will vary according to options and variations specified on these axles. Contact ArvinMeritor Axle Applications Engineering for details.

<sup>3</sup> Axle model designated will vary according to options and variations specified on these axles. Contact ArvinMeritor Axle Applications Engineering for details.

<sup>4</sup> Each vehicle must have a Request for Application Recommendation (RAR) approved by ArvinMeritor prior to vehicle build. All RARs must identify the chassis number or VIN.

Refer to Product Information Letter #303 and #396 for further details.

<sup>5</sup> Warranty is 1/Unl/P&L when used with 2050 lb.ft. engines.

Refer to Product Information Letter #293 for further details.

## Brake Components

Cam P	3/Unl/P
Cam P <sup>2</sup>	2/100/P
Cam Cast Plus™	2/100/P&L
Cam Q Plus™	3/Unl/P&L
Cam Q Plus™ <sup>2</sup>	2/100/P&L
ASA	3/Unl/P
ASA <sup>2</sup>	2/100/P
Hubs/Cast Drums and Other Wheel-end Components	1/Unl/P
Hydraulic Disc Brakes	1/Unl/P
All Other Brakes	1/Unl/P
X30™ Drums <sup>1</sup>	12-Years or Wearable Life/P

<sup>1</sup> Based on stamped wear diameter max.

<sup>2</sup> Applies to City Bus, Trolley, Shuttle Bus and Airport Shuttle only.

<sup>3</sup> Warranty for all non-Meritor ASAs supplied by ArvinMeritor for all Heavy Service vocations is 1/100/P.

## Rear Drive Tandem/Tridem Axles – 3/Unl/P&L

RT-40-160/P/A <sup>3,4</sup>
RT-46-160/P/A <sup>1,3,4</sup>
RT-46-164EH/P/A <sup>2,3,4</sup>
RT-50-160/P/A <sup>3,4</sup>

<sup>1</sup> U.S. only. Canadian warranty – 1/Unl/P for combination vehicles only.

<sup>2</sup> Axle model designated will vary according to options and variations specified on these axles. Contact ArvinMeritor Axle Applications Engineering for details.

<sup>3</sup> Warranty is 1/Unl/P&L when used with 2050 lb.ft. engines. Refer to Product Information Letter #293 for further details.

<sup>4</sup> Each vehicle must have a Request for Application Recommendation (RAR) approved by ArvinMeritor prior to vehicle build. All RARs must identify the chassis number or VIN. Refer to Product Information Letter #303 and #396 for further details.

## Trailer Air Suspension Systems

### RFS/MTA

Major Structural Components <sup>1</sup>	5/Unl/P, 1/Unl/L
Height Control Valve	1/Unl/P&L
Shock Absorbers <sup>1</sup>	2/Unl/P&L
Air Springs	2/Unl/P, 1/Unl/L
Bushings <sup>1</sup>	5/Unl/P, 3/Unl/L

(For axle and ABS coverage, refer to appropriate product warranties.)

<sup>1</sup> Raw wood applications 3/Unl/P, 1/Unl/L

## Center Non-drive Axles – 2/100/P&L

61042	61052	71063
61043	61053	RC-26-700

## Meritor® Tire Inflation System by PSI 3/500/P&L

## Shock Absorbers 1/50/P

Coverage for trailer suspension shock absorbers may vary. Please check appropriate Trailer products sections for other terms.

## Meritor WABCO Components<sup>1</sup>

ABS (Anti-Lock Braking System) Air/Hydraulic	3/300/P&L
Hydraulic Power Brake (HPB)	3/300/P&L
ATC (Automatic Traction Control)	3/300/P&L
EX <sup>3</sup> and PAN Air Disc Brake	2/100/P&L
Air Dryers (ALL)	1/100/P&L
Leveling Valves	1/Unl/P&L
Air Brake Valves	1/100/P&L
Emissions Valve	2/200/P
Emission SCR Air Control Unit <sup>4</sup>	2/200/P
Clutch Controls	2/200/P&L
ECAS (Electronically Controlled Air Suspension)	3/300/P&L
Air Compressors (ALL) <sup>2</sup>	2/200/P&L
Electronic Stability Control (ESC)	3/300/P&L
Truck Roll Stability Control (RSC)	3/300/P&L
Trailer Roll Stability Support (RSS)	3/300/P&L
Trailer Control Line Filter	1/100/P&L
Trailer Control Line Filter with ABS Valve	4/400/P, 1/100/L
Trailer ABS Valve with Control Line Filter	4/400/P, 3/300/L

<sup>1</sup> Warranted by Meritor WABCO Vehicle Control Systems.

<sup>2</sup> WABCO compressors installed on Cummins, Mercedes, and DDC engines are not warranted or serviced by Meritor WABCO. Please contact your respective dealer/distributor of those engines for warranty and servicing.

<sup>3</sup> Brake warranty coverage is valid when using a Meritor chamber. For other chambers, brake coverage is 1/Unl/P.

<sup>4</sup> Must have an oil coalescing device installed in the air system located before the Air Control Unit.

## Air Link™ 2/200/P&L<sup>1,2</sup>

MWA46
MWA52
<sup>1</sup> Coverage includes Hangers, Trailing Arms, Walking Beams
<sup>2</sup> Bushings, Air Bag, Shock Absorbers 1/50/P

## Trailer Axles

Beam and Brackets <sup>1</sup>	5/Unl/P, 1/Unl/L
Wheel End Systems <sup>2</sup>	
Standard System <sup>3</sup>	1/Unl/P&L

<sup>1</sup> 9000 Series is 3/Unl/P, 1/Unl/L.

<sup>2</sup> Includes hub, wheel seals and wheel bearings—all systems require annual inspections and proper documentation to ensure full coverage.

<sup>3</sup> When installed by ArvinMeritor.

(For brake components and ABS coverage, refer to appropriate product warranties.)

## TAG/Pusher Axles<sup>1</sup>

TQ, TQD, TR, TRD	
Beam and Brackets	3/Unl/P, 1/Unl/L

(For brake components and ABS coverage, refer to appropriate product warranties.)

## Rear Engine Power Take-offs 1/Unl/P

## Transfer Cases – 1/Unl/P

MTC-4208	T-1138
MTC-4210	T-2111
MTC-4213	T-2119
	T-2120
	TG-2213

# Restricted Service Warranty Information



## Restricted Service Vehicles:

- Load-On/Load-Off
- Rail Yard Spotter
- Stevedoring Tractor
- Yard Jockey
- Port Tractor
- Roll-On/Roll-Off
- Trailer Spotter

## Restricted Service Typically Is:

- Low mileage operation
- 15 MPH vehicle speed restriction
- Vehicles are **not** typically licensed for highway use
- Six (6) starts/stops per mile (typical)

Coverage under ArvinMeritor's warranty requires that the application of products be properly approved pursuant to OEM, ArvinMeritor, Meritor WABCO, and ZF engineering approvals. Refer to TP-9441 for axles and/or contact ArvinMeritor regarding specific application approval questions on any product line.

## Front Non-Drive Steer Axles – 1/Unl/P

FF-941	FF-966	FL-941	MFS-12-144A-N	MFS-14-143A-N	MFS-18-133A-N
FF-943	FG-941	FL-943	MFS-13-143A-N	MFS-16-122A-N	MFS-20-133A-N
FF-961	FG-943	MFS-12-143A-N	MFS-13-144A-N	MFS-16-143A-N	

## Clutch

15.5" HD Clutch <sup>1</sup>	1/100/P&L
15.5" TwinXTend	1/100/P&L
17" FreedomLine Clutch	1/100/P&L

<sup>1</sup> Products with an in-service date prior to 11/01/02 warranted by Meritor Clutch Company.

## Transmissions – 1/Unl/P

ZF-FreedomLine 12-Speed <sup>1,2</sup>
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<sup>1</sup> Includes electronic shift systems.  
<sup>2</sup> Hard surface applications only.

## Drivelines – 1/Unl/P

RPL	RN	MXL
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## Rear Drive Single Axles – 1/Unl/P

RS-23-186	RS-24-160	MS-30-616	RS-30-380
RS-23-380	MS-26-616	RS-30-185	MS-35-380

## Rear Drive Tandem Axles – 1/Unl/P

MT-44-14X/P	MT-70-380	RT-46-164EH/P
MT-52-616	RT-44-145/P	RT-50-160/P
MT-58-616	RT-46-160/P	

## Shock Absorbers

1/100/P

## Brake Components

Cam P	3/Unl/P
Cam Q Plus™	3/Unl/P&L
ASA	3/Unl/P
Hubs/Cast Drums and Other Wheel-end Components	1/Unl/P
Hydraulic Disc Brakes	1/Unl/P
All Other Brakes	1/Unl/P
LX500 Feature <sup>1</sup>	1/Unl/P

<sup>1</sup> Includes: bushing, seal, cam and ASA.  
<sup>2</sup> Based on stamped wear diameter max.

## Meritor WABCO Components<sup>1</sup>

ABS (Anti-Lock Braking System) Air/Hydraulic	3/300/P&L
Hydraulic Power Brake (HPB)	3/300/P&L
ATC (Automatic Traction Control)	3/300/P&L
EX <sup>3,4</sup> and PAN Disc Brake	2/100/P&L
Air Dryers (ALL)	1/100/P&L
Leveling Valves	1/Unl/P&L
Air Brake Valves	1/100/P
Emissions Valve	2/200/P
Emission SCR Air Control Unit <sup>5</sup>	2/200/P
Clutch Controls	2/200/P&L
Air Compressors <sup>2</sup>	2/Unl/P&L

<sup>1</sup> Warranted by Meritor WABCO Vehicle Control Systems.  
<sup>2</sup> WABCO compressors installed on Cummins, Mercedes, and DDC engines are not warranted or serviced by Meritor WABCO. Please contact your respective dealer/distributor of those engines for warranty and servicing.  
<sup>3</sup> Brake warranty coverage is valid when using a Meritor WABCO chamber. For other chambers, brake coverage is 1/Unl/P.  
<sup>4</sup> Meritor WABCO chamber warranty is 1/Unl/P.  
<sup>5</sup> Must have an oil coalescing device installed in the air system located before the Air Control Unit.

## Coverage Exclusions:

	<u>Product Description</u>
All:	The cost of any repairs, replacements or adjustments to a covered component (1) associated with noise; (2) resulting from the use or installation of non-genuine ArvinMeritor components or materials; (3) due to vibration associated with improper operation or misapplication of drivetrain components; and (4) damage resulting from corrosion.
Front Axles:	King Pin Bushings.
Rear Axles:	Self-contained traction equalizers and oil filters. The use of NoSPIN differentials will result in the exclusion of axle shafts from warranty considerations. NoSPIN is a product of Tractech Inc.
Clutch:	Friction face and mating surface of center and pressure plate, wear pads and clutch brake.
ASA:	Boot and bushing. Bent, broken, over-torqued, missing or otherwise damaged pawl assemblies.
ABS:	Cut, broken, chaffed or otherwise damaged cable wires. Damaged sensors from removal when seized in block, or sensor adjustments. Valve failures due to contamination in air system. E.C.U. failures due to excessive over-voltage conditions.
Air Dryers:	Mounting brackets (see vehicle OEM). Desiccant cartridge housing only.
Emission SCR Air Control Unit:	In no event shall Meritor WABCO be liable for special, incidental, indirect or consequential damages of any kind, including but not limited to towing charges, downtime expenses, failure to meet emission standards, cargo damage or other losses resulting from a defective component.
Air System Components:	Gladhand seals, dash valve knobs, valve actuation handles, treadles, pedals. Water and other contamination damage that is due to the use of a non-genuine air dryer cartridge will not be covered.
Cam Brake:	Brake lining wear (except MX500 package) and brake shoe "rust-jacking."
Disc Brake:	Pad wear, rotor wear, non-Meritor WABCO chambers.

## Coverage Limitations:

	<u>Product Description</u>
All:	Any claim beyond 60 days from date of repair will not be accepted or honored under this warranty program.
Front Axles:	Tie rod and tie rod ends limited to 3-year/300,000-mile or published vocational coverage, whichever is less. Wheel seals, gaskets and wheel bearings are covered for 1 year/unlimited miles if the wheel end equipment is supplied and assembled by ArvinMeritor.
Rear Axles:	Pinion and through shaft seals limited to 3-year/300,000-mile or published vocational coverage, whichever is less, if yoke is installed by ArvinMeritor. If yoke is not installed by ArvinMeritor, then ArvinMeritor does not warrant pinion seals. Wheel seals, gaskets and wheel bearings are covered for 1 year/unlimited miles if the wheel end equipment is supplied and assembled by ArvinMeritor.
Rear Axles:	The Meritor® breather part number A-1199-W-4053 or A-1199-R-4048 must be used for eligibility of any potential warranty consideration relating to contamination and/or loss of lube in axles.
Cam Brake:	Limited to bracket, brake spider and camshaft.
X30:	Wearable life is up to the discard diameter of the drum.
Disc Brake:	For EX brakes, warranty coverage for brake is 1/Unl/P when using chambers other than a Meritor WABCO chamber. All chamber coverages are limited to 1/Unl/P for disc brakes, excluding heavy service applications. Warranty coverage for boots, seals, bushings and pins is 2/200/P.
Trailer Air Suspension Systems:	Fastener torque coverage is limited to 2/Unl P&L.
Transmissions:	Seal warranty is 3-years/300,000-miles or published vocational coverage, whichever is less, if yoke is installed by ArvinMeritor. If yoke is not installed by ArvinMeritor, there is no seal coverage. Approved synthetic lube required for extended transmission coverage.
Bus & Coach, R.V. Suspensions:	Links, rubber and plastic parts, bushings, bearings, joints and air springs are limited to 1/100/P&L.

Warranty coverage on vehicles with 1,850 lb-ft engine torque and over may be reduced on individual drivetrain components. Contact your ArvinMeritor representative for specific details.

(1) What is Covered by this Commercial Warranty? ArvinMeritor Inc. warrants to the owner ("Owner") that the components listed in this publication, which have been installed by an Original Equipment Manufacturer ("OEM") as original equipment in vehicles licensed for on-highway use, will be free from defects in material and workmanship. This warranty coverage begins only after the expiration of the OEM's vehicle warranty for the applicable covered components. Warranty coverage ends at the expiration of the applicable time period from the date of vehicle purchase by the first Owner, or, the applicable mileage limitation, whichever occurs first. Duration of coverage varies by component and vocation as detailed elsewhere in this warranty statement.

Some components are warranted for parts only and the Owner must pay any labor costs associated with the repair or replacement of the component. Other components are warranted for both parts and reasonable labor to repair or replace the subject component. Components (whether new, used or remanufactured) installed as replacements under this warranty are warranted only for the remainder of the original period of time or mileage under the original warranty.

For certain components, coverage requires the use of specific extended drain interval or synthetic lubricants. For further information about lubrication and maintenance, see ArvinMeritor publication Maintenance Manual Number 1 and the applicable ArvinMeritor maintenance manual for the product in question. Other conditions and limitations applicable to this warranty are detailed below.

(2) Designation of Vocational Use Required. To obtain warranty coverage, each Owner must notify ArvinMeritor through the OEM new truck and/or trailer dealer of the intended vocational use of the vehicle into which the ArvinMeritor components have been incorporated prior to the vehicle in-service date. This notification may be accomplished by registering the vehicle through your OEM new truck and/or trailer dealer or with ArvinMeritor directly. Failure to notify ArvinMeritor of (I) the intended vocational use of the vehicle or (II) a change in vocational use from that which was originally designated, will result in the application of a one year, unlimited mileage, parts only warranty (1/Unl/P) from the initial in-service date.

A second Owner and each subsequent Owner must also notify ArvinMeritor as to the intended vocational use of the vehicle. This notification can be sent directly to ArvinMeritor or through the OEM new truck and/or trailer dealer. The duration and mileage coverage of this warranty cannot exceed the coverage extended to the first Owner after his or her initial designation of vocational use.

Coverage under ArvinMeritor's warranty requires that the application of products be properly approved pursuant to OEM, ArvinMeritor, MeritorWABCO, and ZF engineering approvals. Refer to TP-9441 for axles, SP-8320 for trailer axles, and/or contact ArvinMeritor regarding specific application approval questions on any product line.

(3) What is the Cost of this Warranty? There is no charge to the Owner for this warranty.

(4) What is not Covered by this Warranty? This warranty does not cover normal wear and tear; nor does it cover a component that fails, malfunctions or is damaged as a result of (I) improper installation, adjustment, repair or modification (including the use of unauthorized attachments or changes or modification in the vehicle's configuration, usage, or vocation from that which was originally approved by ArvinMeritor), (II) accident, natural disaster, abuse, or improper use (including loading beyond the specified maximum vehicle weight or altering engine power settings to exceed the transmission, axle, driveline, and/or clutch torque capacity), or (III) improper or insufficient maintenance (including deviation from approved lubricants, change intervals, or lube levels). This warranty does not cover any component or part that is not sold by ArvinMeritor. For vehicles that operate full or part time outside of the United States and Canada, a one year, unlimited mileage, parts only warranty (1/Unl/P) will apply.

(5) Remedy. The exclusive remedy under this warranty shall be the repair or replacement of the defective component at ArvinMeritor's option. ArvinMeritor reserves the right to require that all applicable failed materials are available and/or returned to ArvinMeritor for review and evaluation.

(6) Disclaimer of Warranty.

*THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESSED, IMPLIED OR STATUTORY INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE.*

(7) Limitation of Remedies. In no event shall ArvinMeritor be liable for special, incidental, indirect, or consequential damages of any kind or under any legal theory, including, but not limited to, towing, downtime, lost productivity, cargo damage, taxes, or any other losses or costs resulting from a defective covered component.

(8) To Obtain Service. If the Owner discovers within the applicable coverage period a defect in material or workmanship, the Owner must promptly give notice to either ArvinMeritor or the dealer from which the vehicle was purchased. To obtain service, the vehicle must be taken to any participating OEM new truck and/or trailer dealer or authorized ArvinMeritor service location. The dealer will inspect the vehicle and contact ArvinMeritor for an evaluation of the claim. When authorized by ArvinMeritor, the dealer will repair or replace during the term of this warranty any defective ArvinMeritor component covered by this warranty.

(9) Entire Agreement. This is the entire agreement between ArvinMeritor and the Owner about warranty and no ArvinMeritor employee or dealer is authorized to make any additional warranty on behalf of ArvinMeritor. This agreement allocates the responsibilities for component failure between ArvinMeritor and the Owner.

For more information, call **800-535-5560**.

## ArvinMeritor™

Meritor Heavy Vehicle Systems, LLC  
2135 West Maple Road  
Troy, Michigan 48084 USA  
800-535-5560  
www.arvinmeritor.com

Litho in USA  
Issued 12-09  
SP-95155 (47865/11900)  
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## CONDITIONAL 5-YEAR WARRANTY POLICY

WATEROUS warrants, to the original Buyer only, that products and parts manufactured by WATEROUS will be free from defects in material and workmanship under normal use and service for a period of five (5) years from the date the product is first placed in service, or five and one-half (5-1/2) years from the date of shipment by Waterous, whichever period shall be the first to expire; provided the Buyer notifies WATEROUS, in writing, of the defect in said product within the warranty period, and said product is found by WATEROUS to be nonconforming with the aforesaid warranty. When required in writing by WATEROUS, defective products must be promptly returned by Buyer to WATEROUS at WATEROUS' plant at South St. Paul, Minnesota, or at such other place as may be specified by WATEROUS, with transportation and other charges prepaid. A Returned Material Authorization (RMA) is required for all products and parts and may be requested by phone, fax or mail. The aforesaid warranty excludes any responsibility or liability of WATEROUS for:

- (a) damages or defects due to accident, abuse, misuse, abnormal operating conditions, negligence, accidental causes, or improper maintenance, or attributable to written specifications or instructions furnished by Buyer;
- (b) defects in products manufactured by others and furnished by WATEROUS hereunder, it being understood and agreed by the parties that the only warranty provided for such products shall be the warranty provided by the manufacturer thereof which, if assignable, WATEROUS will assign to Buyer, if requested by Buyer;
- (c) any product or part, altered, modified, serviced or repaired other than by WATEROUS, without its prior written consent; and
- (d) the cost of dismantling, removing, transporting, storing, or insuring the defective product or part and the cost of reinstallation.
- (e) normal wear items (packing, strainers, filters, light bulbs, anodes, intake screens, mechanical seals, etc.).

This warranty is subject to WATEROUS' Conditions of Sale (Waterous Company form number F-2190) as currently in effect all of which are herein incorporated and by this reference made a part hereof.

All other warranties are excluded, whether express or implied by operation of law or otherwise, including all implied warranties of merchantability or fitness for purpose. WATEROUS shall not be liable for consequential or incidental damages directly or indirectly arising or resulting from the breach of any of the terms of this limited warranty or from the sale, handling, or used of any WATEROUS product or part. WATEROUS' liability hereunder, either for breach of warranty or for negligence, is expressly limited at WATEROUS' option:

- (A) to the replacement at the agreed point of delivery of any product or part, which upon inspection by WATEROUS or its duly authorized representative, is found not to conform to the limited warranty set forth above, or
- (B) to the repair of such product or part, or
- (C) to the refund or crediting to buyer of the net sales price of the defective product or part.

Buyer's remedies contained herein are exclusive of any other remedy otherwise available to Buyer.

Waterous Company  
125 Hardman Avenue South  
South St. Paul, MN 55075 USA  
[www.waterousco.com](http://www.waterousco.com)

**WATEROUS**

Fire Pumps – Since 1886

F-2113

# UPF POLY-TANK® IIE

## THE ALL-OUT™ NO FAULT LIFETIME WARRANTY

UNITED PLASTIC FABRICATING, INC. warrants each UPF POLY-TANK® IIE Booster/Foam tank to be free from manufacturing defects in material and workmanship for the service life of the original vehicle (vehicle must be actively used in fire suppression). The warranty is transferable within the United States, and Canada by notifying UPF within thirty (30) days of the vehicle transfer date. Every UPF POLY-TANK® IIE is thoroughly inspected and tested for leaks before leaving our facility and must be installed in accordance with the United Plastic Fabricating Installation Guidelines. Should any problems develop with your UPF POLY-TANK® IIE Booster/Foam tank, please notify UPF in writing or call our TOLL FREE SERVICE HOT LINE at 1-800-USA-POLY and provide UPF with the serial number and a description of the problem. If UPF determines that the tank problem has rendered the truck out of service, UPF will dispatch a service technician WITHIN 48 HOURS (2 DAYS) to repair the tank (This time period is for the United States and Canada Only). If it is determined that the vehicle can remain in service, UPF will dispatch a service technician within a mutually agreed upon time period. Should the vehicle be located outside of the United States and Canada, UPF will assume costs for labor and material for the repair and for any travel costs to the U.S. port of embarkation. Costs for airline or other means of travel outside of the U.S. and Canada will not be the responsibility of United Plastic Fabricating, Inc.

UPF will repair or, at its option, replace the tank with a new UPF POLY-TANK® IIE. UPF will cover customary and reasonable costs to remove and install the UPF POLY-TANK® IIE. This warranty will not cover tanks that have been improperly installed, misused or abused, and the serial number must not have been altered, defaced or removed. UPF will not cover any unauthorized third party repairs or alterations. Any of these actions may void the warranty.

**THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACE HEREOF. THERE IS NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. ADDITIONALLY, THIS WARRANTY IS IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF UNITED PLASTIC FABRICATING, INC.**

This warranty contains the entire warranty. It is the sole warranty and price agreements or representation, whether oral or written, are either merged herein or expressly canceled. UNITED PLASTIC FABRICATING, INC. neither assumes, nor authorizes any person supposing to act on its behalf to change, nor assume for it, any warranty or liability concerning its product.

**IN NO EVENT WILL UNITED PLASTIC FABRICATING, INC. BE LIABLE FOR AN AMOUNT IN EXCESS OF THE CURRENTLY PUBLISHED RETAIL PRICE PLUS INSTALLATION AND REMOVAL COST OF THE BOOSTER TANK, FOR ANY LOSS OR DAMAGE, WHETHER DIRECT OR INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHERWISE ARISING OUT OF FAILURE OF ITS PRODUCT.**

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow exclusion or limitation of incidental or consequential damage, so the above limitation or exclusion may not apply to you. Since some states do not allow limitations on the length of an implied warranty, the above limitation may not apply to you.



FILL IN THE INFORMATION CONTAINED ON YOUR WARRANTY CARD IN THE FORM TO THE RIGHT. PLEASE KEEP THIS INFORMATION IN A SAFE PLACE FOR REFERENCE. IF SERVICE SHOULD EVER BE NEEDED, CALL 1-800-USA-POLY.

POLY-TANK®, POLY-TANK® II & POLY-TANK® IIE are all registered trademarks of United Plastic Fabricating, Inc.  
ALL-OUT™ and PT2E™ are trademarks of U.P.F., Inc.  
AccuTul™ is a trademark of Amoco Polymers, Inc., exclusive to U.P.F.  
© April 1998 U.P.F., Inc. Printed in the U.S.A.

### *Transfer of Ownership Form*

Serial Number: \_\_\_\_\_

Original Owner: \_\_\_\_\_

Address: \_\_\_\_\_

City/Town: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

#### Complete and fax or mail to UPF to transfer warranty

Date of transfer: \_\_\_\_\_

New Owner: \_\_\_\_\_

Address: \_\_\_\_\_

City/Town: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

\*\* All transfers subject to approval by UPF. \*\*

*The Industry Standard in  
Booster Tank Technology*

**UPF's Poly-Tank® IIE**

**With Amoco's**

**AccTuf™ Resin**

**For Service Call:**

**1-800-USA-POLY**

- *Booster/Foam Tanks*
- *Slide-In Units*
- *Foam Trailers*
- *Wet-Side Tankers*
- *Rescue/Brush Trucks*
- *Elliptical Tankers*

WARRANTY CARD

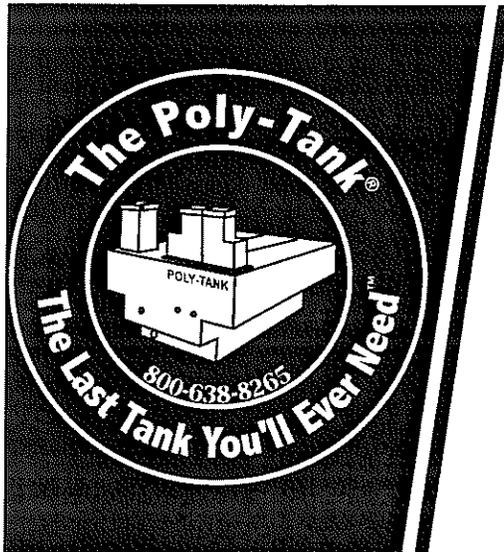
Phone: (800) 638-8265  
Fax: (800) 966-4520  
Email: [info@unitedplastic.com](mailto:info@unitedplastic.com)  
[www.unitedplastic.com](http://www.unitedplastic.com)

\_\_\_\_\_  
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165 Flagship Drive  
N. Andover, MA 01845



**UPF's ALL-OUT™  
No Fault Lifetime  
Warranty is the  
Only Transferable  
Tank Warranty in  
the Fire Industry!**



607 N.W. 27<sup>th</sup> Avenue  
Ocala, Florida 34475  
800-533-3569

## PRODUCT WARRANTY

**Class 1** warrants that any equipment of our own manufacture (or manufactured for us pursuant to our specifications) found to have defects in material or workmanship during normal use and service, will be repaired or replaced (at our option) free of charge, provided that written notice of such defect is received by us within two years (three for liquid-filled gauges) after initial shipment. All equipment requiring repair or replacement under this warranty shall be returned prepaid to **Class 1**. Such returned equipment shall be examined by us and, if found to be defective as a result of materials failure or workmanship, shall be repaired or replaced at no charge.

This warranty shall not apply to any equipment which has been tampered with or altered after leaving our control or which has been repaired by anyone except **Class 1**. Product, which has been subjected to misuse, neglect, abuse, or improper application, will not be covered under this warranty. Misuse or abuse of the equipment or any part thereof shall include, but not limited to, damage by negligence, overpressure, excess voltage and the like. Operating the equipment with or in a corrosive, explosive, or combustible medium (unless equipment is specifically designed for such service), or exposing it to any other conditions or environment of greater severity than that for which the equipment was designed will void this warranty.

This warranty is given and accepted in lieu of all other warranties, expressed or implied, and of all other obligations or liabilities on our part. In no event shall we be liable for breach of warranty beyond the terms stated above or for any consequential damages in any case. **Class 1**'s liability in all events is limited to the value of the product involved.

In order to ensure prompt exchange or repair service, please contact **Class 1** toll free at 800-533-3569 or email: [class1returns@idexcorp.com](mailto:class1returns@idexcorp.com) to receive a Return Materials Authorization Number (RMA #) prior to returning the items to **Class 1**. Please mark the RMA # on the outside of all packages. This will enable our receiving department to quickly route the product to the appropriate repair department. Products received by **Class 1** without a RMA # may experience service delays or may be returned to the sender for additional information. All returned items should be shipped prepaid by customer to:

Class 1, 607 NW 27<sup>th</sup> Ave., Ocala, FL 34475

## **Akron Brass Warranty Contact Information**

### **All Weldon Products including V-Mux Products -- Domestic & International Point of Contact**

Melani Rigsby - CSR - 330-263-9521 - [mrigsby@weldoninc.com](mailto:mrigsby@weldoninc.com)

Please see attached for additional Weldon Warranty Information

### **All Akron Brass Wooster & Washington Product Lines -- Domestic Point of Contact During E-One's Warranty Period**

Traci Cornelius - CSR - 330-287-7071 - [tcornelius@akronbrass.com](mailto:tcornelius@akronbrass.com)

#### **Domestic Point of Contact after E-One Warranty Period**

Christy Brooks - CS Municipal Manager - 330-287-7065 - [cbrooks@akronbrass.com](mailto:cbrooks@akronbrass.com)

#### **International Point of Contact after E-One Warranty Period**

Mary Cogar - CS International Manager - 330-287-7037 - [mcogar@akronbrass.com](mailto:mcogar@akronbrass.com)

Please see attached for additional Akron Wooster & Washington Warranty Information

**AKRON BRASS COMPANY**  
TERMS AND CONDITIONS

**TERMS:** All U.S. sales are Net 30 days. All International sales are ex-factory or D.D.U. (Delivered Duty Unpaid) foreign port of destination. Subject to late payment charge of one and one-half percent (1½%) per month.

**MINIMUM CHARGE:** Due to cost of handling, no order will be billed for less than fifty dollars (\$50.00) - plus forwarding charges.

**SPECIAL ORDERS:** We produce many items to specification that are not carried in stock. After an order in this category has been accepted and placed in process of manufacture, no cancellations will be accepted.

**RETURNED GOODS:** Material returned without prior Returned Material Authorization may be refused. Please contact Akron Brass Customer Service Department for the proper procedure. All returns are subject to a 25% restocking charge. All products must meet current design specifications and must be received in like new condition to avoid rework charges.

**PRODUCT REPAIRS:** Products returned for repair do not need prior authorization. Products for repair should be shipped to: Akron Brass Co., Attention Repair Department, 1615 Old Mansfield Road, Wooster, OH 44691. Extenda-Lite® products and other related materials should be sent to Akron Brass Co., 501 N. Cummings Lane, Washington, IL 61571-9652. If you have any questions on where you should send your repairs, call Customer Service at: 800.228.1161 or 330.264.5678.

**PIKE POLE FREIGHT:** All Pike Pole & Hand Tool Purchases are F.O.B. factory regardless of discount structure. Freight Free shipments of Pike Poles can be obtained with a minimum order for a single shipment to one location of \$950.00 net cost. Does not apply to any international order.

**DISCREPANCIES:** Any shortage or error in shipment should be reported to us within 10 days of receipt of goods.

**LOST GOODS IN TRANSIT:** Any claims for loss of truck shipments shall be the responsibility of the buyer and should be promptly reported to carrier. Any claims for loss of small package shipments should be promptly reported to Akron Brass. These claims are subject to limitations of the carrier.

**DAMAGED GOODS:** Damaged product must be promptly reported to the carrier and Akron Brass. Failure to notify both parties shall place the burden of settlement and negotiation on the buyer. Damaged product returned to Akron Brass should be sent by the same carrier that delivered the goods.

**TAXES:** All prices and quotations exclude Local, State, and Federal sales and excise taxes.

**ALL ORDERS** or parts thereof and all directions for shipment are subject to acceptance by Akron Brass Company.

**ALL PRICES ARE FIRM PROVIDED IMMEDIATE DELIVERY IS ACCEPTABLE.**

**ALL PRICES, TERMS, AND CONDITIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.**

**WARRANTY AND DISCLAIMER:** We warrant Akron Brass products for a period of five (5) years\* after purchase against defects in materials or workmanship. Akron Brass will repair or replace product which fails to satisfy this warranty. Repair or replacement shall be at the discretion of Akron Brass. Products must be promptly returned to Akron Brass for warranty service. We will not be responsible for: wear and tear; any improper installation, use, maintenance or storage; negligence of the owner or user; repair or modification after delivery; damage; failure to follow our instructions or recommendations; or anything else beyond our control. **WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, OTHER THAN THOSE INCLUDED IN THIS WARRANTY STATEMENT, AND WE DISCLAIM ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.** Further, we will not be responsible for any consequential, incidental or indirect damages (including, but not limited to, any loss of profits) from any cause whatsoever. No person has authority to change this warranty.

**CERTIFICATE OF CONFORMANCE:** Many commercial products are available with certificate of conformance to MIL specifications. If a certificate of conformance is required, it must be requested at the time order is placed and is subject to additional charges to cover the costs of the special handling required.

**DOMESTIC DISTRIBUTORS/DEALERS ONLY:**

**PRODUCTS ARE INTENDED FOR DOMESTIC RESALE. AKRON BRASS RESERVES THE RIGHT TO RESTRICT DOMESTIC SALES OF PRODUCTS INTENDED FOR INTERNATIONAL DIVERSIONS. CONTACT AKRON BRASS FOR AUTHORIZATION BEFORE COMMITTING TO ANY INTERNATIONAL SHIPMENTS.**

**INTERNATIONAL DISTRIBUTORS/DEALERS ONLY:**

**PRODUCTS ARE LICENSED BY THE U.S.A. FOR EXPORT AND INTERNATIONAL RESALE EXCEPT FOR DIVERSIONS OR SALES INTO AREAS CONTRARY AND PROHIBITED BY U.S. LAW G.D.E.S.T.**

*Items noted with a "★" are subject to a non-standard distributor discount.*

\* Various products have an extended 10 year warranty. All industrial electronic warranties are limited to 1 year.  
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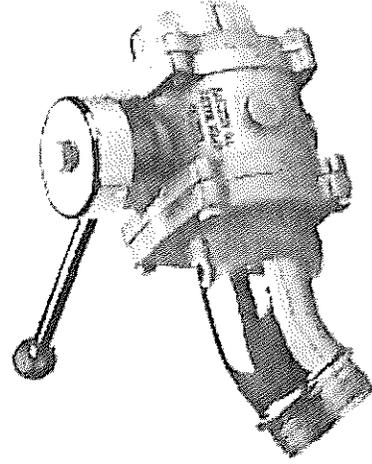
## **AKRON BRASS 10 YEAR WARRANTY ON HEAVY DUTY SWING-OUT™ VALVES**

Akron Brass warrants Heavy Duty Swing-Out Valves for a period of ten (10) years after purchase against defects in material or workmanship. Akron Brass will repair or replace any Heavy Duty Swing-Out Valve which fails to satisfy this warranty. Repair or replacement shall be at the discretion of Akron Brass. Electrical components shall carry our standard five (5) year warranty. We will not be responsible for: wear and tear; any improper installation, use or maintenance; negligence of the owner or user; repair or modification after delivery; failure to follow our instructions or recommendations; or anything else beyond our control. **WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, OTHER THAN THOSE INCLUDED IN THIS WARRANTY STATEMENT, AND WE DISCLAIM ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.** Further, we will not be responsible for any consequential, incidental or indirect damages (including, but not limited to, any loss of profits) from any cause whatsoever. No person has authority to change this warranty.

**HEAVY  
DUTY**

*Swing-Out*

Proven Performance. Trusted by Firefighters  
For Over Half a Century



An ISO 9001: 2000 Registered Company

# Akron Brass Co. LIMITED WARRANTY

## IMPORTANT! READ IMMEDIATELY

The limited warranty set forth below is given by Akron Brass Co. with respect to Akron Brass Co. products purchased and used in the United States and Canada, respectively.

This limited warranty is only effective upon proof of purchase to Akron Brass Co. or an authorized Akron Brass Co. Service Facility in the U.S.A. or Canada. Akron Brass Co. products, when delivered to you in new condition in their original containers or mounted (no responsibility or liability is taken on warranties for incorrect or faulty mounting by others) are warranted against defective materials or workmanship for a period of five (5) years from the date of original delivery to the first end user. Five years for "The Hose Tester" Defective products or parts returned to an authorized Akron Brass Co. U.S.A. or Canada Service Facility, and proven to be defective upon inspection, will be exchanged for new parts or comparable rebuilt parts. The warranty period for replacement parts shall begin upon shipment of the same, but shall in no event exceed the warranty period of the defective part.

When returning any Akron Brass Co. products under this limited warranty, you must prepay the shipping charges, if any, and enclose a complete explanation of the problem. Akron Brass Co. products covered by this limited warranty will be repaired or replaced and returned to you without charge by a Factory Service Center or any authorized Akron Brass Co. U.S.A. or Akron Brass Co. Canada Service Facility.

Repairs not under warranty will be at such cost as Akron Brass Co. U.S.A. or Akron Brass Co. Canada, or an authorized Service Facility, may from time to time generally establish.

This limited warranty covers all defects encountered in the normal use of Akron Brass Co. products, except in the following cases:

- (A) Loss or damage to any Akron Brass Co. products due to abuse, mishandling, alteration, accident, electrical current fluctuations, or failure to follow operating, mounting, and maintenance instructions.
- (B) There is no warranty on any Quartz or incandescent lamp or glass lens.
- (C) Use of parts or supplies which do not meet Akron Brass Co. U.S.A. or Akron Brass Co. Canada's specifications and which damage any Akron Brass Co., Inc. product causing abnormally frequent service calls or service problems.
- (D) If any Akron Brass Co. product has had its serial number or dating altered or removed.

NO IMPLIED WARRANTY, (OR CONDITION\*), INCLUDING ANY IMPLIED WARRANTY (OR CONDITION\*) OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, APPLIES TO ALL AKRON BRASS CO. PRODUCTS AFTER THE APPLICABLE PERIOD OF EXPRESS WARRANTY STATED ABOVE, AND NO OTHER EXPRESS WARRANTY OR GUARANTY, EXCEPT AS MENTIONED ABOVE, GIVEN BY ANY PERSON, FIRM OR CORPORATION WITH RESPECT TO ANY AKRON BRASS CO. PRODUCT SHALL BIND AKRON BRASS CO. U.S.A. OR AKRON BRASS CO. CANADA, (SOME STATE OR PROVINCES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LAST, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.) NEITHER AKRON BRASS CO. U.S.A. OR AKRON BRASS CO. CANADA, NOR ANY OTHER PERSON, FIRM OR CORPORATION, IS RESPONSIBLE FOR LOSS OF PROFITS, EXPENSE OR INCONVENIENCE, OR FOR ANY OTHER SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY THE USE, MISUSE OR INABILITY TO USE THE AKRON BRASS CO. PRODUCTS WHETHER ON ACCOUNT OF NEGLIGENCE OR OTHERWISE, OR BY FAILURE TO CONFORM TO ANY EXPRESS OR IMPLIED WARRANTIES, (SOME STATES OR PROVINCES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.) THIS LIMITED WARRANTY SHALL NOT EXTEND TO ANYONE OTHER THAN THE ORIGINAL PURCHASER OF AKRON BRASS CO. PRODUCTS.

The limited warranty gives you specific legal rights, and you may also have other rights which may vary from state to state or province to province and unless otherwise required shall be Governed by the Laws and limitations of the State of Illinois.

\* In Canada.

## Other Quality Akron Brass Co. Products:



Pull-Up Models  
Push-Up Models  
Through The Roof Models  
Non-Telescoping Swivel Bases

PL-Hand Portable Flood Lights  
Tripods / Portable Light Towers  
Dual Heads can be mounted on any model  
PL-Hand Portables mounted on Poles or Tripods

## MANUAL/ELECTRIC REWIND REELS

Live Cord Reels  
Live Cord Reel w/ Beta Light  
Cord Reels w/ Gang Box  
Non-Live Cord Reels  
Electric/Manual Rewind Reels

## PIKE POLES & MORE

2' - 16' Fiberglass Pike Poles - Available in solid I-Beam and Oval or hollow Round fiberglass  
10' - 16' Double Gripper Pike Poles that can be shipped UPS - Oval or Round only  
Stainless Steel Mounting Brackets for Pike Poles and other Equipment  
Axes with either Fiberglass or Wooden Handles  
Pinch Point Bars, Fire Brooms, Rakes & Beaters  
Super Spanner, designed to fit most locking and non-locking 4" & 5"  
Storz couplings and 1-1/2" through 3" rocker lug type fire hose couplings

## WATER FLOW TEST EQUIPMENT

Apparatus Flow Test Kits  
Hydrant Flow Test Kits  
Hand Held Pitots

Line and Cap Gauges  
Apparatus Test Gauge Sets  
Hand Held Pump Speed Tachometers

## "THE HOSE TESTER"

For testing 1" through 6" hose as required by NFPA.

**Call Anytime**  
**1-800-228-1161**  
**Fax: 1-800-531-7335**



PHONE: 330.264.5678 or 800.228.1161 FAX: 330.264.2944 or 800.531.7335 [www.akronbrass.com](http://www.akronbrass.com)  
Available in Canada through AKRON MANUFACTURING COMPANY  
PHONE: 519.773.8431 FAX: 519.773.3794

WARRANTY AND DISCLAIMER: We warrant Akron Brass products for a period of five (5) years after purchase against defects in materials or workmanship. Akron Brass will repair or replace product which fails to satisfy this warranty. Repair or replacement shall be at the discretion of Akron Brass. Products must be promptly returned to Akron Brass for warranty service.

We will not be responsible for, wear and tear, any improper installation, use, maintenance or storage, negligence of the owner or user, repair or modification after delivery, damage, failure to follow our instructions or recommendations, or anything else beyond our control. WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, OTHER THAN THOSE INCLUDED IN THIS WARRANTY STATEMENT. AND WE DISCLAIM ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. Further, we will not be responsible for any consequential, incidental or indirect damage (including, but not limited to, any loss or profits) from any cause whatsoever. No person has authority to change this warranty.

**A Premier Farnell Company**

## **Akron Brass Warranty Contact Information**

### **All Weldon Products including V-Mux Products – Domestic & International Point of Contact**

Melani Rigsby – CSR – 330-263-9521 – [mrigsby@weldoninc.com](mailto:mrigsby@weldoninc.com)

Please see attached for additional Weldon Warranty Information

### **All Akron Brass Wooster & Washington Product Lines – Domestic Point of Contact During E-One's Warranty Period**

Traci Cornelius - CSR – 330-287-7071 – [tcornelius@akronbrass.com](mailto:tcornelius@akronbrass.com)

### **Domestic Point of Contact after E-One Warranty Period**

Christy Brooks - CS Municipal Manager – 330-287-7065 – [cbrooks@akronbrass.com](mailto:cbrooks@akronbrass.com)

### **International Point of Contact after E-One Warranty Period**

Mary Cogar – CS International Manager – 330-287-7037 – [mcogar@akronbrass.com](mailto:mcogar@akronbrass.com)

Please see attached for additional Akron Wooster & Washington Warranty Information

**AKRON' BRASS COMPANY**  
**TERMS AND CONDITIONS**

**TERMS:** All U.S. sales are Net 30 days. All International sales are ex-factory or D.D.U. (Delivered Duty Unpaid) foreign port of destination. Subject to late payment charge of one and one-half percent (1½%) per month.

**MINIMUM CHARGE:** Due to cost of handling, no order will be billed for less than fifty dollars (\$50.00) - plus forwarding charges.

**SPECIAL ORDERS:** We produce many items to specification that are not carried in stock. After an order in this category has been accepted and placed in process of manufacture, no cancellations will be accepted.

**RETURNED GOODS:** Material returned without prior Returned Material Authorization may be refused. Please contact Akron Brass Customer Service Department for the proper procedure. All returns are subject to a 25% restocking charge. All products must meet current design specifications and must be received in like new condition to avoid rework charges.

**PRODUCT REPAIRS:** Products returned for repair do not need prior authorization. Products for repair should be shipped to: Akron Brass Co., Attention Repair Department, 1615 Old Mansfield Road, Wooster, OH 44691. Extenda-Lite® products and other related materials should be sent to Akron Brass Co., 501 N. Cummings Lane, Washington, IL 61571-9652. If you have any questions on where you should send your repairs, call Customer Service at: 800.228.1161 or 330.264.5678.

**PIKE POLE FREIGHT:** All Pike Pole & Hand Tool Purchases are F.O.B. factory regardless of discount structure. Freight Free shipments of Pike Poles can be obtained with a minimum order for a single shipment to one location of \$950.00 net cost. Does not apply to any International order.

**DISCREPANCIES:** Any shortage or error in shipment should be reported to us within 10 days of receipt of goods.

**LOST GOODS IN TRANSIT:** Any claims for loss of truck shipments shall be the responsibility of the buyer and should be promptly reported to carrier. Any claims for loss of small package shipments should be promptly reported to Akron Brass. These claims are subject to limitations of the carrier.

**DAMAGED GOODS:** Damaged product must be promptly reported to the carrier and Akron Brass. Failure to notify both parties shall place the burden of settlement and negotiation on the buyer. Damaged product returned to Akron Brass should be sent by the same carrier that delivered the goods.

**TAXES:** All prices and quotations exclude Local, State, and Federal sales and excise taxes.

**ALL ORDERS** or parts thereof and all directions for shipment are subject to acceptance by Akron Brass Company.

**ALL PRICES ARE FIRM PROVIDED IMMEDIATE DELIVERY IS ACCEPTABLE.**

**ALL PRICES, TERMS, AND CONDITIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.**

**WARRANTY AND DISCLAIMER:** We warrant Akron Brass products for a period of five (5) years\* after purchase against defects in materials or workmanship. Akron Brass will repair or replace product which fails to satisfy this warranty. Repair or replacement shall be at the discretion of Akron Brass. Products must be promptly returned to Akron Brass for warranty service. We will not be responsible for: wear and tear; any improper installation, use, maintenance or storage; negligence of the owner or user; repair or modification after delivery; damage; failure to follow our instructions or recommendations; or anything else beyond our control. **WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, OTHER THAN THOSE INCLUDED IN THIS WARRANTY STATEMENT, AND WE DISCLAIM ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.** Further, we will not be responsible for any consequential, incidental or indirect damages (including, but not limited to, any loss of profits) from any cause whatsoever. No person has authority to change this warranty.

**CERTIFICATE OF CONFORMANCE:** Many commercial products are available with certificate of conformance to MIL specifications. If a certificate of conformance is required, it must be requested at the time order is placed and is subject to additional charges to cover the costs of the special handling required.

**DOMESTIC DISTRIBUTORS/DEALERS ONLY:**

**PRODUCTS ARE INTENDED FOR DOMESTIC RESALE. AKRON BRASS RESERVES THE RIGHT TO RESTRICT DOMESTIC SALES OF PRODUCTS INTENDED FOR INTERNATIONAL DIVERSIONS. CONTACT AKRON BRASS FOR AUTHORIZATION BEFORE COMMITTING TO ANY INTERNATIONAL SHIPMENTS.**

**INTERNATIONAL DISTRIBUTORS/DEALERS ONLY:**

**PRODUCTS ARE LICENSED BY THE U.S.A. FOR EXPORT AND INTERNATIONAL RESALE EXCEPT FOR DIVERSIONS OR SALES INTO AREAS CONTRARY AND PROHIBITED BY U.S. LAW G.D.E.S.T.**

*Items noted with a "★" are subject to a non-standard distributor discount.*

\* Various products have an extended 10 year warranty. All Industrial electronic warranties are limited to 1 year.  
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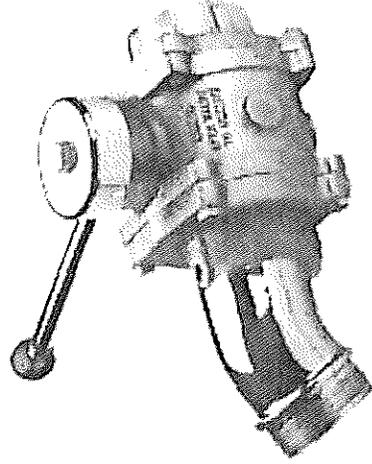
## **AKRON BRASS 10 YEAR WARRANTY ON HEAVY DUTY SWING-OUT™ VALVES**

Akron Brass warrants Heavy Duty Swing-Out Valves for a period of ten (10) years after purchase against defects in material or workmanship. Akron Brass will repair or replace any Heavy Duty Swing-Out Valve which fails to satisfy this warranty. Repair or replacement shall be at the discretion of Akron Brass. Electrical components shall carry our standard five (5) year warranty. We will not be responsible for: wear and tear; any improper installation, use or maintenance; negligence of the owner or user; repair or modification after delivery; failure to follow our instructions or recommendations; or anything else beyond our control. **WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, OTHER THAN THOSE INCLUDED IN THIS WARRANTY STATEMENT, AND WE DISCLAIM ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.** Further, we will not be responsible for any consequential, incidental or indirect damages (including, but not limited to, any loss of profits) from any cause whatsoever. No person has authority to change this warranty.

**HEAVY  
DUTY**

*Swing-Out*

Proven Performance. Trusted By Firefighters  
For Over Half a Century



An ISO 9001: 2000 Registered Company

# Akron Brass Co. LIMITED WARRANTY

## IMPORTANT! READ IMMEDIATELY

The limited warranty set forth below is given by Akron Brass Co. with respect to Akron Brass Co. products purchased and used in the United States and Canada, respectively.

This limited warranty is only effective upon proof of purchase to Akron Brass Co. or an authorized Akron Brass Co. Service Facility in the U.S.A. or Canada. Akron Brass Co. products, when delivered to you in new condition in their original containers or mounted (no responsibility or liability is taken on warranties for incorrect or faulty mounting by others) are warranted against defective materials or workmanship for a period of five (5) years from the date of original delivery to the first end user. Five years for "The Hose Tester" Defective products or parts returned to an authorized Akron Brass Co. U.S.A. or Canada Service Facility, and proven to be defective upon inspection, will be exchanged for new parts or comparable rebuilt parts. The warranty period for replacement parts shall begin upon shipment of the same, but shall in no event exceed the warranty period of the defective part.

When returning any Akron Brass Co. products under this limited warranty, you must prepay the shipping charges, if any, and enclose a complete explanation of the problem. Akron Brass Co. products covered by this limited warranty will be repaired or replaced and returned to you without charge by a Factory Service Center or any authorized Akron Brass Co. U.S.A. or Akron Brass Co. Canada Service Facility.

Repairs not under warranty will be at such cost as Akron Brass Co. U.S.A. or Akron Brass Co. Canada, or an authorized Service Facility, may from time to time generally establish.

This limited warranty covers all defects encountered in the normal use of Akron Brass Co. products, except in the following cases:

- (A) Loss or damage to any Akron Brass Co. products due to abuse, mishandling, alteration, accident, electrical current fluctuations, or failure to follow operating, mounting, and maintenance instructions.
- (B) There is no warranty on any Quartz or incandescent lamp or glass lens.
- (C) Use of parts or supplies which do not meet Akron Brass Co. U.S.A. or Akron Brass Co. Canada's specifications and which damage any Akron Brass Co., Inc. product causing abnormally frequent service calls or service problems.
- (D) If any Akron Brass Co. product has had its serial number or dating altered or removed.

NO IMPLIED WARRANTY, (OR CONDITION\*), INCLUDING ANY IMPLIED WARRANTY (OR CONDITION\*) OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, APPLIES TO ALL AKRON BRASS CO. PRODUCTS AFTER THE APPLICABLE PERIOD OF EXPRESS WARRANTY STATED ABOVE, AND NO OTHER EXPRESS WARRANTY OR GUARANTY, EXCEPT AS MENTIONED ABOVE, GIVEN BY ANY PERSON, FIRM OR CORPORATION WITH RESPECT TO ANY AKRON BRASS CO. PRODUCT SHALL BIND AKRON BRASS CO. U.S.A. OR AKRON BRASS CO. CANADA, (SOME STATE OR PROVINCES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LAST, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.) NEITHER AKRON BRASS CO. U.S.A. OR AKRON BRASS CO. CANADA, NOR ANY OTHER PERSON, FIRM OR CORPORATION, IS RESPONSIBLE FOR LOSS OF PROFITS, EXPENSE OR INCONVENIENCE, OR FOR ANY OTHER SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY THE USE, MISUSE OR INABILITY TO USE THE AKRON BRASS CO. PRODUCTS WHETHER ON ACCOUNT OF NEGLIGENCE OR OTHERWISE, OR BY FAILURE TO CONFORM TO ANY EXPRESS OR IMPLIED WARRANTIES, (SOME STATES OR PROVINCES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.) THIS LIMITED WARRANTY SHALL NOT EXTEND TO ANYONE OTHER THAN THE ORIGINAL PURCHASER OF AKRON BRASS CO. PRODUCTS.

The limited warranty gives you specific legal rights, and you may also have other rights which may vary from state to state or province to province and unless otherwise required shall be Governed by the Laws and limitations of the State of Illinois.

\* In Canada.

## Other Quality Akron Brass Co. Products:



Pull-Up Models  
Push-Up Models  
Through The Roof Models  
Non-Telescoping Swivel Bases

PL-Hand Portable Flood Lights  
Tripods / Portable Light Towers  
Dual Heads can be mounted on any model  
PL-Hand Portables mounted on Poles or Tripods

## MANUAL/ELECTRIC REWIND REELS

Live Cord Reels  
Live Cord Reel w/ Beta Light  
Cord Reels w/ Gang Box  
Non-Live Cord Reels  
Electric/Manual Rewind Reels

## PIKE POLES & MORE

2' - 16' Fiberglass Pike Poles - Available in solid I-Beam and Oval or hollow Round fiberglass  
10' - 16' Double Gripper Pike Poles that can be shipped UPS - Oval or Round only  
Stainless Steel Mounting Brackets for Pike Poles and other Equipment  
Axes with either Fiberglass or Wooden Handles  
Pinch Point Bars, Fire Brooms, Rakes & Beaters  
Super Spanner, designed to fit most locking and non-locking 4" & 5"  
Storz couplings and 1-1/2" through 3" rocker lug type fire hose couplings

## WATER FLOW TEST EQUIPMENT

Apparatus Flow Test Kits  
Hydrant Flow Test Kits  
Hand Held Pitots

Line and Cap Gauges  
Apparatus Test Gauge Sets  
Hand Held Pump Speed Tachometers

## "THE HOSE TESTER"

For testing 1" through 6" hose as required by NFPA.

**Call Anytime**  
**1-800-228-1161**  
**Fax: 1-800-531-7335**



**AKRON**  
BRASS COMPANY

PHONE: 330.264.5678 or 800.228.1161 FAX: 330.264.2944 or 800.531.7335 [www.akronbrass.com](http://www.akronbrass.com)  
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WARRANTY AND DISCLAIMER: We warrant Akron Brass products for a period of five (5) years after purchase against defects in materials or workmanship. Akron Brass will repair or replace product which fails to satisfy this warranty. Repair or replacement shall be at the discretion of Akron Brass. Products must be promptly returned to Akron Brass for warranty service.

We will not be responsible for wear and tear, any improper installation, use, maintenance or storage, negligence of the owner or user, repair or modification after delivery, damage, failure to follow our instructions or recommendations, or anything else beyond our control. WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, OTHER THAN THOSE INCLUDED IN THIS WARRANTY STATEMENT, AND WE DISCLAIM ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. Further, we will not be responsible for any consequential, incidental or indirect damage included, but not limited to, any loss or profits from any cause whatsoever. No person has authority to change this warranty.

**A Premier Farnell Company**



## Warranty Table

All items manufactured by Weldon warrant for a minimum period of twenty-four (24) months from the date of product manufacture shown on the assembly. For products not manufactured by, but sold by Weldon, warranty is limited to that extended by the original manufacturer.

### Lighting/Flashers

Part number or Series	Warranty Period
Diamondback V Series	5 year (60 months)
1010 LED Series	5 year (60 months)
1020 LED Series	5 year (60 months)
3800 LED Series	5 year (60 months)
4600 LED Series	5 year (60 months)
7800 LED Series	5 year (60 months)
8048 LED Series	5 year (60 months)
7000 Series Flashers	3 year (36 months)

### V-Mux

Part number or Series	Parts	Weldon Repair Parts Labor Period
6000 Hercules	4 years	4 years
6010-0000-00 Mini 4x12	4 years	4 years
6020-0000-00 Mini 16	4 years	4 years
611X-0000-00 Transceiver	1 year	1 year
613X-0000-00 Diag Kit, Serial or USB	1 year	1 year
6204-0000-00 Occupant Restraint	4 year	4 year
6231- Vista III L C Display Nodes		
LC Display Screen	1 year	1 year
All other parts	4 years	4 years
6310-0000-12/14 Switch Controllers	4 years	4 years
6311-0X00-00 Smart Switch Module	4 years	4 years
6400-0000-00 Gateway Node	4 years	4 years
6444-0000-00 VDR	4 years	4 years
6500-0000-00 Camera	1 year	1 year
6550-0000-00 GPS	1 year	1 year
0N30-2392-00 Vista III Touch Screen	4 year	4 year
0N70-1519-03/04 Climate Control	4 year	4 year
0R00-2306-00 Hall Effect Sensor	1 year	1 year
0R13-0614-00 Temp sensor	1 year	1 year
0R80-0615-00 Shunt interface Module	1 year	1 year
0U10-0715-00 VFD 2 Line Display	1 year	1 year
Cables or other accessories	30 days	N/A

## **Akron Brass Warranty Contact Information**

### **All Weldon Products including V-Mux Products – Domestic & International Point of Contact**

Melani Rigsby – CSR – 330-263-9521 – [mrigsby@weldoninc.com](mailto:mrigsby@weldoninc.com)

Please see attached for additional Weldon Warranty Information

### **All Akron Brass Wooster & Washington Product Lines – Domestic Point of Contact During E-One's Warranty Period**

Traci Cornelius – CSR – 330-287-7071 – [tcornelius@akronbrass.com](mailto:tcornelius@akronbrass.com)

#### **Domestic Point of Contact after E-One Warranty Period**

Christy Brooks – CS Municipal Manager – 330-287-7065 – [cbrooks@akronbrass.com](mailto:cbrooks@akronbrass.com)

#### **International Point of Contact after E-One Warranty Period**

Mary Cogar – CS International Manager – 330-287-7037 – [mcogar@akronbrass.com](mailto:mcogar@akronbrass.com)

Please see attached for additional Akron Wooster & Washington Warranty Information



## LIMITED WARRANTY

(Effective 07-08-2011)

### SECTION 1 - WARRANTY TERMS

R•O•M Corporation ("R•O•M") warrants that the equipment and parts sold by it (collectively, the "Product") will be free from manufacturing defects for a period of up to 7 years from date of purchase provided that the Product is used under conditions of normal use, that regular periodic maintenance and service is performed and that the Product was installed in accordance with R•O•M's instructions.

The limited warranty is not transferable in the event the Product is sold, traded or transferred to another party.

### SECTION 2 - EXCEPTIONS TO WARRANTY TERMS

#### **2.1 R•O•M Replacement Parts:**

- a. Warranty period for manufacturing defects equivalent to warranty of original product.

#### **2.2 R•O•M Roll-up Shutter Door / Horizontal Hose Bed Cover:**

- a. Warranty period for manufacturing defects is 7 years from the date of purchase (excluding electrical components).
- b. *LED V3 Lightbar components* - Warranty period for manufacturing defects is 7 years from the date of purchase.
- c. *Door ajar switch* - warranty period for manufacturing defects is 3 years from the date of purchase.
- d. *All other electrical components* – warranty period for manufacturing defects is 1 year from the date of purchase.
- e. Perfect Match Wet Paint System™:
  - *PPG Delta / Delfleer*: Covered 100% for 84 months from date of purchase for excessive loss of gloss caused from cracking, checking and hazing. Covered 100% for 84 months from date of purchase for cracking or checking, peeling or de-lamination of the topcoat or other layer of paint.
  - *Sikkens Autocoat LV*: Covered 100% for 84 months from date of purchase for items directly related to durability and appearance of the topcoat (gloss, color retention, cracking). Covered for 72 months from date of purchase, for items related to the integrity of the entire coating system (adhesion, peeling), coverage will be 100% for the first 36 months from date of purchase, from the 37<sup>th</sup> month to the 48<sup>th</sup> month from the date of purchase coverage will be 50%, from the 49<sup>th</sup> month to the 72<sup>nd</sup> month from date of purchase coverage will be 25%.
  - *DuPont Performance Coating products – Imron and Imron Elite*: R•O•M warrants that finished areas will be free throughout the warranty period from: corrosion, blistering, cracking, peeling, hazing, chalking, delamination, and unreasonable loss of gloss throughout the entire finished area. Covered 100% for 60 months from date of purchase, coverage will be 75% from the 61<sup>st</sup> month to the 72<sup>nd</sup> month from the date of purchase, and coverage will be 50% from the 73<sup>rd</sup> month to the 84<sup>th</sup> month from date of purchase.
  - *Other*: Contact factory.

#### **2.3 R•O•M Extreme Cargo Tray and Slides:**

- a. Warranty period for manufacturing defects is 7 years from the date of purchase.

#### **2.4 DuroLumen™ LED V3 Light:**

- a. Warranty period for manufacturing defects to the original consumer/purchaser is 7 years from the date of purchase.

**2.5 LoadMaker™ Bulkhead (3" construction):**

- a. Warranty period for manufacturing defects is 1 year from the date of purchase.
- b. *Core:* For the life of the bulkhead, the core will not delaminate or break from flexural movement along the length of the core.

**2.6 Center ZoneMaker™ Bulkhead (2" construction):**

- a. Warranty period for manufacturing defects is 1 year from the date of purchase.
- b. *Core:* For period of 5 years from date of purchase, the core will not delaminate or break from flexural movement along the length of the core.

**2.7 T-Warrior™ Bulkhead (3" construction):**

- a. Warranty period for manufacturing defects is 1 year from the date of purchase.

**2.8 R•O•M Roadwarrior™ and Sidekick™ Ramps, Carriers, Platforms, Ladders, etc...:**

- a. Warranty period for manufacturing defects is 1 year from the date of purchase.

**2.9 R•O•M LinksGuard™ Chain Gates, Dock Gates, Truck Gates, etc...:**

- a. Warranty period for manufacturing defects is 1 year from the date of purchase.

**SECTION 3 - EXCLUSIONS FROM WARRANTY**

**3.1 This limited warranty does not cover normal maintenance, service and adjustments or damage to Product relating to:**

- a. Accident, alteration, misuse, negligence, abuse, vandalism or physical damage;
- b. Any repair, replacement or alteration by a facility not approved in advance by R•O•M;
- c. Improper installation (including electrical damage caused by improper installation), failure to follow the installation instructions provided by R•O•M;
- d. Use inconsistent with the instruction manual or abuse;
- e. Use of equipment or parts not manufactured by R•O•M;
- f. Fire, explosion, implosion, flood, earthquake, lightning strike, acid rain, chemical fallout, catastrophic event, or other act of God or nature;
- g. Exposure to severe environmental conditions or excessive heat;
- h. Exposure to chemicals and other substances (other than cleaning agents specifically recommended in the instruction manual);
- i. Exposure to unintended uses and/or substances;
- j. Acts or omissions of any carrier delivering the Products;
- k. Any failure to care for or maintain the Products in accordance with the instruction manual;
- l. Damage to the R•O•M Roll-up Shutter Door resulting from the door being left in the open position while the vehicle is in motion.
- m. Damage to the R•O•M Roll-up Shutter Perfect Match Wet Paint System™ resulting from or relating to:
  - Application or removal of stickers, decals, adhesive tapes or adhesives of any kind or other subsequently applied signs, artwork or lettering; or

- Accidents, scratches, abrasions, chips, bruises and gloss reduction to the Perfect Match Wet Paint System™ caused intentionally, accidentally or by normal vehicle use and maintenance; or
  - Hazing, chalking, loss of gloss or peeling of the Perfect Match Wet Paint System™ caused by improper care, abrasive polishes, aggressive chemicals, cleaning agents, heavy-duty pressure washing or aggressive mechanical wash systems; or
- n. Damage to the LoadMaker™, ZoneMaker™, or T-WarriorR™ bulkheads resulting from excessive compressive forces of any kind, any puncture, cutting, or ripping.
- o. The DuroLumen™ LED V3 Light limited warranty does not apply to:
- Severe applications, such as off-road vehicles, construction equipment, buses, or external applications (these applications are examples only and are not all inclusive of such excluded applications); or
  - Damage due to chemicals and or incompatible cleaners.

#### **SECTION 4 - CONDITIONS OF WARRANTY**

##### **4.1 This limited warranty is conditioned upon and will be invalidated by failure to comply with the following conditions:**

- a. The Product and any ancillary equipment, components or parts must be installed in accordance with the instruction manual provided by R•O•M.
- b. Regular maintenance and service must be performed on the Products;
- c. The Products must be put to their intended use;
- d. Replacement parts must be manufactured by R•O•M;
- e. Complete compliance with the claims procedure set forth in Section 5 below; and
- f. R•O•M must have received full and timely payment of all invoices issued to the customer.

#### **SECTION 5 - NOTICE OF CLAIMS AND REPLACEMENT POLICY**

5.1 Claims under this limited warranty must be in writing and presented to and received by R•O•M Corporation at 6800 East 163<sup>rd</sup> Street, Belton, Missouri 64012, within the applicable warranty period set forth in Sections 1 and 2 above. All claims must include the serial number of the Product, the name of the purchaser, and the date the alleged problem was discovered. Within 30 business days of receiving a written claim pursuant to Section 5.1, a member of R•O•M's staff will contact the customer and arrange for a time and place for a R•O•M representative to inspect the Products, if necessary. Alternatively, R•O•M may request the return of the Product.

If R•O•M instructs the customer to return the Products to R•O•M, the item will be assigned a Return Goods Authorization ("RGA") number and the item must be returned to R•O•M within 30 days of the RGA number being assigned. If the item is not returned within 30 days of the assignment of the RGA number, this limited warranty will terminate and R•O•M will have no further liability or obligation with respect to that Product.

- 5.2 After a representative of R•O•M inspects the Products or assesses the problem, R•O•M will take appropriate action, in its sole discretion, to remedy the alleged problem. If the claim is for a manufacturing defect, R•O•M must be satisfied, in its sole discretion, that the Products were defective at the time it left R•O•M's factory.
- 5.3 If R•O•M ships replacement parts prior to the receipt of the allegedly defective part, the replacement part at R•O•M's discretion will be invoiced FOB Belton, Missouri and upon receipt of the allegedly defective part, R•O•M will credit the customer's account, if R•O•M determines, in its sole discretion, that the returned part is covered by this limited warranty.
- 5.4 Labor reimbursement up to 3 years. R•O•M will determine, at its own discretion, the amount of time that it will reimburse for any labor associated with this limited warranty, depending on the nature of the claim. R•O•M will not reimburse any labor connected with the removal or reinstallation of adhesives, decals, stickers, tapes, etc... R•O•M may reimburse for labor with prior approval from an authorized R•O•M representative strictly adhering to the guidelines listed below. This authorization will

pay for removal, replacement and reinstallation of the allegedly defective Product. Warranty coverage only applies to original equipment supplied by R•O•M and does not extend to door attachments including (but not limited to) decals, emblems, stripes and adhesives, equipment removal, compartment configurations (i.e.: false walls, shelves), etc... Reimbursement is for repairs only, travel to and from truck location is not covered.

Guidelines – maximum allowance:

R•O•M Roll-up Shutter Doors and Parts:

- |                      |                 |                          |           |
|----------------------|-----------------|--------------------------|-----------|
| • 1 Door             | 1.5 hours       | • 1 Bottom Rail Assembly | 1.0 hour  |
| • 1 Curtain (slats)  | 1.5 hours       | • 1 Slat Replacement     | 1.5 hours |
| • 1 Door Ajar Switch | 1.0 hour        | • 1 Operator             | 1.5 hours |
| • Other              | Contact Factory |                          |           |

Other R•O•M Products: (Contact Factory)

Maximum reimbursement rate is \$60.00 per hour.

## **SECTION 6 - REMEDY**

- 6.1 The customer's exclusive remedy under this limited warranty is the repair or replacement of the Product, as determined by R•O•M in its sole discretion.

## **SECTION 7 - LIMITATION OF LIABILITY**

- 7.1 THE LIMITED WARRANTY DESCRIBED ABOVE IS THE ONLY WARRANTY MADE BY R•O•M CORPORATION, AND SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. R•O•M CORPORATION SHALL NOT BE LIABLE FOR ANY OTHER DAMAGE OF ANY KIND INCLUDING, BUT NOT LIMITED TO, PUNATIVE, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING DAMAGES FOR LOST PROFITS, LOST SALES, OR INJURY TO PERSON OR PROPERTY. NO REMEDY FOR SUCH DAMAGES SHALL BE AVAILABLE REGARDLESS OF WHETHER SUCH CLAIM IS BASED ON CONTRACT, NEGLIGENCE, TORT OR STRICT LIABILITY.
- 7.2 NO STATEMENT MADE BY ANY PERSON WITH RESPECT TO ANY PRODUCT SHALL CONSTITUTE A WARRANTY, BE RELIED UPON ANY CUSTOMER OR BE DEEMED PART OF THIS LIMITED WARRANTY OR ANY SALE AGREEMENT BETWEEN R•O•M AND THE CUSTOMER.

## **SECTION 8 – CHANGED, RETURNED OR CANCELLED ORDERS**

- 8.1 Changed orders: Alterations or modifications requested within 10 working days (15 working days for painted orders) of the scheduled ship date could result in additional charges for incurred material and labor costs, and may effect the delivery date.
- 8.2 Cancelled orders: Cancelled orders are subject to a 10% cancellation fee.
- 8.3 Returned items: With prior approval goods may be returned within 10 business days of invoice date (excludes custom made products & parts). Returned goods are subject to a 15% restocking fee. No credit allowed for goods returned without prior approval.



*Excellence made to order.*

6800 E. 163<sup>rd</sup> Street  
Belton, MO 64012-5463  
800-827-3692  
Fax 816-318-8100  
salcs@romcorp.com  
www.romcorp.com

December 14, 2010

Scott Beamesderfer  
FSC Supply Chain Manager  
E-One, Inc.  
3611 SW 20<sup>th</sup> Street  
Ocala, FL 34474

Dear Scott,

In the event that anyone would have an issue with an ROM product we simply request that we be contacted. Our toll free number is 1-800-827-3692. They would need to tell us the door serial number, what the issue is and that they believe the door to be under warranty. A repair authorization number and approval will need to be obtained prior to commencing repair. Our current Customer Development Representative is Mike Dryer. Mike can be reached at 1800-827-3692 ext 203 or at [MikeDryer@romcorp.com](mailto:MikeDryer@romcorp.com).

If there is anything else I can help with please do not hesitate to contact me.  
Sincerely,

A handwritten signature in blue ink, appearing to read 'Cindy Preston', is written over a faint, circular stamp.

Cindy Preston  
Customer Development Representative  
[CPreston@Romcorp.com](mailto:CPreston@Romcorp.com)  
1-800-827-3692 ext 273

ROM Warranty Attached

# Warranty Claim Form

Customer Name:			
Contact Name:			
Address:			
City / State / Zip:			
Phone #:		Fax #:	
Cust ID:		Date of Claim:	
Invoice # (s) of products in question:		Serial # (s) of products in question:	

*Describe the Problem you are having:*

*Describe why you feel this is a Warranty Issue:*

*Can you return the parts in question? / If no, explain the reason:*

Can you provide photographs if asked?	
Is the equipment out of service due to the problem described?	
Is the product being used under normal conditions? If no, describe any special circumstances.	
What repairs have you made if any?	

*If you have made any modifications to the product, or modifications where the product is used - please describe.*

*Is there any other information you feel we should be made aware of?*

*The above-presented information is accurate and truthful to the best of my knowledge, fairly and accurately reflecting the facts in this case. I have reviewed R•O•M Corporation's Terms of Warranty and I hereby agree to the conditions therein. The above is not an accusation of liability on the part of any party involved and is submitted for informational purposes only.*

\_\_\_\_\_  
Signature \_\_\_\_\_ Title \_\_\_\_\_ Date

**FOR R•O•M OFFICE USE ONLY**

Date Received	Reviewed By
CQC Number	Date of RMA

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Information contained herein is the confidential and proprietary intellectual property of R•O•M Corporation and should not be disclosed to any third party without the express prior written consent of R•O•M Corporation.

**Toll: 800-827-3692 / Phone: 816-318-8000 / Fax: 816-318-8100 / [www.romcorp.com](http://www.romcorp.com)**

*Instructions for Warranty Claim Form*

Read the Warranty on the product you are making the Claim against, and determine if your case is indeed covered by R•O•M's Warranty.
Gather as much information and appropriate documentation as possible before beginning the Warranty Process.
Attach copies of any pertinent documentation to this form when you return it.
If available have a copies of the original Invoice, Order Packing Lists, Bills of Lading and any previous paperwork associated with the product in question.
Attempt to complete each piece of information requested on this form. If a piece of information is unavailable to you, please indicate that on the form, rather than leaving it blank.
If additional room is needed to complete a particular section, attach an additional paper, then reference the additional piece of paper you are continuing.
If needed, R•O•M can assist you in completing information on the form that you may not have available. However, we cannot assist you in making your actual complaint or in describing why you feel this is a warranty issue.
For assistance in completing this form call R•O•M's Customer Development Center at 1-800-827-3692.
R•O•M will open a Warranty Case and issue a CQC Number (Customer Quality Concern).
You will be sent an RMA number (Return Materials Authorization) if you are asked to return any product. We will not receive any returned product without this number.
R•O•M's Customer Development Center will begin a investigation process. This may involve requests for further information, phone calls and possibly a visit from our Territory Manager.
This process does take some time to complete, however, we will attempt to expedite the investigation when we can.

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**Toll: 800-827-3692 / Phone: 816-318-8000 / Fax: 816-318-8100 / [www.romcorp.com](http://www.romcorp.com)**



global assurance

This is to certify that the Quality Management System of:

**E-ONE, Inc.**

1601 Southwest 37th Avenue  
Ocala, FL 34474

applicable to:

**The design and manufacture of custom and standard fire fighting and emergency response vehicles and apparatus**

has been assessed and approved by  
National Quality Assurance, U.S.A., against the provisions of:

**ISO 9001: 2008**

Certificate Number: 12518

EAC Code: 22

First Issued: August 18, 2000

Valid Until: September 10, 2015

Reissued: September 10, 2012

For and on behalf  
of NQA, USA, Acton, MA 01720



Certificate of Registration



# Proposal Information Sheet

E-One Custom Pumper  
Lexington Fire Department  
October 4, 2013

**Apparatus:** **E-One Mainline Custom Typhoon Pumper**

**Manufacturer:** E-ONE  
1601 S.W. 37th Avenue  
Ocala, FL 34474  
Kent Tyler, President and CEO  
(352) 237-1122  
(352) 237-1151 Fax  
[info@e-one.com](mailto:info@e-one.com)

**Dealer:** Vogelpohl Fire Equipment, Inc.  
2770 Circleport Dr.  
Erlanger, KY 41018  
Todd Vogelpohl, President  
800-797-8317  
859-282-1000  
859-282-1550 fax  
513-659-8789 cell  
[toddv@vogelpohlfire.com](mailto:toddv@vogelpohlfire.com)



## SERVICE FACILITIES

**Local Service Facility:**

**Vogelpohl Fire Equipment, Inc**  
2770 Circleport Dr.  
Erlanger, KY 41018

15,000 sq.ft. facility  
Eight service bays  
Four mobile service vehicles

800-797-8317  
859-282-1000  
859-282-1550 fax

Todd Vogelpohl, President  
513-659-8789 cell  
[toddy@vogelpohlfire.com](mailto:toddy@vogelpohlfire.com)

Brian Roleson, Service Manager, EVT Technician  
(513) 276-5996 cell  
[brianr@vogelpohlfire.com](mailto:brianr@vogelpohlfire.com)

Joe Hoover, Service Writer  
[joehoover@vogelpohlfire.com](mailto:joehoover@vogelpohlfire.com)

For normal service call **859-282-1000** or **800-797-8317** and ask for **Service Department**

For Emergency after hours service call 800-797-8317, press option 2 and leave a message for the on-call service technician. Your call will be returned as quickly as possible. If you do not have a return call within two (2) hours please try your sales representative, or Todd Vogelpohl or Brian Roleson at the above numbers.



Department	Contact & Phone	Units
Georgetown Fire Dept. 101 Airport Rd. Georgetown, KY 40324	Chief Robert Bruin 502-863-7835	Custom Pumper
Greater Cincinnati Airport Fire Dept. 2100 Tower Dr. Hebron, KY 41048	Chief Steve Listerman 859-767-3112	HP78 Quint
Lacy Volunteer Fire Dept 11994 Greenville Rd. Hopkinsville, KY 42240	Chief Kavin Meacham 270-269-9177	Watermaster Tanker
Monterey Fire Dept. Sawridge Creek Rd. Owenton, KY 40359	Larry House 502-484-0969	Comm ES Pumper
Newport Fire Dept. 998 Monmouth St. Newport KY 41071	859-292-3615	HP100 Aerial Ladder Quint
Northern Pendleton Fire Dept. 5900 Hwy 154 Butler, KY 41006	Chief Larry Record 859-472-5127	Custom Pumper
Owen County Volunteer Fire Dept. 406 S. Main St. Owenton, KY 40359	Chief Robb Chaney 502-484-2971	Comm ES Pumper
Pt. Pleasant Fire District 3444 Turfway Rd. Erlanger, KY 41018	A/C Eric Seibel 859-283-2798	Custom Pumper HP78 Quint

**Ohio**

Clearcreek Fire Protection Dist. 925 S. Main St. Springboro, OH 45066	Chief Bob Kidd 937-748-2766	Comm Pumpers Custom Pumper Custom 100' Quint
Mason Fire Dept 6000 Mason-Montgomery Rd. Mason, OH 45040	Chief John Moore 513-229-8540	HP100 Aerial Ladder Quint
Pierce Township Fire Dept. 950 Locust Corner Rd. Cincinnati, OH 45245	Chief Craig Wright 513-752-6273	Comm Wetside Tanker
Reily Township Fire Department 6937 Imhoff Rd. Oxford, OH 45056	A/C Dennis Conrad 513-757-4023	Comm ES Pumper
St. Bernard Fire Dept. 5116 Vine St. Cincinnati, OH 45217	Chief Steve Scherpenberg 513-242-2727	Custom Rescue Pumper
S. Webster/Bloom Twp Joint Fire Dist. 81 Market St. PO Box 509 S. Webster, OH 45682	740-778-2555	Custom Pumper

Department	Contact & Phone	Units
Sprigg Township 3106 Cabin Creek Rd. Manchester, OH 45144	Chief Rick Bowman 937-549-2256	Comm ES Pumper
Stamping Ground Fire Department 3374 Main St. Stamping Ground, KY 40379	502-535-7714	Comm ES Pumper
Tri-Community Joint Fire District 49 Main St. Greenwich, OH 44837	419-752-5141	Comm Tradition Pumper

08/15/13



May 28, 2001

Emergency One, Inc.  
P. O. Box 2710  
Ocala, FL 34478

Subject: Typhoon Vista Cab Crash Worthiness Test, Roof Load.

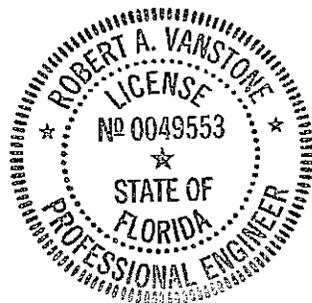
References: 1. Uniform Provisions Concerning the Approval of Vehicles with Regard to the Protection of the Occupants of the Cab of a Commercial Vehicle, E/ECE/TRANS/505, Regulation No. 29.

Ladies & Gentlemen:

May 25, 2001 at Ocala, Florida, the undersigned witnessed the conduct of the roof load defined in the referenced European Standard. The test was performed on an Emergency One Typhoon cab with a Vista roof.

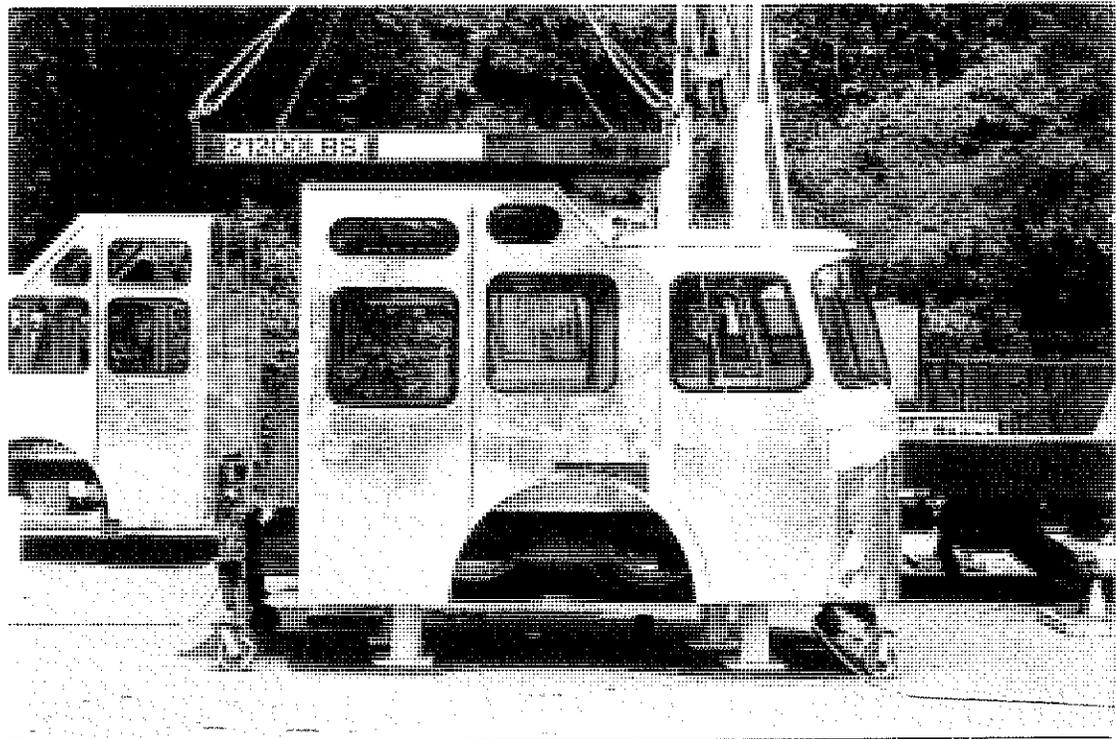
The cab roof load test was performed to 21,200 lbs as required by the Standard. The roof load was applied first over the entire roof and then reapplied centered on the raised section as illustrated in the attached photographs. In both cases there was essentially no intrusion into the passenger spaces and the four doors could be opened and closed.

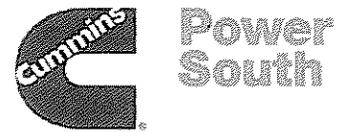
As a result of my observations of the test conduct and my review of the test preparations I have concluded that the tests were conducted substantially in compliance with the requirements and specifications of the referenced Standard.



Yours very truly,

Robert A. Vanstone, P.E.





June 3, 2013

Mr. Raff McDougall  
Emergency One, Inc.  
P.O. Box 2710  
Ocala, Florida, 34478

Ref: T2X/C2X/Quest Installation Review 2013 ISL

Dear Raff,

Cummins has approved our IQA submission for the 2013 ISL installation on May 23, 2013. Per the submission, the installation meets Cummins requirements. Per Cummins AEB's, any changes to the installation need to be communicated to Cummins for additional review and approval.

<u>System</u>	<u>Concurrence</u>
Power Train	Yes
Mounting	Yes
Deaeration	Yes
Cooling	Yes
Fuel	Yes
Air Induction	Yes
Air compressor	Yes
Exhaust	Yes
Lubrication	Yes
Electrical	Yes
Accessories	Yes
Serviceability	Yes

Emergency One  
Page 2

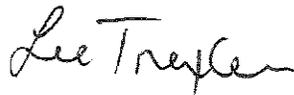
As always, this engine installation interfaces with various other systems in the equipment. There are several factors the installation review cannot be expected to address and have not been evaluated unless specifically noted in this report.

- Equipment application with regard to type of service and performance
- Component quality, workmanship, assembly practices and endurance abilities.
- Conformance of the equipment to regulatory or legislated requirements for design, safety and noise levels.
- End user acceptability of subjective characteristics as vibration or noise levels.

This report in no way reflects or assures market availability of the equipment reviewed.

Please contact me if you have any questions.

Best regards,



Lee Trexler  
Director of OEM Sales and Engineering

cc: John Tyson – Cummins Power South LLC Ocala  
Aaron Schilling – Cummins Power South LLC Tampa



SAE Turning Radius Calculations for Quote No. 61850				
Wheelbase:	148"	Front Bumper Size:	10"	
Body Width:	100"	Front Bumper Extension:	20"	
Front Axle Kingpin Center:	68.83"	Front Wheel Type:	ALUMINUM	
Front Axle Track:	81.47"	Rear Wheel Type:	ALUMINUM	
Front Axle Tire Width:	16.2"	Tire Brand:	MICHELIN	
Dimension Over Rear Tires:	97.61"			
Body Front Overhang:	92"			
Inside Cramp Angle	S. A. E. Turning Radius	Tire Curb Clearance	Bumper Swing Clearance	Minimum Inside Radius
38	25.3'	26'	30.3'	14.6'
39	24.9'	25.5'	29.9'	14'
40	24.4'	25.1'	29.5'	13.5'
41	24'	24.6'	29.2'	13'
42	23.5'	24.2'	28.8'	12.5'
43	23.1'	23.8'	28.5'	12'
44	22.8'	23.4'	28.1'	11.6'
45	22.4'	23.1'	27.8'	11.1'
Nominal Cramp Angles:				
Leaf spring suspension: up to and including 425/65R22.5 tires			45 degrees	
Leaf spring suspension: 445/65R22.5 tires			38 degrees	
Independent Front Suspension (IFS): up to and including 425/65R22.5 tires			44 degrees	
Independent Front Suspension (IFS): 445/65R22.5 tires			42 degrees	
<p><b>This Turning Radius report reflects how the quote was configured. Any succeeding changes may slightly alter the turning radius of the vehicle and the data in this report.</b></p>				

Electrical Load Report for Quote: 61850

Amp Draw

Category / Selection	Responding	On-Scene with Fast Idle	Minimum Load w/o Fast Idle	Intermittent Load
<b>AIR SYSTEM OPTIONS</b>				
AIR HORNS RECSO BUMP GRVR (PR)	0	0	0	1
<b>SECONDARY BRAKING</b>				
RETARDER TELMA DRIVELINE MOUNT	0	0	0	70
<b>FUEL SYSTEMS</b>				
FUEL/WATER SEPARATOR RACOR	1	1	1	0
<b>CHASSIS OPTIONS</b>				
TANK DEF 5 GAL - 2013 EPA	10	10	10	30
<b>CAB MODEL</b>				
TYPHOON X LONG CAB W /BS DRS	7.5	7.5	7.5	0
<b>CAB DOOR OPTIONS</b>				
CAB STEP AREA LTG LED (4)	0	2	2	0
CAB STEP AREA LTG LED RED (4)	0	1	1	0
<b>MIRRORS</b>				
MIRROR LANG MEKRA	3	3	0	2
<b>HVAC</b>				
AIR COND ISC/ISL 2006	65	65	0	0
HEATER FRNT/RR W /COVER (PR)	20.1	20.1	0	0
<b>CAB ELECTRICAL OPTIONS</b>				
SPEEDOMETER FOR OFFICER	.25	.25	.25	0
WINDSHIELD FANS-8" (PR)	8	8	0	0
CAB HEADLIGHTS	10.93	10.93	10.93	0
TIRE CHAIN PREW IRE	8	0	0	0
CAB 12V OUTLET HOT	5	5	0	0
CAB 12V OUTLET HOT	5	5	0	0
CAB 12V OUTLET HOT [2]	10	10	0	0
TURN W HLN M6 LED ARROW AMBR	1.4	1.4	1.4	0
<b>BODY COMPT LEFT SIDE</b>				
COMPT ROOF TOP STRG DRV	0	2.88	1.44	0
<b>HANDRAILS / STEPS</b>				
STEP RR FLDG DRV LED CPI	0	.288	.288	0
STEP FLDG LED CPI	0	.072	.072	0
STEP FLDG LED CPI [3]	0	.216	.216	0
<b>PUMPS</b>				
PUMP WATEROUS CSU1500-2250-1/S	0	0	0	100
<b>PUMP OPTIONS</b>				
VLW MONARCH ELECT ACT - W TRUS	0	0	0	10
<b>PRESSURE GOVERNORS</b>				
GOV PRESS FRC PUMPROSS	1	1	1	0
<b>GAUGES</b>				
GA IC 10LED TANK LVL FOAM [2]	0	1	1	0
GA IC 10LED TANK LVL W TR/PSTNK	0	1.8	0	0
<b>FOAM SYSTEM OPTIONS</b>				
FOAM FILL EZ HAILE SGL 12V	0	0	0	20
<b>LIGHT BARS</b>				
LT BAR W HLN FN72VLED 12 MKRZ7	6	5	0	0
LT BAR W HLN FNM IN LED MK7 (PR)	8	6	6	0
<b>WARNING LIGHT PACKAGES</b>				
LT PKG W HLN M6 LED RED (8/2)	4	4	4	0
<b>WARNING LIGHTS</b>				
LTS W HLN BEACON E6LED (PR)	2.25	2.25	2.25	0
LT HAZARD 2" LED	.3	0	0	0
LTS W HLN 500 SUPER LED RED (PR)	.8	.8	.8	0
LTS W HLN M6 SUPER LED RED (PR)	1	1	1	0
<b>SIRENS</b>				
SIREN FED Q2B-PEDestal MNTED	0	0	0	100
SIREN POW ERCALL DX5200	8	.03	.03	0
<b>DOT LIGHTING</b>				
LT LICENSE PLATE LED	.05	.05	.05	0
LTS MKKR PKG BDY/CAB LED -P/TRK	3.5	3.5	3.5	0
LTS BR/TAX LED AMBR/RED (PR)	.8	.8	.8	0
LT W HLN LED PSR00XRR BRAKE LT	0	0	0	.65
LT AUX TURN W LDN 9106 LED (PR)	0	0	0	2.1
LTS S/T/AT/BU M6 LED VRT 4	1.5	1.5	1.5	0
<b>LIGHTS - COMPARTMENT, STEP &amp; GROUND</b>				
LT COMPT AMD LED MED CABINET [4]	0	2.4	2.4	0
LT GROUND PKG LMBR H2O LED LG	0	6	6	0
LT COMPT PKG AMDOR LED SM DUA	0	7.54	7.54	0
LT COMPT AMD LED MED CBNT DUAL	0	1.2	1.2	0
<b>LIGHTS - DECK AND SCENE</b>				
LT HOSEBED FED GH SCENE [2]	0	6.6	6.6	0
LTS SCENE W HLN M6 SPR LED (PR)	0	4.5	0	0

<u>LT CROSSLAW TRUCK-12V LED</u>	0	1.2	0	0
<b>LIGHTS - NON-WARNING</b>				
<u>LT ENGINE COMPT LED (EA)</u>	0	.5	.5	0
<u>LT W IRING-PUMP PANEL LT</u>	0	0	0	0
<u>LT PUMP COMPT LED (EA)</u>	0	.5	.5	0
<u>LT MAPLT-SUNNEX</u>	1	1	0	0
<u>LT SPOT COLLNS CL-12-M HNDHLD</u>	0	0	0	7.8
<u>LT PUMP PNL H2O LED 6LT SM PKG</u>	0	6.3	6.3	0
<b>CAMERAS / INTERCOM</b>				
<u>INTRCM FIRECOM 4 CAB W IRLESS</u>	2	2	0	0
<b>MISC ELECTRICAL</b>				
<u>12V POWER DISTRIBUTION MODULE</u>	10	10	0	0
<u>12V POWER DISTRIBUTION MODULE</u>	10	10	0	0
<u>ALARM BACK UP ECCO SA917</u>	0	0	0	.3
<b>LIGHTS - QUARTZ</b>				
<u>LT FIRETECH 72" BROW W /MLW HT</u>	23.75	23.75	0	0
<u>LT W HLN PIONR PCP2 W /INT POLE [2]</u>	0	24	0	0
<u>LT FRCSPECTR 12V LED W /CAB MNT [2]</u>	0	36	0	0
<b>Total Amps:</b>	<b>239.13</b>	<b>325.86</b>	<b>89.07</b>	<b>343.85</b>

Alternator Output

	Responding	On-Scene with Fast Idle	Idle
<u>ALT-360AMP NIEHOFF</u>	340	304	230

Wattage

Category / Selection

	25 Pct Wattage	100 Pct Wattage	
<b>Total Watts:</b>	<b>0</b>	<b>0</b>	<b>0</b>

E-ONE Quality Operating Procedure	Revision No.: <b>A</b> Date: <b>12/22/2010</b> Page: <b>1 of 2</b>
Title:	<b>Corrosion Prevention Policy</b>

1.0 **PURPOSE:** This procedure defines E-ONE's approach to corrosion prevention and control.

2.0 **SCOPE:** This procedure applies to all steps in the product realization process and covers the entire life cycle of the product.

3.0 **DEFINITIONS:**

- ASTM D1654 – Standard Test Method for evaluation of painted or coated specimens subjected to corrosive environments.
- Corrosion – The destructive attack of a metal through interaction with its environment.
- PI – Process Instruction
- QMS – Quality Management System

4.0 **RESPONSIBILITY:**

- Design Engineer – incorporate corrosion prevention design principals. Define testing criteria.
- Manufacturing Engineer – develop process instructions and standards for corrosion control applications.
- Production Supervisor/Manager – ensure all operators are trained on corrosion prevention techniques and follow established standards.
- Quality Team – Audit process to ensure procedures are followed and ensure products are tested and records are maintained.
- Customer Service Team – document corrosion issues in the field.

5.0 **PROCESS:**

Corrosion prevention is achieved by engineering out corrosion opportunities. Design practices include the use of pre-punched holes to eliminate drilling after paint application, the minimization of slotted extrusions, and the elimination of water intrusion and collection points. Periodic evaluations of product designs are conducted to identify corrosion prevention opportunities.

Corrosion control is achieved by the application of corrosion protection products. Selection of materials, coatings, and corrosion inhibitors are specified to minimize corrosion from dissimilar metals. Surface pre-treatments are specified to promote maximum paint adhesion. Sealants are specified to minimize water and salt intrusion and collection points.

Storage and manufacturing processes are defined to ensure corrosion control. These QMS procedures are used to train associates on:

- Corrosion prevention of dissimilar metals (PI 2153)
- Corrosion control applications (PI 33)
- Protection of joints and seams (PI1318)

Pre-production corrosion control testing must be conducted by an accredited laboratory according to ASTM D1654 (or equivalent) prior to changing any corrosion control applications or processes. In-process tests are defined to target leak detection where corrosion is most likely to occur.

Field reports and warranty claims are reviewed and used to drive design and process changes that will further reduce long-term corrosion.

Process audits are scheduled with 3<sup>rd</sup> party corrosion reduction experts to verify correct application of coatings and pre-treatments.

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File Name:	Design Control Rev. A
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E-ONE Quality Operating Procedure	Revision No.: <b>A</b> Date: <b>12/22/2010</b> Page: <b>2 of 2</b>
Title: <b>Corrosion Prevention Policy</b>	

**Approval Status:**

	Title	Date	Signature
<b>Prepared by:</b>	Serena Mendola Director of Quality	12/22/10	<i>Serena Mendola</i>
<b>Reviewed/ Approved by:</b>	Dirk Steyn Director of Engineering	12/22/10	<i>Dirk Steyn</i>
<b>Reviewed/ Approved by:</b>	Billy Miles Director of Customer Service	11-25-2010	<i>Billy Miles</i>
<b>Reviewed/ Approved by:</b>	Mike Tomasetti VP Operations	12/22/10	<i>Mike Tomasetti</i>
<b>Reviewed/ Approved by:</b>			
<b>Reviewed/ Approved by:</b>			
<b>Reviewed/ Approved by:</b>			

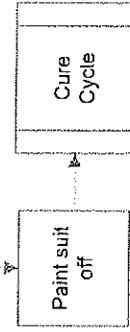
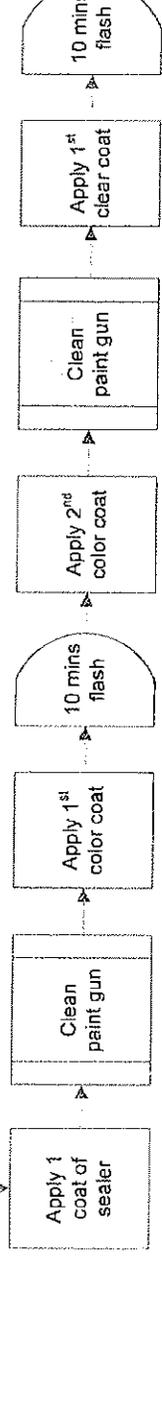
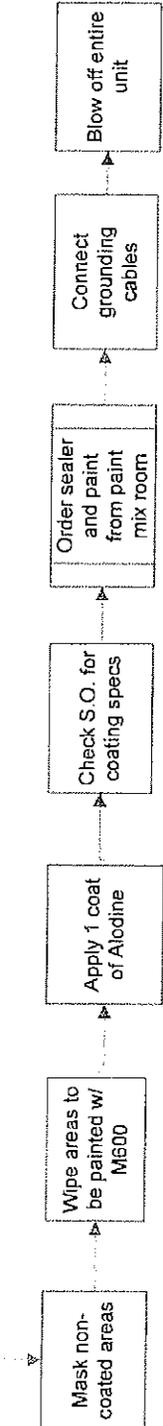
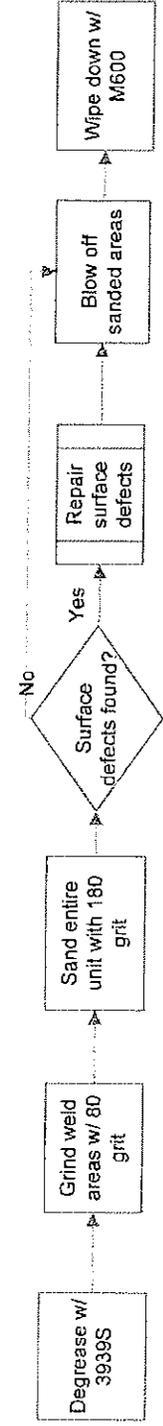
**Revision Log:**

Revision Level	Date Changed	Section Changed	Description of Change
A	12/21/10	All	Original Issue

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# Coating Application - Wet on Wet Process

Reference Documentation  
PI-152



# Coating Application – Two Cycle Process

