holmatro
mastering power

Heavy Duty Power Rescue Tools
Bid #67-2018

Prepared for:
Lexington Fire Department

VOGELPOHL
FIRE EQUIPMENT

Authorized Dealer & Service Center
859-282-1000

VOGELPOHL
FIRE EQUIPMENT

2770 Circleport Dr. Erlanger, KY 41018
Office. (859) 282-1000 Fax. (859) 282-1550

May 23, 2018

Lexington Fayette Urban County Government
Division of Central Purchasing
200 East Main Street
3rd Floor, Room 338
Lexington KY 40507
BID #67-2018 Heavy Duty Power Rescue Tools

We would like to thank you for the opportunity to quote the Holmatro line of rescue equipment to your department. Vogelpohl Fire Equipment has been the authorized sales, service, and warranty center for Holmatro Rescue Equipment in the state of Kentucky, Southwest Ohio, and Southeast Indiana for the past 28 years. The employees of Vogelpohl Fire Equipment, Inc. have over 150 years of combined fire service experience.

We are located in Erlanger, KY near the Greater Cincinnati International Airport. We have a mobile service vehicle and full-time technician who provides preventative maintenance programs, training, and next day emergency service calls. Vogelpohl Fire Equipment maintains a complete inventory of replacement parts and will provide loaner tools if unable to repair your tool on site.

Vogelpohl Fire Equipment, Inc. and Holmatro Rescue Equipment are committed to providing the best equipment and service available. Enclosed you will find all types of supporting documentation and literature to support our statements. We look forward to the possibilities of providing the Lexington Fire Department with the highest quality tools and service which best meet your needs.

Thank you,

Todd Vogelpohl
President
Vogelpohl Fire Equipment

holmatro
mastering power

LEXINGTON

Lexington-Fayette Urban County Government

Lexington, Kentucky
Horse Capital of the World

Division of Central Purchasing

Date of Issue: May 9, 2018

INVITATION TO BID #67-2018 Heavy Duty Power Rescue Tools

Bid Opening Date: **May 23, 2018** **Bid Opening Time:** **2:00 PM**
Address: 200 East Main Street, 3rd Floor, Room 338, Lexington, Kentucky 40507

Type of Bid: Price Contract

Pre Bid Meeting: N/A Pre Bid Time: N/A
Address: N/A

Sealed bids will be received in the office of the Division of Central Purchasing, 200 East Main Street, Lexington, Kentucky, until **2:00 PM**, prevailing local time on **05/23/2018**. Bids must be received by the above-mentioned date and time. Mailed bids should be sent to:

Division of Central Purchasing
200 East Main Street, Room 338
Lexington, KY 40507, (859) 258-3320

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not addressed and delivered as indicated above. **Bids that are not delivered to the Division of Central Purchasing by the stated time and date will be rejected.** All bids must be signed and have the company name and address, bid invitation number, and the name of the bid on the outside of the envelope.

Bids are to include all shipping costs to the point of delivery located at: Lexington, KY

Check One:			**Proposed Delivery:**
X Bid Specifications Met	_____ Exceptions to Bid Specifications.	*Exceptions shall be itemized and attached to bid proposal submitted.*	120 days after acceptance of bid.

Procurement Card Usage—The Lexington-Fayette Urban County Government may be using Procurement Cards to purchase goods and services and also to make payments. Will you accept Procurement Cards? X Yes _____ No

Submitted by: VOGELPOHL FIRE EQUIPMENT
Firm Name

2770 CIRCLEPORT DR
Address

ERLANGER, KY 41018
City, State & Zip

Bid must be signed:
(original signature)

Vice President
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,

   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. T Vogelpohl

STATE OF KENTUCKY

COUNTY OF BOONE

The foregoing instrument was subscribed, sworn to and acknowledged before me by TODD VOGELPOHL on this the 18 day of MAY, 2018.

My Commission expires: 1/24/19

DAVID MCCLANAHAN
NOTARY PUBLIC
ID # 526549
Commonwealth of Kentucky
My Commission Expires January 24, 2019

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**). 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** 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 opening.

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.

I. Bids must be submitted prior to the date and time indicated for opening. Bids submitted after this time will not be considered.

J. All bids mailed must be marked on the face of the envelope:

"Bid on #67-2018 Heavy Duty Power Rescue Tools"

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 bids that are not addressed and delivered as indicated above. Bids 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 **XX** 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(s) from the date of acceptance of this contract by the Lexington-Fayette Urban County Government. This agreement may be automatically extended for an additional 1 year(s) renewal. 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.

B. Price Changes **(Space Checked Applies)**

() 1. Prices quoted in response to the Invitation shall be firm prices for the first 90 days of the Procurement Contract. After 90 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 quarter. 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 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.

(XXX) 3. See bid specifications.

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 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.

F. No substitutions for articles specified herein may be made without prior approval of the Division of Central Purchasing.

EQUAL OPPORTUNITY AGREEMENT

Standard Title VI Assurance

The Lexington Fayette-Urban County Government, (hereinafter referred to as the "Recipient") hereby agrees that as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation, it will comply with Title VI of the Civil Rights Act of 1964, 78Stat.252, 42 U.S.C. 2000d-4 (hereinafter referred to as the "Act"), and all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, (49 CFR, Part 21) Nondiscrimination in Federally Assisted Program of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act of 1964 (hereinafter referred to as the "Regulations") and other pertinent directives, no person in the United States shall, on the grounds of race, color, national origin, sex, age (over 40), religion, sexual orientation, gender identity, veteran status, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Recipient receives Federal financial assistance from the U.S. Department of Transportation, including the Federal Highway Administration, and hereby gives assurance that will promptly take any necessary measures to effectuate this agreement. This assurance is required by subsection 21.7(a) (1) of the Regulations.

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 disability.*
- 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: T*he 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, veteran status, disability and age.

Signature

VOGEL PAHL FIRE EQUIPMENT

Name of Business

GENERAL PROVISIONS OF BID CONTRACT

By signing the below, bidder acknowledges that it understands and agrees with the following provisions related to its bid response and the provision of any goods or services to LFUCG upon selection by LFUCG pursuant to the bid request:

1. Bidder shall comply with all Federal, State & Local regulations concerning this type of service or good. All applicable state laws, ordinances and resolutions (including but not limited to Section 2-33 (Discrimination due to sexual orientation or gender identity) and Chapter 13 (Licenses and Regulations) of the Lexington-Fayette Urban County Government Code of Ordinances, and Resolution No. 484-17 (Minority, Women, and Veteran-Owned Businesses)) and the regulations of all authorities having jurisdiction over the project shall apply to the contract, and shall be deemed to be incorporated herein by reference.

2. Failure to submit ALL forms and information required by LFUCG may be grounds for disqualification.

3. Addenda: All addenda and IonWave Q&A, if any, must be considered by the bidder in making its response, and such addenda shall be made a part of the requirements of the bid contract. Before submitting a bid response, it is incumbent upon bidder to be informed as to whether any addenda have been issued, and the failure of the bidder to cover any such addenda may result in disqualification of that response.

4. Bid Reservations: LFUCG reserves the right to reject any or all bid responses, to award in whole or part, and to waive minor immaterial defects in proposals. LFUCG may consider any alternative proposal that meets its basic needs.

5. Liability: LFUCG is not responsible for any cost incurred by bidder in the preparation of its response.

6. Changes/Alterations: Bidder may change or withdraw a proposal at any time prior to the opening; however, no oral modifications will be allowed. Only letters, or other formal written requests for modifications or corrections of a previously submitted proposal which is addressed in the same manner as the bid response, and received by LFUCG prior to the scheduled closing time for receipt of bids, will be accepted. The bid response when opened, will then be corrected in accordance with such written request(s), provided that the written request is contained in a sealed envelope which is plainly marked "modifications of bid response".

7. Clarification of Submittal: LFUCG reserves the right to obtain clarification of any point in a bid or to obtain additional information from any bidder.

8. Bribery Clause: By his/her signature on its response, bidder certifies that no employee of his/hers, any affiliate or subcontractor, has bribed or attempted to bribe an officer or employee of the LFUCG.

9. Additional Information: While not necessary, the bidder may include any product brochures, software documentation, sample reports, or other documentation that may assist LFUCG in better understanding and evaluating the bid response. Additional documentation shall not serve as a substitute for other documentation which is required by the LFUCG to be submitted with the bid response.

10. Ambiguity, Conflict or other Errors: If a bidder discovers any ambiguity, conflict, discrepancy, omission or other error in the bid request of LFUCG, it shall immediately notify LFUCG of such error in writing and request modification or clarification of the document if allowable by the LFUCG.

11. Agreement to Bid Terms: In submitting its bid response, the bidder agrees that it has carefully examined the specifications and all provisions relating to LFUCG's bid request, including but not limited to the bid contract. By submission of its bid response, bidder states that it understands the meaning, intent and requirements of LFUCG's bid request and agrees to the same. The successful bidder shall warrant that it is familiar with and understands all provisions herein and shall warrant that it can comply with them. No additional compensation to bidder shall be authorized for services, expenses, or goods reasonably covered under these provisions that the bidder omits from its bid response.

12. Cancellation: LFUCG may unilaterally terminate the bid contract with the selected bidder(s) at any time, with or without cause, by providing at least thirty (30) days advance written notice unless a different advance

written notice period is negotiated prior to contract approval. Payment for services or goods received prior to termination shall be made by the LFUCG provided these goods or services were provided in a manner acceptable to the LFUCG. Payment for those goods and services shall not be unreasonably withheld.

13. Assignment of Contract: The selected bidder(s) shall not assign or subcontract any portion of the bid contract with LFUCG without the express written consent of LFUCG. Any purported assignment or subcontract in violation hereof shall be void. It is expressly acknowledged that LFUCG shall never be required or obligated to consent to any request for assignment or subcontract; and further that such refusal to consent can be for any or no reason, fully within the sole discretion of LFUCG.

14. No Waiver: No failure or delay by LFUCG in exercising any right, remedy, power or privilege hereunder, nor any single or partial exercise thereof, nor the exercise of any other right, remedy, power or privilege shall operate as a waiver hereof or thereof. No failure or delay by LFUCG in exercising any right, remedy, power or privilege under or in respect of this bid proposal or bid contract shall affect the rights, remedies, powers or privileges of LFUCG hereunder or shall operate as a waiver thereof.

15. Authority to do Business: Each bidder must be authorized to do business under the laws of the Commonwealth of Kentucky and must be in good standing and have full legal capacity to provide the goods or services specified in the bid proposal. Each bidder must have all necessary right and lawful authority to submit the bid response and enter into the bid contract for the full term hereof including any necessary corporate or other action authorizing the bidder to submit the bid response and enter into this bid contract. If requested, the bidder will provide LFUCG with a copy of a corporate resolution authorizing this action and/or a letter from an attorney confirming that the proposer is authorized to do business in the Commonwealth of Kentucky. All bid responses must be signed by a duly authorized officer, agent or employee of the bidder.

16. Governing Law: This bid request and bid contract shall be governed by and construed in accordance with the laws of the Commonwealth of Kentucky. In the event of any proceedings regarding this matter, the bidder agrees that the venue shall be the Fayette County Circuit Court or the U.S. District Court for the Eastern District of Kentucky, Lexington Division and that the bidder expressly consents to personal jurisdiction and venue in such Court for the limited and sole purpose of proceedings relating to these matters or any rights or obligations arising thereunder.

17. Ability to Meet Obligations: Bidder affirmatively states that there are no actions, suits or proceedings of any kind pending against bidder or, to the knowledge of the bidder, threatened against the bidder before or by any court, governmental body or agency or other tribunal or authority which would, if adversely determined, have a materially adverse effect on the authority or ability of bidder to perform its obligations under this bid response or bid contract, or which question the legality, validity or enforceability hereof or thereof.

18. Price Discrepancy: When applicable, in case of price discrepancy, unit bid price written in words will prevail followed by unit price written in numbers then total amount bid per line item.

19. Bidder understands and agrees that its employees, agents, or subcontractors are not employees of LFUCG for any purpose whatsoever. Bidder is an independent contractor at all times related to the bid response or bid contract.

20. Contractor [or Vendor or Vendor's Employees] will not appropriate or make use of the Lexington-Fayette Urban County Government (LFUCG) name or any of its trade or service marks or property (including but not limited to any logo or seal), in any promotion, endorsement, advertisement, testimonial or similar use without the prior written consent of the government. If such consent is granted LFUCG reserves the unilateral right, in its sole discretion, to immediately terminate and revoke such use for any reason whatsoever. Contractor agrees that it shall cease and desist from any unauthorized use immediately upon being notified by LFUCG.

21. If any term or provision of this bid contract shall be found to be illegal or unenforceable, the remainder of the contract shall remain in full force and such term or provision shall be deemed stricken.

[signature] 5-18-18

Signature Date

WORKFORCE ANALYSIS FORM

Name of Organization: VOGELPOHL FIRE EQUIPMENT

Categories	Total	White (Not Hispanic or Latino)		Hispanic or Latino		Black or African-American (Not Hispanic or Latino		Native Hawaiian and Other Pacific Islander (Not Hispanic or Latino		Asian (Not Hispanic or Latino		American Indian or Alaskan Native (not Hispanic or Latino		Two or more races (Not Hispanic or Latino		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Administrators		3														3	
Professionals		9														9	
Superintendents																	
Supervisors																	
Foremen																	
Technicians																	
Protective Service																	
Para-Professionals																	
Office/Clerical		1	2													1	2
Skilled Craft																	
Service/Maintenanc		5														5	
Total:		18	2													18	2

Prepared by: TODD VOGELPOHL, PRESIDENT **Date:** 5 / 18 / 18

(Name and Title)

Revised 2015-Dec-15

DIRECTOR, DIVISION OF CENTRAL PURCHASING
LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
200 EAST MAIN STREET
LEXINGTON, KENTUCKY 40507

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITIES AND DBE CONTRACT PARTICIPATION

The Lexington-Fayette Urban County Government has set a goal that not less than ten percent (10%) of the total value of this contract be subcontracted to MBE/WBE's, and set a goal that not less than three percent (3%) of the total value of this contract be subcontracted to Veteran-Owned Small Businesses. The goal for the utilization of Certified MBE/WBE's and Veteran-Owned Small Businesses as subcontractors are recommended goals. Contractors who fail to meet such goals will be expected to provide written explanations to the Director of the Division of Central Purchasing of efforts they have made to accomplish the recommended goals and the extent to which they are successful in accomplishing the recommended goals will be a consideration in the procurement process.

For assistance in locating MBE/WBE Subcontractors contact Sherita Miller at 859/258-3320 or by writing the address listed below:

Sherita Miller, Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street – Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

Lexington-Fayette Urban County Government
MWDBE PARTICIPATION GOALS

A. GENERAL

1) The LFUCG request all potential contractors to make a concerted effort to include Minority-Owned (MBE), Woman-Owned (WBE), Disadvantaged (DBE) Business Enterprises and Veteran-Owned Small Businesses (VOSB) as subcontractors or suppliers in their bids.

2) Toward that end, the LFUCG has established 10% of total procurement costs as a Goal for participation of Minority-Owned, Woman-Owned and Disadvantaged Businesses on this contract.

3) **It is therefore a request of each Bidder to include in its bid, the same goal (10%) for MWDBE participation and other requirements as outlined in this section.**

4) The LFUCG has also established a 3% of total procurement costs as a Goal for participation for of Veteran-Owned Businesses.

5) **It is therefore a request of each Bidder to include in its bid, the same goal (3%) for Veteran-Owned participation and other requirements as outlined in this section.**

B. PROCEDURES

1) The successful bidder will be required to report to the LFUCG, the dollar amounts of all payments submitted to Minority-Owned, Woman-Owned or Veteran-Owned subcontractors and suppliers for work done or materials purchased for this contract. (See Subcontractor Monthly Payment Report)

2) Replacement of a Minority-Owned, Woman-Owned or Veteran-Owned subcontractor or supplier listed in the original submittal must be requested in writing and must be accompanied by documentation of Good Faith Efforts to replace the subcontractor / supplier with another MWDBE Firm; this is subject to approval by the LFUCG. (See LFUCG MWDBE Substitution Form)

3) For assistance in identifying qualified, certified businesses to solicit for potential contracting opportunities, bidders may contact:

   a) The Lexington-Fayette Urban County Government, Division of Central Purchasing (859-258-3320)

4) The LFUCG will make every effort to notify interested MWDBE and Veteran-Owned subcontractors and suppliers of each Bid Package, including information on the scope of work, the pre-bid meeting time and location, the bid date, and all other pertinent information regarding the project.

C. DEFINITIONS

1) A Minority-Owned Business Enterprise (MBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by persons of African American, Hispanic, Asian, Pacific Islander, American Indian or Alaskan Native Heritage.

2) A Woman-Owned Business Enterprise (WBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by one or more women.

3) A Disadvantaged Business (DBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by a person(s) that are economically and socially disadvantaged.

4) A Veteran-Owned Small Business (VOSB) is defined as a business which is certified as being at least 51% owned, managed and controlled by a veteran and/or a service disabled veteran.

5) Good Faith Efforts are efforts that, given all relevant circumstances, a bidder or proposer actively and aggressively seeking to meet the goals, can reasonably be expected to make. In evaluating good faith efforts made toward achieving the goals, whether the bidder or proposer has performed the efforts outlined in the Obligations of Bidder for Good Faith Efforts outlined in this document will be considered, along with any other relevant factors.

D. OBLIGATION OF BIDDER FOR GOOD FAITH EFFORTS

1) **The bidder shall make a Good Faith Effort to achieve the Participation Goal for MWDBE and Veteran-Owned subcontractors/suppliers. The failure to meet the goal shall not necessarily be cause for disqualification of the bidder; however, bidders not meeting the goal are required to furnish with their bids written documentation of their Good Faith Efforts to do so.**

2) Award of Contract shall be conditioned upon satisfaction of the requirements set forth herein.

3) The Form of Proposal includes a section entitled "MWDBE Participation Form". The applicable information must be completed and submitted as outlined below.

4) **Failure to submit this information as requested may be cause for rejection of bid or delay in contract award.**

E. DOCUMENTATION REQUIRED FOR GOOD FAITH EFFORTS

1) Bidders reaching the Goal are required to submit only the MWDBE Participation Form." The form must be fully completed including names and telephone number of participating MWDBE firm(s); type of work to be performed; estimated value of the contract and value expressed as a percentage of the total Lump Sum Bid Price. The form must be signed and dated, and is to be submitted with the bid.

2) Bidders not reaching the Goal must submit the "MWDBE Participation Form", the "Quote Summary Form" and a written statement documenting their Good Faith Effort to do so. If bid includes no MWDBE and/or Veteran participation, bidder shall enter "None" on the subcontractor / supplier form). In addition, the bidder must submit written proof of their Good Faith Efforts to meet the Participation Goal:

a. Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission

of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

b. Included documentation of advertising in the above publications with the bidders good faith efforts package

c. Attended LFUCG Central Purchasing Economic Inclusion Outreach event

d. Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned businesses of subcontracting opportunities

e. Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses.

f. Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

g. Contacted organizations that work with MWDBE companies for assistance in finding certified MWBDE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

h. Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs and/or Veteran-Owned businesses soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

i. Followed up initial solicitations by contacting MWDBEs and Veteran-Owned Businesses to determine their level of interest.

j. Provided the interested MWBDE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

k. Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce

l. Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

m. Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

n. Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own

forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

o. Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

p. Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

q. Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

Note: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to review by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.

LEXINGTON

MINORITY BUSINESS ENTERPRISE PROGRAM

Sherita Miller, MPA
Minority Business Enterprise Liaison
Division of Central Purchasing
Lexington-Fayette Urban County Government
200 East Main Street
Lexington, KY 40507
smiller@lexingtonky.gov
859-258-3323

OUR MISSION: The mission of the Minority Business Enterprise Program is to facilitate the full participation of minority and women owned businesses in the procurement process and to promote economic inclusion as a business imperative essential to the long term economic viability of Lexington-Fayette Urban County Government.

To that end the city council adopted and implemented Resolution 484-2017 – A Certified Minority, Women and Disadvantaged Business Enterprise ten percent (10%) minimum goal and a three (3%) minimum goal for Certified Veteran-Owned Small Businesses and Certified Service Disabled Veteran – Owned Businesses for government contracts.

The resolution states the following definitions shall be used for the purposes of reaching these goals (a full copy is available in Central Purchasing):

Certified Disadvantaged Business Enterprise (DBE) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a person(s) who is socially and economically disadvantaged as define by 49 CFR subpart 26.*

Certified Minority Business Enterprise (MBE) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by an ethnic minority (i.e. African American, Asian American/Pacific Islander, Hispanic Islander, Native American/Native Alaskan Indian) as defined in federal law or regulation as it may be amended from time-to-time.*

Certified Women Business Enterprise (WBE) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a woman.*

Certified Veteran-Owned Small Business (VOSB) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines or Coast Guard.*

Certified Service Disabled Veteran Owned Small Business (SDVOSB) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a disabled veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines or Coast Guard.*

The term "Certified" shall mean the business is appropriately certified, licensed, verified, or validated by an organization or entity recognized by the Division of Purchasing as having the appropriate credentials to make a determination as to the status of the business.

We have compiled the list below to help you locate certified MBE, WBE and DBE certified businesses. Below is a listing of contacts for LFUCG Certified MWDBEs and Veteran-Owned Small Businesses in (https://lexingtonky.ionwave.net)

Business	Contact	Email Address	Phone
LFUCG	Sherita Miller	smiller@lexingtonky.gov	859-258-3323
Commerce Lexington – Minority Business Development	Tyrone Tyra	ttyra@commercelexington.com	859-226-1625
Tri-State Minority Supplier Diversity Council	Susan Marston	smarston@tsmsdc.com	502-365-9762
Small Business Development Council	Shawn Rogers UK SBDC	shawn.rogers@uky.edu	859-257-7666
Community Ventures Corporation	Phyllis Alcorn	palcorn@cvky.org	859-231-0054
KY Transportation Cabinet (KYTC)	Melvin Bynes	Melvin.bynes2@ky.gov	502-564-3601
KYTC Pre-Qualification	Shella Eagle	Shella.Eagle@ky.gov	502-782-4815
Ohio River Valley Women's Business Council (WBENC)	Sheila Mixon	smixon@orvwbc.org	513-487-6537
Kentucky MWBE Certification Program	Yvette Smith, Kentucky Finance Cabinet	Yvette.Smith@ky.gov	502-564-8099
National Women Business Owner's Council (NWBOC)	Janet Harris-Lange	janet@nwboc.org	800-675-5066
Small Business Administration	Robert Coffey	robertcoffey@sba.gov	502-582-5971
LaVoz de Kentucky	Andres Cruz	lavozdeky@yahoo.com	859-621-2106
The Key News Journal	Patrice Muhammad	production@keynewsjournal.com	859-685-8488

LFUCG MWDBE PARTICIPATION FORM
Bid/RFP/Quote Reference # 67-2018

The MWDBE and/or veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Central Purchasing for approval immediately. **Failure to submit a completed form may cause rejection of the bid.**

MWDBE Company, Name, Address, Phone, Email	MBE WBE or DBE	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1. DOES NOT	APPLY			
2.				
3.				
4.				

The undersigned company representative submits the above list of MWDBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

VOGELPOHL FIRE EQUIPMENT
Company

Vog Pohl
Company Representative

5-18-18
Date

President
Title

LEXINGTON

LFUCG MWDBE PARTICIPATION FORM

Bid/RFP/Quote Reference # 67-2018

The MWDBE and/or veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Central Purchasing for approval immediately. **Failure to submit a completed form may cause rejection of the bid.**

MWDBE Company, Name, Address, Phone, Email	MBE WBE or DBE	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1. DOES NOT APPLY				
2.				
3.				
4.				

The undersigned company representative submits the above list of MWDBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

VOGELPOHL FIRE EQUIPMENT
Company

Company Representative

5-18-18
Date

President
Title

LEXINGTON

LFUCG MWDBE SUBSTITUTION FORM

Bid/RFP/Quote Reference # 67 - 2018

The substituted MWDBE and/or veteran subcontractors listed below have agreed to participate on this Bid/RFP/Quote. These substitutions were made prior to or after the job was in progress. These substitutions were made for reasons stated below and are now being submitted to Central Purchasing for approval. By the authorized signature of a representative of our company, we understand that this information will be entered into our file for this project. **Failure to submit this form may cause rejection of the bid.**

SUBSTITUTED MWDBE Company Name, Address, Phone, Email	MWDBE Formally Contracted/ Name, Address, Phone, Email	Work to Be Performed	Reason for the Substitution	Total Dollar Value of the Work	% Value of Total Contract
1. DOES NOT APPLY					
2.					
3.					
4.					

The undersigned acknowledges that any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

VOGELPOHL FIRE EQUIPMENT
Company

5-18-18
Date

Company Representative

President
Title

LEXINGTON

MWDBE QUOTE SUMMARY FORM

Bid/RFP/Quote Reference # 67 - 2018

The undersigned acknowledges that the minority and/or veteran subcontractors listed on this form did submit a quote to participate on this project. Failure to submit this form may cause rejection of the bid.

Company Name	Contact Person
VOGELPOHL FIRE EQUIPMENT	TODD VOGELPOHL
Address/Phone/Email 2770 CIRCLEPORT DR, ERLANGER KY 41018 (859) 282-1000 TODDV@VOGELPOHLFIRE.COM	**Bid Package / Bid Date** 67 - 2018 / 5-23-2018

MWDBE Company Address	Contact Person	Contact Information (work phone Email, cell)	Date Contacted	Services to be performed	Method of Communication (email, phone meeting, ad, event etc)	Total dollars $$ Do Not Leave Blank (Attach Documentation)	MBE * AA HA AS NA Female	Veteran
DOES NOT APPLY								

(MBE designation / AA=African American / HA= Hispanic American/AS = Asian American/Pacific Islander/ NA= Native American)

The undersigned acknowledges that all information is accurate. Any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

VOGELPOHL FIRE EQUIPMENT
Company

T Vog-fold
Company Representative

5-18-18
Date

President
Title

LEXINGTON

LFUCG SUBCONTRACTOR MONTHLY PAYMENT REPORT

The LFUCG has a 10% goal plan adopted by city council to increase the participation of minority and women owned businesses in the procurement process. The LFUCG also has a 3% goal plan adopted by cited council to increase the participation of veteran owned businesses in the procurement process. In order to measure that goal LFUCG will track spending with MWDBE and Veteran contractors on a monthly basis. By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentation may result in termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims. Please submit this form monthly to the Division of Central Purchasing/ 200 East Main Street / Room 338 / Lexington, KY 40507.

Bid/RFP/Quote # 67-2018

Total Contract Amount Awarded to Prime Contractor for this Project_____

Project Name/ Contract #	Work Period/ From: To:
Company Name:	Address:
Federal Tax ID:	Contact Person:

Subcontractor Vendor ID (name, address, phone, email	Description of Work	Total Subcontract Amount	% of Total Contract Awarded to Prime for this Project	Total Amount Paid for this Period	Purchase Order number for subcontractor work (please attach PO)	Scheduled Project Start Date	Scheduled Project End Date
DOES	NOT APPLY						

By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentations may result in the termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims.

VOGELPOHL FIRE EQUIPMENT
Company

5-18-18
Date

Company Representative

President
Title

LFUCG STATEMENT OF GOOD FAITH EFFORTS
Bid/RFP/Quote # 67 - 2018

By the signature below of an authorized company representative, we certify that we have utilized the following Good Faith Efforts to obtain the maximum participation by MWDBE and Veteran-Owned business enterprises on the project and can supply the appropriate documentation.

DOES NOT APPLY

_____ Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

_____ Included documentation of advertising in the above publications with the bidders good faith efforts package

_____ Attended LFUCG Central Purchasing Economic Inclusion Outreach event

_____ Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned Businesses of subcontracting opportunities

_____ Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses

_____ Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

_____ Contacted organizations that work with MWDBE companies for assistance in finding certified MWBDE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

_____Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

_____ Followed up initial solicitations by contacting MWDBEs and Veteran-Owned businesses to determine their level of interest.

_____ Provided the interested MWBDE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

_____ Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce

_____ Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

_____ Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

_____ Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

_____ Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

_____Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

_____ Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE **and Veteran participation.**

NOTE: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to approval by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.

The undersigned acknowledges that all information is accurate. Any misrepresentations may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

VOGELPOHL FIRE EQUIPMENT
Company

T Vog
Company Representative

5-18-18
Date

President
Title

SPECIFICATIONS FOR A HYDRAULIC RESCUE TOOLS

Heavy Duty Power Rescue Tools
Scope and Classification

I. Scope
This specification covers a new and commercially produced hydraulic rescue tool system.

II. Classification
These specifications call for gasoline powered hydraulic pumps and manual hydraulic pumps with the capability to operate hydraulic spreaders with accessories, hydraulic cutters, telescopic rams, and push/pull rams with accessories. 32ft hoses shall be provided in this package.

III. Applicable Documents
Any manufacturer or vendor responding to this bid shall enclose in their proposal at the time of bid any documents required in these specifications. It is the responsibility of the vendor to be sure that the proposal submitted meets all requirements of these specifications. Bids which fail to comply with these requirements shall not be considered for award.

IV. Materials
The hydraulic rescue tools delivered under these specifications shall be standard commercial products which meet or exceed the requirements of this specification. The components and optional items shall be as represented in the manufacturer's current sales and technical data. Materials used in construction of the rescue tools shall be new and not less than the quality conforming to current engineering and manufacturing practices. Materials shall be free of defects and suitable for the service intended.

V. Training
Three consecutive days of training shall be provided covering the use, maintenance, and limitations of the tools covered in this specification.

VI. Exceptions to Specifications
It is not the intent of these specifications to restrict or prevent any vendor from submitting a proposal on his product. Due to the fact that the equipment specified is to used under emergency and hazardous conditions where human life may be at risk the following must apply: Any exception(s) to these specifications indicated herein must be clearly pointed out otherwise it will be considered that items offered are in strict compliance with these specifications and the successful bidder will be held responsible for delivering a rescue tool system meeting these specifications. Any exception taken shall be listed by number and noted on the exception sheet found at the end of these specifications.

VII. Information and Descriptive Literature
Bidders must furnish all information requested and in the space provided on the bid form. In addition, vendors shall supply at least two (2) complete sets of sketches, descriptive literature, and complete specifications covering the products offered. Bids not meeting this requirement will be rejected.

VII. Anti-Collusion Statement
By signing this bid the bidder agrees that this proposal is made without any understanding, agreement, or connection with any other person, firm, or corporation making a bid for the

same purpose, and that the l ... or fraud.
Sign in ink in the space pro ... l as incomplete and
will be rejected.

Sign

IT IS AGREED BY THE ... GNING AND
DELIVERY OF THIS BI ... 'TANCE OF THE
TERMS AND CONDITI ... 'IONS AND
PROVISIONS, AND IF ... .GENCY, WILL
REPRESENT THE AGI

Delivery

NAME OF FIRM VOSE
SIGNED BY: must be si
ink by a company office
TITLE President
MANUFACTURER OF
MODEL(S) BID 5000
DELIVERY WILL BE MADE IN _____ **DAYS.**

SPECIAL NOTE: Variances or exceptions must be noted by number on the following pages and explained in full detail on the last page(s) of this specification. Vendors whose bid fails to comply with this requirement will not be accepted.

GENERAL CONDITIONS

(WARRANTY)

The following is a description of the rescue tool system that will meet the minimum requirements of this specification. These specifications are to be considered as minimum and are expressed as such. If the rescue tool(s) and component parts delivered under this contract do not comply with these specifications the tools will not be accepted. Any vendor failing to meet his obligations required as part of this contract may be forced to pay damages to this agency. Such damages shall not exceed the amount required to obtain a replacement product or tool meeting the requirements of this specification.

Warranty and Service Requirements

This agency subscribes whenever possible to a "Buy American" policy. With respect to service and the possible difficulty of obtaining replacement parts, the rescue system supplied under this contract shall be made in the United States.

NOTE: ANY AND ALL EXCEPTIONS TO THESE SPECIFICATIONS SHALL BE LISTED IN SECTION (7) AND BE REFERRED BY PARAGRAPH.

Warranty

The rescue system bid in response to these specifications shall carry a limited lifetime warranty. This warranty shall protect the original owner so long as the necessary warranty papers are supplied when service is required.
A copy of the limited lifetime warranty requirements shall be included with this bid.

Hydraulic Gasoline Power Unit

General

This pump must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. It must also comply with EN 13204. Classification to Third Party Standards shall be performed by Underwriters Laboratories or by a test laboratory recognized and accepted by this AHJ. The pump must allow operation in a humid and dusty environment. The pump must be capable of powering two tools at full power, independently and simultaneously. The pump must have a connecting block incorporating flat face female couplers of a coaxial design, with the pressure line inside of the return line, allowing for simultaneous connection of both lines with one connection motion. The couplers must be of a flat-face, non-drip style, with built-in automatic locking feature, capable of being operated with one hand and must be supplied with aluminum protective dust caps. The pump shall not require a manual pressure release valve for the purpose of connecting or disconnecting hoses and the user must be able to connect and disconnect hoses and rescue tools while the pump is flowing oil. The pump shall be provided with a Pressure Relief Device to allow the relief of pressure in hose lines resulting from temperature changes.

Engine

The pump shall be driven by a Honda GX100 4-stroke gasoline engine. The engine shall have a gasoline tank of at least 1.8 qts. (1700cc), that allows the pump to run for three continuous hours. For ease of operation the fuel tank shall incorporate a highly visible fuel level indicator.

Pump

To provide maximum efficiency during rescue operations, the hydraulic pump shall be a 3-stage axial design with two automatic sequence valves, switching to 2nd stage at approximately 2,175 psi (150 bar), to 3rd stage at approximately 4,350 psi (300 bar) to allow full pressure to be built up to a maximum working pressure of 10,443 psi (720 bar). The pump shall be protected with an internal safety valve. In addition, the pump must have an external safety valve, factory set at 10,443 psi (720 bar).

The pump shall have an output of not less than:

- 171 cu in/min (2800 cc/min) in the 1st stage
- 76 cu in/min (1250 cc/min) in the 2nd stage
- 32 cu in/min (525 cc/min) in the 3rd stage

Carrying frame

The pump shall have a protective carrying frame designed for mobility with a hand grip centered for balance. In order to provide improved grip in all weather conditions, the frame must have a non-slip surface. The frame shall be provided with anti-vibration dampers to keep the pump at its position while running.

Tank and Fluid

The effective oil contents of 4.22 qt. (4 l) must allow for the simultaneous deployment of at least four full size rescue tools. The pump shall be designed for the use of non-toxic mineral oil base hydraulic fluid.

Weight and Dimensions

The complete pump ready for use, including gas, oil and carrying frame shall weigh no more than: 50 lbs. (23 kg). The complete pump unit shall be extremely compact with dimensions within: (LxWxH): 17.91" 12.4" x 18.11" (455 mm x 315 mm x 460 mm).

Sound level

The sound level of the pump must not exceed 81 dB(A) unloaded, 85 db(A) loaded when measured at a distance of 3.28 ft. (1m).

Options:

Couplers. The pump shall be optionally available with twin line auto locking, drip-free couplers. These couplers shall also be supplied with aluminum protective dust caps. This option does not change the dimensions, but will add 1 lb (.5 kg) for each set of twin line couplers to the ready to use weight

Task Lights. To improve visibility of the pump connection(s) and operation controls, clip on LED work lights shall be available to connect to the pump frame.

Mounting Bracket. The unit must have as an option, a mounting bracket, offered by the same manufacturer, to protect and quickly secure the unit inside the apparatus compartment. The bracket shall consist of an adapter that is bolted to the underside of the power unit, and a locking mount that is bolted to the compartment floor. The locking mechanism shall have a detent position that allows the operator to easily secure the pump in its locked, storage position with a simple flip of a lever. To further facilitate ease of access to the unit, an optional angle bracket shall be available, which tilts 8 degrees downward toward the operator. When unlocked, it easily slides forward, with no impedance from the compartment's four sides.

Installing the optional Quick Fix and Release Mounting System will modify the pump's ready for use weight and dimensions as follows:

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Heavy Duty Electric Rescue Pump

General

This pump must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2010 edition. It must also comply with EN 13204. Classification to Third Party Standards shall be performed by Underwriters Laboratories or by a test laboratory recognized and accepted by this AHJ. The pump must allow operation in a humid and dusty environment. The pump must be capable of powering two tools at full power, independently and simultaneously. The pump must have a connecting block incorporating flat face female couplers of a coaxial design, with the pressure line inside of the return line, allowing for simultaneous connection of both lines with one connection motion. The couplers must be of a flat-face, non-drip style, with built-in automatic locking feature, capable of being operated with one hand and must be supplied with aluminum protective dust caps. The pump shall not require a manual pressure release valve for the purpose of connecting or disconnecting hoses and the user must be able to connect and disconnect hoses and rescue tools while the pump is flowing oil. The pump shall be provided with a Pressure Relief Device to allow the relief of pressure in hose lines resulting from temperature changes.

Electric Motor

The pump shall be driven by a Lafert 1.8 kW, 230v, 60 Hz Continuous Duty Electric Motor.

Pump

To provide maximum efficiency during rescue operations, the hydraulic pump shall be a 3-stage axial design with two automatic sequence valves, switching to 2nd stage at approximately 2,175 psi (150 bar), to 3rd stage at approximately 4,350 psi (300 bar) to allow full pressure to be built up to a maximum working pressure of 10,443 psi (720 bar). The pump shall be protected with an internal safety valve. In addition, the pump must have an external safety valve, factory set at 10,443 psi (720 bar).

The pump shall have an output of not less than:

- 183 cu in/min (3000 cc/min) in the 1st stage
- 82 cu in/min (1350 cc/min) in the 2nd stage
- 35 cu in/min (575 cc/min) in the 3rd stage

Carrying frame
The pump shall have a protective carrying frame designed for mobility with two hand grips centered for balance. In order to provide improved grip in all weather conditions, the frame must have a non-slip surface. The frame shall be provided with anti-vibration dampers to keep the pump at its position while running.

Tank and Fluid
The effective oil contents 6.34 qt. (6 l) must allow for the simultaneous deployment of at least six full size rescue tools. The pump shall be designed for the use of non-toxic mineral oil base hydraulic fluid.

Weight and Dimensions
The complete pump ready for use, including oil and carrying frame shall weigh no more than 90 lbs. (41 kg). The complete pump unit shall be extremely compact with dimensions within (LxWxH): 19.57" 18.39" x 19.37" (497 mm x 467 mm x 492 mm).

Sound level
The sound level of the pump must not exceed 73 dB(A) unloaded, 77 db(A) loaded when measured at a distance of 3.28 ft. (1m).

Options:
Couplers. The pump shall be optionally available with twin line auto locking, drip-free couplers. These couplers shall also be supplied with aluminum protective dust caps. This option does not change the dimensions, but will add 1 lb (.5 kg) for each set of twin line couplers to the ready to use weight

Task Lights.
To improve visibility of the pump connection(s) and operation controls, clip-on LED work lights shall be available to connect to the pump frame.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Super Compact Gasoline Rescue Pump

General
This pump must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. It must also comply with EN 13204. Classification to Third Party Standards shall be performed by Underwriters Laboratories or by a test laboratory recognized and accepted by this AHJ. The pump must allow operation in a humid and dusty environment. The pump must have a connecting block incorporating a flat face female coupler of a coaxial design, with the pressure line inside of the return line, allowing for simultaneous connection of both lines with one connection motion. The coupler must be of a non-drip style, with built-in automatic locking feature, capable of being operated with one hand and must be supplied with aluminum protective dust caps. The pump shall not require a manual pressure release valve for the purpose of connecting or disconnecting hoses and the user must be able to connect and disconnect hoses and rescue tools while the pump is flowing oil. The pump shall be provided with a Pressure Relief Device to allow the relief of pressure in hose lines resulting from temperature changes.

Engine
The unit shall be driven by a Honda GXH50 4-stroke gasoline engine. The engine shall have a gasoline tank with a fuel capacity of 0.81 qt. (770 cc) that allows the pump to run for three continuous hours. For ease of operation the fuel tank shall incorporate a highly visible fuel level indicator.

Pump
To provide maximum efficiency during rescue operations, the hydraulic pump shall be a 3-stage axial design with two automatic sequence valves, switching to 2nd stage at approximately 2,175 psi (150 bar), to 3rd stage at approximately 4,350 psi (300 bar) to allow full pressure to be built up to a maximum working pressure of 10,443 psi (720 bar). The pump shall be protected with an internal safety valve. In addition, the pump must have an external safety valve, factory set at 10,443 psi (720 bar).

The pump shall have an output of not less than:

- 167.81 cu in/min (2750 cc/min) in the 1st stage
- 79.33 cu in/min (1300 cc/min) in the 2nd stage
- 31.73 cu in/min (520 cc/min) in the 3rd stage

Carrying frame
The pump shall have a protective carrying frame designed for mobility with a hand grip centered for balance. In order to provide improved grip in all weather conditions, the frame must have a non-slip surface. The frame shall be provided with anti-vibration dampers to keep the pump at its position while running.

Tank and Fluid
The effective oil contents 2.64 qt. (2.5 l) must allow for the simultaneous deployment of at least three full size rescue tools. The pump shall be designed for the use of non-toxic mineral oil base hydraulic fluid.

Weight and Dimensions
The complete pump ready for use, including engine oil, mineral oil, gas and carrying frame shall weigh no more than 31.8 lbs (14.5 kg). The complete pump unit shall be extremely compact with dimensions within (LxWxH): 14.17" x 11.42" x 16.65" (360 mm x 290 mm x 423 mm).

Sound level
The sound level of the pump under load must not exceed 82 dB (A) measured at a distance of 3.28 ft (1m).

Options:
Couplers. The pump shall be optionally available with twin line auto locking, drip-free couplers. These couplers shall also be supplied with aluminum protective dust caps.

Task Lights. To improve visibility of the pump connection(s) and operation controls, clip on LED work lights shall be available to connect to the pump frame.

Mounting Bracket
The unit must have as an option, a mounting bracket, offered by the same manufacturer, to protect and quickly secure the unit inside the apparatus compartment. The bracket shall consist of an adapter that is bolted to the underside of the power unit, and a locking mount that is bolted to the compartment floor. The locking mechanism shall have a detent position that allows the operator to easily secure the pump in its locked, storage position with a simple flip of a lever. To further facilitate ease of access to the unit, an optional angle bracket shall be available, which tilts 8 degrees downward toward the operator. When unlocked, it easily slides forward, with no impedance from the compartment's four sides.

Installing the optional Quick Fix and Release Mounting System will modify the pump's ready for use weight and dimensions as follows:

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Hydraulic Back-up Pump (hand/foot operated)

Hydraulic pump capable of operating any tools listed in this specification. This pump must be a 2-stage pump that can be hand or foot operated. Valves shall be of a single fitting connection. This connection shall allow the flow of hydraulic fluid to flow from the pump to the tool and return through a single fitting hose. Fitting will allow hose to be disconnected without the flow continuing and without the use of a manual relief valve. Pump must produce a maximum of 1.7cubic inches per stroke.

Tank and Fluid
Manual pump must use non-toxic mineral based hydraulic fluid. Fluid capacity shall be no less than 67.3 oz.

Weight
Weight of manual power unit shall no exceed 17 pounds.

Air Powered Hydraulic Pump

The pump will have a maximum operating pressure of 10,500 psi (720 bar). The pump must have a one tool connection and a manual pressure relief valve situated over the pressure outlet in such way that inadvertent pressurization cannot take place but that allows a pressure relief under full load by just pressing the foot pedal. Couplers must be drip free with quick connect design.

Power Source
The unit shall be driven by an air supply operating at 125 psi (8.5 bar). Air consumption unloaded shall be no less than 184 cfm; loaded shall be no less than 153 cfm.

Pump
The pump will be a reciprocating air/hydraulic pump for use in high hazard areas. The pump shall have unloaded output of not less than 58 cu in/min (960 cc/min) and loaded output of 25 cu in/min (410 cc/min). The pump will consume air at a rate of 3 gal/min (700 L/min) unloaded and 2.5 gal/min (580 L/min) loaded. The air intake port will be 1/4" (6.35mm) BSP and the oil port will be 3/8" (9.5 mm) NPT. The pump shall be protected with an internal safety valve. In addition, the pump must have an external safety valve, factory set at 10,500 psi (720 bar).

Tank and fluid
The oil tank shall contain 1.8 qt. (1.7 L) to allow a proper cooling of the hydraulic fluid and shall be provided with an automatic air vent. The pump shall be designed for the use of non-toxic mineral oil. The effective oil contents shall be no less than 1.7 qt. (1.6 L).

Weight and Dimensions
The complete pump's ready to use weight will be 15 lbs. (6.5 kg). The dimensions of the complete pump unit shall be within (LxWxH): 13 1/2 in x 5 in x 8 ¼ in (343 mm x 127 mm x 210 mm).

RESCUE CUTTER 1

General

The tool must be **UL Listed**: This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must ***also*** be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2005 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions, even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose *while under flow*. The coupler must be a flat-face, non-drip coupling with a built-in automatic locking feature and must be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. The coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Dead Man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must automatically return to the neutral position. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist the operator and increase safety while working in dark or poorly lit circumstances the carrying handle shall have integrated LED lights. The lights shall be focused on the working area of the tool and shall be completely weatherproof. Lights should be powered by a field replaceable single AA battery and shall provide a minimum of six continuous hours of illumination. The distance between the dead man's handle and the U-shaped carrying handle will be at least 9" (229 mm) to provide a natural position for both hands during operation and to allow for complete control of the tool. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Safety and Protection

For maximum safety of the operator, all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Hinge bolt system

To allow greater access into tight spaces the cutter will contain a low profile locking hinge bolt system that does not extend beyond the blade holder profile. Bolt head and nut construction that protrude and impede tool operation are not acceptable. This low profile system allows

greater precision and control on every cut by locking the factory set torque value. For ease of maintenance, the hinge bolt system must require a torque of no more than 38 ft-lb (50Nm). For extended tool life the cutter shall have a set of corrosion resistant steel covers in place to shield the front of the tool from damage during the extrication operation.

Blades
The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The blades will be constructed so as to be re-grindable. The blades will be manufactured with a recess in the cutting edge of ∅ 28mm (1.1") The NFPA 1936 performance level rating for this tool shall be: A6 B3 C5 D6 E5.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Forces
The maximum cutting force exerted will be no less than 63,400 lbf. (282 kN) in the recess, and 41,000 lbs. (182.4 kN) in the blade's center.

Weight & Dimensions
The weight of an operable tool may not exceed 24 lbs. (10.9 kg) including hydraulic oil. The maximum opening of the blades will be no less than 5¼" (134 mm) measured at the tips. The length of the tool is not to exceed 27" (686 mm); width not to exceed 9 5/16" (236 mm); height not to exceed 7½" (190 mm).

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be anodized to provide maximum durability. The tool must be capable of withstanding a 10-day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

RESCUE CUTTER 2

General
The tool must be **UL Listed**: This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must ***also*** be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2005 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose *while under flow*. The

coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Dead man's handle

The tool must be activated by means of a rotary dead man's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle grip is released, it must return to the neutral position automatically. The dead man's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist the operator and increase safety while working in dark or poorly lit circumstances the carrying handle shall have integrated LED lights. The lights shall be focused on the working area of the tool and shall be completely weatherproof. Lights should be powered by a field replaceable single AA battery and shall provide a minimum of six continuous hours of illumination. The distance between the dead man's handle and the U-shaped carrying handle will be at least 10" (254 mm) to provide a natural position for both hands during operation and to allow for complete control of the tool. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Hinge Bolt System

To allow better access into tight spaces the cutter will contain a low profile locking hinge bolt system that does not extend beyond the blade holder profile. Bolt head and nut construction that protrude and impede tool operation are not acceptable. This low profile system allows greater precision and control on every cut by locking the factory set torque value. For ease of maintenance, the hinge bolt system must require a torque of no more then 38 ft-lb (50Nm). For extended tool life the cutter shall have a set of corrosion resistant steel covers in place to shield the front of the tool from damage during the extrication operation.

Blades

The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The design of the blade shall be derived to meet the requirement of today's rescuer facing *New Car Technology*. The blades will be constructed so as to be re-grindable.

Pump

Hydraulic power at a maximum pressure of 10,500 psi (720 bar) must be delivered from a gasoline or an electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator, the pump must be a completely separate unit from the rescue tool.

Forces
The maximum cutting force exerted will be no less than 57,320 lbf. (255 kN) in the recess of the blades, near the hinge bolt. The NFPA performance level rating for this tool shall be: A6 B2 C6 D5 E6.

Weight and dimensions
The maximum opening of the blades will be no less than 5.7" (144 mm) measured at the tips. Length of tool not to exceed 28 3/4" (731mm); Width not to exceed 9 5/16" (236 mm). Height not to exceed 7 1/2" (190mm). Weight ready to use not to exceed 27½ lbs. (12.5 kg) including hydraulic oil.

Corrosion and wear protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Rescue Cutter 3

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces
The maximum cutting force exerted will be no less than 317,430 lbf. (1412 kN) in the recess of the blades, near the hinge bolt. The NFPA performance level rating for this tool shall be A8 B8 C7 D9 E9.

Weight and dimensions
The maximum opening of the blades will be no less than 7.2" (182 mm) measured at the tips. The weight of the tool must not exceed 35.1 lbs. (15.9 kg). The dimensions (LxWxH) must not exceed 30.4" x 10.9" x 7.6" (773 x 278 x 193 mm).

Dead man's handle
The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Blades

The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The design of the blade shall be derived to meet the requirement of today's rescuer facing *New Car Technology*. The blades will be constructed so as to be re-grindable.

Hinge Bolt System

To allow better access to tight spaces and improve cutting and spreading precision, the-tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage, corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Pump

Hydraulic power must be delivered from a gasoline, electrical or hydraulically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. The pump must be a completely separate unit from the rescue tool.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Rescue Cutter 4

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces

The maximum cutting force exerted will be no less than 312,260 lbf. (1389 kN) in the recess of the blades, near the hinge bolt. The NFPA performance level rating for this tool shall be A8 B8 C7 D9 E9.

Weight and dimensions

The maximum opening of the blades will be no less than 7.2" (182 mm) measured at the tips. The weight of the tool must not exceed 35.7 lbs. (16.2 kg). The dimensions (LxWxH) must not exceed 30.8" x 10.5" x 11.1" (783 x 266 x 281 mm).

Dead man's handle

The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Blades

The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The design of the blade shall be derived to meet the requirement of today's rescuer facing *New Car Technology*. The blades will be constructed so as to be re-grindable.

Hinge Bolt System
To allow better access to tight spaces and improve cutting and spreading precision, the-tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage, corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Pump
Hydraulic power must be delivered from a gasoline, electrical or hydraulically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. The pump must be a completely separate unit from the rescue tool.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Mini Cutter

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead Man's Handle
The tool must be activated by means of a toggle-type, push button dead man's handle, operated by depressing the push button by one's thumb or fingers. When the dead man's push button is released, it must return to the neutral position automatically. The dead man's push button will provide one-handed control of opening and closing functions. The dead man's push button must

be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's push button shall be inset into the handle in such a way that inadvertent activation is not possible.

Safety and Protection
For maximum safety of the operator the cutter shall contain a safety relief valve to protect the tool against over pressurization.

Blades
The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades will be constructed so as to be re-grindable. The blades will be manufactured with serrations in the cutting edge. The outside edge of the blades will have serrations to allow for spreading/pushing operations.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Forces
The maximum cutting force exerted will be no less than 49,458 lbf. (220 kN) in the blade's recess.

Weight & Dimensions
The ready to use weight may not exceed 8.5 lbs. (3.9 kg). The maximum opening of the blades will be no less than 2 3/16" (55 mm) measured at the tips. The dimensions of the complete tool shall be within (L x W x H): 15" x 2 13/16" x 5 5/16" (380 x 72 x 135mm).

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be anodized to provide maximum durability.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Special Materials Cutter

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead Man's Handle
The tool must be activated by means of a rotary dead man's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle grip is released, it must return to the neutral position automatically. The dead man's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The dead man's handle shall provide 360° access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Carrying Handle
To assist the operator the tool shall be supplied with an adjustable rotating carrying handle capable of moving to any position.

Safety and Protection
For maximum safety of the operator the cutter shall contain a safety relief valve to protect the tool against over pressurization.

Cutting Blades
The blades of the cutter will be inserts fabricated from high grade tool steel, hardened to improve durability. For longer service life the inserts will be constructed so as to have two useable cutting edges. The blades will be easily removed and rotated to use the second cutting edge. Blades are specially designed to cut hardened round stock rated at:

Rebar up to 5/8" (16 mm) with a hardness of 28 HRc
Padlocks up to 7/16" (12 mm) with a hardness of 49 HRc
Padlocks up to 3/4" (20 mm) with a hardness of 75 HRb
Chain up to 5/16" (8.5 mm) with hardness of 60 HRc

Pump
Hydraulic power must be delivered from an external hydraulic pump that is to be manufactured by the same company as this cutter. It shall be designed specifically for use with rescue tools, and be capable of supplying the full operating pressure of 10,500 psi (720 bar). The hydraulic pump must be designed to be compatible with a mineral oil based system.

Forces
The maximum cutting force exerted will be no less than 43,388 lbf. (193 kN).

Weight & Dimensions
The ready to use weight may not exceed 14.3 lbs. (6.5 kg). The length of the tool is not to exceed 15.3" (389 mm); width not to exceed 4.5" (114 mm); height not to exceed 9.2" (234 mm).

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be anodized to provide maximum durability.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Spreader 1

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist in any poorly lit or nighttime rescue scenario, 6 integrated LED task lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life when not needed, an on/off switch for the lights must also be included in the carrying handle. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Forces

The arms of the spreader will have a maximum opening width of 20.1" (510 mm) with a maximum spreading force of 29,450 lbf (131 kN).

NFPA HSF shall be no less than: 11,915 lbf. (53 kN)
NFPA LSF shall be no less than: 7,868 lbf. (35 kN)
NFPA HPF shall be no less than:10,566 lbf. (47 kN)
NFPA LPF shall be no less than: 5,395 (24 kN)

Weight & Dimensions
The weight of the ready-for-use tool may not exceed 21.8 lbs (9.9 kg) including hydraulic oil. Length of not to exceed 27.7" (703 mm). Width not to exceed 10.8" (274 mm). Height not to exceed 8.1" (205 mm)

Method of Measuring Forces
The spreading force must be measured at the effective tip area on the moving arms, perpendicular to the centerline of the tool when in an unfixed state. This measurement of force measures the actual force created by the tool when used by the operator.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Arms
The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Accessories
The following accessories will be available:
-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Spreader 2

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist in any poorly lit or nighttime rescue scenario, 6 integrated LED task lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life when not needed, an on/off switch for the lights must also be included in the carrying handle. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Forces

The arms of the spreader will have a maximum opening width of 28.5" (725 mm) with a maximum spreading force of 62,947 lbf (280 kN).

NFPA HSF shall be no less than: 15,737 lbf. (70 kN)
NFPA LSF shall be no less than: 8,543 lbf. (38 kN)
NFPA HPF shall be no less than:10,566 lbf. (47 kN)
NFPA LPF shall be no less than: 5,620 (25 kN)

Weight & Dimensions
The weight of the ready-for-use tool may not exceed 32.8 lbs (14.9 kg) including hydraulic oil. Length of not to exceed 32.9" (836 mm). Width not to exceed 11.3" (286 mm). Height not to exceed 8.6" (218 mm)

Method of Measuring Forces
The spreading force must be measured at the effective tip area on the moving arms, perpendicular to the centerline of the tool when in an unfixed state. This measurement of force measures the actual force created by the tool when used by the operator.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Arms
The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Accessories
The following accessories will be available:
-Pulling attachments
Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.
-Cutting Tip
An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Spreader 3

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist in any poorly lit or nighttime rescue scenario, 6 integrated LED task lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life when not needed, an on/off switch for the lights must also be included in the carrying handle. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Forces

The arms of the spreader will have a maximum opening width of 28.5" (725 mm) with a maximum spreading force of 82,280 lbf (366 kN).

NFPA HSF shall be no less than: 21,806 lbf. (97 kN)
NFPA LSF shall be no less than: 10,341 lbf. (46 kN)
NFPA HPF shall be no less than:15,062 lbf. (67 kN)
NFPA LPF shall be no less than: 6,969 (31 kN)

Weight & Dimensions
The weight of the ready-for-use tool may not exceed 35.9 lbs (16.3 kg) including hydraulic oil. Length of not to exceed 33.3" (847 mm). Width not to exceed 11.3" (286 mm). Height not to exceed 8.6" (218 mm)

Method of Measuring Forces
The spreading force must be measured at the effective tip area on the moving arms, perpendicular to the centerline of the tool when in an unfixed state. This measurement of force measures the actual force created by the tool when used by the operator.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Arms
The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Accessories
The following accessories will be available:
-Pulling attachments
Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.
-Cutting Tip
An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Spreader 4

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist in any poorly lit or nighttime rescue scenario, 6 integrated LED task lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life when not needed, an on/off switch for the lights must also be included in the carrying handle. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Forces

The arms of the spreader will have a maximum opening width of 32.4" (822 mm) with a maximum spreading force of 117,350 lbf (522 kN).

NFPA HSF shall be no less than: 26,303 lbf. (117 kN)
NFPA LSF shall be no less than: 13,039 lbf. (58 kN)
NFPA HPF shall be no less than:18,434 lbf. (82 kN)
NFPA LPF shall be no less than: 8,318 (37 kN)

Weight & Dimensions
The weight of the ready-for-use tool may not exceed 43.9 lbs (19.9 kg) including hydraulic oil. Length of not to exceed 36.2" (919 mm). Width not to exceed 12.6" (321 mm). Height not to exceed 8.7" (220 mm)

Method of Measuring Forces
The spreading force must be measured at the effective tip area on the moving arms, perpendicular to the centerline of the tool when in an unfixed state. This measurement of force measures the actual force created by the tool when used by the operator.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Arms
The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Accessories
The following accessories will be available:

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

-Cutting Tip

An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Hydraulic Extension Hose

General

This hose must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The hose assembly shall be of a "coaxial" design with a single coupler and protective bend restrictor at each end. For increased safety to the user the hose pressure line shall be encapsulated inside of the outer return line to shield the pressure line from damage inherent on the rescue scene. The working pressure of the interior pressure line shall be 10,500 psi (720 bar). The outer return line shall have a working pressure of 365 psi (25 bar). The hose must be capable of withstanding a static overload pressure of at least four times the maximum working pressure. This overload ratio is a requirement to provide maximum safety to the operator. All hoses shall be delivered ready to use as a complete unit that has been pre-filled with hydraulic mineral oil and hydrostatically tested

The inner pressure hose shall be constructed from Polyurethane reinforced with para-aramid yarn for increased strength, reduced weight and maximum flexibility. Para-aramid fibers as a reinforcement in this construction offer very desirable properties such as high strength (5X stronger than steel), low weight, no corrosion, non-conductive. The outer return hose shall be constructed of polyurethane reinforced with polyester yarn. The hose shall remain flexible in cold temperatures, with a useable temperature range of -4°F (-20 °C) to 162°F (72°C). The Orange-colored outer hose shall be designated by the manufacturer to be electrically non-conductive.

The couplers must allow for simultaneous connection of both pressure and return lines to eliminate connection errors and reduce deployment time. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve that will permit connection and disconnection to the tool or pump while under flow. The couplers must be flat-face, non-drip couplings with built-in automatic locking feature and be one hand operated. To avoid stressing the hose the couplers shall allow the hose to freely swivel 360° while connected to a pump and a tool, without twisting or kinking the hose. Each coupler must be supplied with a protective aluminum dust cap.

Hose assemblies shall be available in 32 ft (10 M) lengths. For maximum portability the weight of a hose assembly shall fall within the following guidelines:

- 32 ft (10 M) hose shall not exceed 11 lbs

Small Single Plunger Rescue Ram

General

The tool must be UL Listed: This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must also be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one hydraulic coupler. This single coupler shall have a coaxial

design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose *while under flow*. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Deadman's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool. In addition, the ram must be able to rotate under load to allow the operating handle to be moved out of the way for patient removal.

Safety and Protection

When the ram plunger is fully extended and under maximum load, the safety factor against bending or buckling must be at least 2:1. For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load.

Pump

Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Grip Heads

The end of the plunger will have a twist-lock design to allow rotation of the grip heads even when the tool is under a load. Rams with threaded grip heads that could become corroded and prevent use of interchangeable accessories shall not be acceptable. The twist-lock design shall accept interchangeable tool accessories. Likewise, the rear of the tool shall have a twist-lock design to also accept extension pipes. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Forces

The ram will have a maximum pushing force of no less than 36,460 lbf (162.2 kN) and a maximum pulling force of no less than 11,265 lbf (50.1 kN).

Weight & Dimensions

Length of closed tool not to exceed 21 9/16" (547 mm).
Length of extended tool not to exceed 31" (787mm).
Width not to exceed 13 5/16" (338 mm).
Height not to exceed 4 13/16" (122 mm)
Net stroke not less than 9¾" (248 mm).
Weight not to exceed 26 lbs (11.8 kg).

Accessories

All accessories shall be of a twist lock design. *No threading and/or loose locking pins are allowed.*

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have a quick-change design. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool

-Attachments
-Wedge tip for splitting.
-Conical point for piercing holes in sheet materials.
-Round flat base min. diameter 4 ½ " (115 mm) for better distribution of the forces.
-Extension Pipes

Extension pipes in the following lengths will be available for pushing operations: 6 ½" (165 mm), 13" (330 mm) and 23 ½" (597 mm)

-Ram Support Unit

Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

LARGE SINGLE PLUNGER RAM

General

The tool must be UL Listed: This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must also be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must

be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Deadman's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool. In addition, the ram must be able to rotate under load to allow the operating handle to be moved out of the way for patient removal.

Safety and Protection

When the ram plunger is fully extended and under maximum load, the safety factor against bending or buckling must be at least 2:1. For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load.

Pump

Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Grip Heads

The end of the plunger will have a twist-lock design to allow rotation of the grip heads even when the tool is under a load. Rams with threaded grip heads that could become corroded and prevent use of interchangeable accessories shall not be acceptable. The twist-lock design shall accept interchangeable tool accessories. Likewise, the rear of the tool shall have a twist-lock design to also accept extension pipes. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Forces

The ram will have a maximum pushing force of no less than 36,460 lbf (162.2 kN) and a maximum pulling force of no less than 11,265 lbf (50.1 kN).

Weight & Dimensions

Length of closed tool not to exceed 25¼" (642 mm).
Length of extended tool not to exceed 39" (991mm).
Width not to exceed 13½" (338 mm).
Height not to exceed 4 7/8" (122 mm)
Net stroke not less than 13 ¾" (349 mm).
Weight not to exceed 31 lbs (14 kg).

Accessories
All accessories shall be of a twist lock design. *No threading and/or loose locking pins are allowed.*

-Pulling attachments
Pulling adapters and chains will be provided for pulling operations. The adapters must have a quick-change design. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool

-Attachments
-Wedge tip for splitting.
-Conical point for piercing holes in sheet materials.
-Round flat base min. diameter 4 ½ " (115 mm) for better distribution of the forces.
-Extension Pipes
Extension pipes in the following lengths will be available for pushing operations: 6 ½" (165 mm), 13" (330 mm) and 23 ½" (597 mm)
-Ram Support Unit
Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Medium Size Twin Plunger Rescue Ram

General
The tool must be UL Listed: This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must also be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must

be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Deadman's Handle The tool must be activated by means of a rotary deadman's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle is released, it must return to the neutral position automatically. The deadman's handle will provide one-handed control of opening and closing functions. The deadman's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool. In addition, the ram must be able to rotate under load to allow the operating handle to be moved out of the way for patient removal.

Carrying Handle
To assist in carrying and positioning of the ram, an optional carrying handle will be available.

Safety and Protection
When the ram plunger is fully extended and under maximum load, the safety factor against bending or buckling must be at least 2:1. For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the deadman's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Grip Heads
The ends of the plungers will have a twist-lock design to allow rotation of the grip heads even when the tool is under a load. Rams with threaded grip heads that could become corroded and prevent use of interchangeable accessories shall not be acceptable. The twist-lock design shall accept interchangeable tool accessories. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Forces
The ram will have a maximum pushing force of no less than 36,460 lbf (162.2 kN) and a maximum pulling force of no less than 11,265 lbf (50.1 kN).

Weight & Dimensions

Length of closed tool not to exceed 30 3/8" (772 mm).
Length of extended tool not to exceed 50" (1268mm).
Width not to exceed 13½" (338 mm).
Height not to exceed 4 7/8" (122 mm)
Net stroke not less than 2 x 9 ¾ " (2 x 248 mm).
Weight not to exceed 36 lbs (16.4 kg).

Accessories

All accessories shall be of a twist lock design. *No threading and/or loose locking pins are allowed.*

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have a quick-change design. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool

-Attachments
-Wedge tip for splitting.
-Conical point for piercing holes in sheet materials.
-Round flat base min. diameter 4 ½ " (115 mm) for better distribution of the forces.
-Ram Support Unit

Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Small Telescopic Ram

General

This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2010 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. Couplers must be one hand operated, flat-face, non-drip couplings with built-in automatic locking feature. Couplers must be supplied with aluminum protective dust caps. Pigtail hoses will be connected to the rear of the dead man's handle, leading away in line with the tool avoiding hindrance to the operator. Pigtail hose connection shall be protected so that the connection is not accessible or susceptible to damage. Pigtail hoses shall be equipped with full-length, spring-type, protective bend restrictors.

The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Dead man's Handle
The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool. In addition, the ram must be able to rotate under load to allow the operating handle to be moved out of the way for patient removal.

Carrying Handle
To assist in carrying and positioning of the rescue ram it shall be supplied with a carrying handle.

Safety and Protection
When both ram plungers are fully extended and under maximum load, the safety factor against bending or buckling must be at least 2:1. For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Grip Heads
The ends of the plungers will have non-threaded connections of the grip heads to allow rotation of the tool even when the tool is under a load. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Forces
The first plunger will have a maximum pushing force of no less than 49,145 lbf (218.6 kN). The second plunger will have a maximum pushing force of no less than 18,210 lbf (81 kN).

Weight & Dimensions
Length of closed tool not to exceed 12 1/16" (307 mm).
Length of extended tool not to exceed 23 1/8" (588 mm).
Width not to exceed 16½" (419 mm),
Height not to exceed 5 ¼" (133 mm)
Stroke of first plunger 6 3/16" (157 mm).
Stroke of second plunger 4 7/8" (124 mm).
Weight not to exceed 26.5 lbs (12 kg).

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Accessories

-Ram Support Unit

Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Large Telescopic Ram

General

This tool must also be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of performing 1000 endurance cycles, whereby one cycle consists of completely opening and closing the tool at its maximum pressure during its stroke. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool. In addition, the ram must be able to rotate under load to allow the operating handle to be moved out of the way for patient removal.

Carrying Handle

To assist in carrying and positioning of the rescue ram it shall be supplied with a carrying handle.

Safety and Protection

When both ram plungers are fully extended and under maximum load, the safety factor against bending or buckling must be at least 2:1. For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have

automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Grip Heads
The ends of the plungers will have non-threaded connections of the grip heads to allow rotation of the tool even when the tool is under a load. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Forces
The first plunger will have a maximum pushing force of no less than 49,145 lbf (218.6 kN). The second plunger will have a maximum pushing force of no less than 18,210 lbf (81 kN).

Weight & Dimensions
Length of closed tool not to exceed 21 1/8" (537 mm).
Length of extended tool not to exceed 49 15/16" (1269 mm).
Width not to exceed 13¾" (350 mm),
Height not to exceed 5 ¼" (133 mm)
Stroke of first plunger 14 15/16" (380 mm).
Stroke of second plunger 13 13/16" (352 mm).
Weight not to exceed 36.5 lbs (16.6 kg).

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Accessories
-Ram Support Unit
Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Rescue Combination Tool

General
The tool must be UL Listed: This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must also be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied

with only one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle grip is released, it must return to the neutral position automatically. The dead man's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The dead man's handle shall provide 360° access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist the operator and increase safety while working in dark or poorly lit circumstances the carrying handle shall have integrated LED lights. The lights shall be focused on the working area of the tool and shall be completely weatherproof. Lights should be powered by a field replaceable single AA battery and shall provide a minimum of six continuous hours of illumination. The distance between the dead man's handle and the U-shaped carrying handle will be at least 10" (254 mm) to provide a natural position for both hands during operation and to allow for complete control of the tool. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by accidentally disconnecting the return line of the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the deadman's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Hinge bolt system

To allow better access into tight spaces the cutter will contain a low profile locking hinge bolt system that does not extend beyond the blade holder profile. Bolt head and nut construction that protrude and impede tool operation are not acceptable. This low profile system allows greater precision and control on every cut by locking the factory set torque value. For ease of maintenance, the hinge bolt system must require a torque of

no more then 38 ft-lb (50Nm). For extended tool life the cutter shall have a set of corrosion resistant steel covers in place to shield the front of the tool from damage during the extrication operation.

Blades/Arms
The blades of the combi cutter will be fabricated out of high grade tool steel that is hardened to improve durability. The cutting, gripping and spreading surfaces of the blades will be regrindable to ensure a longer life span. For maximum safety and gripping when cutting, cutting edges will have specially designed half round serrations.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. The pump must be a completely separate unit from the rescue tool.

Forces
The maximum cutting force exerted will be no less than 67,600 lbf. (300.7 kN) in the recess. Maximum spreading force must be at least 16,166 lbf (71.9 kN). Maximum pulling force at full opening 14,358 lbf (63.9 kN). The NFPA performance level rating for this tools shall be: A6 B7 C5 D7 E5.

Method of Measuring Forces
The spreading force must be measured at the effective tip area on the moving arms, perpendicular to the center line of the tool when in an unfixed state. This measurement of force was calculated and approved by UL and measures the actual force created by the tool when used by the operator.

Weight & Dimensions
The weight of an operable tool may not exceed 31 lbs. (14 kg) including hydraulic oil. Maximum spreader opening will be no less than 14¼" (362mm). Maximum cutter opening will be 9" (229 mm). Width of spreading tips must be 1 3/16" (31mm) minimum for optimum gripping. Squeezing surface should be 1 3/16" x 2 ¼" (30mm x 57mm) minimum. Length of tool shall not exceed 31" (787 mm). Width not to exceed 9 5/16" (236 mm). Height not to exceed 7 1/2" (190 mm).

Accessories
Pulling adapters and chains will be available for pulling operations. The adapters must have a quick-lock system. Pulling chains will be equipped with shortening hooks. The strength of the chain set will be at least 2 times the maximum pulling force of the tool.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be anodized to provide maximum durability. The tool must be capable of withstanding a 10-day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Hand Operated Combi-tool

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand.

The tool must be activated by means of a rotary pump handle. For ease of operation, the handle shall have a maximum rotation of 90° in either direction The pump handle, in combination with the carrying handle, shall provide 360° access to the operator allowing operation of the tool in any position. The pump handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves.

Carrying Handle

The distance between the pump handle and the U-shaped carrying handle will be no less than 12" (305 mm) to provide a natural position for both hands during operation and to allow for complete control of the tool. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the pump handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. To provide for the safety of the operator, a cover must protect all moving parts such as yoke and levers.

Blades

The blades of the cutter will be fabricated from high-grade tool steel, hardened to improve durability. The blades will be constructed so as to be re-grindable. The blades must be capable of shearing □ 0.95" round stock (in the recess), Ø 1 7/8" O.D. x 0.11" tube, 1 3/4" x 1 3/4" x 3/16" square section, 2 3/8" x 1 ¼" x 3/16" rectangular section, and 3" x 3/8" steel plate.

Pump

Hydraulic power must be delivered from a built-in manually operated pump. To provide maximum ease of use to the operator the pump handle must be capable of being rotated through 180° at 30° intervals.

Forces

The maximum cutting force exerted will be no less than 49,000 lbf. (218 kN) in the recess, and 18,660 lbs (83 kN) in the middle of the blade.

Weight & Dimensions

The weight of an operable tool may not exceed 23 lbs. (10.5kg) including

hydraulic oil. The maximum opening of the blades will be no less than 10 ½ "(268 mm) measured at the tips. The length of the tool is not to exceed 27 ½ "(698mm). Width not to exceed 8 1/16"(205 mm). Height not to exceed 6 7/16" (163 mm).

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodize to provide maximum durability. The tool must be capable of withstanding a 10-day salt spray test, and still be able to function normally. Blades must have a method of lubrication through the hinge bolt using a grease gun.

Hydraulic Power Lifting Wedge

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is requirement to provide maximum safety to the operator. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. Couplers must be one hand operated, flat-face, non-drip couplings with built-in automatic locking feature. Couplers must be supplied with aluminum protective dust caps. Pigtail hoses will be connected to the rear of the deadman's handle, leading away in line with the tool avoiding hindrance to the operator. Pigtail hose connection shall be protected so that the connection is not accessible or susceptible to damage. Pigtail hoses shall be equipped with full-length, spring-type, protective bend restrictors.

Deadman's Handle

The tool must be activated by means of a rotary deadman's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle is released, it must return to the neutral position automatically. The deadman's handle will provide one-handed control of opening and closing functions. The deadman's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Carrying Handle

The distance between the deadman's handle and the U-shaped carrying handle will be no less than 12" (305 mm) to provide a natural position for both hands during operation and to allow for complete control of the tool. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Safety and Protection

For maximum safety of the operator all power wedges shall contain a safety relief valve to protect the tool against over-pressurization caused by accidentally disconnecting the return line of the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the deadman's handle is released, whether the tool is lifting or lowering. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. A cover for the safety of the user must protect all moving parts.

Blades/Wedges

The insertion plates and wedge of the power wedge must be manufactured out of extremely high tensile steel, protected against corrosion.

Pump
Hydraulic power should be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Forces
The power wedge must exert a maximum lifting force of 52,900 lbs (235 kN)
The power wedge will have a maximum lifting height of 2" (50 mm), minimum opening of ¼ " (6 mm) and a maximum insertion length under the load of 2 ¼ " (60 mm).

Weight & Dimensions
The weight of the ready-for-use tool may not exceed 24 ½ lbs (11 kg) including hydraulic oil. Length of tool including hose bend radius not to exceed 29 ¼ "(743 mm). Width not to exceed 9" (229 mm). Height not to exceed 8"(203 mm). Blade width will be 2 3/8" (60 mm)

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10-day salt spray test, and still be able to function normally. The power wedge will be provided with a rubber protection cap over the insertion plates and wedge.

Battery Operated Cutter 1

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces
The maximum cutting force exerted will be no less than 57,326 lbf. (255 kN) in the recess of the blades, near the hinge bolt. The NFPA performance level rating for this tool shall be: A6 B2 C6 D5 E6

Weight and dimensions
The maximum opening of the blades will be no less than 5.7" (144 mm) measured at the tips. Weight of the tool not to exceed 40.3 lbs. (18.3 kg) excluding the battery; 42.3 lbs. (19.2 kg) including the battery. Dimensions (LxWxH) not to exceed 32.6" x 11.7" x 8.5" (829 x 297 x 217 mm).

Dead man's handle
The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the

neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle
Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have four integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting
To assist in any poorly lit or nighttime rescue scenario, 4-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Hinge Bolt System
To allow better access to tight spaces and improve cutting and spreading precision, the tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage, corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Blades
The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The design of the blade shall be derived to meet the requirement of today's rescuer facing New Car Technology. The blades will be constructed so as to be re-grindable.

Pump
Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger
28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be anodized to provide maximum durability. The tool must be capable of withstanding a 10-day salt spray test, and still be able to function normally.

Battery Operated Cutter 2

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces
The maximum cutting force exerted will be no less than 317,430 lbf. (1412 kN) in the recess of the blades, near the hinge bolt. The NFPA performance level rating for this tool shall be A8 B8 C7 D9 E9.

Weight and dimensions
The maximum opening of the blades will be no less than 7.2" (182 mm) measured at the tips. Weight of the tool not to exceed 45.2 lbs. (20.5 kg) excluding the battery; 47.2 lbs. (21.4 kg) including the battery. Dimensions (LxWxH) not to exceed 35" x 11.6" x 7.6" (889 x 295 x 193 mm).

Dead man's handle
The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle
Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting
To assist in any poorly lit or nighttime rescue scenario, 6-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Blades
The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The design of the blade shall be derived to meet the requirement of today's rescuer facing New Car Technology. The blades will be constructed so as to be re-grindable.

Hinge Bolt System
To allow better access to tight spaces and improve cutting and spreading precision, the tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage,

corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Battery Operated Cutter 3

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces
The maximum force will be no less than 312,260 lbf. (1389 kN) in the recess of the blades, near the hinge bolt. The NFPA performance level rating for this tool shall be A8 B8 C7 D9 E9.

Weight and dimensions
The maximum opening of the blades will be no less than 7.2" (182 mm) measured at the tips. Weight of the tool not to exceed 45.9 lbs. (20.8 kg) excluding the battery; 47.8 lbs. (21.7 kg) including the battery. Dimensions (LxWxH) not to exceed 35.4" x 11.9" x 11.1" (889 x 302 x 281 mm).

Dead man's handle
The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Ergonomic Advantage
Cutter jaw mounted at an angle of 30 degrees in relation to the body of the tool to reduce the effect of tool movement towards the passenger cell and thus the patient. This blade design allows for a more ergonomic positioning when cutting above or below waist height, less strain on the rescuer.

Lighted Carrying Handle
Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting
To assist in any poorly lit or nighttime rescue scenario, 6-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Blades
The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The design of the blade shall be derived to meet the requirement of today's rescuer facing New Car Technology. The blades will be constructed so as to be re-grindable.

Hinge Bolt System
To allow better access to tight spaces and improve cutting and spreading precision, the tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage, corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Pump
Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger
28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute,

open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Battery Operated Spreader 1

General
This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces
The arms of the spreader will have a maximum opening width of 20.1" (510 mm), must exert no less than 29,450 lbf (131 kN) at the base of the tips.

NFPA HSF shall be no less than 11,915 lbf (53 kN)
NFPA LSF shall be no less than 7,868 lbf (35 kN)
NFPA HPF shall be no less than 10,566 lbf (47 kN)
NFPA LPF shall be no less than 5,395 lbf (24 kN)

Weight & Dimensions
The weight of the tool may not exceed 32.6 lbs (14.8 kg) without the battery, 34.6 lbs (15.7 kg), with the battery. Dimensions (LxWxH) not to exceed 32.4" (822 mm) x 11.6" (295 mm) x 8.1" (205 mm).

Accessories

The following accessories will be available:

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

-Cutting Tip

An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Deadman's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6 LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Arms

The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC

Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger
28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Battery Operated Spreader 2

General
This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit

without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces

The arms of the spreader will have a maximum opening width of 28.5" (725 mm), must exert no less than 62,947 lbf (280 kN) at the base of the tips.

NFPA HSF shall be no less than 15,737 lbf (70 kN)
NFPA LSF shall be no less than 8,543 lbf (38 kN)
NFPA HPF shall be no less than 10,566 lbf (47 kN)
NFPA LPF shall be no less than 5,620 lbf (25 kN)

Weight & Dimensions

The weight of the tool may not exceed 43.7 lbs (19.8 kg) without the battery, 45.6 lbs (20.7 kg), with the battery. Dimensions (LxWxH) not to exceed 37.5" (953 mm) x 11.6" (295 mm) x 8.6" (218 mm).

Accessories

The following accessories will be available:

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

-Cutting Tip

An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Deadman's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6 LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in

a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Arms

The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power

source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Battery Operated Spreader 3

General
This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces
The arms of the spreader will have a maximum opening width of 28.5" (725 mm), must exert no less than 82,280 lbf (366 kN) at the base of the tips.

NFPA HSF shall be no less than 21,806 lbf (97 kN)
NFPA LSF shall be no less than 10,341 lbf (46 kN)
NFPA HPF shall be no less than 15,062 lbf (67 kN)
NFPA LPF shall be no less than 6,969 lbf (31 kN)

Weight & Dimensions
The weight of the tool may not exceed 47 lbs (21.3 kg) exluding battery, 48.9 lbs (22.2 kg), including battery. Dimensions (LxWxH) not to exceed 38.1" (967 mm) x 11.6" (295 mm) x 8.6" (218 mm).

Accessories
The following accessories will be available:
-Pulling attachments
Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.
-Cutting Tip
An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Deadman's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6 LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Arms

The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute,

open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Battery Operated Ram 1

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces
The ram will have a maximum pushing force (NFPA 1936 HSF, LSF) of no less than 36,460 lbf
(162 kN) and a maximum pulling force (NFPA 1936 HPF, LPF) of no less than 11,265 lbf (50.1 kN).

Weight & Dimensions

Weight of the tool not to exceed 38.6 lbs (17.5 kg) excluding the battery; 40.6 lbs (18.4 kg) including the
battery. Closed length not to exceed 22.3" (566 mm); length of extended must be at least 32.1" (816 mm).
Width not to exceed 9.4" (234 mm). Height not to exceed 17.8" (452 mm).
Spreading/Pulling stroke not less than 9.8" (250 mm).

Dead man's handle

The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For operational continuity the deadman's handle shall be of the same design as for the non-battery operated tools. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Grip Heads

The end of the plunger will have a twist-lock design to allow rotation of the grip heads even when
the tool is under a load. Rams with threaded grip heads that could become corroded and prevent
use of interchangeable accessories shall not be acceptable. The twist-lock design shall accept
interchangeable tool accessories. Likewise, the rear of the tool shall have a twist-lock design to
also accept extension pipes. Tool shall be delivered with two diamond shaped grip heads
designed to prevent off-center loads.

Accessories

All accessories shall be of a twist lock design. *No threading and/or loose locking pins are allowed.*

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have a quick-change design. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool

-Attachments

-Wedge tip for splitting.

-Conical point for piercing holes in sheet materials.

-Round flat base min. diameter 4 ½ " (115 mm) for better distribution of the forces.

-Extension Pipes

Extension pipes in the following lengths will be available for pushing operations:
6 ½" (165 mm), 13" (330 mm) and 23 ½" (597 mm)

-Ram Support Unit

Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, and rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be

available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Battery Operated Ram 2

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces
The ram will have a maximum pushing force (NFPA 1936 HSF, LSF) of no less than 36,460 lbf (162 kN) and a maximum pulling force (NFPA 1936 HPF, LPF) of no less than 11,265 lbf (50.1 kN).

Weight & Dimensions
Weight of the tool not to exceed 40.3 lbs (18.3 kg) excluding the battery; 42.3 lbs (19.2 kg)including the battery. Closed length not to exceed 23.9" (607 mm); length of extended must be atleast 41" (1041 mm). Width not to exceed 9.4" (234 mm). Height not to exceed 17.8" (452 mm).Spreading/Pulling stroke not less than 13.8" (250 mm).

Dead man's handle
The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For operational continuity the deadman's handle shall be of the same design as for the non-battery operated tools. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be

capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Grip Heads

The end of the plunger will have a twist-lock design to allow rotation of the grip heads even when the tool is under a load. Rams with threaded grip heads that could become corroded and prevent use of interchangeable accessories shall not be acceptable. The twist-lock design shall accept interchangeable tool accessories. Likewise, the rear of the tool shall have a twist-lock design toalso accept extension pipes. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Accessories

All accessories shall be of a twist lock design. *No threading and/or loose locking pins are allowed.*

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have a quick-change design. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool

-Attachments

-Wedge tip for splitting.

-Conical point for piercing holes in sheet materials.

-Round flat base min. diameter 4 ½ " (115 mm) for better distribution of the forces.

-Extension Pipes

Extension pipes in the following lengths will be available for pushing operations: 6 ½" (165 mm), 13" (330 mm) and 23 ½" (597 mm)

-Ram Support Unit

Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Pump
Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger
28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 4.1Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, and rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

GCT 4150 Battery Operated Heavy Duty Combi Tool

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces

The maximum cutting force will be no less than 85,427 lbf. (380 kN) in the recess. Maximum spreading force must be at least 47,435 (211 kN). Maximum pulling force must be at least 14,358 lbf (63.9 kN). Maximum squeezing force must be at least 17,085 lbf (76 kN). The NFPA Cutting classification must be no less than A6 B7 C5 D7 E5.

NFPA HPF shall be no less than 14,358 lbf. (63.9 kN)
NFPA HSF shall be no less than 7,541 lbf. (33.5 kN)
NFPA LPF shall be no less than 8,230 lbf. (36.6kN)
NFPA LSF shall be no less than 6,598 lbf. (29.3 kN)

Weight & Dimensions

Maximum spreader opening will be no less than 14.2 (360 mm). Maximum cutter opening will be 9" (229 mm). Width of spreading tips must be 1.2" (31mm) minimum for optimum gripping. Squeezing surface should be 1.1" x 2.25 (30mm x 57mm) minimum. Length of tool shall not exceed 35.5" (901 mm). Width not to exceed 11.7" (297 mm). Height not to exceed 8.3" (212 mm). Weight, including battery shall not exceed 43.9 lbs (19.9 kg).

Accessories

Pulling adapters and chains will be available for pulling operations. The adapters must have a quick-lock system. Pulling chains will be equipped with shortening hooks. The strength of the chain set will be at least 2 times the maximum pulling force of the tool.

Deadman's Handle

The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have four integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 4-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Hinge bolt system

To allow better access to tight spaces and improve cutting and spreading precision, the tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage, corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Blades/Arms

The blades of the combi cutter will be fabricated out of high grade tool steel that is hardened to improve durability. The cutting, gripping and spreading surfaces of the blades will be regrindable to ensure a longer life span. For maximum safety and gripping when cutting, cutting edges will have specially designed half round serrations.

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be

recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by accidentally disconnecting the return line of the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the deadman's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be anodized to provide maximum durability. The tool must be capable of withstanding a 10-day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

GENERAL CONDITIONS
(BID PRICE)

Hydraulic Tool Bid Price

Bidder offers the following prices for the hydraulic rescue tools specified in the above bid statement.

HOLMATRO MODEL			
SR20	-Hydraulic power unit with gasoline engine 1	$ 7890.00	each
SR40R	-Optional power with electric engine	$ 9056.00	each
SR10	-Hydraulic power unit w/ gasonline engine 2	$ 5012.00	each
PA18H2C	-Manual power unit	$ 1360.00	each
AHS1400	-Air/Hydraulic power unit	$ 1695.00	each
5030CL	-Hydraulic cutter #1	$ 4935.00	each
5040	-Hydraulic cutter #2	$ 5518.00	each
5050	-Hydraulic cutter #3	$ 6100.00	each
5050i	-Hydraulic cutter #4	$ 6285.00	each
4007	-Hydraulic mini cutter	$ 3715.00	each
3MCS00	-Hydraulic special materials cutter	$ 4085.00	each
5240CL	-Hydraulic spreader #1	$ 7070.00	each

	-Spreader #1 Accessory package	$ 1790.00 each
5240	-Hydraulic spreader #2	$ 7070.00 each
	-Spreader #2 Accessory package	$ 1936.00 each
5250	-Hydraulic spreader #3	$ 7385.00 each
	-Spreader #3 Accessory package	$ 1936.00 each
5260	- Hydraulic spreader #4	$ 7700.00 each
	- Spreader #4 Accessory package	$ 2570.00 each
32' CORE	-Hydraulic Extension Hose	$ 902.00 each
4321	-Small Hydraulic Push/Pull Ram	$ 3212.00 each
4331	-Large Hydraulic Push/Pull Ram	$ 3480.00 each
4332	-Medium Sized Twin Plunger Ram	$ 3800.00 each
	-Push/Pull Ram Accessory package	$ 3245.00 each
5340	-Small Hydraulic Telescopic Ram	$ 4065.00 each
5350	-Large Hydraulic Telescopic Ram	$ 5003.00 each
HRS32/SET	-Telescopic Ram Accessory package	$ 830.00 each
4150	-Hydraulic Cutter/Spreader Combination tool	$ 4965.00 each
HCT3120	-Manual Cutter/Spreader Combination tool	$ 5004.00 each
5624	-Hydraulic Lifting Wedge	$ 3395.00 each
	-Replacement Blades for Hydraulic cutter #1	$ 360.00 each
	-Replacement Blades for Hydraulic cutter #2	$ 1188.00 each
	-Replacement Blades for Hydraulic cutter #3	$ 840.00 each
	-Replacement Blades for Hydraulic cutter #4	$ 1049.00 each
	-Replacement Blades for Hydraulic Mini Cutter	$ 450.00 each
	-Replacement Blades for Special Materials Cutter	$ 177.00 each
GCU5030CL	-Battery Operated Hydraulic Cutter #1	$ 9060.00 each
GCU5050	-Battery Operated Hydraulic Cutter #2	$ 10225.00 each
GCU5060i	-Battery Operated Hydraulic Cutter #3	$ 10410.00 each
GSPS240CL	-Battery Operated Hydraulic Spreader #1	$ 10365.00 each
GSPS240	-Battery Operated Hydraulic Spreader #2	$ 10365.00 each
GSPS350	-Battery Operated Hydraulic Spreader #3	$ 10680.00 each
GRA4321	-Battery Operated Hydraulic Ram #1	$ 8150.00 each
GRA4331	-Battery Operated Hydraulic Ram #2	$ 8415.00 each
GCT4150	-Battery Operated Hydraulic Combination Tool	$ 9095.00 each
	-Percentage of Catalogue Items	5% each

Bid Price Guarantee

Bidder guarantees price for a period of two (2) years for future purchases. All pricing shall include delivery and set up.

GENERAL CONDITIONS

(Service of Hydraulic Tools)

Guarantee of Tool Repair

Award winning vendor guarantees service representative to assess tool repair or replacement needs at purchaser's location within twenty-four (24) hours of being contacted by purchaser. Vendor will provide replacement tool while on sight for service call and/or while tool is returned to service facility.

Service Training
Manufacturer of purchased tools shall provide training for tool service and repair to the purchasing agency.

EXCEPTIONS
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.

RISK MANAGEMENT PROVISIONS
INSURANCE AND INDEMNIFICATION

INDEMNIFICATION AND HOLD HARMLESS PROVISION

(1) It is understood and agreed by the parties that Contractor 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 Contractor or its employees, agents, servants, owners, principals, licensees, assigns or subcontractors of any tier (hereinafter "CONTRACTOR") 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) CONTRACTOR 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 CONTRACTOR'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 CONTRACTOR; 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, CONTRACTOR 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.

(5) LFUCG is a political subdivision of the Commonwealth of Kentucky. CONTRACTOR acknowledges and agrees that LFUCG is unable to provide indemnity or otherwise save, hold harmless, or defend the CONTRACTOR in any manner.

FINANCIAL RESPONSIBILITY

BIDDER/CONTRACTOR 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.

INSURANCE REQUIREMENTS

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.

Required Insurance Coverage

BIDDER/CONTRACTOR 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 performance of the work hereunder by CONTRACTOR. The cost of such insurance shall be included in any bid:

Coverage	**Limits**
General Liability (Insurance Services Office Form CG 00 01)	$1 million per occurrence, $2 million aggregate or $2 million combined single limit
Commercial Automobile Liability (Insurance Services Office Form CA 0001)	combined single, $1 million per occurrence
Worker's Compensation	Statutory
Employer's Liability	$100,000.00
Excess/Umbrella Liability	$1 million per occurrence

The policies above shall contain the following conditions:

a. All Certificates of Insurance forms used by the insurance carrier shall be properly filed and approved by the Department of Insurance for the Commonwealth of Kentucky (DOI). LFUCG shall be named as an additional insured in the General Liability Policy and Commercial Automobile Liability Policy using the Kentucky DOI approved forms.

b. The General Liability Policy shall be primary to any insurance or self-insurance retained by LFUCG.

c. The General Liability Policy shall include a Products and Completed Operations endorsement or Premises and Operations Liability endorsement unless deemed not to apply by LFUCG.

d. LFUCG shall be provided at least 30 days advance written notice via certified mail, return receipt requested, in the event any of the required policies are canceled or non-renewed.

e. Said coverage shall be written by insurers acceptable to LFUCG and shall be in a form acceptable to LFUCG. Insurance placed with insurers with a rating classification of no less than Excellent (A or A-) and a financial size category of no less than VIII, as defined by the most current Best's Key Rating Guide shall be deemed automatically acceptable.

Renewals

After insurance has been approved by LFUCG, evidence of renewal of an expiring policy must be submitted to LFUCG, and may be submitted on a manually signed renewal endorsement form. If

the policy or carrier has changed, however, new evidence of coverage must be submitted in accordance with these Insurance Requirements.

Deductibles and Self-Insured Programs

IF YOU INTEND TO SUBMIT A SELF-INSURANCE PLAN IT MUST BE FORWARDED TO LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DIVISION OF RISK MANAGEMENT, 200 EAST MAIN STREET, LEXINGTON, KENTUCKY 40507 NO LATER THAN A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE RESPONSE DATE. Self-insurance programs, deductibles, and self-insured retentions in insurance policies are subject to separate approval by Lexington-Fayette Urban County Government's Division of Risk Management, upon review of evidence of BIDDER/CONTRACTOR's financial capacity to respond to claims. Any such programs or retentions must provide LFUCG with at least the same protection from liability and defense of suits as would be afforded by first-dollar insurance coverage. If BIDDER/CONTRACTOR satisfies any portion of the insurance requirements through deductibles, self-insurance programs, or self-insured retentions, BIDDER/CONTRACTOR agrees to provide Lexington-Fayette Urban County Government, Division of Risk Management, the following data prior to the final acceptance of bid and the commencement of any work:

a. Latest audited financial statement, including auditor's notes.

b. Any records of any self-insured trust fund plan or policy and related accounting statements.

c. Actuarial funding reports or retained losses.

d. Risk Management Manual or a description of the self-insurance and risk management program.

e. A claim loss run summary for the previous five (5) years.

f. Self-Insured Associations will be considered.

Safety and Loss Control

CONTRACTOR shall comply with all applicable federal, state, and local safety standards related to the performance of its works or services under this Agreement and take necessary action to protect the life, health and safety and property of all of its personnel on the job site, the public, and LFUCG.

Verification of Coverage

BIDDER/CONTRACTOR agrees to furnish LFUCG with all applicable Certificates of Insurance signed by a person authorized by the insurer to bind coverage on its behalf prior to final award, and if requested, shall provide LFUCG copies of all insurance policies, including all endorsements.

Right to Review, Audit and Inspect

CONTRACTOR understands and agrees that LFUCG may review, audit and inspect any and all of its records and operations to insure compliance with these Insurance Requirements.

DEFAULT

BIDDER/CONTRACTOR understands and agrees that the failure to comply with any of these insurance, safety, or loss control provisions shall constitute default and that LFUCG may elect at its option any single remedy or penalty or any combination of remedies and penalties, as available, including but not limited to purchasing insurance and charging BIDDER/CONTRACTOR for any such insurance premiums purchased, or suspending or terminating the work.

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holmatro

mastering power

Certificate for Lifetime Warranty

for

Holmatro® hydraulic rescue tools

Warranty:

Holmatro® hydraulic rescue tools, parts and [illegible] against defects in material and workmanship for as long as owned by the original purchaser.

The identity of the original purchaser and the date of purchase shall be established in each case by the return of the properly completed warranty registration card.

Warranty Terms:

The obligations of Holmatro® under this warranty [illegible] of the necessary parts and the shipping costs to return the equipment to the user, provided the inspection of the equipment has proved that the parts were defective at the time of purchase or were improperly designed or manufactured. The warranty inspection can only be performed by a Holmatro® service center and shipping costs to a Holmatro® service center will be for purchaser's account. Said warranty shall remain in effect only if (1) such goods are used normally and properly in accordance with Holmatro® instructions as to maintenance and operation, whether given orally or set forth in manuals and instruction sheets furnished by Holmatro®, and (2) the purchaser gives prompt notice to Holmatro® of any such defects and preserves and turns over all allegedly defective goods, parts or items.

Exclusions:

This warranty covers all defects in material and workmanship [illegible]

Any damage occurring during shipment of the goods [illegible] tear parts and consumable parts and items [illegible] accessories, all seal rings, plunger blocks, [illegible] such as the Briggs & Stratton engine [illegible] available to Holmatro® by the manufacturer. [illegible] repairs performed by persons other than a Holmatro® [illegible] damage resulting from the use of parts other than [illegible] reasonable maintenance.

THE WARRANTY STATED HEREIN [illegible] HOLMATRO EXPRESSLY DISCLAIMS ANY [illegible] OR SUITABILITY FOR A PARTICULAR PURPOSE.

Limitation of Damages:

Holmatro's obligation under this Warranty is limited to [illegible] Holmatro® tool, part, [illegible] or any other cause, and whether [illegible] contract or [illegible] shall Holmatro® be liable for (1) consequential or indirect loss or damage [illegible] downtime, or liabilities to customers or other third parties [illegible] of the sale or contributory negligence of the purchaser, its employees or agents, or any third party, or (3) any special or punitive damages of any nature. If Holmatro® determines, in its sole and final discretion, that the nature of the defect precludes remedy by repair and/or replacement, Holmatro® reserves the right to satisfy any warranty obligation by refunding the full purchase price, on return of all defective goods to Holmatro®, shipping costs prepaid. Any action for breach of warranty or other action must be commenced within one year after such cause of action arises, except where applicable law would prohibit any such time restriction on the bringing of such an action.

Notices:

For all notices, information and inquiries concerning this warranty or Holmatro® service centers contact:

Holmatro, Inc.
505 McCormick Drive
Glen Burnie, MD 21061-3254 USA
phone: 410-768-9662
fax: 410-768-1678
http://www.holmatro-usa.com

SR 20 PC 2 Compact Rescue Pump

General

This pump must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2010 edition. It must also comply with EN 13204. Classification to Third Party Standards shall be performed by Underwriters Laboratories or by a test laboratory recognized and accepted by this AHJ. The pump must allow operation in a humid and dusty environment. The pump must be capable of powering two tools at full power, independently and simultaneously. The pump must have a connecting block incorporating flat face female couplers of a coaxial design, with the pressure line inside of the return line, allowing for simultaneous connection of both lines with one connection motion. The couplers must be of a flat-face, non-drip style, with built-in automatic locking feature, capable of being operated with one hand and must be supplied with aluminum protective dust caps. The pump shall not require a manual pressure release valve for the purpose of connecting or disconnecting hoses and the user must be able to connect and disconnect hoses and rescue tools while the pump is flowing oil. The pump shall be provided with a Pressure Relief Device to allow the relief of pressure in hose lines resulting from temperature changes.

Engine

The pump shall be driven by a Honda GX100 4-stroke gasoline engine. The engine shall have a gasoline tank of at least 1.8 qts. (1700cc), that allows the pump to run for three continuous hours. For ease of operation the fuel tank shall incorporate a highly visible fuel level indicator.

Pump

To provide maximum efficiency during rescue operations, the hydraulic pump shall be a 3-stage axial design with two automatic sequence valves, switching to 2nd stage at approximately 2,175 psi (150 bar), to 3rd stage at approximately 4,350 psi (300 bar) to allow full pressure to be built up to a maximum working pressure of 10,443 psi (720 bar). The pump shall be protected with an internal safety valve. In addition, the pump must have an external safety valve, factory set at 10,443 psi (720 bar).

The pump shall have an output of not less than:

- 171 cu in/min (2800 cc/min) in the 1st stage
- 76 cu in/min (1250 cc/min) in the 2nd stage
- 32 cu in/min (525 cc/min) in the 3rd stage

Carrying frame

The pump shall have a protective carrying frame designed for mobility with a hand grip centered for balance. In order to provide improved grip in all weather conditions, the frame must have a non-slip surface. The frame shall be provided with anti-vibration dampers to keep the pump at its position while running.

Tank and Fluid

The effective oil contents of 4.22 qt. (4 l) must allow for the simultaneous deployment of at least four full size rescue tools. The pump shall be designed for the use of non-toxic mineral oil base hydraulic fluid.

Weight and Dimensions

The complete pump ready for use, including gas, oil and carrying frame shall weigh no more than: 50 lbs. (23 kg). The complete pump unit shall be extremely compact with dimensions within: (LxWxH): 17.91" 12.4" x 18.11" (455 mm x 315 mm x 460 mm).

Sound level

The sound level of the pump must not exceed 81 dB(A) unloaded, 85 db(A) loaded when measured at a distance of 3.28 ft. (1m).

Options:

Couplers. The pump shall be optionally available with twin line auto locking, drip-free couplers. These couplers shall also be supplied with aluminum protective dust caps. This option does not change the dimensions, but will add 1 lb (.5 kg) for each set of twin line couplers to the ready to use weight

Task Lights. To improve visibility of the pump connection(s) and operation controls, clip on LED work lights shall be available to connect to the pump frame.

Mounting Bracket. The unit must have as an option, a mounting bracket, offered by the same manufacturer, to protect and quickly secure the unit inside the apparatus compartment. The bracket shall consist of an adapter that is bolted to the underside of the power unit, and a locking mount that is bolted to the compartment floor. The locking mechanism shall have a detent position that allows the operator to easily secure the pump in its locked, storage position with a simple flip of a lever. To further facilitate ease of access to the unit, an optional angle bracket shall be available, which tilts 8 degrees downward toward the operator. When unlocked, it easily slides forward, with no impedance from the compartment's four sides.

Installing the optional Quick Fix and Release Mounting System will modify the pump's ready for use weight and dimensions as follows:

	STANDARD	Pump Wt (lbs)	L"	W"	H"
158.152.178	**SR 20 PC 2**	**50**	**17.91**	**12.4**	**18.11**
150.062.190	w/QF Mounting Plate (pump side)	52	17.91	12.4	18.11
150.062.188	w/QF Mounting & Release Bracket (truck side)	52	17.91	12.4	19.02
150.062.193	w/QF Angle Bracket (truck side)	52	19.37	12.4	21.78

	METRIC	Pump Wt (kg)	L mm	W mm	H mm
158.152.178	**SR 20 PC 2**	**23**	**455**	**315**	**460**
150.062.190	w/QF Mounting Plate (pump side)	24	455	315	460
150.062.188	w/QF Mounting & Release Bracket (truck side)	24	455	315	483
150.062.193	w/QF Angle Bracket (truck side)	24	492	315	553

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

SR 40 HC 2 Heavy Duty Electric Rescue Pump

General

This pump must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2010 edition. It must also comply with EN 13204. Classification to Third Party Standards shall be performed by Underwriters Laboratories or by a test laboratory recognized and accepted by this AHJ. The pump must allow operation in a humid and dusty environment. The pump must be capable of powering two tools at full power, independently and simultaneously. The pump must have a connecting block incorporating Holmatro CORE Technology™ flat face female couplers of a coaxial design, with the pressure line inside of the return line, allowing for simultaneous connection of both lines with one connection motion. The couplers must be of a flat-face, non-drip style, with built-in automatic locking feature, capable of being operated with one hand and must be supplied with aluminum protective dust caps. The pump shall not require a manual pressure release valve for the purpose of connecting or disconnecting hoses and the user must be able to connect and disconnect hoses and rescue tools while the pump is flowing oil. The pump shall be provided with a Pressure Relief Device to allow the relief of pressure in hose lines resulting from temperature changes.

Electric Motor

The pump shall be driven by a Lafert 1.8 kW, 230v, 60 Hz Continuous Duty Electric Motor.

Pump

To provide maximum efficiency during rescue operations, the hydraulic pump shall be a 3-stage axial design with two automatic sequence valves, switching to 2nd stage at approximately 2,175 psi (150 bar), to 3rd stage at approximately 4,350 psi (300 bar) to allow full pressure to be built up to a maximum working pressure of 10,443 psi (720 bar). The pump shall be protected with an internal safety valve. In addition, the pump must have an external safety valve, factory set at 10,443 psi (720 bar).

The pump shall have an output of not less than:

- 183 cu in/min (3000 cc/min) in the 1st stage
- 82 cu in/min (1350 cc/min) in the 2nd stage
- 35 cu in/min (575 cc/min) in the 3rd stage

Carrying frame

The pump shall have a protective carrying frame designed for mobility with two hand grips centered for balance. In order to provide improved grip in all weather conditions, the frame must have a non-slip surface. The frame shall be provided with anti-vibration dampers to keep the pump at its position while running.

Tank and Fluid

The effective oil contents 6.34 qt. (6 l) must allow for the simultaneous deployment of at least six full size rescue tools. The pump shall be designed for the use of non-toxic mineral oil base hydraulic fluid.

Weight and Dimensions

The complete pump ready for use, including oil and carrying frame shall weigh no more than **90 lbs. (41 kg).** **WEIGHT STILL ACCURATE DATA WITH NEW MOTOR?)** The complete pump unit shall be extremely compact with dimensions within (LxWxH): 19.57" 18.39" x 19.37" (497 mm x 467 mm x 492 mm).

Sound level

The sound level of the pump must not exceed 73 dB(A) unloaded, 77 db(A) loaded when measured at a distance of 3.28 ft. (1m). **STILL ACCURATE DATA WITH NEW MOTOR?**

Options:

Couplers. The pump shall be optionally available with twin line auto locking, drip-free couplers. These couplers shall also be supplied with aluminum protective dust caps. This option does not change the dimensions, but will add 1 lb (.5 kg) for each set of twin line couplers to the ready to use weight

Task Lights. To improve visibility of the pump connection(s) and operation controls, clip-on LED work lights shall be available to connect to the pump frame.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

SR 10 P Super Compact Rescue Pump

General

This pump must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. It must also comply with EN 13204. Classification to Third Party Standards shall be performed by Underwriters Laboratories or by a test laboratory recognized and accepted by this AHJ. The pump must allow operation in a humid and dusty environment. The pump must have a connecting block incorporating a Holmatro CORE Technology™ flat face female coupler of a coaxial design, with the pressure line inside of the return line, allowing for simultaneous connection of both lines with one connection motion. The coupler must be of a non-drip style, with built-in automatic locking feature, capable of being operated with one hand and must be supplied with aluminum protective dust caps. The pump shall not require a manual pressure release valve for the purpose of connecting or disconnecting hoses and the user must be able to connect and disconnect hoses and rescue tools while the pump is flowing oil. The pump shall be provided with a Pressure Relief Device to allow the relief of pressure in hose lines resulting from temperature changes.

Engine

The unit shall be driven by a Honda GXH50 4-stroke gasoline engine. The engine shall have a gasoline tank with a fuel capacity of 0.81 qt. (770 cc) that allows the pump to run for three continuous hours. For ease of operation the fuel tank shall incorporate a highly visible fuel level indicator.

Pump

To provide maximum efficiency during rescue operations, the hydraulic pump shall be a 3-stage axial design with two automatic sequence valves, switching to 2nd stage at approximately 2,175 psi (150 bar), to 3rd stage at approximately 4,350 psi (300 bar) to allow full pressure to be built up to a maximum working pressure of 10,443 psi (720 bar). The pump shall be protected with an internal safety valve. In addition, the pump must have an external safety valve, factory set at 10,443 psi (720 bar).

The pump shall have an output of not less than:

- 167.81 cu in/min (2750 cc/min) in the 1st stage
- 79.33 cu in/min (1300 cc/min) in the 2nd stage
- 31.73 cu in/min (520 cc/min) in the 3rd stage

Carrying frame

The pump shall have a protective carrying frame designed for mobility with a hand grip centered for balance. In order to provide improved grip in all weather conditions, the frame must have a non-slip surface. The frame shall be provided with anti-vibration dampers to keep the pump at its position while running.

Tank and Fluid

The effective oil contents 2.64 qt. (2.5 l) must allow for the simultaneous deployment of at least three full size rescue tools. The pump shall be designed for the use of non-toxic mineral oil base hydraulic fluid.

Weight and Dimensions

The complete pump ready for use, including engine oil, mineral oil, gas and carrying frame shall weigh no more than 31.8 lbs (14.5 kg). The complete pump unit shall be extremely compact with dimensions within (LxWxH): 14.17" x 11.42" x 16.65" (360 mm x 290 mm x 423 mm).

Sound level

The sound level of the pump under load must not exceed 82 dB (A) measured at a distance of 3.28 ft (1m).

Options:

Couplers. The pump shall be optionally available with twin line auto locking, drip-free couplers. These couplers shall also be supplied with aluminum protective dust caps.

Task Lights. To improve visibility of the pump connection(s) and operation controls, clip on LED work lights shall be available to connect to the pump frame.

Mounting Bracket

The unit must have as an option, a mounting bracket, offered by the same manufacturer, to protect and quickly secure the unit inside the apparatus compartment. The bracket shall consist of an adapter that is bolted to the underside of the power unit, and a locking mount that is bolted to the compartment floor. The locking mechanism shall have a detent position that allows the operator to easily secure the pump in its locked, storage position with a simple flip of a lever. To further facilitate ease of access to the unit, an optional angle bracket shall be available, which tilts 8 degrees downward toward the operator. When unlocked, it easily slides forward, with no impedance from the compartment's four sides.

Installing the optional Quick Fix and Release Mounting System will modify the pump's ready for use weight and dimensions as follows:

	STANDARD	Pump Wt (lbs)	L"	W"	H"
158.152.175	**SR 10 PC 1**	**31.9**	**14.17**	**11.42**	**16.65**
150.062.189	w/QF Mounting Plate (pump side)	33.9	14.17	11.42	16.65
150.062.188	w/QF Mounting & Release Bracket (truck side)	33.9	14.17	11.42	17.56
150.062.193	w/QF Angle Bracket (truck side)	33.9	15.39	11.42	19.37

	METRIC	Pump Wt (kg)	L mm	W mm	H mm
158.152.175	**SR 10 PC 1**	**14.46**	**360**	**290**	**423**
150.062.189	w/QF Mounting Plate (pump side)	15.36	360	290	423
150.062.188	w/QF Mounting & Release Bracket (truck side)	15.36	360	290	446
150.062.193	w/QF Angle Bracket (truck side)	15.36	391	290	492

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

Coaxial Hydraulic Hose

General

This hose must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The hose assembly shall be of a "coaxial" design with a single coupler and protective bend restrictor at each end. For increased safety to the user the hose pressure line shall be encapsulated inside of the outer return line to shield the pressure line from damage inherent on the rescue scene. The working pressure of the interior pressure line shall be 10,500 psi (720 bar). The outer return line shall have a working pressure of 365 psi (25 bar). The hose must be capable of withstanding a static overload pressure of at least four times the maximum working pressure. This overload ratio is a requirement to provide maximum safety to the operator. All hoses shall be delivered ready to use as a complete unit that has been pre-filled with hydraulic mineral oil and hydrostatically tested

The inner pressure hose shall be constructed from Polyurethane reinforced with para-aramid yarn for increased strength, reduced weight and maximum flexibility. Para-aramid fibers as a reinforcement in this construction offer very desirable properties such as high strength (5X stronger than steel), low weight, no corrosion, non-conductive. The outer return hose shall be constructed of polyurethane reinforced with polyester yarn. The hose shall remain flexible in cold temperatures, with a useable temperature range of -4°F (-20 °C) to 162°F (72°C). The Orange-colored outer hose shall be designated by the manufacturer to be electrically non-conductive.

The couplers must allow for simultaneous connection of both pressure and return lines to eliminate connection errors and reduce deployment time. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve that will permit connection and disconnection to the tool or pump while under flow. The couplers must be flat-face, non-drip couplings with built-in automatic locking feature and be one hand operated. To avoid stressing the hose the couplers shall allow the hose to freely swivel 360° while connected to a pump and a tool, without twisting or kinking the hose. Each coupler must be supplied with a protective aluminum dust cap.

Hose assemblies shall be available in 16 ft (5 M), 32 ft (10 M) or 50 ft (15 M) lengths. For maximum portability the weight of a hose assembly shall fall within the following guidelines:

- 16 ft (5 M) hose shall not exceed 7 lbs
- 32 ft (10 M) hose shall not exceed 11 lbs
- 50 ft (15 M) hose shall not exceed 15 lbs

CU 5030 CL Rescue Cutter

General

This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose *while under flow*. The coupler must be a flat-face, non-drip coupling with a built-in automatic locking feature and must be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. The coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Forces

The maximum force will be no less than 130,164 lbf. (579 kN) in the recess of the blades, near the hinge bolt. The NFPA performance level rating for this tool shall be A6 B5 C6 D6 E6.

Weight and dimensions

The maximum opening of the blades will be no less than 6.7" (170 mm) measured at the tips. The weight of the tool must not exceed 20.9 lbs. (9.5 kg). The dimensions (LxWxH) must not exceed 26.5" x 10.6" x 7.4" (674 x 270 x 188 mm).

Dead man's handle

The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous

hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Blades
The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The design of the blade shall be derived to meet the requirement of today's rescuer facing *New Car Technology*. The blades will be constructed so as to be re-grindable.

Hinge Bolt System
To allow better access to tight spaces and improve cutting and spreading precision, the-tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage, corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Pump
Hydraulic power must be delivered from a gasoline, electrical or hydraulically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. The pump must be a completely separate unit from the rescue tool.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

CU 5050 i Rescue Cutter

General

This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must *also* be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose *while under flow*. The coupler must be a flat-face, non-drip coupling with a built-in automatic locking feature and must be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. The coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Forces

The maximum force will be no less than 312,260 lbf. (1389 kN) in the recess of the blades, near the hinge bolt. The NFPA performance level rating for this tool shall be A8 B8 C7 D9 E9.

Ergonomic Advantage

Cutter jaw mounted at an angle of 30 degrees in relation to the body of the tool to reduce the effect of tool movement towards the passenger cell and thus the patient. This blade design allows for a more ergonomic positioning when cutting above or below waist height, less strain on the rescuer.

Weight and dimensions

The maximum opening of the blades will be no less than 7.2" (182 mm) measured at the tips. The weight of the tool must not exceed 35.7 lbs. (16.2 kg). The dimensions (LxWxH) must not exceed 30.8" x 10.5" x 11.1" (783 x 266 x 281 mm).

Dead man's handle

The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting
To assist in any poorly lit or nighttime rescue scenario, 6-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Blades
The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The design of the blade shall be derived to meet the requirement of today's rescuer facing *New Car Technology*. The blades will be constructed so as to be re-grindable.

Hinge Bolt System
To allow better access to tight spaces and improve cutting and spreading precision, the-tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage, corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Pump
Hydraulic power must be delivered from a gasoline, electrical or hydraulically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. The pump must be a completely separate unit from the rescue tool.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

CU 4007 C Mini Cutter

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead Man's Handle
The tool must be activated by means of a toggle-type, push button dead man's handle, operated by depressing the push button by one's thumb or fingers. When the dead man's push button is released, it must return to the neutral position automatically. The dead man's push button will provide one-handed control of opening and closing functions. The dead man's push button must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's push button shall be inset into the handle in such a way that inadvertent activation is not possible.

Safety and Protection
For maximum safety of the operator the cutter shall contain a safety relief valve to protect the tool against over pressurization.

Blades
The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades will be constructed so as to be re-grindable. The blades will be manufactured with serrations in the cutting edge. The outside edge of the blades will have serrations to allow for spreading/pushing operations.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Forces
The maximum cutting force exerted will be no less than 49,458 lbf. (220 kN) in the blade's recess.

Weight & Dimensions
The ready to use weight may not exceed 8.5 lbs. (3.9 kg). The maximum opening of the blades will be no less than 2 3/16" (55 mm) measured at the tips. The dimensions of the complete tool shall be within (L x W x H): 15" x 2 13/16" x 5 5/16" (380 x 72 x 135mm).

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be anodized to provide maximum durability.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist in any poorly lit or nighttime rescue scenario, 6 integrated LED task lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life when not needed, an on/off switch for the lights must also be included in the carrying handle. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Forces

The arms of the spreader will have a maximum opening width of 20.1" (510 mm) with a maximum spreading force of 29,450 lbf (131 kN).

NFPA HSF shall be no less than: 11,915 lbf. (53 kN)
NFPA LSF shall be no less than: 7,868 lbf. (35 kN)
NFPA HPF shall be no less than: 10,566 lbf. (47 kN)
NFPA LPF shall be no less than: 5,395 (24 kN)

Weight & Dimensions

oil. Length of not to exceed 27.7" (703 mm). Width not to exceed 10.8" (274 mm). Height not to exceed 8.1" (205 mm)

Method of Measuring Forces

The spreading force must be measured at the effective tip area on the moving arms, perpendicular to the centerline of the tool when in an unfixed state. This measurement of force measures the actual force created by the tool when used by the operator.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Arms

The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump

Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Accessories

The following accessories will be available:

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead man's Handle
The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle
To assist in any poorly lit or nighttime rescue scenario, 6 integrated LED task lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life when not needed, an on/off switch for the lights must also be included in the carrying handle. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Forces
The arms of the spreader will have a maximum opening width of 28.5" (725 mm) with a maximum spreading force of 62,947 lbf (280 kN).

NFPA HSF shall be no less than: 15,737 lbf. (70 kN)
NFPA LSF shall be no less than: 8,543 lbf. (38 kN)
NFPA HPF shall be no less than:10,566 lbf. (47 kN)
NFPA LPF shall be no less than: 5,620 (25 kN)

Weight & Dimensions The weight of the ready-for-use tool may not exceed 32.8 lbs (14.9 kg) including hydraulic oil. Length of not to exceed 32.9" (836 mm). Width not to exceed 11.3" (286 mm). Height not to exceed 8.6" (218 mm)

Method of Measuring Force

The spreading force must be measured at the effective tip area on the moving arms, perpendicular to the centerline of the tool when in an unfixed state. This measurement of force measures the actual force created by the tool when used by the operator.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Arms

The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump

Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Accessories

The following accessories will be available:

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

-Cutting Tip

An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist in any poorly lit or nighttime rescue scenario, 6 integrated LED task lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life when not needed, an on/off switch for the lights must also be included in the carrying handle. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Forces

The arms of the spreader will have a maximum opening width of 28.5" (725 mm) with a maximum spreading force of 82,280 lbf (366 kN).

NFPA HSF shall be no less than: 21,806 lbf. (97 kN)
NFPA LSF shall be no less than: 10,341 lbf. (46 kN)
NFPA HPF shall be no less than:15,062 lbf. (67 kN)
NFPA LPF shall be no less than: 6,969 (31 kN)

Weight & Dimensions

oil. Length of not to exceed 33.3" (847 mm). Width not to exceed 11.3" (286 mm). Height not to exceed 8.6" (218 mm)

Method of Measuring Forces

The spreading force must be measured at the effective tip area on the moving arms, perpendicular to the centerline of the tool when in an unfixed state. This measurement of force measures the actual force created by the tool when used by the operator.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Arms

The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump

Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Accessories

The following accessories will be available:

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

-Cutting Tip

An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist in any poorly lit or nighttime rescue scenario, 6 integrated LED task lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life when not needed, an on/off switch for the lights must also be included in the carrying handle. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Forces

The arms of the spreader will have a maximum opening width of 32.4" (822 mm) with a maximum spreading force of 117,350 lbf (522 kN).

NFPA HSF shall be no less than: 26,303 lbf. (117 kN)
NFPA LSF shall be no less than: 13,039 lbf. (58 kN)
NFPA HPF shall be no less than:18,434 lbf. (82 kN)
NFPA LPF shall be no less than: 8,318 (37 kN)

Weight & Dimensions

oil. Length of not to exceed 36.2" (919 mm). Width not to exceed 12.6" (321 mm). Height not to exceed 8.7" (220 mm)

Method of Measuring Forces

The spreading force must be measured at the effective tip area on the moving arms, perpendicular to the centerline of the tool when in an unfixed state. This measurement of force measures the actual force created by the tool when used by the operator.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Arms

The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump

Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Accessories

The following accessories will be available:

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

-Cutting Tip

An optional cutting tip for cutting sheet metals will be available. The
cutting tip must have the same quick-change design as the spreading tips.

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

4321 Small Single Plunger Rescue Ram

General

The tool must be **UL Listed**: This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must ***also*** be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose *while under flow*. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Deadman's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool. In addition, the ram must be able to rotate under load to allow the operating handle to be moved out of the way for patient removal.

Safety and Protection

When the ram plunger is fully extended and under maximum load, the safety factor against bending or buckling must be at least 2:1. For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load.

Pump

Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Grip Heads
The end of the plunger will have a twist-lock design to allow rotation of the grip heads even when the tool is under a load. Rams with threaded grip heads that could become corroded and prevent use of interchangeable accessories shall not be acceptable. The twist-lock design shall accept interchangeable tool accessories. Likewise, the rear of the tool shall have a twist-lock design to also accept extension pipes. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Forces
The ram will have a maximum pushing force of no less than 36,460 lbf (162.2 kN) and a maximum pulling force of no less than 11,265 lbf (50.1 kN).

Weight & Dimensions
Length of closed tool not to exceed 21 9/16" (547 mm).
Length of extended tool not to exceed 31" (787mm).
Width not to exceed 13 5/16" (338 mm).
Height not to exceed 4 13/16" (122 mm)
Net stroke not less than 9¾" (248 mm).
Weight not to exceed 26 lbs (11.8 kg).

Accessories
All accessories shall be of a twist lock design. *No threading and/or loose locking pins are allowed.*
-Pulling attachments
Pulling adapters and chains will be provided for pulling operations. The adapters must have a quick-change design. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool
-Attachments
-Wedge tip for splitting.
-Conical point for piercing holes in sheet materials.
-Round flat base min. diameter 4 ½ " (115 mm) for better distribution of the forces.
-Extension Pipes
Extension pipes in the following lengths will be available for pushing operations:
6 ½" (165 mm), 13" (330 mm) and 23 ½" (597 mm)
-Ram Support Unit
Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

4331 LARGE SINGLE PLUNGER RAM

General

The tool must be UL Listed: This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must ***also*** be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose *while under flow*. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Deadman's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool. In addition, the ram must be able to rotate under load to allow the operating handle to be moved out of the way for patient removal.

Safety and Protection

When the ram plunger is fully extended and under maximum load, the safety factor against bending or buckling must be at least 2:1. For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load.

Pump

Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To provide

maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Grip Heads
The end of the plunger will have a twist-lock design to allow rotation of the grip heads even when the tool is under a load. Rams with threaded grip heads that could become corroded and prevent use of interchangeable accessories shall not be acceptable. The twist-lock design shall accept interchangeable tool accessories. Likewise, the rear of the tool shall have a twist-lock design to also accept extension pipes. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Forces
The ram will have a maximum pushing force of no less than 36,460 lbf (162.2 kN) and a maximum pulling force of no less than 11,265 lbf (50.1 kN).

Weight & Dimensions
Length of closed tool not to exceed 25¼" (642 mm).
Length of extended tool not to exceed 39" (991mm).
Width not to exceed 13½" (338 mm).
Height not to exceed 4 7/8" (122 mm)
Net stroke not less than 13 ¾" (349 mm).
Weight not to exceed 31 lbs (14 kg).

Accessories
All accessories shall be of a twist lock design. *No threading and/or loose locking pins are allowed.*
-Pulling attachments
Pulling adapters and chains will be provided for pulling operations. The adapters must have a quick-change design. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool
-Attachments
-Wedge tip for splitting.
-Conical point for piercing holes in sheet materials.
-Round flat base min. diameter 4 ½ " (115 mm) for better distribution of the forces.
-Extension Pipes
Extension pipes in the following lengths will be available for pushing operations:
6 ½" (165 mm), 13" (330 mm) and 23 ½" (597 mm)
-Ram Support Unit
Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

4322 Medium Size Twin Plunger Rescue Ram

General

The tool must be UL Listed: This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must ***also*** be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose *while under flow*. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Deadman's Handle The tool must be activated by means of a rotary deadman's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle is released, it must return to the neutral position automatically. The deadman's handle will provide one-handed control of opening and closing functions. The deadman's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool. In addition, the ram must be able to rotate under load to allow the operating handle to be moved out of the way for patient removal.

Carrying Handle

To assist in carrying and positioning of the ram, an optional carrying handle will be available.

Safety and Protection

When the ram plunger is fully extended and under maximum load, the safety factor against bending or buckling must be at least 2:1. For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the deadman's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load.

Pump

Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. To

provide maximum ease of use (lightest weight) to the operator the pump must be a completely separate unit from the rescue tool.

Grip Heads
The ends of the plungers will have a twist-lock design to allow rotation of the grip heads even when the tool is under a load. Rams with threaded grip heads that could become corroded and prevent use of interchangeable accessories shall not be acceptable. The twist-lock design shall accept interchangeable tool accessories. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Forces
The ram will have a maximum pushing force of no less than 36,460 lbf (162.2 kN) and a maximum pulling force of no less than 11,265 lbf (50.1 kN).

Weight & Dimensions
Length of closed tool not to exceed 30 3/8" (772 mm).
Length of extended tool not to exceed 50" (1268mm).
Width not to exceed 13½" (338 mm).
Height not to exceed 4 7/8" (122 mm)
Net stroke not less than 2 x 9 ¾ " (2 x 248 mm).
Weight not to exceed 36 lbs (16.4 kg).

Accessories
All accessories shall be of a twist lock design. *No threading and/or loose locking pins are allowed.*
-Pulling attachments
Pulling adapters and chains will be provided for pulling operations. The adapters must have a quick-change design. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool
-Attachments
-Wedge tip for splitting.
-Conical point for piercing holes in sheet materials.
-Round flat base min. diameter 4 ½ " (115 mm) for better distribution of the forces.
-Ram Support Unit
Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

TR 5340 Small Telescopic Rescue Ram

General

This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose *while under flow.* The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool. In addition, the ram must be able to rotate under load to allow the operating handle to be moved out of the way for patient removal.

Laser Pointer

To assure first time, perfect positioning in ramming operations, the ram must have available, as an option, an integrated laser pointer in the forward facing crosshead that indicates the exact landing position of extending plunger. The laser shall be highly visible, even in sunny, daytime operations. The laser pointer is powered by a CR1/3N battery, which is controlled by an on/off switch also integrated into the crosshead.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, LED lights shall be included in the carry handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights are to be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Safety and Protection

When both ram plungers are fully extended and under maximum load, the safety factor against bending or buckling must be at least 2:1. For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load.

Grip Heads

The ends of the plungers will have non-threaded connections of the grip heads to allow rotation of the tool even when the tool is under a load. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Forces

The first plunger will have a maximum pushing force (HSF) of no less than 48,784 lbf (217 kN). The second plunger will have a maximum pushing force (LSF) of no less than 22,706 lbf (101 kN).

Weight & Dimensions

Length of closed tool not to exceed 13.2" (335 mm)
Length of extended tool not to exceed 24" (610 mm)
Width not to exceed 11" (280 mm)
Height not to exceed 4.3" (109 mm)
Stroke of first plunger 5.9" (150 mm)
Stroke of second plunger 4.9" (125 mm)
Total spreading stroke 10.8" (275 mm)
Weight not to exceed 20.3 lbs (9.2 kg)

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Accessories

-Ram Support Unit
Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

TR 5350 Telescopic Rescue Ram

General

This tool must also be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of performing 1000 endurance cycles, whereby one cycle consists of completely opening and closing the tool at its maximum pressure during its stroke. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one compact hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose while under flow. The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. Coupler must be supplied with a protective aluminum dust cap. The hose connection will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding hindrance to the operator.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool. In addition, the ram must be able to rotate under load to allow the operating handle to be moved out of the way for patient removal.

Laser Pointer

To assure first time, perfect positioning in ramming operations, the ram must have available, as an option, an integrated laser pointer in the forward facing crosshead that indicates the exact landing position of extending plunger. The laser shall be highly visible, even in sunny, daytime operations. The laser pointer is powered by a CR1/3N battery, which is controlled by an on/off switch also integrated into the crosshead.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, LED lights shall be included in the carry handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. The LED task lights are to be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Safety and Protection

When both ram plungers are fully extended and under maximum load, the safety factor against bending or buckling must be at least 2:1. For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load.

Grip Heads

The ends of the plungers will have non-threaded connections of the grip heads to allow rotation of the tool even when the tool is under a load. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Forces

The first plunger will have a maximum pushing force (HSF) of no less than 48,784 lbf (217 kN). The second plunger will have a maximum pushing force (LSF) of no less than 22,706 lbf (101 kN).

Weight & Dimensions

Length of closed tool not to exceed 22" (560 mm)
Length of extended tool must be 50.6" (1285 mm)
Width not to exceed 11" (280 mm)
Height not to exceed 4.3" (109 mm)
Stroke of first plunger 14.8" (375 mm).
Stroke of second plunger13.8" (350 mm).
Total spreading stroke 28.5" (725 mm)
Weight not to exceed 32.2 lbs (14.6 kg)

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Accessories

-Ram Support Unit

Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

4150 Heavy Duty Rescue Combi Tool

General

The tool must be **UL Listed**: This tool must have successfully completed the rescue tool test program certified by Underwriters Laboratories, Inc. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a UL requirement to provide maximum safety to the operator. This tool must ***also*** be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of other people. For this reason the tool will be equipped with a carrying handle, which allows the operator to keep the tool evenly balanced in all positions even with one hand. To eliminate connection errors and reduce deployment time the tool shall be supplied with only one hydraulic coupler. This single coupler shall have a coaxial design with the pressure line inside of the return line to allow for rapid simultaneous connection of both lines with one connection motion. To avoid hindrance to the operator the coupler must be extremely compact and lightweight. The coupler design shall incorporate an automatic return valve to permit connection and disconnection of the tool to the hose *while under flow.* The coupler must be a flat-face, non-drip coupling with built-in automatic locking feature and be one hand operated. The coupler shall permit an unhindered 360° rotation at the connection point to avoid twisting or stressing the hose. Coupler must be supplied with a protective aluminum dust cap. The hose connection point will be to the rear of the dead man's handle, leading away in line with the center axis of the tool, avoiding interference with the operation of the tool.

Dead man's Handle

The tool must be activated by means of a rotary dead man's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle grip is released, it must return to the neutral position automatically. The dead man's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The dead man's handle shall provide 360° access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

To assist the operator and increase safety while working in dark or poorly lit circumstances the carrying handle shall have integrated LED lights. The lights shall be focused on the working area of the tool and shall be completely weatherproof. Lights should be powered by a field replaceable single AA battery and shall provide a minimum of six continuous hours of illumination. The distance between the dead man's handle and the U-shaped carrying handle will be at least 10" (254 mm) to provide a natural position for both hands during operation and to allow for complete control of the tool. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by accidentally disconnecting the return line of the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the deadman's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Hinge bolt system
To allow better access into tight spaces the cutter will contain a low profile locking hinge bolt system that does not extend beyond the blade holder profile. Bolt head and nut construction that protrude and impede tool operation are not acceptable. This low profile system allows greater precision and control on every cut by locking the factory set torque value. For ease of maintenance, the hinge bolt system must require a torque of no more then 38 ft-lb (50Nm). For extended tool life the cutter shall have a set of corrosion resistant steel covers in place to shield the front of the tool from damage during the extrication operation.

Blades/Arms
The blades of the combi cutter will be fabricated out of high grade tool steel that is hardened to improve durability. The cutting, gripping and spreading surfaces of the blades will be regrindable to ensure a longer life span. For maximum safety and gripping when cutting, cutting edges will have specially designed half round serrations.

Pump
Hydraulic power must be delivered from a gasoline or electrically driven pump. Alternatively, a manually operated pump or an air driven pump may be used. The pump must be a completely separate unit from the rescue tool.

Forces
The maximum cutting force exerted will be no less than 67,600 lbf. (300.7 kN) in the recess. Maximum spreading force must be at least 16,166 lbf (71.9 kN). Maximum pulling force at full opening 14,358 lbf (63.9 kN). The NFPA performance level rating for this tools shall be: A6 B7 C5 D7 E5.

Method of Measuring Forces
The spreading force must be measured at the effective tip area on the moving arms, perpendicular to the center line of the tool when in an unfixed state. This measurement of force was calculated and approved by UL and measures the actual force created by the tool when used by the operator.

Weight & Dimensions
The weight of an operable tool may not exceed 31 lbs. (14 kg) including hydraulic oil. Maximum spreader opening will be no less than 14¼" (362mm). Maximum cutter opening will be 9" (229 mm). Width of spreading tips must be 1 3/16" (31mm) minimum for optimum gripping. Squeezing surface should be 1 3/16" x 2 ¼" (30mm x 57mm) minimum. Length of tool shall not exceed 31" (787 mm). Width not to exceed 9 5/16" (236 mm). Height not to exceed 7 1/2" (190 mm).

Accessories
Pulling adapters and chains will be available for pulling operations. The adapters must have a quick-lock system. Pulling chains will be equipped with shortening hooks. The strength of the chain set will be at least 2 times the maximum pulling force of the tool.

Corrosion & Wear Protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be anodized to provide maximum durability. The tool must be capable of withstanding a 10-day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

GCU 5030 CL EVO Battery Operated Cutter

General

This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces

The maximum force will be no less than 130,164 lbf. (579 kN) in the recess of the blades, near the hinge bolt. The NFPA performance level rating for this tool shall be A6 B5 C6 D6 E6.

Weight and dimensions

The maximum opening of the blades will be no less than 6.7" (170 mm) measured at the tips. Weight of the tool not to exceed 32 lbs. (14.5 kg) excluding the battery; 34.2 lbs. (15.5 kg) including the battery. Dimensions (LxWxH) not to exceed 32.5" x 10.8" x 7.4" (825 x 275 x 188 mm).

Dead man's handle

The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Blades

The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The design of the blade shall be derived to meet the requirement of today's rescuer facing *New Car Technology*. The blades will be constructed so as to be re-grindable.

Hinge Bolt System

To allow better access to tight spaces and improve cutting and spreading precision, the tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage, corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

GCU 5050 Battery Operated Cutter

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces

The maximum cutting force exerted will be no less than 317,430 lbf. (1412 kN) in the recess of the blades, near the hinge bolt. The NFPA performance level rating for this tool shall be A8 B8 C7 D9 E9.

Weight and dimensions

The maximum opening of the blades will be no less than 7.2" (182 mm) measured at the tips. Weight of the tool not to exceed 45.2 lbs. (20.5 kg) excluding the battery; 47.2 lbs. (21.4 kg) including the battery. Dimensions (LxWxH) not to exceed 35" x 11.6" x 7.6" (889 x 295 x 193 mm).

Dead man's handle

The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Blades

The blades of the cutter will be fabricated from high grade tool steel, hardened to improve durability. The blades shall be manufactured from forged bar stock by CNC machining technology. The design of the blade shall be derived to meet the requirement of today's rescuer facing *New Car Technology*. The blades will be constructed so as to be re-grindable.

Hinge Bolt System

To allow better access to tight spaces and improve cutting and spreading precision, the-tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage, corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

General

This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces

The arms of the spreader will have a maximum opening width of 20.1" (510 mm), must exert no less than 29,450 lbf (131 kN) at the base of the tips.

NFPA HSF shall be no less than 11,915 lbf (53 kN)
NFPA LSF shall be no less than 7,868 lbf (35 kN)
NFPA HPF shall be no less than 10,566 lbf (47 kN)
NFPA LPF shall be no less than 5,395 lbf (24 kN)

Weight & Dimensions

The weight of the tool may not exceed 32.6 lbs (14.8 kg) without the battery, 34.8 lbs (15.8 kg), with the battery. Dimensions (LxWxH) not to exceed 32.2" (819 mm) x 10.9" (277 mm) x 8.1" (205 mm).

Accessories

The following accessories will be available:

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

-Cutting Tip

An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Deadman's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6 LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Arms

The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Corrosion & Wear Protection

must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

General

This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces

The arms of the spreader will have a maximum opening width of 28.5" (725 mm), must exert no less than 62,947 lbf (280 kN) at the base of the tips.

NFPA HSF shall be no less than 15,737 lbf (70 kN)
NFPA LSF shall be no less than 8,543 lbf (38 kN)
NFPA HPF shall be no less than 10,566 lbf (47 kN)
NFPA LPF shall be no less than 5,620 lbf (25 kN)

Weight & Dimensions

The weight of the tool may not exceed 43.7 lbs (19.8 kg) without the battery, 45.6 lbs (20.7 kg), with the battery. Dimensions (LxWxH) not to exceed 37.5" (953 mm) x 11.6" (295 mm) x 8.6" (218 mm).

Accessories

The following accessories will be available:

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

-Cutting Tip

An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Deadman's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6 LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Arms

The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

General

This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces

The arms of the spreader will have a maximum opening width of 28.5" (725 mm), must exert no less than 82,280 lbf (366 kN) at the base of the tips.

NFPA HSF shall be no less than 21,806 lbf (97 kN)
NFPA LSF shall be no less than 10,341 lbf (46 kN)
NFPA HPF shall be no less than 15,062 lbf (67 kN)
NFPA LPF shall be no less than 6,969 lbf (31 kN)

Weight & Dimensions

The weight of the tool may not exceed 47 lbs (21.3 kg) exluding battery, 48.9 lbs (22.2 kg), including battery. Dimensions (LxWxH) not to exceed 38.1" (967 mm) x 11.6" (295 mm) x 8.6" (218 mm).

Accessories

The following accessories will be available:

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have the same quick-change design as the spreading tips. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool.

-Cutting Tip

An optional cutting tip for cutting sheet metals will be available. The cutting tip must have the same quick-change design as the spreading tips.

Deadman's Handle

The tool must be activated by means of a rotary dead man's handle, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the dead man's handle is released, it must return to the neutral position automatically. The dead man's handle will provide one-handed control of opening and closing functions. The dead man's handle shall provide 360 degree access to the operator allowing operation of the tool in any position. The dead man's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The dead man's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have six integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 6 LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Arms

The arms and yoke of the spreader must be manufactured out of extremely high tensile aluminum alloy, anodized to offer protection against corrosion. The arms of the spreader will be equipped with investment cast hardened tool steel tips, specially designed for quick field replacement without the use of any tools. Spring-loaded tip locking pins will be incorporated into the arms so that no loose parts can be lost. The tips will have serrations on both the inside and the outside for a superior grip in spreading or crushing operations.

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by sudden load shift on the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the dead man's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the user.

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

GRA 4321 EVO Battery Operated Ram

General
This tool must be compliant with NFPA 1936 Standard on Powered Rescue Tools, 2015 edition. The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces
The ram will have a maximum pushing force (NFPA 1936 HSF, LSF) of no less than 36,460 lbf (162 kN) and a maximum pulling force (NFPA 1936 HPF, LPF) of no less than 11,265 lbf (50.1 kN).

Weight & Dimensions
Weight of the tool not to exceed 39 lbs (17.7 kg) excluding the battery; 41.2 lbs (18.7 kg) including the battery. Closed length not to exceed 23.3" (593 mm); length of extended must be at least 33.2" (843 mm). Width not to exceed 9.4" (239 mm). Height not to exceed 17.8" (452 mm).
Spreading/Pulling stroke not less than 9.8" (250 mm).

Dead man's handle
The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For operational continuity the deadman's handle shall be of the same design as for the non-battery operated tools. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle
Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting
To assist in any poorly lit or nighttime rescue scenario, 4-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Grip Heads
The end of the plunger will have a twist-lock design to allow rotation of the grip heads even when the tool is under a load. Rams with threaded grip heads that could become corroded and prevent use of interchangeable accessories shall not be acceptable. The twist-lock design shall accept interchangeable tool accessories. Likewise, the rear of the tool shall have a twist-lock design to also accept extension pipes. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Accessories
All accessories shall be of a twist lock design. *No threading and/or loose locking pins are allowed.*
-Pulling attachments
Pulling adapters and chains will be provided for pulling operations. The adapters must have a

quick-change design. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool
-Attachments
-Wedge tip for splitting.
-Conical point for piercing holes in sheet materials.
-Round flat base min. diameter 4 ½ " (115 mm) for better distribution of the forces.
-Extension Pipes
Extension pipes in the following lengths will be available for pushing operations:
6 ½" (165 mm), 13" (330 mm) and 23 ½" (597 mm)
-Ram Support Unit
Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Pump
Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger
28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, and rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection
For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against sudden load shift. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion and wear protection
Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be protected by anodization to provide maximum durability. The tool must be capable of withstanding a 10 day salt spray test, and still be able to function normally.

Lifetime Warranty
The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.

GRA 4331 Battery Operated Ram

General
The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces
The ram will have a maximum pushing force (NFPA 1936 HSF, LSF) of no less than 36,460 lbf (162 kN) and a maximum pulling force (NFPA 1936 HPF, LPF) of no less than 11,265 lbf (50.1 kN).

Weight & Dimensions
Weight of the tool not to exceed 40.3 lbs (18.3 kg) excluding the battery; 42.3 lbs (19.2 kg) including the battery. Closed length not to exceed 23.9" (607 mm); length of extended must be at least 41" (1041 mm). Width not to exceed 9.4" (234 mm). Height not to exceed 17.8" (452 mm). Spreading/Pulling stroke not less than 13.8" (250 mm).

Dead man's handle
The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For operational continuity the deadman's handle shall be of the same design as for the non-battery operated tools. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle
Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting
To assist in any poorly lit or nighttime rescue scenario, LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Grip Heads
The end of the plunger will have a twist-lock design to allow rotation of the grip heads even when the tool is under a load. Rams with threaded grip heads that could become corroded and prevent use of interchangeable accessories shall not be acceptable. The twist-lock design shall accept interchangeable tool accessories. Likewise, the rear of the tool shall have a twist-lock design to

also accept extension pipes. Tool shall be delivered with two diamond shaped grip heads designed to prevent off-center loads.

Accessories

All accessories shall be of a twist lock design. *No threading and/or loose locking pins are allowed.*

-Pulling attachments

Pulling adapters and chains will be provided for pulling operations. The adapters must have a quick-change design. Pulling chains will be equipped with shortening hooks. Safety factor of the chain set will be at least 2 times the maximum pulling force of the tool

-Attachments

-Wedge tip for splitting.

-Conical point for piercing holes in sheet materials.

-Round flat base min. diameter 4 ½ " (115 mm) for better distribution of the forces.

-Extension Pipes

Extension pipes in the following lengths will be available for pushing operations:
6 ½" (165 mm), 13" (330 mm) and 23 ½" (597 mm)

-Ram Support Unit

Provides firm surface to allow for full extension and effectiveness of the ram during pushing operations such as dash displacements.

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 4.1Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, and rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be available for 120 VAC or

GCT 4150 Battery Operated Heavy Duty Combi Tool

General

The tool must be capable of withstanding a static over-load pressure of twice the working pressure. This 2:1 over-load ratio is a requirement to provide maximum safety to the operator. The tool must be capable of operating as a self-contained unit without power cables for maximum portability. The tool must be a "one-person" operated lightweight tool, which means that one person will be able to position, guide and operate the tool without the assistance of others. The tool must be operate efficiently in all weather conditions and environments from -4 F (-20 C) to 131 F (55 C).

Forces

The maximum cutting force will be no less than 85,427 lbf. (380 kN) in the recess. Maximum spreading force must be at least 47,435 (211 kN). Maximum pulling force must be at least 14,358 lbf (63.9 kN). Maximum squeezing force must be at least 17,085 lbf (76 kN). The NFPA Cutting classification must be no less than A6 B7 C5 D7 E5.

NFPA HPF shall be no less than 14,358 lbf. (63.9 kN)
NFPA HSF shall be no less than 7,541 lbf. (33.5 kN)
NFPA LPF shall be no less than 8,230 lbf. (36.6kN)
NFPA LSF shall be no less than 6,598 lbf. (29.3 kN)

Weight & Dimensions

Maximum spreader opening will be no less than 14.2 (360 mm). Maximum cutter opening will be 9" (229 mm). Width of spreading tips must be 1.2" (31mm) minimum for optimum gripping. Squeezing surface should be 1.1" x 2.25 (30mm x 57mm) minimum. Length of tool shall not exceed 35.5" (901 mm). Width not to exceed 11.7" (297 mm). Height not to exceed 8.3" (212 mm). Weight, including battery shall not exceed 43.9 lbs (19.9 kg).

Accessories

Pulling adapters and chains will be available for pulling operations. The adapters must have a quick-lock system. Pulling chains will be equipped with shortening hooks. The strength of the chain set will be at least 2 times the maximum pulling force of the tool.

Deadman's Handle

The tool must be activated by means of a rotary deadman's handle grip, operated by a twist of the wrist. For ease of operation, the handle shall have a maximum rotation of 20° in either direction. When the deadman's handle grip is released, it must return to the neutral position automatically. The deadman's handle design will provide one-handed ergonomic control of opening and closing functions that does not rely on thumb (single digit) operation. The deadman's handle shall provide 360° access to the operator allowing operation of the tool in any position. The deadman's handle must be located in such a way that it can be operated, guided and supported easily by right and left handed operators without having to change the position of the hands, even when wearing gloves. The deadman's control must be capable of withstanding 6000 endurance cycles, one cycle consisting of opening and closing the tool.

Lighted Carrying Handle

Designed for ease of control, the tool's carrying handle shall allow natural hand position for right or left handed operators. The lightweight, steel carrying handle shall have four integrated LED lights. The tool shall remain in a balanced horizontal position when held only by the carrying handle. In order to provide improved grip in all weather conditions, the carrying handle must have a non-slip surface.

Task Lighting

To assist in any poorly lit or nighttime rescue scenario, 4-LED lights shall be included. To provide maximum lighting, with minimal interference, the LEDs should be oriented in a position forward of the operator's hands in the carrying handle. The lights shall be focused on the working area of the tool and must be completely weatherproof. To dedicate all of the tool's 28v lithium ion battery power to the rescue operation, the LED task lights must be powered by a single field replaceable AA battery and shall provide a minimum of six continuous

hours of illumination. To preserve AA battery life an on/off switch for the lights must also be included in the carrying handle.

Hinge bolt system

To allow better access to tight spaces and improve cutting and spreading precision, the-tool shall utilize an integrated locking hinge bolt system that must not extend beyond the blade holder profile. It shall be physically locked by means of a precision interlocking ring that maintains factory set torque values. For added protection from damage, corrosion resistant steel covers will shield the hinge bolt system and blade holders on each side. The profile height at the widest point must be less than 3.38". Bolt heads or nuts that protrude beyond the blade holder profile, 1) impede tool operation; 2) increase surface area exposed to damage; 3) risk compromised torque values and blade performance due to exposure during rescue operations. For these reasons, this type of hinge bolt system is unacceptable. For ease of maintenance and lower maintenance cost, the hinge bolt system must not use any blade shims, and the factory recommended torque may not exceed 38 ft-lb (50Nm).

Blades/Arms

The blades of the combi cutter will be fabricated out of high grade tool steel that is hardened to improve durability. The cutting, gripping and spreading surfaces of the blades will be regrindable to ensure a longer life span. For maximum safety and gripping when cutting, cutting edges will have specially designed half round serrations.

Pump

Hydraulic power must be delivered from an internally mounted axial piston pump driven by an internal electric motor that operates on 28v Lithium-Ion batteries or AC/DC Adapter. The pump shall produce a maximum of 10,443 psi and operate on mineral-based hydraulic oil.

Battery & Battery Charger

28v Lithium-Ion (lithium manganese oxide/graphite) batteries shall be supplied standard with the tool. The battery shall be available in two types - 3Ah or 5Ah, each weighing no more than 2 lbs. The battery must be able to operate in wet weather conditions.

The battery shall have 4 LED lights to indicate its SOC (state of charge). The battery shall have internal safeguards designed to protect against: Short-circuit, Deep discharge, Over and under voltage (battery and cells), Over-current during charging and discharging, Overcharging, Over temperature (individual cells and electronics), Charging and discharging outside allowed temperature range. The batteries must be recyclable through a service available in North America. Nickel Cadmium batteries are not acceptable.

Run time will vary, depending on how heavily the battery is taxed during the rescue operation, and ambient air temperature. In order to simulate a rescue, we have defined a "standard" test cycle as: open/close for 30 seconds, full pressure for one minute, open/close for 30 seconds, rest for 30 seconds. Repeating this cycle, the 3Ah battery will last about 11 minutes; 5Ah battery about 20 minutes.

The charger shall provide a 90% charge to either battery in 30 minutes; 100% full charge in 45 minutes for the 3Ah battery; 1 hr. for the 5Ah battery. The charger shall comply with FCC15 electronic noise emission standards. The battery chargers shall be available for 120 VAC or 230v. The charger shall have green LED lights to indicate the battery's state of charge, red LED lights to indicate the battery's condition.

Safety and Protection

For maximum safety of the operator all cutters, spreaders and rams shall contain a safety relief valve to protect the tool against over pressurization caused by accidentally disconnecting the return line of the tool. The tool will have automatic, non-return check valves built in so that the tool will hold the load when the deadman's handle is released, whether the tool is spreading or pulling. If pressure should drop because of interruption of the power source for any reason, the tool must hold the load. All moving parts such as yoke and levers must be protected by a cover for the safety of the operator.

Corrosion & Wear Protection

Internal and external aluminum parts of the tool that are susceptible to wear or corrosion must be anodized to provide maximum durability. The tool must be capable of withstanding a 10-day salt spray test, and still be able to function normally.

Lifetime Warranty

The manufacturer shall warrant this tool against all defects in material and workmanship for as long as owned by the original purchaser.