

FOUTS BROS.



**FOUTS BROS**

SUPER TANKER

Fouts Bros.  
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1-800-948-5045

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## SCOPE AND GENERAL REQUIREMENTS

It is the intent of the manufacturer to provide a new fire apparatus that will withstand the continuous use encountered in the emergency fire fighting service. The apparatus shall be of the latest type, symmetrically proportioned and constructed with due consideration of the load to be sustained.

All parts not specifically mentioned herein, but which are necessary in order to furnish a complete fire apparatus, shall be furnished and shall conform to the best practices known to the fire apparatus industry.

The unit is to be of current year manufacture, and is to be new and unused. The bid price shall not include any local, State, or Federal taxes. The Bidder shall not be liable for any State or Federally mandated tax or program after the sale of this apparatus.

These specifications shall be construed as minimum. Should the manufacturer's current published data or specifications exceed these, they shall be considered minimum and be furnished.

## PRIME BIDDER, MANUFACTURER

The manufacturer shall be prime bidder and shall identify the location of their facility.

## BIDDERS BACKGROUND

Bids are requested from responsible manufacturers who are engaged in the manufacture of fire apparatus. To insure reliable and complete acceptance of the apparatus, bidder shall have been in operation for a minimum of twenty (20) years in the manufacturing of fire apparatus.

The manufacturer of the apparatus must be fully owned and managed by a Parent Company, Corporation, or Individual(s) that is 100% held by United States of America based Company, Corporation, or United States citizen(s).

Proposals from any manufacturer that is fully or partially owned and/or operated by a foreign company, Corporation or Individual(s) under any type of ownership, partnership, or any similar type of agreement will be immediately rejected.

If the manufacturer of the apparatus, or if any owner, shareholder, or immediate relative of an owner or shareholder that has previously been involved in or held ownership in any company that has filed bankruptcy or any other type of reorganization plan, it must be clearly stated in the bid proposal. The statement must include details and dates of all occurrences.

## FAMA COMPLIANCE

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The apparatus manufacturer must be a current member of the Fire Apparatus Manufacturer's Association (FAMA) and must provide certificate of membership.

## **FAIR, ETHICAL AND LEGAL COMPETITION**

In order to ensure fair, ethical, and legal competition the apparatus manufacturer shall have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

## **PROPRIETARY PARTS**

It is the intention of the purchaser for all bidders to furnish the apparatus with major parts commonly used by the heavy-duty truck manufacturers and open market vendors where as replacement parts are more readily available and at reduced cost. The use of proprietary parts may not be acceptable to the purchaser.

## **MANUFACTURER'S DISCRETION**

Materials, parts, or procedures used are subject to change at manufacturer's discretion at any time to provide equal or better products.

## **COOPERATIVE PURCHASING**

The manufacturer shall be pleased to allow other public agencies to use the purchase agreement resulting from this invitation to bid unless the bidder expressly notes on the proposal form that prices are not available for tag-on. The condition of such use by other agencies shall be that any such agency must make and pursue contact, purchase order/contract, and all contractual remedies with the successful bidder. Such tag-ons shall be done so that the purchaser has no responsibility for performance by either the manufacturer or the agency using the contract.

## **PRODUCT QUALITY AND WORKMANSHIP**

The components provided and workmanship performed shall be of the highest quality available for this application. Special consideration shall be given to the following areas:

- A). Accessibility to various components that require periodic maintenance or lubrication checks.
- B). Ease of vehicle and pump operation.
- C). Features beneficial to the intended operation of the apparatus.

Construction of the complete apparatus shall be designed to carry the loads intended to meet the road and terrain conditions and speed requirements desired when specified by the purchaser.

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Welding shall not be employed in the assembly of the apparatus in a manner that will prevent the removal of any major component part for service and/or repair.

## **INSURANCE REQUIREMENTS**

Each bidder must submit with their bid proposal a Certificate of Insurance listing the proposed manufacturer's product liability insurance coverage. Liability insurance shall be a minimum amount of ten (10) million dollars. Submitted certificate shall name the apparatus manufacturer, insurance company, policy number, and effective dates of the insurance policy. Bids submitted without the required certificate will be considered non responsive and automatically rejected. No exceptions are allowed to the minimum insurance coverage requirement.

The manufacturer shall maintain full insurance coverage on the purchaser's cab and chassis from time of first possession by the manufacturer until the apparatus is delivered and accepted by the purchaser (No Exceptions). Purchaser reserves the right to require proof of insurance from the manufacturer's insurance carrier prior to entering into a contract for the apparatus.

## **PAYMENT TERMS**

Full payment for the apparatus shall be made at time of delivery of the completed vehicle. Due to insurance liability, the apparatus will not be left at the purchaser's location without full acceptance and payment or prior agreement between the Purchaser and Bidder.

Final delivery price shall not include any Local, State or Federal taxes. The manufacturer shall not be liable for any State or Federal mandated tax or program after sale or delivery of the apparatus.

## **VEHICLE ACCEPTANCE AND DELIVERY**

The customer shall pickup the vehicle at the manufacturing facility and shall supply evidence of sufficient insurance coverage to transport the vehicle.

## **FUEL TANK FILLED AT DELIVERY**

The fuel tank and DEF tank (if applicable) shall be filled upon final delivery at the factory.

## **GROUND SWEEP DISCHARGES - FRONT BUMPER**

One (1) 1.50" ground sweep discharge piping shall be piped to the front bumper area. Flexible 1.50" diameter high pressure hose shall be provided from the pump to the sweep nozzles with automatic low point drains where necessary.

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Two (2) ground sweep discharge nozzles shall be installed, one (1) each side of the front bumper. The discharges shall be equipped ground sweeps nozzles angled accordingly with a 180 degree total front sweep pattern.

Each nozzle shall be an Elkhart Model NTS-C with 0.75" outlets. They shall have adjustable flow rates ranging 5-40 gpm. The fog pattern on each nozzle shall be capable of being set up to 120 degrees.

The valve shall be a 1.50" Elkhart Brass Unibody, model EB15, with a brass valve body and stainless steel ball. The valve shall be operated using an electric gear drive actuator. The actuator shall be quickly adjustable to one of four positions. The clutchless electric drive shall open or close the valve in no less than 5 seconds.

The valve shall be controlled electrically with an Elkhart UBEC1 valve controller located on the console. The controller shall display the actual position of the valve from open to close in 10% increments, and include a user programmable preset position button. The controller shall control valve travel via a sealed position sensor and employ currently limiting only as a fail-safe means of stopping travel.

One (1) Class1 automatic 0.75" drain valve(s) shall be installed. The valve shall have an all brass body with heavy duty neoprene seal. The valve shall be normally open and shall close at 6 psi using an all brass check assembly with stainless steel spring.

## **GROUND SWEEP DISCHARGES - FRONT BUMPER**

Two (2) ground sweep discharge nozzles shall be installed, one (1) each side of the front bumper.

## **ONE YEAR APPARATUS WARRANTY**

The complete apparatus detailed herein shall be warranted against defects in materials and workmanship for a period of twelve (12) months, effective upon pick up or delivery of the completed apparatus to the purchaser, as detailed in the respective warranty documents. Any unauthorized alterations or modifications to the apparatus shall void this warranty.

Other warrantees, as provided by individual component manufacturers may extend beyond this warranty.

## **STRUCTURAL WARRANTY, TEN YEAR**

A structural warranty shall be provided by the apparatus manufacturer for products of its manufacture to be free from defects in material and workmanship, under normal use and service, for a period of ten (10) years, effective upon final payment in full by the Purchaser, and pick up or delivery of the

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completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the apparatus shall void this warranty.

## **PLUMBING WARRANTY, TEN YEAR**

A Stainless Steel Plumbing/Piping warranty shall be provided by the apparatus manufacturer for products of its manufacture to be free from defects in material and workmanship, under normal use and service, for a period of ten (10) years effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the plumbing shall void this warranty.

## **PAINT WARRANTY, FIVE YEAR**

The finish paint as used on the proposed apparatus shall be warranted against defects in materials and workmanship for a prorated period of five (5) years, effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the apparatus shall void this warranty.

## **TANK WARRANTY, LIFETIME**

For normal fire department applications, the tank shall have a limited Lifetime warranty that provides warranty service for the life of the fire apparatus in which the tank is installed. Warranties are transferable if the apparatus ownership changes by requesting the transfer from UPF. In applications where the tank will be subject to severe conditions, the tank may have a warranty unique to the application that is clearly defined for each such application.

## **APPARATUS ELECTRICAL WARRANTY, TWO YEAR**

The apparatus electrical system as detailed herein shall have a electrical warranty against defects in materials and workmanship for a period of two (2) years, effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the electrical system shall void this warranty.

## **OVERALL HEIGHT**

An overall height restriction has not been specified for this apparatus.

## **OVERALL LENGTH**

No overall length restriction has been specified for this apparatus.

## **OVERALL WIDTH**

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No overall width restriction has been specified for this apparatus.

## **OVERALL WHEELBASE**

No overall wheelbase restriction has been specified for this apparatus.

## **PUMP MODULE WIDTH**

No pump module width restriction has been specified for this apparatus.

## **ANGLE OF APPROACH**

No angle of approach restriction has been specified for this apparatus.

## **ANGLE OF DEPARTURE**

No angle of departure restriction has been specified for this apparatus.

## **NFPA COMPLIANCE**

The National Fire Protection Association standard #1901 (most recent edition) is hereby adopted and made a part of these specifications, the same as if they were written out in full detail, insofar as they apply with the exception of any sections dealing with "Equipment Recommended for Various Types of Apparatus". Bidders are to provide only the equipment requested herein and the Department will supply the rest before the apparatus is put into service. The unit shall comply with all federal, state, ICC, and DOT motor vehicle regulations, standards, and laws relating to commercial vehicles as well as to fire apparatus on the date of the bid.

## **ROAD TEST CERTIFICATION**

A road test shall be conducted with the finished apparatus fully loaded. During this time, the apparatus shall not show loss of power and/or overheating. The transmission driveshaft or shafts and rear axle shall run free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus, when loaded, shall have not less than 25% or more than 45% of the weight on the front axle and not less than 55% or more than 75% on the rear axle.

- A). The apparatus must be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed RPM of the engine.
- B). The apparatus must be capable of accelerating from a steady speed of 15 mph to a true speed of 35 mph within 30 seconds. This shall be accomplished without moving the gear selector.

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- C). The fully loaded apparatus shall be capable of obtaining a speed of 50 to 55 mph on a level concrete highway.
- D). The manufacturer shall furnish copies of the engine installation approvals signed by the appropriate engine company upon delivery of the chassis to the Fire Department.
- E). The manufacturer shall furnish copies of the transmission approval signed by the transmission manufacturer upon delivery of the chassis to the Fire Department.
- F). The manufacturer shall furnish copies of the front and rear axle approvals upon delivery of the apparatus to the Fire Department.

## **ROAD TEST FAILURE**

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may be made at the option of the manufacturer within thirty (30) days of the first trials. Such trials shall be final and conclusive and failure to comply with changes, as the purchaser may consider necessary to conform to any clause of the specifications within thirty (30) days after notice is given to the manufacturer of such changes, shall be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser, or its use by the purchaser during the above-specified period with permission of the manufacturer, shall not constitute acceptance.

## **VEHICLE TOP SPEED**

The rear axle shall be geared for a top speed of 60 mph at engine governed RPM.

## **NFPA TOP SPEED STATEMENT**

NFPA-1901, 2009 Edition - 4.15.2. The maximum top speed of fire apparatus with a GVWR over 26,000 lbs. shall not exceed either 68 MPH or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

NFPA-1901, 2009 Edition - 4.15.3. If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gallons, or the GVWR of the vehicle is over 50,000 lbs., the maximum top speed of the apparatus shall not exceed either 60 MPH or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

## **CAB SAFETY SIGNS**

The following safety signs shall be provided in the cab:



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- One (1) FAMA 10 sign shall be visible to the driver. "Flying Object Crash Hazard. All equipment required to be used in emergency response must be securely fastened. Loose items may injure or kill during a crash."
- One (1) FAMA 07 sign shall be visible from each seat. "Crash Hazard. Occupants must be seated and belted when vehicle is in motion. Use only OEM approved belts. Unbelted occupants
- One (1) FAMA 15 sign shall be visible from each seat. "Crash Hazard. Do not wear helmet while seated. Serious head or neck injury may result from helmet use in cab. Failure to comply may injure or kill."
- One (1) FAMA 17 sign shall be visible to the driver. "Backing Hazard. Ensure that personnel are clear before driving in reverse. Always use a spotter when backing. Failure to comply may injure or kill.
- One (1) FAMA 42 sign shall be inside of the driver door. "Sirens produce loud sounds that may damage hearing. Roll up windows. Wear hearing protection. Use only for emergency response. Avoid exposure to siren sound outside of vehicle."
- "Do Not Move Apparatus When Light Is On" sign adjacent to the warning light indicating a hazard if the apparatus is moved (as described in subsequent section).

## CHASSIS DATA LABELS

The following information shall be on labels affixed to the vehicle:

### Fluid Data:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid
- Pump primer fluid (if applicable)
- Drive axle(s) lubrication fluid
- Air conditioning refrigerant
- Air conditioning lubrication
- Power steering fluid
- Cab tilt mechanism fluid (if applicable)
- Transfer case fluid
- Equipment rack fluid (if applicable)
- Air compressor system lubricant

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- Generator system lubricant (if applicable)

## Chassis Data:

- Chassis Manufacturer
- Production Number
- Year Built
- Month Manufactured
- Vehicle Identification Number

Location shall be in the driver's compartment of the chassis cab.

## **OVERALL HEIGHT, LENGTH, GVW DATA PLAQUE**

A "high visibility" plate shall be permanently mounted in the cab, visible to driver when seated.

The plate shall show the overall height of the completed apparatus in feet and inches, the overall length of the completed apparatus in feet and inches.

The plate shall also show the gross vehicle weight rating (GVWR) in tons.

Text shall also be supplied on the plate, indicating that the information shown is current upon completion of the apparatus. If the overall height of the apparatus changes after the apparatus is put into service, then the purchaser must revise the dimensions on the plate.

## **"NO RIDE" LABEL**

A label shall be located on the vehicle at the rear step areas, and at any cross walkways, if they exist. The label(s) shall warn personnel that riding in or on these areas while the vehicle is in motion is prohibited.

## **COMMERCIAL CHASSIS SPECIFICATION**

### **CHASSIS PROVIDER**

The chassis, as detailed in these specifications, shall be ordered and supplied by the apparatus manufacturer.

### **KENWORTH CHASSIS**

A Kenworth 2-door chassis per the attached specifications shall be furnished:

### **CHASSIS PAINT COLOR**

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The cab shall be painted a single color.

**Color:** Fouts Bros. Red

**Paint Number:** 763572EA

## **AIR HORNS**

Two (2) Hadley chrome plated air horns shall be installed at the front of the vehicle. The air horns shall be mounted in full compliance of NFPA. The supply lines shall be dual 1/4" lines with equal distance from each horn.

Each air horn shall be mounted, one (1) each side, on the side of the hood.

Both air horns shall be controlled by the horn on the KW steering wheel.

## **ELECTRIC TRAFFIC HORN AND AIR HORN SELECTOR SWITCH**

One (1) selector switch shall be provided on the cab's dash that will allow the chassis steering wheel horn button to activate either the electric traffic horn or air horn system.

## **TIRE PRESSURE MANAGEMENT**

There will be a RealWheels LED AirSecure™ tire alert pressure management system provided, that will monitor each tire's pressure. A sensor will be provided on the valve stem of each tire for a total of six (6) tires.

The sensor will calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi. The sensor will activate an integral battery operated LED when the pressure of that tire drops 5 to 8 psi.

Removing the cap from the sensor will indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED will immediately start to flash.

## **HUB COVERS (front)**

Stainless steel hub covers shall be provided on the front axle.

## **HUB COVERS (rear)**

A pair of stainless steel high hat hub covers shall be provided on rear axle hubs.

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## **COVERS, LUG NUT, CHROME**

Chrome lug nut covers shall be supplied on front and rear wheels.

## **EXHAUST SYSTEM**

The chassis exhaust system shall be provided as detailed in the chassis specifications. NO modifications shall be made by the apparatus manufacturer.

## **BUMPER EXTENSION**

The chassis frame shall be extended 12.00" with a reinforced steel angle and channel framework. The extension shall adequately support the bumper and other equipment to be installed.

A gravel shield constructed from NFPA compliant, slip resistant .125" aluminum tread plate material shall be provided on the front chassis frame extension.

## **CHASSIS PREPARATION**

Prior to installation of the fire pump, apparatus body, or cab steps, all components which extend out beyond the chassis frame rails shall be removed and relocated to the area within the frame rails

## **CHASSIS TOW HOOKS**

The front tow hooks shall be provided as detailed in the chassis specifications.

## **REAR TOW PLATES**

Two (2) rear tow plates with 1.50" I.D. holes, constructed with 1.00" steel plate shall be provided at the rear of the apparatus body.

## **FRONT MUD FLAPS**

A pair of black rubber mud flaps shall be provided as detailed in the chassis specifications.

## **REAR MUD FLAPS**

A pair of black rubber mud flaps, with the Manufacturer's logo, shall be provided and installed behind the rear wheels.

## **VEHICLE DATA RECORDER**

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The apparatus shall be equipped with a Class1 "Vehicle Data Recorder and Seat Belt Warning System" (VDR/SBW) that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and antilock brake (ABS) modules mounted on the apparatus. The VDR/SBW will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train's J1939 data and 14.1.3.10 (Seat Belt Warning) using the Class1 "Seat Belt Input Module" for seat occupied and belt status information.

The VDR data shall be downloadable by USB cable to a computer using either Microsoft™ or Apple™ Operating Systems using Class 1/ O.E.M. supplied reporting software.

## **SEAT BELT WARNING SYSTEM**

There shall be a seat belt indicator system supplied in the cab. The indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

A display panel shall be supplied in the dash area. The panel shall have an audible indicators and a red light display to indicate that a seat belt has not been fastened.

## **VEHICLE DATA RECORDER DOWNLOAD HARNESS**

A Class1 model #629-00025 USB VDR download harness shall be supplied with the system to allow the data to be downloaded to a computer.

## **CENTER CONSOLE**

A center console shall be furnished and shall be located between the driver and officer's seats. The top face of the console shall be designed as the switch panel for all emergency light switches.

## **BATTERY SYSTEM**

The battery system shall be supplied with the chassis.

## **KEYLESS IGNITION SWITCH**

One (1) non-removable, keyless style ignition switch shall be provided with the chassis.

## **MASTER BATTERY SWITCH**

A master battery switch shall be provided as detailed in the chassis specifications.

## **KUSSMAUL "PUMP PLUS" BATTERY CHARGER/AIR COMPRESSOR**

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Kussmaul "Pump Plus" model #091-9-1200-S-KIT battery charger/air compressor shall be provided on the apparatus. The compressor system shall be designed to maintain the air pressure in the chassis brake system while not in use. A pressure switch shall sense air pressure drop and engage the compressor which shall run until the pressure is restored.

The battery charger section of the system shall be wired to the 12 volt batteries. Input voltage shall be from a 120 volt A/C power source.

## **AUXILIARY AIR COMPRESSOR**

One (1) Kussmaul Pump 12V air compressor shall be supplied. The compressor system shall be designed to maintain the air pressure in the chassis brake system while not in use. A pressure switch shall sense air pressure drop and engage the compressor which shall run until the pressure is restored.

## **120 VOLT SHORELINE CONNECTION - "SUPER" AUTO EJECT**

One (1) Kussmaul "Super" Auto Eject model 091-55-20-120, automatic, 120 volt, 20 amp shoreline disconnect shall be provided for the on board, 110 volt battery charging systems.

The Kussmaul auto-eject connection shall be equipped with a Yellow weatherproof cover. model # 091-55YW.

The disconnect shall be equipped with a NEMA 5-20P female receptacle, which shall automatically eject the shoreline when the vehicle starter is energized. The mating connector shall be included with the auto eject and shall be provided as loose equipment.

## **ELECTRICAL INLET LOCATION**

The electrical inlet shall be installed on the left hand side cab near the driver's door.

## **SHORELINE POWER INLET PLATE**

A shoreline power receptacle information plate shall be permanently affixed at or near the power inlet. The plate shall indicate the following:

- Type of Line Voltage
- Current Rating in Amps Power Inlet Type (DC or AC).

## **BACK-UP ALARM**

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One (1) 97 DB back up alarm shall be provided and installed at the rear of the unit. It shall be wired to activate when the transmission is placed in reverse.

## **PUMP, MODULE, AND RELATED ITEMS**

### **NFPA 1901 COMPLIANT PUMP**

The fire pump and related plumbing on the specified apparatus shall be installed in accordance with applicable NFPA 1901 guidelines at the time the contract was placed.

## **HALE MBP POWER TAKE-OFF (PTO) PUMP**

### **PUMP ASSEMBLY**

The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis.

The entire pump shall be assembled and tested at the pump manufacturer's factory.

The pump shall be driven by a the truck transmission mounted PTO. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance within the torque rating of the PTO, truck transmission and drive line components.

The entire pump shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectionable pulsation and vibration.

The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2069 bar). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron not acceptable.

Pump body shall be vertically split, on a single plane for easy removal of entire impeller assembly including clearance rings.

Pump shaft to be rigidly supported by two bearings for minimum deflection. The bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

The pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machines, hand-ground and individually balanced. The vanes of the impeller intake eye shall be hand ground and polished to a sharp edge, and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

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Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

## **GEARBOX**

The gearbox shall be manufactured and tested at the pump manufacturer's factory.

Pump gearbox shall be of sufficient size to withstand the torque of the engine in pump operating conditions. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature..

The gearbox drive shafts shall be of heat-treated chrome nickel steel shall withstand the full torque of the engine and pump operating conditions.

All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut helical design shall be provided. (No exceptions.)

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

## **PUMP WARRANTY**

The pump shall be covered by the Hale Pro-Tech 5-year pump warranty against workmanship and materials. Both parts and labor shall be covered for the first 2 years and years 3-5 shall have parts only coverage.

## **MECHANICAL SEAL**

The pump shall have a mechanical seal. One (1) only required on the suction (inboard) side of the pump. The mechanical seal shall be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber cup, and a tungsten carbide seat with Teflon backup seal.

## **1000 GPM FIRE PUMP SPECIFICATIONS**

The centrifugal type fire pump shall be a Hale model MBP with a rated capacity of 1000 GPM. The pump shall meet NFPA 1901 requirements.



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The pump shall be certified to meet the following deliveries:

1000 gpm (3785 L/M) @ 150 psi (10.3 bar)  
700 gpm (2646 L/M) @ 200 psi (13.8 bar)  
500 gpm (1893L/M) @ 250 psi (17.2 bar)

## **MIDSHIP FIRE PUMP DRIVESHAFTS AND INSTALLATION**

The midship PTO fire pump shall be installed and shall include installation of the fire pump, modification and/or fabrication of new drivelines and all pump-mounting brackets.

### **LEFT SIDE INLET - 6.00"**

One (1) 6.00" steamer inlet with male NST threads shall be provided on the left side of the pump module. The inlet shall have a removable screen.

### **INLET CAP**

One (1) 6.00" chrome plated cap shall be provided on the intake. The threads shall be NST and the cap shall be equipped long handles..

### **RIGHT SIDE INLET - 6.00"**

One (1) 6.00" steamer inlet with male NST threads shall be provided on the right side of the pump module. The inlet shall have a removable screen.

### **INLET CAP**

One (1) 6.00" chrome plated cap shall be provided on the intake. The threads shall be NST and the cap shall be equipped long handles..

## **PTO PUMP SHIFT SPECIFICATIONS -- PUMP AND ROLL**

An electric powered PTO pump shift shall be installed in the cab driver's area where not subject to accidental engagement. The pump shift system shall permit "pump and roll" operations, as well as stationary pumping operations.

The following indicator lights shall be included with pump shift.

1. A green indicator light, labeled "**PUMP ENGAGED**" shall indicate pump shift has successfully been completed.

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2. A green indicator light, labeled "**OK TO PUMP**" shall indicate the chassis transmission is in neutral, and the parking brake is engaged.
3. A green indicator light, labeled "**OK TO PUMP AND ROLL**" shall be energized when the pump is engaged, the chassis transmission is in road gear, and the parking brake is released.

When the "**OK TO PUMP AND ROLL**"• indicator is energized, the "**OK TO PUMP**"• indicator shall not be energized.

The pump shall be capable of "Pump and Roll" up to 5 mph where the safety interlock shall disengage the PTO automatically.

## **REMOTE MOUNTED DISCHARGE PRESSURE GAUGE**

One (1) 2.50" Noshok discharge pressure gauge (0-400 PSI) shall be provided in the cab. The face of the gauge shall be a WHITE dial with black letters.

## **PIPING AND MANIFOLDS**

All the plumbing and/or piping in the pump module shall be of 304 stainless steel or flexible piping for long life. All stainless steel castings shall be a minimum of schedule 40.

The flexible piping shall be black SBR synthetic rubber hose with 300 working pounds and 1200 pounds burst pressure for sizes 1.5 through 4". Sizes ¾", 1" and 5" are rated at 250 pound working and 1,000 pound burst pressure. All sizes are rated at 30 HG vacuum. Reinforcement consists of two (2) plies of high tensile strength tire cord for all sizes and helix wire installed in sizes 1 through 5" for maximum performance in tight bend applications. The material has a temperature rating of -40 degrees F to 210 degrees F. Full flow couplings are precision machined from high tensile strength stainless steel. All female couplings are brass. ¾" and 1" male and Victaulic couplings are brass.

## **PLUMBING SYSTEM**

The plumbing system shall be left unpainted by the apparatus manufacturer.

## **HOSE THREADS- NST**

All hose threads shall be National Standard Thread (NST) on all base threads on the apparatus intake and discharges, unless otherwise specified.

## **PUMP CERTIFICATION**

The fire pump shall be tested to meet the flow requirements of the pump. A written certification shall be provided with the completed vehicle.

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## **RELIEF VALVE**

There shall be one (1) suction side stainless steel relief pump valve provided on the pump system.

## **PRIMING SYSTEM**

A Hale ESP priming pump shall be a positive displacement, oil-less rotary vane electric motor driven pump. The pump body shall be manufactured of heat treated anodized aluminum for wear and corrosion resistance.

The pump shall be capable of producing a minimum 24 Hg vacuum at 2,000 feet above sea level.

The electric motor shall be a 12 VDC totally enclosed unit.

The priming pump shall not require lubrication.

The primer shall be capable of priming the pump through a 20' section of suction hose with a 10' lift within 30 seconds for pumps less than 1,500 gpm, and 45 seconds for pumps 1,500 gpm and larger. '

## **PRIMER CONTROL**

The priming pump shall operate by a single pull control valve mounted on the pump operator's panel. The control valve shall be manufactured of bronze construction.

## **PRIMER FUSE**

The primer shall be protected with a 250 amp fusible link that is designed to protect the apparatus 12 volt electrical system if the primer motor malfunctions.

## **THERMAL RELIEF VALVE**

A Hale Model TRV120 Thermal Relief Valve shall be provided on the pump. If water temperature in the pump exceeds 120 degrees Fahrenheit, the thermal relief valve shall automatically open and discharge pump water to the ground, through a 0.375" discharge line, routed below the pump module. The thermal relief valve shall automatically close when the water temperature is lowered.

## **U.L. TEST POINTS**

Two (2) U.L. test plugs shall be mounted on the pump panel for testing of the vacuum and pressures.

## **MASTER PUMP DRAIN**

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A rotary type, 12 port master drain valve shall be provided and controlled at the lower portion of the side pump panel. The valve shall be located in pump compartment lower than the main body and connected in such a manner as to allow complete water drainage of the pump body and all required accessories. Water shall be drained below the apparatus body and away from the pump operator.

## **SENTRY GOVERNOR PRESSURE SYSTEM**

The apparatus shall be equipped with the Class1 Sentry Pressure Governor System. The Sentry Pressure Governor System (SPGS) is a J1939 CAN based pressure governing system that consists of a Sentry display, Twister throttle, pressure transducers and associated wiring. The SPGS must be capable of dual station control allowing the system to be operated from separate locations on the apparatus (dual systems do not require additional transducers). The SPGS' advanced diagnostic capability instantly notifies the operators of any out of parameter condition. It also notifies the operator of actions performed and suggests operation methods in the event of an out of parameter condition. Graphic diagnostics also provides wiring and troubleshooting information.

The Sentry display utilizes Class1's UltraView technology. It is a custom tooled and programmed, 4.30", full color LCD display with (8) buttons. It shall be bonded for direct sunlight viewing. The Sentry is sealed to IP67 and allows for flush, pedestal or rear mounting options. The sentry display can be oriented in either the portrait or landscape orientations. The Sentry display provides the interface to the Engine Control Module (ECM) mounted on the engine. The Sentry display will operate as a pressure sensing governor (PSG) utilizing the engines J1939 CAN data for optimal resolution and response. The Sentry display utilizes control algorithms that minimize pressure spikes during low or erratic water supply situations. The Sentry display shall be backwards compatible to any engine that supplies J1939 RPM, Temperature and Oil Pressure information providing the ability to maintain a consistent fleet fire-fighting capability and reduce operator cross training and confusion.

The Sentry display is capable of storing up to 12 different languages. It shall provide the operator with the ability to adjust the display brightness for day and night mode operations. The following parameters visible at all times:

- Pump Intake Pressure
- Pump Discharge Pressure
- Engine RPM
- Engine Oil Pressure
- Engine Coolant Temperature
- Transmission Temperature
- System Voltage
- Throttle Ready Interlock Status
- Pump Engaged Interlock Status
- OKAY to Pump Interlock Status
- Operating Mode Status (RPM or Pressure)
- Target Pressure Indication (when in pressure mode)

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## **TWISTER THROTTLE**

The Twister throttle is a J1939 CAN based throttle device that communicates directly with the Sentry display. It features a robust knob operator that can be configured to operate the engine throttle in either the clock wise or counter clockwise directions. It features a large stationary idle button in the center of the knob. It also provides the operator with "Throttle Ready" and "Throttle Active" LED indicators. The Twister throttle can be mounted away from the Sentry Display giving the operator hand control at waist level. This also allows the Sentry display to be mounted at eye level assuring that the operator has the most comfortable and ergonomic control possible.

## **AUXILARY INTAKE- 2.50" - LEFT SIDE**

One (1) 2.50" intake valve shall be installed on the left pump panel with the valve body mounted behind the pump panel. The suction shall terminate with a 2.50" female NST chrome inlet swivel, and a brass inlet strainer.

An Akron Brass 2.50" generation II swing-out valve shall be provided for the left hand side auxiliary suction.

The side auxiliary inlet will incorporate a quarter-turn ball valve with a swing-type manual control located adjacent the intake.

There shall be an Class1 model 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

One (1) 2.50" chrome plated plug shall be provided. The plug shall be equipped with MNST threads, rocker lugs, and a 12.00" chain.

## **TANK TO PUMP LINE**

One (1) 3.00" tank to pump line shall be provided for connection between the water tank and the fire pump.

An Akron Brass 3.00" Generation II Swing-Out valve shall be provided for the tank to pump line.

The valve shall be actuated with an air cylinder. The valve shall be controlled with a switch at the pump panel.

## **TANK FILL/ RECIRULATION LINE**

# FOUTS BROS.

One (1) 2.00" fire pump to water tank refill and pump bypass cooler line shall be provided. The valve shall be a full flow quarter turn ball valve with 2.00" piping and flex hose to tank.

An Akron Brass 2.00" Generation II Swing-Out™ Valve shall be provided between the pump discharge manifold and the water tank. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00" x 3.00" identification tag. The controls shall be locked in any position.

## **LEFT SIDE FRONT PANEL DISCHARGE**

One (1) 2.50" discharge with valve shall be located on the left side panel.

An Akron Brass 2.50" generation II swing-out valve shall be provided for the discharge.

The quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00" x 3.00" identification tag. The controls shall be locked in any position.

There shall be an Class1 model 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

The discharge shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2.50" MNST threads.

One (1) Class1 2.50" chrome plated cap with self-venting lungs shall be provided. The cap shall be equipped with FNST threads, rocker lugs, and a 12.00" chain.

## **LEFT SIDE REAR PANEL DISCHARGE**

One (1) 2.50" discharge with valve shall be located on the left side panel.

An Akron Brass 2.50" generation II swing-out valve shall be provided for the discharge.

# FOUTS BROS.

The quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00" x 3.00" identification tag. The controls shall be locked in any position.

There shall be an Class1 model 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

The discharge shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2.50" MNST threads.

One (1) Class1 2.50" chrome plated cap with self-venting lungs shall be provided. The cap shall be equipped with FNST threads, rocker lugs, and a 12.00" chain.

## **RIGHT SIDE PANEL DISCHARGE**

One (1) 2.50" discharge with valve shall be located on the right side panel.

An Akron Brass 2.50" generation II swing-out valve shall be provided for the discharge.

The quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00" x 3.00" identification tag. The controls shall be locked in any position.

There shall be an Class1 model 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

The discharge shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2.50" MNST threads.

One (1) Class1 2.50" chrome plated cap with self-venting lungs shall be provided. The cap shall be equipped with FNST threads, rocker lugs, and a 12.00" chain.

## **RIGHT SIDE REAR PANEL DISCHARGE**

One (1) 2.50" discharge with valve shall be located on the right side panel.

# FOUTS BROS.

An Akron Brass 2.50" generation II swing-out valve shall be provided for the discharge.

The quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00" x 3.00" identification tag. The controls shall be locked in any position.

There shall be an Class1 model 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

The discharge shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2.50" MNST threads.

One (1) Class1 2.50" chrome plated cap with self-venting lungs shall be provided. The cap shall be equipped with FNST threads, rocker lugs, and a 12.00" chain.

## **CROSSLAY PRE-CONNECT DISCHARGE #1**

One (1) 1.75" crosslay pre-connect shall be installed in the pump module above the pump. The crosslay shall be plumbed using 2.00" stainless steel pipe, and/or flexible piping. A minimum of one (1) grooved pipe coupling shall be furnished in this assembly, if necessary, to allow for flex and serviceability.

The crosslay discharge shall terminate below the hose bed floor with a 1.50" NSTM chicksan swivel adapter. The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

Crosslay discharge #1 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1.75" fire hose.

The the pre-connect shall terminate in a stainless steel swivel with 1.50" NST threads. The swivel shall allow the hose to be pulled from either side of the apparatus.

An Akron Brass 2.00" generation II swing-out valve shall be provided for the discharge.

The quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00" x 3.00" identification tag. The controls shall be locked in any position.



# FOUTS BROS.

There shall be an Class1 model 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

## **CROSSLAY PRE-CONNECT DISCHARGE #2**

One (1) 1.75" crosslay pre-connect shall be installed in the pump module above the pump. The crosslay shall be plumbed using 2.00" stainless steel pipe, and/or flexible piping. A minimum of one (1) grooved pipe coupling shall be furnished in this assembly, if necessary, to allow for flex and serviceability.

The crosslay discharge shall terminate below the hose bed floor with a 1.50" NSTM chicksan swivel adapter. The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

Crosslay discharge #2 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1.75" fire hose.

The the pre-connect shall terminate in a stainless steel swivel with 1.50" NST threads. The swivel shall allow the hose to be pulled from either side of the apparatus.

An Akron Brass 2.00" generation II swing-out valve shall be provided for the discharge.

The quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00" x 3.00" identification tag. The controls shall be locked in any position.

There shall be an Class1 model 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color coded bezel shall be included.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

## **CROSSLAY #3, HOSEBED ("DEADLAY")**

One (1) crosslay style "deadlay" hosebed shall be installed above the pump. The deadlay shall have the capacity to hold 250' of 2.50" fire hose and nozzle.

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## **VINYL CROSSLAY COVER**

The crosslays shall be equipped with a heavy duty 18 oz. vinyl cover with side flaps. The top portion will be fastened to the pump house with Velcro and the side flaps will be held in place with a hook and bungee system.

The vinyl cover shall be red in color.

## **FRONT BUMPER MONITOR**

One (1) Akron Model 3462 Forestry Monitor shall be installed. The remote monitor shall be located on the front bumper of the apparatus.

The monitor shall have a fully enclosed 12-volt motor and gears with a manual override for both horizontal and vertical rotation and may be operated simultaneously. The vertical travel shall be from 45-degrees below to 90- degrees above horizontal with adjustable stops at -20 degrees and +45 degrees. The horizontal rotation shall be 320-degrees with adjustable stops at +-90-degrees.

The monitor shall be Red in color.

A 2.00" Akron Brass, model # 8620 Generation II electric valve shall be supplied for the forestry monitor.

The monitor shall be controlled by a joystick located in the cab. The joystick shall provide up, down, right, left, fog, and stream control of the monitor. The joystick shall have a trigger switch to control an optional electric discharge valve.

The joystick shall be flush mounted in the center console.

## **QUICK CONNECT**

A 2.00" NPT quick disconnect shall be installed for quick removal of the monitor from the truck.

## **MONITOR NOZZLE**

An electric adjustable nozzle shall be supplied. It shall be adjustable at the following GPM's: 30, 60, 95, 125

## **4.50" MASTER PRESSURE GAUGE**

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One (1) Class1, 4.50" liquid filled master pressure gauge with stainless steel bezel shall be provided, reading from 0 Hg. to 400 psi. It shall be accurate to within 1%. The gauge shall have a white face and black markings. The gauge shall be located on the pump operator's panel.

## **4.50" MASTER INTAKE GAUGE**

One (1) Class 1, 4.50" liquid filled master intake gauge(s) with stainless steel bezel shall be provided, reading from -30" Hg. to 400 psi. It shall be accurate to within 1%. The gauge shall have a white face and black markings. The gauge shall be located on the pump operator's panel.

## **LED WATER LEVEL GAUGE (PUMP PANEL)**

One (1) Hale model # "ITL-40R" Tank Level Gauge for indicating water level shall be installed on the pump operator's panel. The tank level gauge shall indicate the liquid level or volume on an easy to read LED display with a visual indicator at nine (9) precise levels, using one (1) color. The system shall include the ability to display "text messages" and have built-in diagnostic capabilities. Additional secondary displays (if requested) are to be easily integrated and will receive data from the same source as the Master Display.

The LED display shall be red in color.

## **CLASS1 MINI WATER LEVEL GAUGE**

One (1) Hale Intelli-Tank model # 610-00049 remote mini tank level gauge for indicating the water level of the tank shall be provided in the cab. The tank level gauge shall indicate the liquid level on an easy 4 light display and show increments of 1/4 of a tank.

## **PUMP, MODULE, AND RELATED ITEMS**

### **PUMP MODULE BODY**

The pump module body shall be a self-supported structure mounted independently from the body and chassis cab. The pump module shall be constructed entirely of extrusions and aluminum plate. The framework shall be formed from beveled aluminum alloy extrusions and shall be electrically seam welded at each joint using 5356 aluminum alloy welding wire. The main framework to be 3.00 x 3.00 x 0.18, or 3.00 x 1.5 webbed 0.25, 6063-T5 aluminum extrusion. The pump module design must allow normal frame deflection through isolation mounts without imposing stress on the pump module structure or side running boards. The pump module shall consist of a welded framework, properly braced to withstand chassis frame flexing. The pump module support shall be bolted to the frame rails of the chassis.

### **PUMP PANEL MATERIAL**

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The left side operator's panel, gauge panel, right side pump panel and right side access door shall be fabricated from 14-gauge 304L stainless steel with a #4, (150/180 grit), standard brushed finish.

## **GAUGE PANEL**

The pump operator's upper gauge panel shall be located on the left hand side of the pump module above the main control panel. It shall be horizontally hinged and shall have two (2) latches.

## **PUMP ENCLOSURE ACCESS DOOR -- RIGHT SIDE UPPER**

A vertically hinged pump panel access door shall be provided on the upper right side of the side mount pump enclosure. The access door shall be approximately 22.00" high and as wide as possible. The door shall have three (3) push button type latches. The drains located on the officer's side panel shall be fastened to the lower panel, which shall be stationary.

## **PUMP PANEL/ ENCLOSURE LIGHTS**

### **PUMP PANEL LIGHT SHIELD, LH SIDE PANEL**

One (1) LED strip light shall be installed under an instrument panel light hood on the left side pump panel.

### **PUMP PANEL LIGHT SHIELD, RH SIDE PANEL**

One (1) LED strip light shall be installed under an instrument panel light hood on the right side pump panel.

A weather resistant switch, located on the pump operator's panel shall be provided to activate the lights.

### **PUMP COMPARTMENT LIGHTS (LED)**

Two (2) clear LED lights shall be provided inside the pump compartment area. Each shall be switched.

## **LEFT SIDE RUNNING BOARD**

The left pump panel shall be equipped with a side running board. The running board shall be constructed of 0.125" embossed fire apparatus bright aluminum treadplate. It shall be a minimum of approximately 11.00" deep x the width of the module. The running board shall have an upward bend on the inside edge to act as a kick plate. The running board shall be attached to a frame mounted outrigger support structure. The running board shall have a 3.00" downward bend on the front and side faces with a 1.00" underside return for superior strength.

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## **RIGHT SIDE RUNNING BOARD**

The right pump panel shall be equipped with a side running board. The running board shall be constructed of 0.125" embossed fire apparatus bright aluminum treadplate. It shall be a minimum of approximately 11.00" deep x the width of the module. The running board shall have an upward bend on the inside edge to act as a kick plate. The running board shall be attached to a frame mounted outrigger support structure. The running board shall have a 3.00" downward bend on the front and side faces with a 1.00" underside return for superior strength.

## **WARNING LABEL, FAMA 22, HOSE RESTRAINT REQUIRED**

Safety sign FAMA22, which warns of the need to secure hose, shall be visible to personnel at each side of hose storage area.

## **WARNING LABEL, FAMA 18, INTAKE AND DISCHARGE CAP PRESSURE**

FAMA 18 warning labels shall be installed, one on each side and back of apparatus where caps are present. They shall read "WARNING: Pressure Hazard. ALWAYS OPEN Drain or Bleeder Valve to release pressure BEFORE removing Intake or Discharge Cap. Caps can trap pressure. Cap under pressure can fly off with great force. Flying Cap will injure or kill."

## **SAFETY SIGN**

A safety sign FAMA25, which warns of the need for training prior to operating the apparatus, shall be located on the pump operators panel.

## **PUMP PANEL ID PLATE**

An identification plate shall be installed on the pump operator control panel to identify the fire pump serial number, model number, and performance.

## **COLOR CODED PUMP PANEL LABELING AND NAMEPLATES**

Discharge and intake valve controls shall be color coded in compliance to guidelines of applicable sections of NFPA standards. Innovative Controls permanent type nameplates and instruction panels shall be installed on the pump panel for safe operation of the pumping equipment and controls.

## **WATER TANK AND RELATED COMPONENTS**

### **2000 GALLON POLY TANK**

Tank capacity shall be 2000 US gallons / 1665 Imperial gallons / 7571 Liters.

# FOUTS BROS.

The tank shall be constructed of PT3 polypropylene material.

## **TANK MATERIAL**

This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. Tank shell thickness may vary depending on the application and may range from 0.50" to 1.00" as required. Internal baffles are generally 0.375" in thickness.

## **ISO CERTIFICATION**

The tank must be designed and fabricated by a tank manufacturer that is ISO 9001:2008 certified in each of its locations. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.

## **CONSTRUCTION**

The booster and/or foam tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include PolyProSeal™ technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 0.375" PT3™ polypropylene.

All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique Full Floor Design™. Tolerances in design allow for a maximum variation of 0.125" on all dimensions.

The tank cover shall be constructed of 0.50" thick PT3 polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 0.375" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2.00" minimum polypropylene dowels spaced a maximum of 40.00" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two (2) lifting dowels shall accommodate the necessary lifting hardware.

## **OUTLETS**

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There will be two (2) standard tank outlets: one (1) for the tank-to-pump suction line, which shall be sized to provide adequate water flow to the pump; and, one (1) for tank fill line, which shall be sized according to the NFPA minimum size chart for booster tanks. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1000 G.P.M. The addition of rear suction fittings, nurse valve fittings, dump valve fittings, and through-the-tank sleeves to accommodate rear discharge piping must be specified. All auxiliary outlets and inlets must meet all NFPA guidelines in effect at the time of manufacture.

## **CAPACITY CERTIFICATION**

All water and foam tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. Each Poly-Tank® III is delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight. Engineering estimates for capacity calculations shall not be permitted for capacity certification.

## **CENTER OF GRAVITY**

A center of gravity calculation shall be determined for each tank and provided as requested in order to provide the apparatus manufacturer with the necessary data to design and certify the apparatus with respect to the NFPA requirements regarding rollover stability. This information may be used by the apparatus manufacturer to assist in the calculation of the apparatus's ability to meet the tilt table static rollover threshold or calculated Center of Gravity requirements per NFPA. A center of gravity and weight calculation for both empty and full conditions shall be required with each tank.

## **TANKNOLOGY™ TAG**

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

## **WATER FILL TOWER AND COVER**

The tank shall have a combination vent and manual anti-surge fill tower. The fill tower shall be constructed of 0.50" PT3 polypropylene and shall be a minimum dimension of 14.00" x 14.00" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall have a 0.25" thick removable polypropylene screen and a PT3 polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid.

# FOUTS BROS.

The fill tower shall have an anti-surge provision. It shall be designed to prevent water splashing up through the top of the fill tower when the water tank is full and the apparatus comes to an immediate stop. (NO EXCEPTION)

## **FILL TOWER LOCATION**

The fill tower shall be located in the left front area of the tank.

Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 6.00" that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction.

## **SUMP**

There shall be one (1) sump standard per tank. The sump shall be constructed of a minimum of 0.50" PT3 polypropylene and be located in the left front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3.00" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. All tanks shall have an anti-swirl plate located approximately 3.00" above the inside floor.

## **WATER TANK CLEAN-OUT PLUG**

The tank shall have a 4.00" N.P.T. threaded outlet on the bottom for a cleanout/ drain plug per NFPA. The cleanout/ drain plug shall be installed in the bottom of the water tank using an 8-Bolt flange with a 4.00" N.P.T. threaded outlet to create easy access to the plug. (NO EXCEPTION)

## **MOUNTING**

The UPF Poly-Tank III shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches, cross member spacing shall be decreased to allow for not more than 400 square inches of unsupported area.

The tank shall be isolated from the cross members through the use of hard rubber strips with a minimum thickness and width dimension of 1/4" x 1" and a Shore A Hardness of approximately 60 durometer. The rubber shall be installed so it will not become dislodged during normal operation of the vehicle. Additionally, the tank shall be supported around the entire bottom outside perimeter and captured both in the front and rear as well as side to side to prevent tank from shifting during vehicle operation.

A picture frame type cradle mount shall be provided for the purpose of capturing the tank.



# FOUTS BROS.

Although the tank is designed on a free floating suspension principle, it is required that the tank have adequate vertical hold down restraints to minimize movement during vehicle operation.

## **MOUNTING BLOCKS, TANK SIDES**

There will be four (4) mounting blocks, two (2) on each side for mounting equipment such as ladder brackets. Each shall be approx. 12.00" wide x 31.75" tall x 1.00" deep.

## **MOUNTING BLOCK, REAR TANK FACE**

A 1.00" mounting block shall cover the whole rear of tank for mounting work lights, folding steps, grab rails, accessories and emergency lighting.

A 1.00" mounting block shall on the front right hand side of the tank for mounting folding steps, grab rails, and accessories.

## **REAR CAMERA NOTCH**

A recessed mounting area for a backup camera shall be build into the rear of the tank. As high and as close to the center line as possible.

## **HOSE BED**

There shall be a hose bed area constructed of polypropylene on the top of the tank consisting of two side walls and one front panel. The hose bed shall be welded to the outside perimeter of the tank cover, and shall be approximately 9.00" tall by the length and width of the water tank.

The hose bed shall be free from all projections, which may interfere with the unloading of hose.

## **HOSEBED FLOOR**

The floor of the hose bed shall be grooved by the tank manufacturer to provide an integral planking designed to allow the loaded hose to drain and allow airflow for ventilation.

## **VINYL HOSEBED COVER**

The apparatus shall be equipped with a 18 oz. vinyl Hosebed cover with a rear flap and a hook and bungee fastening system at front and sides. The rear flap shall be fastened with three (3) 2.00" side release plastic buckle assemblies. The vinyl material shall be treated for protection against UV rays and mildew.

The vinyl cover shall be red in color.

# FOUTS BROS.

## **REAR DUMP VALVE**

One (1) NEWTON 10.00" Model 1050-34 Stainless Steel dump valve shall be installed. It shall be located at the rear center of the apparatus.

One (1) manual operated lever control shall be used to open and close the dump valve, the lever shall be located on the top of the valve.

## **SWIVEL DUMP SYSTEM**

A Newton Model 6012SW-34 stainless steel swivel dump chute extension shall be mounted on the rear dump valve. The unit shall be able to rotate 180 degrees and lock in place while the apparatus is in motion. With the swivel attached, the chute shall be capable of flowing 2,777 gpm.

## **TELESCOPIC EXTENSION CHUTE**

One (1) Newton, model 4036-8X12-34, manual stainless steel telescoping extension chute shall be installed on the swivel. The extension chute shall be capable of extending 36.00" past the dump valve.

## **DIRECT TANK FILL - LEFT HAND SIDE**

There shall be a one (1) 2.50" direct tank fill located on the left-rear of the apparatus. The valve shall be an Akron 8800 Series swing out valve. This valve shall be operated using a direct manual actuator handle. The manual actuator shall require only 90 degree travel and be quickly adjustable to one of eight positions. Valve inlet shall be a 2.50" female hose thread adapter and feature a 30 degree droop with a wire screen inlet strainer and a swivel.

## **PLUG**

One (1) 2.50" chrome plated plug shall be provided. The threads shall be NST and the plug shall be equipped rocker lugs and chain.

## **DIRECT TANK FILL - RIGHT HAND SIDE**

There shall be a one (1) 2.50" direct tank fill located on the right-rear of the apparatus. The valve shall be an Akron 8800 Series swing out valve. This valve shall be operated using a direct manual actuator handle. The manual actuator shall require only 90 degree travel and be quickly adjustable to one of eight positions. Valve inlet shall be a 2.50" female hose thread adapter and feature a 30 degree droop with a wire screen inlet strainer and a swivel.

## **PLUG**

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One (1) 2.50" chrome plated plug shall be provided. The threads shall be NST and the plug shall be equipped rocker lugs and chain.

## **SUBFRAME**

The sub frame shall be constructed from structural steel channel and plate, welded together and bolted to the chassis frame. The main support shall be a 0.3125" thick steel plate under the tank floor with a 2.50" angle steel around the perimeter of the tank. Two (2) sub frame long sills constructed of 3.00" X 7.00" steel tubing with 0.1875" walls shall run the full length of the subframe and be mounted to truck frame using 0.1875" angle clips and a minimum of ten (10) grade 8 bolts. The tank sub frame and attachments shall be in strict compliance with UPF poly-tanks engineering specifications.

## **MOUNTING**

The tank shall rest on the subframe as to not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches the subframe shall be designed to allow for not more than 400 square inches of unsupported area.

The tank shall be supported to prevent itself from shifting during vehicle operation.

A non-corrosive protective liner shall be installed in between the tank and the subframe.

The tank shall be mounted to sub frame with three (3) stainless steel gussets per UPF specifications.

The tank and sub frame must be installed by a UPF Authorized installer (NO EXCEPTIONS).

## **BODY CONSTRUCTION**

The body shall be fabricated of steel tubing, angle, smooth aluminum sheet and aluminum treadplate.

The tubing shall be designed as structural-framing members with the smooth aluminum and treadplate fabricated to form compartments, floors and fender panels

The side compartments shall be modular in design and shall be capable of being replaced if damaged. Each shall be supported by the steel frame and attached to the sub frame with grade 8 bolts.

All body compartments will have a method of ventilation provided either by louvers stamped into a wall or another method to allow the compartments to aerate. The ventilation design will provide the proper airflow inside the compartments and prevent water from dripping into the compartment.

The side compartments shall be constructed of formed 0.125" aluminum.

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Compartment flooring will be of the sweep out design

## **FENDER PANELS**

The side fender panels above the rear wheels shall be constructed of 0.125" bright aluminum diamond plate.

The rear wheel wells shall be angled cut with an integral fenderette for a streamlined appearance.

The compartments and fenders, together forming the body, shall remain unpainted. All seams on the frame side of the body shall be welded or caulked to prevent moisture from entering the compartments.

## **ROLL-UP DOORS - AMDOR**

All lower compartment doors shall be equipped with AMDOR brand roll-up doors. The slats shall be 1.00" double wall aluminum with continuous ball and socket hinge joints designed to prevent water ingress and weather tight recessed dual durometer seals. The interior door curtains shall be smooth to prevent equipment hang-ups. The door tracks and side frames shall each be one-piece aluminum. Each side seal shall be recessed, and non-marring with UV stabilizers to prevent warping. The bottom panel flange shall have cut-outs for ease of access with gloved hands. The door strikers shall provide support beneath the lift bar to prevent door curtain bounce and potential false door ajar indications.

## **LEFT SIDE COMPARTMENT IN FRONT OF REAR WHEELS, L-1**

One (1) compartment shall be supplied on the left hand side of the truck in front of the rear wheels. Compartment dimensions shall be approx. 60.00" wide by 26.00" deep by 27.00" high.

The compartment shall have a roll up door. The door shall have a satin finish.

## **COMPARTMENT LIGHT(S)**

One (1) 12.00" Luma Bar LED strip light shall be installed inside the compartment.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

## **LEFT SIDE COMPARTMENT BEHIND REAR WHEELS, L-2**

One (1) compartment shall be supplied on the left hand side of the truck behind of the rear wheels. Compartment dimensions shall be approx. 24.00" wide by 26.00" deep by 27.00" high.

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The compartment shall have a roll up door. The door shall have a satin finish.

## **COMPARTMENT LIGHT(S)**

One (1) 12.00" Luma Bar LED strip light shall be installed inside the compartment.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

## **RIGHT SIDE COMPARTMENT IN FRONT OF REAR WHEELS, R-1**

One (1) compartment shall be supplied on the right hand side of the truck in front of the rear wheels. Compartment dimensions shall be approx. 60.00" wide by 26.00" deep by 27.00" high.

The compartment shall have a roll up door. The door shall have a satin finish.

## **COMPARTMENT LIGHT(S)**

One (1) 12.00" Luma Bar LED strip light shall be installed inside the compartment.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

## **RIGHT SIDE COMPARTMENT BEHIND REAR WHEELS, R-2**

One (1) compartment shall be supplied on the right hand side of the truck behind of the rear wheels. Compartment dimensions shall be approx. 24.00" wide by 26.00" deep by 27.00" high.

The compartment shall have a roll up door. The door shall have a satin finish.

## **COMPARTMENT LIGHT(S)**

One (1) 12.00" Luma Bar LED strip light shall be installed inside the compartment.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

## **DROP TANK STORAGE- RH SIDE**

There shall be room to store an appropriate size dump tank under the right hand side "T" portion of the tank. The area shall have a mechanical means to lock the dump tank in place while the apparatus is in motion.

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The tank shall slide in horizontally into the hold from the right side of the body.

The storage shall have the capacity for one (1) 2100 US Gallon Portable Tank with an aluminum frame.

## **HARD SUCTION STORAGE- LH SIDE**

There shall be a hard suction storage tray located under the left hand side of the "T" portion of the tank. The hard suction hose storage shall be accessed from the ground at the rear of the unit.

In order to provide a comfortable and safe level of access to the hoses, there shall be no exception allowed to this feature.

The suction storage shall have capacity for two (2) 10.00' sections of hard suction hose.

## **REAR TAILBOARD**

A rear beavertail tailboard shall be provided and installed at the rear of the apparatus. The tailboard shall consist of two (2) separate stepping/ standing surfaces made of aluminum grip-strut material.

The top step shall be 7.00" deep and the bottom shall be 9.50" deep. The rear tailboard shall be full width of the tanker body between the side compartments.

The outside edges of the rear tailboard shall be trimmed with bright diamondplate aluminum.

The tailboard shall meet recommended requirements for non-slip surfaces. This area is to be used as a step, but is not designed to carry personnel and should never be used to transport firemen.

## **STEPS**

All steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of at least 500 pounds.

## **REAR FOLDING STEPS**

Three (3) large, heavy duty chrome folding steps shall be furnished and located, at the rear of the apparatus. The exact number of steps provided may vary depending upon body configuration and options.

## **FOLDING STEPS- RH SIDE FRONT OF BODY**

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Four (4) large, heavy duty chrome folding steps shall be furnished and located, at the right hand front of the body. The exact number of steps provided may vary depending upon body configuration and options.

## **EXTERIOR GRAB RAILS**

Each grab rail shall be non-slip, 1.25" diameter extruded polished aluminum grab rails with rubber inserts designed to provide maximum gripping ability, strength, and durability. The rails shall comply with NFPA 1901.

## **GRAB RAILS, REAR STEP, VERTICAL**

Two (2) extruded aluminum non-slip grab rails, approximately 30.00" in length, shall be provided and vertically mounted on the rear of the apparatus, one (1) on each side of the body.

## **GRAB RAIL, RH FRONT**

One (1) extruded aluminum non-slip grab rail shall be provided and mounted on the front, upper, right hand side of the body.

## **12 VOLT ELECTRICAL SECTION**

### **NFPA 1901 CERTIFIED 12 VOLT ELECTRICAL SYSTEM**

The 12-volt apparatus body electrical system shall be provided and shall be in compliance with NFPA 1901 testing and certification procedures as follows:

### **NFPA MINIMUM ELECTRICAL LOAD DEFINITION**

The NFPA 1901 defined minimum electrical load shall consist of the total amperage required to simultaneously operate the following in a stationary mode:

1. Propulsion engine and transmission.
2. The clearance and marker lights.
3. Communication equipment. 5 amp default.
4. Illumination of all walking surfaces, the ground at all egress points, control and instrumentation panels and 50% of total compartment lighting.
5. Minimum warning lights required for "blocking right of way" mode.

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6. The current to simultaneously operate and fire pump and all specified electrical devices.
7. Anything defined by the purchaser, in the advertised specifications, to be critical to the mission of the apparatus.

## **RESERVE CAPACITY TEST**

The first electrical test to be performed will be the Reserve Capacity Test. All items listed in NFPA Minimum Load Definition shall be activated with the engine shut off. After 10 minutes of operation, the items 1-7 shall be deactivated. After deactivation, the battery system shall have ample reserve to start the engine.

## **ALTERNATOR PERFORMANCE TEST AT IDLE**

The second electrical test to be performed shall be Alternator Performance Test at Full Load. All electrical loads shall be activated with the engine running up to the governed rpm for two hours. During the test, the system voltage shall not drop below 11.7 volts or have excessive battery discharge for more than 120 seconds. Any loads not defined in the NFPA Minimum Electrical Load may be load managed to pass test.

## **TEST CONDITIONS**

All electrical testing shall be performed with the engine compartment at approximately 200 degrees.

## **12 VOLT ELECTRICAL SYSTEM**

The truck shall have a 12-Volt electrical system.

All wiring will be run in convoluted high temperature plastic loom. Wiring shall be color and function coded and will be of adequate size to handle the assigned load. All solenoids, relays, and terminal blocks will be located in an easily accessible area.

All circuits provided shall have properly rated low voltage over current protective devices.

All wiring shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for the protected circuit. Voltage drops in all wiring from the power source to the using device shall not exceed 10 percent. The wiring and wiring harness and insulation shall be in conformance to applicable SAE and NFPA standards. The wiring harness shall conform to SAE J-1128 with GXL temperature properties. All exposed wiring shall be protected in a loom with a minimum 289 degree Fahrenheit rating. All wiring looms shall be properly supported and attached to body members. The electrical conductors shall be constructed in accordance with applicable SAE standards, except when good engineering practice requires special construction.



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All under side terminal junctions shall be fully enclosed in sealed plastic weather proof boxes.

Electromagnetic interference suppression shall be provided as required to satisfy the radiation limits specified in SAE J551/1.

## **CLASS1 ES-KEY SYSTEM**

The electrical system shall utilize Class1 Inc. **ES-Key** technology where applicable.

The apparatus shall be equipped with a Class 1 ES-Key Management System for controlling electrical system devices. This management system shall be capable of performing load management functions, system switching, monitoring and reporting, and be fully programmable for a standardized electrical system utilizing the ES-Key Professional software program.

## **SUPERNODE II**

The apparatus shall be equipped with a Class1 ES-Key system with a Supernode II high density input output node. The Supernode II shall have (24) inputs, (24) outputs, a Universal System Manager, a data logger, and programmable special utilities.

The Supernode II shall have an integrated USB port to allow for direct connection to the ES-Key system without additional interface devices.

## **LOAD MANAGER**

The Supernode II shall have an integrated Load Manager. The Load Manager Sequencer shall assure that loads are applied and removed gradually, thus eliminating the possibility of inducing failures in the vehicle's equipment.

## **LOW VOLTAGE MONITOR**

A voltage monitor shall be built into the ES-Key electrical system. It shall activate a warning when the alternator output voltage falls below any desired voltage (usually 11.5 volts).

## **LOW VOLTAGE ALARM**

One (1) Cole Hersee model # 4112-RC light/buzzer shall be located in the cab and wired to the low voltage monitor on the ES-Key System.

## **SWITCH PANEL**

The system shall be controlled from a multiplexed switch panel located in the center console between the driver and officer position. The switch panel shall have back lighted identification plates on a non-

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glare panel surface. The panel shall be illuminated when the master battery disconnect switch is in the on position.

## **CHASSIS GROUND LIGHTS**

LED ground lights with outward facing angle brackets shall be installed, one (1) under each chassis door.

## **FRONT OF BODY GROUND LIGHTS**

Two (2) LED ground lights with outward facing angle brackets shall be installed under the front of the body. One (1) light shall be located on the driver side and one (1) light shall be located on the officer side of the apparatus.

## **REAR STEP GROUND LIGHTS**

Two (2) LED ground lights with outward facing angle brackets shall be installed under the rear step of the apparatus, one (1) each side.

## **GROUND LIGHT SWITCHING**

The cab and body ground lights shall activate by engaging the parking brake.

## **HAZARD LIGHT**

One (1) Whelen model 0SR00FCR flashing red LED light, located in the driving compartment, the light shall be illuminated automatically whenever any compartment door is ajar.

The hazard light shall be marked with a sign that reads "Do Not Move Apparatus When Light is On".

The warning light shall be interlocked to the parking brake and shall only alert the driver when the parking brake is released. The light shall also be used to signal that other ancillary equipment such as racks light towers etc. are not in their "ready for transport" position.

## **REAR ROAD LIGHTING**

Two (2) sets of 4.00" LED stop, turn and back-up lights shall be provided, one (1) set on each side of the rear of the truck.

## **DOT MARKER LIGHTS AND REFLECTORS**

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LED marker lights shall be installed on the vehicle in conformance to the Department of Transportation requirements. All marker lights shall be incorporated into the headlight circuit of the cab/chassis.

Two (2) amber LED side marker and turn lights shall be provided on the apparatus lower side, forward of rear axle, one (1) each side if the apparatus is 30 feet long or longer.

The side body panels shall be furnished with marker lights installed as follows:

- Two (2) 0.75" amber LED marker lights, one (1) on each side at the lower front corner of the body.
- Four (4) 0.75" red LED marker lights, one (1) on each side at the lower rear corner of the body.

The rear body panel, centered above the bumper, shall be furnished with marker lights installed as follows:

- Three (3) 0.75" red LED marker lights, as close as practical to the vertical centerline. Centers spaced not less than 6.00" or more than 12.00" apart.

Two (2) amber reflectors shall be provided on the apparatus body lower side, as far forward and low as practical, one (1) each side if the apparatus is 30 feet long or longer.

Four (4) red reflectors shall be provided on the apparatus rear, one (1) each side and two (2) on the rear.

## **LICENSE PLATE LIGHT**

A license plate bracket with LED light shall be provided and installed on the rear of the body. It shall be wired to come on with the headlights.

## **UPPER REAR SCENE LIGHTS**

One (1) pair of Whelen model 90SC0ENZR LED scene lights shall be installed, one (1) each side on the upper rear of the apparatus body.

The light(s) shall be installed within a Cast Aluminum Bezel.

## **UPPER RIGHT SCENE LIGHTS**

One (1) pair of Whelen model 90SC0ENZR LED scene lights shall be installed, one (1) each side on the upper right hand side of the apparatus body.

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The light(s) shall be installed within a Cast Aluminum Bezel.

## **UPPER LEFT SCENE LIGHTS**

One (1) pair of Whelen model 90SC0ENZR LED scene lights shall be installed, one (1) each side on the upper left hand side of the apparatus body.

The light(s) shall be installed within a Cast Aluminum Bezel.

## **SCENE LIGHT SWITCHING**

One (1) scene light switch with indicator shall be installed on 1Touch switch panel to control the left side scene light(s). The switch shall be labeled "LEFT SCENE".

## **SCENE LIGHT SWITCHING**

One (1) scene light switch with indicator shall be installed on 1Touch switch panel to control the right side scene light(s). The switch shall be labeled "RIGHT SCENE".

## **SCENE LIGHT SWITCHING**

One (1) scene light switch with indicator shall be installed on the 1Touch switch panel to control the rear scene light(s). The switch shall be labeled "REAR SCENE".

## **SCENE LIGHT SWITCHING**

The rear scene lights shall activate automatically upon placing the transmission into reverse.

## **REAR VISION SYSTEM**

One (1) complete backup camera system shall be provided to allow the driver to visually see the rear of the apparatus while in the cab. The system shall include a high resolution 7.00" touch screen with LED Backlight and anti-glare system with an auto dimmer. The system shall include audio transmission from the camera.

The rear vision camera shall be wired to automatically activate when the chassis transmission is placed in reverse.

## **CAMERA LOCATION**

The camera shall be recessed mounted in the rear of the tank, as close to the center line as possible.

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The monitor for the rear vision system shall be mounted on the dash of the cab in easy view of the driver.

## **NFPA AUDIBLE AND LIGHTING WARNING PACKAGE**

The following warning light package shall include all of the minimum warning light and actuation requirements for the current revision of the NFPA 1901-2009. The lighting as specified shall meet the requirements for both "Clearing Right of Way" and "Blocking Right of Way" which includes disabling all white warning lights when the apparatus is in "Blocking Right of Way" mode.

### **WARNING LIGHT FLASH PATTERN**

All of the perimeter warning lights shall be set to the default NFPA flash pattern as provided by the warning light manufacturer.

### **LIGHTBAR**

One (1) WHELEN model JE2NFPA 56.00" LED lightbar shall be supplied and mounted. The lightbar shall have clear lenses and contain the following modules:

Four (4) RED LIN6 LED modules, two (2) on each corner.

Four (4) RED CON3 LED modules, across the front

Two (2) WHITE CON3 LED modules, on the front

The forward facing white lights shall be automatically disabled for the "Blocking Right of Way" mode.

### **LIGHT BAR SWITCH**

The lightbar shall be controlled through the master warning switch.

### **UPPER REAR WARNING LIGHTS**

One (1) pair of Whelen model 90RR5FRR Super LED warning lights shall be installed, one (1) each side on the upper rear of the apparatus body.

The lights shall be red in color with red lens.

The light(s) shall be installed within a Cast Aluminum Bezel.

### **UPPER LEFTSIDE WARNING LIGHTS**

One (1) pair of Whelen model 90RR5FRR Super LED warning lights with shall be installed, one (1) each side on the upper left side of the apparatus body.

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The lights shall be red in color with red lens.

The light(s) shall be installed within a Cast Aluminum Bezel.

## **UPPER RIGHT SIDE WARNING LIGHTS**

One (1) pair of Whelen model 90RR5FRR Super LED warning lights shall be installed, one (1) each side on the upper right side of the apparatus body.

The lights shall be red in color with red lens.

The light(s) shall be installed within a Cast Aluminum Bezel.

## **UPPER WARNING LIGHT SWITCH**

The upper warning lights shall be controlled through the master warning switch.

## **LOWER FRONT WARNING LIGHTS**

One (1) pair of Whelen model 60R02FRR Super LED warning lights shall be installed, one (1) each side on the front of the chassis cab.

The lights shall be red in color with red lens.

The light(s) shall be supplied and installed with a chrome bezel.

## **INTERSECTION WARNING LIGHTS**

One (1) pair of Whelen model 60R02FRR Super LED warning lights shall be installed, one (1) each side of the chassis cab.

The lights shall be red in color with red lens.

The light(s) shall be supplied and installed with a chrome bezel.

## **LOWER MID-BODY WARNING LIGHTS**

One (1) pair of Whelen model 60R02FRR Super LED warning lights shall be installed , one (1) each side of the apparatus, mid-body.

The lights shall be red in color with red lens.

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The light(s) shall be supplied and installed with a chrome bezel.

## **LOWER REAR WARNING LIGHTS**

One (1) pair of Whelen model 60R02FRR Super LED warning lights shall be installed, one (1) each side on the lower rear of the apparatus body.

The lights shall be red in color with red lens.

The light(s) shall be supplied and installed with a chrome bezel.

## **LOWER WARNING LIGHT SWITCH**

The lower warning lights shall be controlled through the master warning switch.

## **REAR BEACONS**

Two (2) Whelen model L31 LED beacons shall be provided and installed at the upper rear corners of the apparatus.

The beacon on the driver side shall be red in color with a red lens.

The beacon on the officer side shall be red in color with a red lens.

## **BEACON LIGHT SWITCH**

The beacons shall be controlled through the master warning switch.

## **BEACON LIGHT MOUNTING**

The rear beacons shall be mounted on a smooth aluminum bracket and attached to the apparatus body, one (1) on each side.

## **ELECTRIC SIREN AND CONTROL**

One (1) Whelen model #295SLSA1 electronic siren shall be mounted in the cab. This unit shall feature an electronic air horn, wail, yelp, hi-lo and shall have a hard wired PA microphone.

## **ELECTRONIC SIREN SPEAKER**

One (1) Federal Signal model ES100 Dynamax 100 watt speaker shall be flush mounted as far forward and as low as possible on the front of the vehicle. A polished model ESFMT with "Electric F"

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grille shall be provided on the outside of the speaker to prevent road debris from entering the speaker.

The speaker shall produce a minimum sound output of 120 dB at 10 feet to meet current NFPA 1901 requirements.

The speaker shall be located on the right hand side of the bumper.

## **PAINT, STRIPING, AND LETTERING SECTION**

### **PAINT PROCESS**

The wetside tank shall be painted with a PPG Delfleet Evolution Paint System.

All products and technicians shall be certified by PPG every two (2) years.

The wetside tank shall be totally removed from the chassis during the painting process to insure the entire unit is covered.

All seams shall be caulked both inside and along the exterior edges with a urethane automotive sealant to prevent moisture from entering.

The water tank and all parts shall be thoroughly washed with a grease cutting solvent prior to any sanding. After the wetside tank has been sanded, the wetside tank shall be washed again with a grease cutting solvent to remove any contaminants on the surface.

### **PAINT**

The tank shall be painted to match the chassis. The tank's paint color shall be "cross referenced" from the chassis paint, and shall be painted to match the main chassis color as close as possible.

### **PRIMING**

Two (2) medium wet coats of adhesion promoter for plastics shall be applied to all surfaces to be painted.

Two (2) applications of primer shall be applied. The first application shall be four (4) coats and the second application shall be three (3) coats.

### **COMPARTMENT INTERIORS**

The side compartment interiors shall be unpainted and in their natural finish.



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## **WHEEL RIMS**

The chassis wheels shall be as furnished by the chassis OEM. No additional finishes shall be provided by apparatus manufacturer.

## **LETTERING**

Reflective lettering shall be applied to the cab doors at the direction of the purchaser.

Photos or drawings of the lettering and striping layout shall be provided by the purchaser prior to construction.

## **REFLECTIVE STRIPE**

There shall be a reflective Scotchlite band located on the apparatus cab and body. The band shall be per the purchasers size, design and color specifications.

The reflective band shall be in compliance with current NFPA requirements.

Photos or drawings of the layout shall be provided by the purchaser prior to construction.

## **CHEVRON STRIPING**

At least 50% of the rear of the unit shall be covered with Red and Fluorescent Yellow-Green alternating 6.00" stripe in an inverted Chevron pattern.

A 0.50" Gold reflective stripe shall outline the sides of the wetside tank.

## **LOOSE EQUIPMENT**

The following items shall be provided and shipped loose with the completed apparatus at the time of delivery:

## **FOLDING TANK**

One (1) 2100 gallon Aluminum collapsible frame folding portable tank shall be supplied. The tank liner shall have 22 oz vinyl sides and a 28 oz vinyl floor that shall be Red in color. Grab handles shall be placed on the floor of the liner to help the firefighter pick up the liner when folding.

## **SUCTION HOSE**

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Two (2) 6.00" X 10' section(s) of KOCHEK, PVC type hard, suction hose shall be provided on the apparatus. The hose(s) shall be light weight type with Pyrolite, Long Handle Female x Rocker Lug Male, NST threads. The hose shall be black in color.