

# Lumpkin County 1500 Gallon Pumper

## **INTENT OF SPECIFICATIONS**

It is the intent of these specifications to cover our bid to furnish and deliver to the purchaser a complete NFPA 1901 compliant apparatus as it pertains to the specific type of apparatus equipped as hereinafter specified. With a view to obtaining the best results and the most acceptable apparatus for service in the fire department, these specifications cover the general requirements as to the type of construction, together with certain details as to finish, equipment and appliances with which the successful bidder must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who will be solely responsible for the design and construction of all features.

### **ADHERENCE TO SPECIFICATIONS**

In order to closely evaluate all bids and determine the responsiveness to the customer request, each proposal must be submitted in the same order as the customer specification for ease of comparison. Each item must have a check mark in the appropriate column indicating compliance. Those items that are different by brand, model number (when applicable), and operational performance must be clearly defined and listed separately on a document clearly identified as "Clarifications and Substitutions". Vendors failing to comply with this request are subject to immediate rejection without further cause. (NO EXCEPTIONS)

### **SAFETY REQUIREMENTS**

The unit specified meets all State and Federal safety standards and laws that are in effect on the date of the bid for the item(s) that are being specified and the particular use for which they are meant.

### **QUALITY AND WORKMANSHIP**

The design of the apparatus shall embody the latest approved automotive engineering practices, experimental designs and methods shall not be acceptable. The workmanship shall be of the highest quality in its respective field. Special consideration is given to the following points: accessibility of the various units that require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry loads as specified.

### **DELIVERY & TERMS**

The successful bidder shall agree to furnish the apparatus within **180 to 230** calendar days after the receipt of order, subject to chassis delivery.

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## **GENERAL CONSTRUCTION**

The complete apparatus, assemblies, subassemblies, component parts and so on, will be designed and constructed with due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is to be subjected when placed in service. All parts of the apparatus will be strong enough to withstand the general service under full load. The apparatus will be so designed that the various parts are readily accessible for lubrication, inspection, adjustment and repair. Vehicle specifications meet or exceed requirements of NFPA 1901, Underwriters Laboratories and all State and Federal DOT vehicle regulations.

The apparatus will be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between the front and rear axles, that all specified equipment, including a full compliment of specified ground ladders, full water tank, loose equipment, and firefighters; will be carried without overloading or injuring the apparatus.

## **OPERATION AND SERVICE DOCUMENTATION**

The documentation will address at least the inspection, service, and operations of the fire apparatus and all major components thereof. The manufacturer shall also provide documentation of the following items for the entire apparatus and each major operating system or major component of the apparatus:

1. Manufacturers name and address
2. Country of manufacture
3. Source of service and technical information
4. Parts and replacement information
5. Descriptions, specifications, and ratings of the chassis, pump, and aerial device
6. Wiring diagrams for low voltage and line voltage systems to include the following information: representations of circuit logic for all electrical components and wiring, circuit identification, connector pin identification, zone location of electrical components, safety interlocks, alternator-battery power distribution circuits, and input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
7. Lubrication charts
8. Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
9. Precautions related to multiple configurations of aerial devices, if applicable
10. Instructions regarding the frequency and procedure for recommended maintenance
11. Overall apparatus operating instructions
12. Safety considerations
13. Limitations of use
14. Inspection procedures
15. Recommended service procedures
16. Troubleshooting guide
17. Apparatus body, chassis, and other component manufacturers warranties

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18. Special data required by this standard
19. Copies of required manufacturer test data or reports, manufacturer certifications, and independent third-party certifications of test results (Mid-ship Pump)

## MANUFACTURING LABELS

A permanent plate shall be mounted in a compartment specifying the quantity and type of the following fluids that may be used in the apparatus for normal maintenance.

Where a fluid is not applicable to the unit, the plate shall be marked N/A to inform the service technician who may not be familiar with the apparatus.

- Engine oil
- Engine coolant
- Transmission fluid
- Pump transmission fluid
- Pump primer fluid
- Drive axle fluid
- Air conditioning refrigerant
- Power steering fluid
- Cab tilt mechanism fluid
- Transfer case fluid
- Equipment rack fluid
- Air compressor system lubricant
- Generator system lubricant
- Front tires air pressure
- Rear tires air pressure

## REQUIRED LABELS:

**SEAT BELT SIGN:** An accident prevention sign stating “**Danger Personnel Must Be Seated And Seat Belts Must Be Fastened While Vehicle Is In Motion Or Death or Serious Injury May Result.**” shall be visible from each seating position.

**SEATING CAPACITY SIGN:** A permanent sign shall be installed in the driver’s compartment specifying the maximum number of personnel the vehicle is designed to carry (seating capacity) per NFPA standards. It shall be located in an area visible to the driver and shall read “**SEATING CAPACITY (2)**”.

**ACCIDENT PREVENTION SIGN:** An accident prevention sign stating “**Danger Do Not Ride On Rear Step While Vehicle Is In Motion, Death Or Serious Injury May Result**” shall be placed so it is visible from the rear step of the vehicle. A similar sign shall be placed on the top mount walkway.

**SUCTION INLET SIGN:** If an inlet located at the pump operator’s position is valved, it shall be provided with a permanent label that states “**Warning Death Or Serious Injury**”

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Could Occur If Inlet Is Supplied By A Pressurized Source When The Valve Is Closed".

**OVERALL TRAVEL CLEARANCE PLATE:** There shall be a travel clearance warning label located in the chassis cab. The travel clearance warning label to be located in easy view of the driver. The travel clearance warning label to include the following information: **Overall travel clearance height in feet and inches.**

**GVW SIGN:** The manufacturer shall supply the final manufacturer's furnished certification of GVWR and GAWR on a nameplate affixed to the vehicle.

**TYPE OF FUEL SIGN:** A “Diesel Fuel Only” name tag shall be attached to fuel fill access door.

**FINAL STAGE LABEL:** A nameplate shall certify that the completed vehicle conforms to the motor vehicle safety standards previously certified by the chassis manufacturer and that the final stage Manufacturer has not altered the certification. All nameplates and instruction plates shall be metal or plastic with the information permanently engraved, stamped, or etched thereon. Metal nameplates to be installed with plated screws. All nameplates to be mounted in a conspicuous place.

## **NFPA COMPLIANCE**

### **NFPA COMPLIANCE**

The successful bidder shall agree to furnish a complete apparatus in compliance with the latest published version of NFPA 1901. Manufacturers whose apparatus does not meet the intent of the latest published version of NFPA 1901 shall be considered non-compliant and cause for bid rejection.

The chosen manufacturer shall comply with NFPA 1901 Chapter 4 titled General Requirements as they pertain to the requested type of apparatus.

All fire apparatus shall comply with the following NFPA 1901 chapters:

- (1) Chapter 1, “Administration”
- (2) Chapter 2, “Referenced Publications”
- (3) Chapter 3, “Definitions”
- (4) Chapter 4, “General Requirements”
- (5) Chapter 12, “Chassis and Vehicle Components”
- (6) Chapter 13, “Low Voltage Electrical Systems and Warning Devices”
- (7) Chapter 14, “Driving and Crew Areas”
- (8) Chapter 15, “Body, Compartments, and Equipment Mounting”

After acceptance of the fire apparatus, the purchaser shall be responsible for ongoing training of personnel to develop and maintain proficiency regarding the proper and safe use of the apparatus and the associated equipment.

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Special notice is given to the following areas that were changed in the 2009 revision. It is the responsibility of the successful bidder to be familiar with all applicable areas of NFPA. This list is not all-inclusive and shall not be construed as such.

## **APPARATUS TOP SPEED**

The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (105 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L) and the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 mph (85 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

## **VDR DATA**

The completed apparatus shall have a VDR Data recorder installed. The following information shall be collected.

- Vehicle speed in mph
- Acceleration (from speedometer) mph/sec
- Deceleration (from speedometer) mph/sec
- Engine speed rpm
- Engine throttle position % of full throttle
- Anti-lock braking system event On/off
- Seat occupied status Occupied: Yes/No by position
- Seat belt status Buckled: Yes/No by position
- Master optical warning device switch On/off
- Time 24-hour clock
- Date Year/month/day

Memory shall be sufficient to record 100 engine hours' worth of minute-by-minute summary showing the data in Table 4.11.4.

When the memory capacity is reached, the system shall erase the oldest data first.

All data stored in the VDR shall be uploadable by the user to a computer and importable into a data management software package.

Data shall be password protected with access controlled by the purchaser.

Software shall be delivered with the apparatus that will run on both Windows® and Apple® operating systems and produce the following formatted reports from the uploaded data:

- (1) Raw second-by-second data over a specified data/time range
- (2) Daily log for the time the engine is running for a given date (minute-by-minute output of all values)
- (3) Weekly summary (maximum values each hour for each day of the week)
- (4) Monthly summary (maximum values each day for each day of the month)

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## **SEAT BELT INDICATORS**

Signs that read “Occupants Must be Seated and Belted When Apparatus Is in Motion” shall be visible from each seated position.

Each seating position that is not intended to be used during transit shall be individually labeled as follows:

WARNING: THIS SEAT IS NOT TO BE OCCUPIED WHILE VEHICLE IS IN MOTION.

A seat belt warning system shall be provided.

The warning system shall consist of an audible warning device that can be heard at all seating positions designed to be occupied while the vehicle is in motion and a visual display visible to the driver or the officer showing the condition of each seating position.

The warning shall be activated anytime the parking brake is released or the automatic transmission is not in park.

The seat position display shall indicate conditions in accordance with Table 14.1.3.10.3.

The display indication shall be permitted to consist of lights, text, graphical indicators, digital displays, or other methods.

The warning system shall not show an affirmative indication unless it has determine

## **TIRE PRESSURE MONITORING**

Each tire shall be equipped with a visual indicator or monitoring system that indicates tire pressure.

## **ELECTRONIC STABILITY CONTROL**

This vehicle is equipped with the Bendix Electronic Stability Control system (ESC) to meet the requirements of NFPA 1901, 2009 Edition Section 4.13.1.2.

# **OEM WARRANTY**

## **GENERAL WARRANTY**

The following warranty will be furnished. We warrant each new piece of Fire Apparatus to be free from defects in material and workmanship under normal use and service. Our obligation under this warranty is limited to repairing or replacing, as the Company may elect, any part or parts thereof which will be returned to us with transportation charges prepaid and as to which examination will disclose to the Company's satisfaction to have been defective, provided that such part, or parts will be returned to us no later than one (1) year after delivery of covered apparatus. Such defective part or parts will be returned or replaced free of charge and without charge for installation to the original purchaser.

### **This warranty will not apply to:**

- 1) Normal maintenance services or adjustments.
- 2) To any vehicle which will have been repaired or altered outside of our factory in any way so as, in our judgment, to affect it's stability, nor which has been subject to misuse, negligence, or accident, nor to any vehicle made by us which will have been operated to a speed exceeding the factory rated speed, or loaded beyond the factory rated load capacity.

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3) Commercial chassis and associated equipment furnished with chassis, signaling devices, generators, batteries, or other trade accessories as they are usually warranted separately by their respective manufacturers. This warranty is in lieu of all other warranties, expressed or implied. All other representations as to the original purchaser and all other obligations or liabilities, including for incidental or consequential damage on the Company's behalf unless made in writing by the Company.

## **PUMP WARRANTY**

Five (5) year (minimum) pump warranty to the original owner. This warranty varies by pump manufacturer.

## **TANK WARRANTY**

“Lifetime” warranty on the water tank.

## **10 YEAR BODY & SUBFRAME WARRANTY**

The manufacturer shall warrant each new fire body manufactured by it, if used in a normal and reasonable manner, against structural defects caused by defects in material, design or workmanship for a period of ten (10) years or 50,000 miles, the parts & labor to the original purchaser starting the day of final delivery.

## **5 YEAR PAINT WARRANTY**

The manufacturer shall warrant each new fire and rescue apparatus manufactured by it, if used in a normal and reasonable manner, against rust through, blistering, peeling or cracking of painted surfaces for a period of five (5) years or 50,000 miles, parts & labor to the original purchaser starting the day of final delivery. The manufacturer’s obligation under this warranty is strictly limited to repairing or repainting, as the Company may elect any defective part.

# **KENWORTH CHASSIS**

## **APPARATUS CHASSIS**

**Model:** New Kenworth T370  
Intended Service: Fire Engine - Pumper

## **FRAME & EQUIPMENT**

10.75 x 3.5 x 3/8in Steel Rails, Steel Crossmembers, 285-336in  
Aerodynamic Chromed Steel Bumper  
Three-Piece Huck-Bolted Crossmembers  
Huck Bolt All Accessible Frame Components

## **FRONT AXLE & EQUIPMENT**

Dana Spicer E1462I 14,600 lb, 3.5in drop  
Bendix Air ES cam brakes, 16.5 x 5  
Taper Leaf Springs with Shocks 14,600 lbs  
Power Steering TRW TAS85

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Power Steering Reservoir Frame Mounted  
PHP10 Alum LMS Hubs, Cast Drums, 16.5x5 Brakes  
Includes Bendix EES420 brake linings, non-asbestos.

## **REAR AXLE & EQUIPMENT**

Dana Spicer S30-190 Drive Axle  
30,000 lb. Capacity  
Ratio 6.14 Rear Axle  
Gusseted Cam Brackets on Axles  
Bendix 4S4M ABS with Traction Control & Electronic Stability Program  
Synthetic Axle Lubricant, All Axles  
Bendix ES cam brakes, 16.5 x 7  
Reyco 79B Multi Leaf 31,000 lb with Helper Springs

## **ENGINE & ENGINE EQUIPMENT**

PACCAR PX **380 HP**/2200 (Cummins)  
380HP@2000 1150 LB.FT. @1400  
Fire Service Only. Includes alum flywheel housing, cruise control,  
and J1939 provisions.  
Jacobs Retarder Engine Compression Brake, 3-stage  
Spin-on Oil & Fuel Filter Frame Mounted  
High Efficiency Cooling System  
Includes silicone radiator hoses and extended life coolant.  
Donaldson Radial Seal/Dry Type Air Cleaner w/Frontal Air Intake  
Delco 40SI 320 Amp Alternator  
Immersion Type Pre-heater 110-120V  
PACCAR 12V Starter  
Two (2) PACCAR Premium 12V Dual Purpose Batteries 1400 CCA  
Threaded Stud Type Terminal

## **AIR COMPRESSOR**

18.7 CFM Engine Mounted Air Compressor

## **EMBER SEPARATOR ON AIR INTAKE**

Designed to prevent embers in the atmosphere from entering the engine air intake  
and causing damage.

## **EXHAUST SYSTEM**

Horizontal (Diesel Particulate Filter/SCR RH under frame)

## **TRANSMISSION & CLUTCH**

Allison 3000 6 Speed EVS-P Emergency Vehicle Service Fire and Emergency  
Applications. Includes Rear Transmission Support, TranSynd Automatic  
Transmission Fluid, and Water Oil Heat Exchange.  
HD Driveline With Single Midship Bearing  
Allison EVS 4th Gear Lockup `J`  
Allison Configuration – Dash Mounted Push Button Shifter

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## **AIR EQUIPMENT**

Bendix AD-IS Air Dryer with Heater  
Includes easy-to-service spin-on cartridge.  
Drain Valve(s) - All Air Tanks  
Nylon Chassis Hose

## **TIRES & WHEELS**

FF: Goodyear 16 ply 12R22.5 G731  
RR: Goodyear 18 ply 315/80R22.5 G291 Tread  
Front Pilot 22.5x8.25 Polished Aluminum Wheels  
Rear Pilot 22.5x9 Polished Aluminum Wheels  
Polished Wheels with Chrome Wheel Nut Covers

## **FUEL TANKS**

Polished Aluminum 56 Gallons Fuel Tank Driver's Side  
DEF Tank 11 Gallons Under Cab  
(1) Non-Slip Fuel Tank Step LH  
Polished Aluminum Fuel Tank, Cover for DEF Tank & Strap

## **BUMPER**

Steel Aero Bumper Chromed with 2 Tow Hooks

## **CAB & EQUIPMENT**

Aluminum Cab Metton Hood w/Chrome Grille  
Bulkhead Aluminum Doors with SS Piano Hinges  
Includes alum side skins, alum rear skin, alum windshield mask  
911 HighBack Vinyl Air-ride NFPA Driver Seat  
911 HighBack Vinyl NFPA & SCBA Passenger Seat  
Black Seat Color  
3-Point Safety Belt-Driver & Pass-Red  
18in (4) Spoke Foam Steering Wheel-Soft Touch  
Adjustable Steering Column with Tilt Control  
Vantage Interior Grey/Black  
Includes vinyl padded headliner and back panels, doors with rubber insert, (2) inside entry grab handles, contoured armrests, vermilion Burl wood dash, two inside sun visors, two coat hooks, rubber floor mats, cup holder with 12-volt power outlet, and 2-way dome light.  
NFPA compliant Grab handles mounted RH/LH on Cab  
NFPA compliance kit with VDR, Sensors & Seat Monitors  
Day Cab Rear Window  
Power Lift Window - Both Doors w/Driver Control  
Combo Fresh Air Heater/Air Conditioner with radiator mounted condenser.  
Bi-Level Heater/Defroster Controls, 54,500 BTU/HR, and silicone heater hoses.  
Outside Sunvisor Stainless Steel  
Power Remote Stainless Steel Mirrors 7x16 with Heat Element  
Convex Mirror Over RH Door  
(2) Convex 8-Inch SS Mirror  
Center mounted under mirror bracket.

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OEM Air Horn Valve, Solenoid & Pull Cord  
Includes AM/FM/WB/USB Stereo, (2) cab mounted speakers, and antenna.  
Plug-In Auto Reset Circuit Breaker in place of fuses in junction box.  
Peterbilt Electric Windshield Wipers with Intermittent Feature  
Cigar Lighter and Ashtray  
Oil Temp Gauge  
Trans – Main Allison Transmission  
Instrument Package includes electric speedometer w/trip odometer, tachometer w/integral hourmeter, voltmeter, dual air pressure, engine oil pressure, water temperature, transmission temperature, and fuel level gauge.

## **WARNING LIGHT PACKAGE**

Includes High water temperature  
Low oil pressure  
Low air pressure warning lights w/buzzers  
High beam and turn signal indicators  
Parking brake warning light.  
Inlet air heater and alternator charging system warning  
Bright Bezel Gauges  
(2) Additional Toggle Switches  
Headlights Composite Fender Mounted w/Integral  
Park, Turn, and Side Marker.  
Marker Lights (5) Rectangular LED (Light Emitting Diodes)

## **PAINT**

Dupont Imron Non-Metallic (Solid Color Paint)  
CAB: RED  
FRAME: BLACK

## **APPARATUS CHASSIS ADDITIONS**

**The manufacturer shall provide the following chassis modifications.**

### **FRONT & REAR MUD FLAPS**

There shall be a pair of front and rear mud flaps installed at the rear of the fenders.

### **REAR TOW EYES**

There shall be two (2) tow eyes, one (1) on each side. They shall be attached to the frame rails, located in the rear center, under the tailboard.

### **BUMPER EXTENSION**

The factory front bumper shall be extended 16 inches forward of the original position to accommodate a 2.5” discharge and hose well made of .125” smooth aluminum with drainage. A polished aluminum .125” tread plate piano hinged door with latch covering

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the storage well shall be installed. A polished aluminum .125" tread plate cover shield with end plates shall be installed to enclose the space behind the bumper.

## **SWITCH PANEL**

There shall be a Class1 ES-Key control head located in the cab. The panel shall be mounted in an aluminum Jotto Desk tower between the driver and officer.

## **MASTER BATTERY SWITCH**

A master battery on/off switch with shall be provided in the cab, near the driver's door.

## **BACK-UP ALARM**

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

## **DUAL CHROME AIR HORNS**

Dual Hadley chrome air horns shall be provided and installed on the front fenders, (1) each side.

## **AUTOMATIC TIRE CHAINS**

"On-Spot" brand automatic tire chains will be provided on the rear axle for increased traction in inclement conditions. An electric switch mounted in the cab provides 12 volts to a solenoid mounted on the vehicle's frame rail. Compressed air to the solenoid is supplied from the vehicle's onboard air system. When the solenoid opens, compressed air enters the air chamber and lowers the chain-wheel so it contacts the inside of the tire. Friction between the tire and the rubber-covered chain-wheel causes the chain-wheel to rotate, creating centrifugal force to flail the chains out in front of the tire.

Six lengths of chain spaced at 60-degree intervals on the chain-wheel ensure that there are always two (2) chains between the tire and road surface whether you are accelerating, braking or are in a wheel lockup condition. The traction from the chain-wheel is obtained in forward or reverse. When the dashboard switch is turned off, the solenoid exhausts the air provided to the chain units and return springs in the air chambers bring the chain-wheels back to their resting position.

# **INDEPENDENT FIRE PUMP MOUNTING**

## **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.

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## **SIDE PANEL MODULE**

A pump operator's side panel pump module shall be provided. It shall be assembled and mounted independently from both the chassis and the body to properly allow sufficient flexing and prevent component fatigue.

The module shall be constructed using 3" aluminum square tubing with a 3/16<sup>th</sup> inch wall thickness. The welded ends of the tubing shall be chamfered prior to welding and shall be ground smooth prior to finishing. **(NO EXCEPTIONS)**

## **SIDE PANELS**

The pump compartment module shall have left and right side pump panels constructed of vinyl coated aluminum sheets. The side pump panels shall be removable. **(NO EXCEPTIONS)**

## **GAUGE PANEL**

The pump operator's upper gauge panel shall be located on the left side of the pump module above the main control panel. It shall be constructed from vinyl coated aluminum. It shall be vertically hinged and shall have two latches. **(NO EXCEPTIONS)**

## **ACCESS PANEL**

There shall be a hinged upper access panel located above the main pump panel on the right side of the pump module. It shall be constructed from vinyl coated aluminum. It shall be vertically hinged and shall have two latches. **(NO EXCEPTIONS)**

## **COLOR CODED LABELS**

A set of color-coded and function described labels shall be provided on the apparatus for the pump operator's controls, gated inlets, discharge outlets, drains, intake gauge, and pressure gauges (as applicable). The labels shall be a high quality plastic material with a durable adhesive on the back.

## **PUMP PANEL LIGHT SHIELD – LEFT**

The light shield shall be incorporated into the stainless steel gauge and operator's panel. Each light shall be weather resistant LED. A switch, located on the pump operator's panel shall be provided to activate the lights.

## **PUMP PANEL LIGHT SHIELD – RIGHT**

The light shield shall be incorporated into the stainless steel gauge and operator's panel. Each light shall be weather resistant LED. A switch, located on the pump operator's panel shall be provided to activate the lights.

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## PUMP COMPARTMENT LIGHTS

Two (2) DOT # 4310 recessed 4" - 10 LED lights shall be provided inside the pump compartment area.

## RUNNING BOARDS

Diamond plate running boards shall be installed on each side of the pump compartment module. The running boards shall be constructed of .125" fire truck quality (FTQ) bright aluminum treadplate. Each shall be a minimum of approximately 11" deep x the width of the side panel module.

The FTQ bright aluminum treadplate shall meet recommendations for slip resistant surfaces at the time of proposal. **(NO EXCEPTIONS)**

The running boards shall be attached to a frame mounted outrigger support structure. Each running board to have a 3" downward bend on the front and side faces with a 1" underside return for superior strength.

## **HALE QFLO Plus 1250 PUMP**

### SINGLE STAGE FIRE PUMP

The pump shall be a Hale single stage fire pump, capable of a 1250 gpm rating. Power to drive the pump shall be provided by the same engine used to propel the apparatus.

The pump shall be located near the middle of the chassis ("midship mounted") and driven through a transmission mounted drive shaft. Gear ratio of the pump to be individually engineered for engine selected.

The pump casing shall be a fine grain cast iron alloy, vertically split, with a minimum 30,000 psi tensile strength and bronze fitted.

The pump shall contain a cored heating jacket feature that, if selected, can be connected into the vehicle antifreeze system to protect the pump from freezing in cold climates.

The impeller shall be a high strength bronze alloy of mixed flow design, accurately balanced and splined to the pump shaft for precision fit and durability.

The seal rings shall be renewable, double labyrinth, wrap around bronze type.

The pump shaft shall be precision ground stainless steel. The shaft shall be splined to receive broached impeller hubs, for greater resistance to wear, torsional vibration, and torque imposed by engine.

The bearings provided shall be heavy duty, deep groove, radial type ball bearings. They shall be oversized for extended life. The bearings shall be protected at all openings from

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road dirt and water splash with oil seals and water slingers. The pump drive shaft shall be precision ground, heat treated alloy steel, with a minimum 2-1/2" x 10" spline ends. Gears shall be helical design, and shall be precision cut for quiet operation and extended life. The gears shall be cut from high strength alloy steel, heat treated and gas nitrided. The gear face shall be 3-1/2" minimum.

A discharge manifold, as supplied as part of the pump by the pump manufacturer, shall include a discharge check valve assembly to allow priming of the pump from draft with discharges open and caps off. Discharge outlets shall have extensions with companion flange openings to allow ease of service.

The pump priming system, heat exchanger system, discharge and suction valves, relief valves, pump shift, and master drain shall be as detailed elsewhere in these specifications.

Two (2) manuals covering the fire pump, pump transmission and selected options of the fire pump shall be provided with the apparatus.

## **MECHANICAL SEAL**

The pump shall be furnished with a maintenance free mechanical seal. The mechanical seal shall be a non-contacting, non-wearing dual seal design. The lip seal eliminates leakage on a wet pump while parked on standby. The second seal shall allow a drip rate for cooling and lubrication while pumping.

## **PUMP SHIFT - STATIONARY PUMPING**

One (1) drive shaft shall be installed to operate the fire pump. An electrically activated switch shall be installed in the cab to engage the fire pump. Safety interlocks shall be provided to ensure the pump drive system components are properly engaged to safely operate the pump. Pump shifting instructions shall be provided at the pump shifting location.

## **PUMP CERTIFICATION**

The fire pump shall be tested by pump manufacturer. To meet the flow requirements of the pump installed on the apparatus. A written certification shall be provided with the completed vehicle.

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

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

## **6" LEFT SIDE INLET**

One (1) 6" suction steamer inlet with male NH threads shall be provided, on the left side pump panel. The inlet shall have a removable screen.

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## INLET CAP

The inlet shall have a polished chrome cap, engraved with the pump manufacturer's logo and name. The logo and name shall be painted with a high quality urethane paint.

## 6" RIGHT SIDE INLET

One (1) 6" suction steamer inlet with male NH threads shall be provided, on the right side pump panel. The inlet shall have a removable screen.

## INLET CAP

The inlet shall have a polished chrome cap, engraved with the pump manufacturer's logo and name. The logo and name shall be painted with a high quality urethane paint or etching.

## ELECTRIC PRIMER

The fire pump priming system shall consist of one (1) 12V positive displacement type rotary vane primer of a fluidless design. A single, push-pull control shall be located on the pump operator's panel with a "Pull to Prime - Push To Close" label. The primer shall not require a lubrication tank. The priming pump shall be constructed of heat treated aluminum and hard coat anodized.

The pump priming system shall include a light to indicate when the pump priming system has been activated. The light shall be red in color and shall be labeled "WARNING - Primer Engaged".

## CLASS-1 "TOTAL PRESSURE GOVERNOR"

**A Class-1 "Total-Pressure-Governor" will be provided and installed on the pump operator's panel. It shall have the following Features:**

- Dedicated Intake & Discharge Pressure Gauges and RPM Display
- Check and Stop Engine Indicators
- One Touch Engine Information:
  - Battery Voltage
  - Oil Pressure and Temperature
  - Coolant Temperature
  - Transmission Temperature
  - Total Engine Hours
  - Total Pump Hours
  - Fuel Rate
- Reduced Pump Panel Space Required
- Proven Resolution and Response

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## **FUNCTION SWITCHES:**

Idle Mode - Preset - Increase - Decrease - Silence.

This system shall utilize information from the chassis engine ECU.

An audible alarm buzzer shall be included.

## **INDICATOR LIGHT**

A green indicator light labeled "**THROTTLE READY**" shall be included with the pressure governor control located on the pump operator's panel. It shall indicate that the pump is engaged in the proper stationary pumping position, and that the parking brake is set.

## **INTAKE RELIEF VALVE**

One intake relief valve shall be provided and mounted on the suction side of the pump, adjustable from 50-250 psi, on the valve itself. The valve shall be factory preset at approximately 125 psi. **(NO EXCEPTIONS)**

## **MASTER DRAIN**

One (1) rotary style master drain shall be installed on the lower portion of the side control panel. It shall be of brass construction and use a rotary screw mechanism against a rubber sealing surface. Each port shall be isolated. An "open and closed" label with arrows indicating direction shall be installed.

## **PUMP PANEL ID PLATE**

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

## **PLUMBING SYSTEM**

The plumbing system shall consist of stainless steel hard piping, or flexible high pressure hose with stainless steel ends, as deemed necessary for the application. Upon completion, the entire system shall be fully pressure tested.

The plumbing and valve arrangement shall be capable of delivering water to the pump at a minimum flow rate of 500 GPM while pumping at 150 psi pressure.

Each gated intake shall be equipped with a 3/4 inch bleeder valve located in close proximity to the intake. All intakes shall be provided with suitable closers (valves or caps) capable of withstanding 500 PSI.

When any 3" or larger intake or discharge is gated (except tank to pump valve), the valve shall have a mechanism to allow the valve to fully open or fully close no faster than 3 seconds.

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Any 2-1/2" or larger discharge outlet, mounted 42" or higher from ground, which hose is to be connected, and which is not in a hose storage area, shall be supplied with a sweep elbow of at least 30 degrees.

All 1-1/2" and larger intakes and discharges shall be equipped with drains. All drain valves shall be operational without the operator having to get under the apparatus. All discharges and intakes shall terminate with chrome NST adapters, with chrome caps and chains, unless detailed otherwise in these specifications.

## **2-1/2" SUCTION - REAR**

One (1) 2-1/2" NST rear suction inlet shall be plumbed to the pump. This rear inlet shall terminate at the rear body panel on officer's side. It shall be equipped with a 2-1/2" NSTF swivel thread adapter and 2-1/2" NST chrome plated pressure vented female plug. This rear suction will be gated with an air-operated 2-1/2" Akron stainless steel ball valve located in the pump compartment.

## **2-1/2" SUCTION(S) - BOTH SIDES**

One (1) 2-1/2" Akron Brass suction valve(s) shall be installed on both side panels of the pump with the valve body mounted behind the pump panel. The control handle(s) shall be the quarter turn ball type, of the fixed pivot design, and located along side the suction valve.

The suction(s) shall terminate with a 2-1/2" female NST chrome inlet swivel, an inlet strainer, a chrome male plug and chain. The valve(s) shall have a polished stainless steel ball.

## **TANK TO PUMP LINE**

One (1) tank to pump line shall be provided for connection between a water tank and the fire pump. The valve shall be a 4" butterfly ball type. The valve shall be controlled from the pump operator panel using an open/closed, two position toggle switch with a green indicator light for the closed position, and an amber indicator light for open. The toggle switch shall activate an electric solenoid changing the position of the valve.

## **2" TANK FILL**

One (1) 2" pump to tank fill shall be provided with a 2-1/2" inline bronze valve. The valve shall be manually controlled and properly labeled at the pump operator's panel.

## **2-1/2" LEFT SIDE DISCHARGES**

Two (2) 2-1/2" discharge outlets with 2-1/2" pipe and valve with NST threads shall be supplied at the left side panel. Each valve shall be a quarter turn ball type, self locking, fixed pivot design and shall be operated with a push/pull handle located on the pump operator's panel.

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Each valve shall be an Akron Brass valve with a high polished stainless steel ball.

Each valve shall have a chrome 30 degree elbow, NST threads, with a chrome cap and a stainless steel retaining chain.

## **PRESSURE GAUGES**

Two (2) 2-1/2" liquid filled gauges, each with a stainless steel bezel shall be provided, one for each discharge. The gauges shall be located on the pump operator's panel near the respective discharge control.

## **2-1/2" RIGHT SIDE DISCHARGES**

Two (2) 2-1/2" discharge outlet with 2-1/2" pipe and valve with NST threads shall be supplied at the right side panel. Each valve shall be a quarter turn ball type, self locking, fixed pivot design and shall be operated with a push/pull handle located on the pump operator's panel.

Each valve shall be an Akron Brass valve with a high polished stainless steel ball. Each valve shall have a chrome 30 degree elbow, NST threads, with a chrome cap and a stainless steel retaining chain.

## **PRESSURE GAUGES**

Two (2) 2-1/2" liquid filled gauges, each with a stainless steel bezel shall be provided, one for each discharge. The gauges shall be located on the pump operator's panel near the respective discharge control.

## **3" DECK GUN DISCHARGE**

One (1) 3" discharge outlet with 3" pipe and valve with NPT threads shall be supplied at the area on top of the pump. Each valve shall be a quarter turn ball type, self locking, fixed pivot design and shall be operated with a push/pull handle located on the pump operator's panel.

Each valve shall be an Akron Brass valve with a high polished stainless steel ball.

Each valve shall have a chrome 30 degree elbow, NST threads, with a chrome cap and a stainless steel retaining chain.

One 2-1/2" liquid filled gauge with a stainless steel bezel shall be provided for each discharge. The gauge shall be located on the pump operator's panel near the respective discharge control.

## **ELKHART MANUAL DECK GUN AND NOZZLE**

An Elkhart Vulcan 8500 series monitor and Elkhart model "X-Stream" 1250 GPM

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manual nozzle shall be supplied and installed on the deck gun base of the unit to provide for maximum travel clearance. The deck gun position shall be controlled with a tiller type handle.

## **2-1/2" FRONT DISCHARGE**

One (1) 2-1/2" discharge outlet with 2" pipe and valve terminating with NST threads chicksan swivel adapter, shall be plumbed to the front bumper. Each valve shall be a quarter turn ball type, self locking, fixed pivot design and shall be operated with a push/pull handle located on the pump operator's panel.

Each valve shall be an Akron Brass valve with a high polished stainless steel ball.

Each valve shall have a chrome 30 degree elbow, NST threads, with a chrome cap and a stainless steel retaining chain.

One 2-1/2" liquid filled gauge with a stainless steel bezel shall be provided for each discharge. The gauge shall be located on the pump operator's panel near the respective discharge control.

## **TWO CROSSLAYS**

Two (2) 1-3/4" crosslays shall be installed in the pump module above the pump. The crosslays shall each have capacity for 200 ft. of 1-3/4" double jacket fire hose.

The crosslays shall each have 2" plumbing and 2" self-locking valve and terminate with a 1-1/2" NST chicksan type swivel up through the center of the crosslay flooring. The swivels shall allow hose out either side of the crosslay.

A red vinyl cross lay cover shall be provided and securely fastened with straps on each end. A push/pull valve control shall be furnished at the pump operator's panel for each.

## **TANK LEVEL GAUGES**

### **TANK LEVEL GAUGE**

Two (2) Tank level gauges shall be provided and installed in the following locations.

One (1) The left rear of the apparatus body in close proximity to the dump valve.

One (1) Pump operators control panel.

The Intelli-Tank level gauge shall indicate the liquid level on an easy to read display and show 9 levels of indication. Each tank level gauge system shall include:

One (1) pressure transducer shall be mounted on the outside of the tank. All sealed foam tanks require a second transducer.

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One (1) set of weather resistant connectors, connecting to the digital display, to the pressure transducer and to the apparatus power.

Two (2) additional Whelen PS Tank vertical rainbow LED level gauges shall be provided and installed per the departments request.

## TANK SLAVE UNIT

One (1) mini-slave tank level indicator shall be installed in the cab in an area clearly visible by the driver.

One (1) set of weather resistant connectors, connecting to the digital display, to the pressure transducer and to the apparatus power.

## WATER TANK

### WATER TANK

The water tank shall have a capacity of **1500** U.S. Gallons. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus.

### POLY TANK CONSTRUCTION

The Poly-Tank shall be constructed of 1/2" thick polypropylene sheet stock. **The rear wall of the tanker shall be a minimum of 3/4" thick.** This will provide a solid surface for mounting steps, lights, handrails, and other requested options. A tank with a rear wall thickness of less than 3/4" will be cause for immediate rejection. This material shall be a noncorrosive stress relieved thermoplastic, natural in color, and U.V. stabilized for maximum protection. (No Exceptions)

The tank shall be designed and manufactured with the ability to deliver 100% of the tanks rated capacity from each dump valve while on level ground. Tanks whose total discharge capacity cannot be achieved while on level ground through the side or rear dump valves independent of each other will not be considered.

### TANK

The **1500** Gallon tank shall be of a specific configuration and shall be so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the booster tank shall be fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removability.

### TANK BAFFLES

# Lumpkin County 1500 Gallon Pumper

The transverse swash partitions shall be manufactured of 3/8" polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" polypropylene (natural in color) and extend to the floor of the tank through the cover to allow for positive welding and maximum integrity. 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 shall interlock with one another and be welded to each other as well as to the walls of the tank.

## **TANK SUMP**

There shall be one (1) sump in the bottom of the water tank. The sump shall be constructed of 1/2" polypropylene and shall be located in the left front quarter of the tank. On all tanks that require a front suction, a 4" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump to pre-vent air from being entrained in the water while pumping.

## **TANK FILL CONNECTION**

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and shall be capable of withstanding sustained fill rates of up to 1,000 GPM.

## **TANK LID**

The tank lid shall be constructed of 1/2" thick polypropylene to incorporate a three-piece locking design which allows for individual removal and inspection if necessary. The tank lid shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity. Each one of the lids shall have hold downs consisting of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers and shall assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

## **TANK MOUNTING**

The Poly-Tank shall rest on the body cross members in conjunction with such additional cross members, as required by the tank manufacturer.

The tank shall be isolated from the cross members through the use of hard rubber strips with, a minimum Rockwell Hardness of 60 durometer. Additionally, the tank shall be supported around the entire perimeter and captured both front and rear as well as side to side to prevent the tank from shifting during vehicle operation.

# Lumpkin County 1500 Gallon Pumper

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

The tank shall be completely removable without disturbing or dismantling the apparatus structure.

## **LIFETIME TANK WARRANTY**

The tank shall have a lifetime warranty from the tank manufacturer. Proof shall be provided that the manufacturer has supplied a minimum of 250 comparable units for the purpose Fire Tank applications. Warranty repairs shall be performed by a factory authorized representative at the customer location. Repairs made by a third party or the OEM shall not be acceptable. (No Exceptions)

## **WATER TANK FILL TOWER**

The tank shall have a combination vent and manual fill tower, marked "Water Fill." The fill tower shall be constructed of 1/2" polypropylene and shall be a minimum dimension of 8" x 8" at the outer perimeter. The tower shall be located in the **center** of the tank. Fill towers located at the front or rear of the tank shall not be permitted due to the increased chance of spillage during operation which could cause a hazardous environment under certain conditions. The tower shall have a 1/4" thick removable polypropylene screen and a polypropylene hinged-type cover. (No Exceptions)

## **TANK OVERFLOW**

The tank shall be equipped with a minimum of a 10" schedule 40 polypropylene overflow / air vent pipe. The pipe shall be installed in the fill tower and extend through the tank and dump to the rear of the rear axle.

## **SWIVEL CHUTE SYSTEM STAINLESS STEEL**

There will be one (1) 10" Newton stainless steel swivel chute with a Newton 8x12" long telescoping chute provided and installed on the dump valve at the center rear of the tank. The chute will be pinned to the rear compartment for storage during transport. The valves will be manually actuated with controls near the valve.

## **REAR DIRECT TANK FILL**

There shall be two (2) external 2.5" direct tank fill ports furnished on the rear of the apparatus, (1) each side. The tank fills shall have 2.5" Pump manufacturer Brass valves with built-in 30 degree elbow and manual swing type control handles located on each valve. A chrome plug and chain shall be supplied and installed on each valve.

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## **BODY SUB-STRUCTURE**

### **BODY SUB-STRUCTURE**

Body and compartment sub structure will be an all welded steel structure, and bolted to chassis frame. Ultimate strength will be accomplished with 1-1/2" x 3" x 3/16" structural channel members extended across chassis frame.

In addition, there will be 1-1/2" x 3" x 3/16" structural channel connecting the front and rear sub structure transverse members for additional strength and to form a full perimeter base for supporting the booster tank. Hangers and brackets will be reinforced at all corners with gussets to prevent potential sag and warp over an extended period of fire service operations.

The sub-structure will be coated with either Linex, Rhino Liner, or a polyurethane type material. Substructures that are just primed and painted will not be permitted. (No Exceptions)

The tank frame and compartment sub-assembly will be supported by using two 4" X 6" structural steel longitudinal support members.

There will be a minimum of two (2) 2" X 4" structural steel tubes affixed to the sub-assembly to for the compartment downriggers. Each compartment will be supported 3" X 3" steel angle with corner gussets.

A minimum of twelve (12) 3/4" Grade 8 bolts will attach the compartment sub-assembly to the vehicle chassis.

The tank cradle, compartment sub-assembly will be continuously welded to form an unprecedented body support system.

Body sub-assemblies that are affixed to the apparatus utilizing "U" bolts will not be permitted. (No Exceptions)

Tank support assemblies and/or cradles that are made of a solid sheet of steel will not be considered due to the inability to fully shed moisture. This design will allow moisture to accumulate which will lead to corrosion and failure due to the lack of air space and ventilation. (NO EXCEPTIONS)

## **BODY CONSTRUCTION**

### **BODY CONSTRUCTION**

The body compartments shall be fabricated entirely of treadbrite aluminum and flat sheet material due to superior strength to weight ratio. Each compartment shall be continuously welded on all exterior seams for maximum strength. All major structural mounting bolts shall be a minimum of grade five with locking style nuts.

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All mounting bolts shall be stainless steel ¼” with nylon lock nuts for rust prevention and lasting appearance while providing maximum strength. All fasteners shall be removed easily with standard tools. Wherever possible, all fasteners shall have locking style nuts or shall be threaded into panel and locked by an acorn nut, to eliminate loosening fasteners. (No Exceptions)

All screws that do not have locking nuts shall have threads coated with lock-tite. Acorn nuts shall be used throughout the body to prevent the possibility of snags and injuries, including fasteners, which protrude into compartments and hose bed.

The entire body shall be painted.

## **ROLL UP DOOR CONSTRUCTION**

Hansen roll up doors shall be provided for all compartments. Doors shall be constructed of extruded aluminum panels with flexible seals between each panel. Synthetic rubber seals shall be installed on each side, top and bottom edge for proper seal.

Each door shall be equipped with a stainless steel lift bar latching mechanism with bottom latch. (No Exceptions). Each door shall have an internal spring assist device.

## **COMPARTMENTS**

### **SWEEP-OUT CONSTRUCTION**

All side body compartments shall have sweep out type floors. All compartments shall be made to the largest practical dimensions to provide maximum storage capacity for fire department equipment. Compartments that are fabricated without a “Sweep Out” design shall be immediately rejected. (No Exceptions)

All compartments shall have aluminum vents on the top rear wall of the compartment. An aluminum cover shall be provided and installed on the outside of the compartment to shield water from entering the compartment at the vent area.

### **COMPARTMENTATION**

Both sides of the body shall have the following compartments:

One (1) full height with split depth 72” high x 55” wide compartment with rollup door opening of 68” high x 52” wide forward of the rear wheels.

One (1) full height with split depth 72” high x 49” wide compartment with rollup door opening of 68” high x 46” wide behind the rear wheels.

One (1) full height with split depth 36” high x 59” wide compartment with rollup door opening of 32” high x 53” wide forward of the rear wheels.

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## **REAR FENDERS & FENDERWELLS**

Two (2) single axle style painted aluminum fender assemblies shall be included on each side of the vehicle over the wheels of the axle. Reinforcements shall be provided at the rear and center areas to reduce movement during truck operation. Rubber fenderettes shall be provided and installed around each wheel well.

## **AIR BOTTLE STORAGE**

The body shall have a minimum of four (4) SCBA air bottle storage compartments (2 on each side) in the lower fender area. Each compartment shall be lined with a non-abrasive material to protect stored bottles. Each compartment shall have a polished aluminum door to protect bottles from loss.

## **RUNNING BOARDS**

Running boards shall be fabricated of 3/16" FTQ polished aluminum diamondette, supported by the structural steel sub-frame. The running boards when apparatus is fully loaded shall have a maximum ground clearance of 24" when sitting on a level surface. They shall be flanged down to provide added strength and rigidity and to prevent cutting of hands while washing the apparatus. All stepping surfaces shall be in compliance with the latest version of all applicable NFPA standards.

## **REAR TAILBOARD**

Rear step shall be constructed of 3/16" FTQ polished aluminum diamondette and supported by the structural steel sub-frame. The tailboard when apparatus is fully loaded shall have a maximum ground clearance of 24" when sitting on a level surface. The tailboard shall be flanged down to provide added strength and rigidity and to prevent cutting of hands while washing the apparatus. Rear step shall be spaced away from body a minimum of 1/4". The rear step shall be 12.5" deep and run the entire width of the apparatus. All stepping surfaces shall be in compliance with the latest version of all applicable NFPA standards.

## **ACCESS STEPS**

The following areas shall have steps installed;

Three (3) chrome-folding steps plus the fixed step bumper on the rear of the vehicle.

## **HANDRAILS**

All handrails used on apparatus shall be 1-1/4" diameter aluminum tube knurled supported at each end by a chrome-plated stanchion. All rails shall be designed and mounted to reduce the possibility of hand slippage and to avoid snagging of hose, equipment, or clothing. Drain holes shall be provided in the bottom of all vertically mounted assist handles. Handrails shall be installed in the following locations:

# Lumpkin County 1500 Gallon Pumper

One (1) 24" minimum vertical handrails shall be installed on the left side at the rear.

## **FOLDING TANK STORAGE**

The folding tank shall be stored vertically in a compartment behind the officer's side body compartments and accessed from the rear of the truck. The compartment shall be lined with material to protect the tank and secured by a polished aluminum door cover.

## **FOLDING TANK**

One (1) 1500-gallon capacity Heavy Duty folding tank shall be supplied. The tank shall feature a tubular aluminum frame with 22-ounce vinyl sides and 28-ounce vinyl floor.

## **LADDER AND PIKE POLE STORAGE**

Ground ladders and pike poles shall be stored vertically behind the Driver's side body compartments and accessed from the rear of the truck. The compartment shall be lined with material to protect the equipment and secured by a polished aluminum door cover.

## **SUCTION HOSE STORAGE**

Suction hose shall be stored behind the tank and accessed from the rear of the truck.

## **HOSE STORAGE DIVIDERS**

Three (3) hose bed dividers to separate different size hoses shall be supplied and installed to department's dimensions. Hose shall be stored above the tank and accessed from the rear of the truck.

# **12 VOLT ELECTRICAL**

## **ELECTRICAL STANDARDS**

All wiring and electrical equipment shall meet SAE standards. All lighting and reflectors shall meet Federal Motor Vehicle Standards.

All wiring shall be color and function coded. (No Exceptions)

The optical warning system on the fire apparatus shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right of way. The other mode shall signal that the apparatus is stopped and is blocking the right of way. The parking brake switch shall determine, through the use of switching, which mode the emergency lighting is in.

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The optical warning devices shall be constructed or arranged to avoid the projection of light either directly or through mirrors into any driving or crew compartments.

Illumination shall be provided for controls switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus and the equipment provided on it. Where external illumination is provided, it shall be a minimum of 5 foot-candles on the face of the device. Where external illumination is provided, it shall be a minimum of 4 foot lamberts.

Hydraulic lines, air system tubing, control cables, and electrical lines shall be clipped to the frame or body structure of the apparatus and shall be furnished with protective heat looms and/or grommets at each point where they pass through body panels or structural members.

Where any through-the-frame connector is provided, any such connector and wiring shall also be protected from shear or tear. Wiring shall be provided with properly rated low voltage over current automatic resetting protective devices. (The headlight circuit breaker shall be of the automatic reset type).

Such devices shall be readily accessible and protected against excessive heat, damage and water spray. Switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. Electromagnetic interference suppression shall be in accordance with SAE J551, performance levels and methods of measurement of electromagnetic radiation from vehicles and devices (30-1000 MHZ).

All relays and circuit breakers shall be "plug in" type for easy replacement. All components shall be protected against corrosion, heat, vibration and moisture. The relay panel shall be installed in the cab on the floor, between the seats and have an easily removable, aluminum cover. Relay panels mounted in compartments shall not be permitted due to the increased risk of damage from moisture. (No Exceptions)

## **ES-KEY MANAGEMENT SYSTEM**

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 loan management functions, system monitoring and reporting, and be fully programmable for a standardized electrical system.

The ES-Key system shall utilize a Controller Area Network to provide multiplexed control signals for "real time" operation. The system will consist of a Universal System Manager (USM) and Power Distribution Module(s) (PDM), a Vocation Module (VOM) that performs interlock functions, an Input Switch Module(s) that communicates with the USM, a Data Logger Module and an Information Display Module for displaying warnings and diagnostics.

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## **LOW-VOLTAGE SYSTEM (LVS)**

A Low Voltage Alarm system shall be provided and installed on the vehicle. It is designed to meet and exceed all the requirements of NFPA 1901.

## **DOT LIGHTING**

Two (2) amber and two (2) red side body running lights shall be provided and mounted, one (1) amber and one (1) red on each side approximately midway between the front and rear axle. There shall be five (5) lights located on the rear of the vehicle. Three (3) of the lights shall be in the tailboard area for use as identification lamps. Two (2) lights shall be provided on top stanchions, located as high and wide as possible, one (1) each side, for use as clearance lamps. All required reflectors shall be bolted onto body.

## **TAIL LIGHTS**

The two (2) tail/turn/brake lights shall be supplied. The two (2) back-up lights shall be clear. There shall be one (1) set of two mounted vertically each side on rear face of body.

## **BACK-UP ALARM**

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

## **COMPARTMENT LIGHTING**

One (1) LED strip light shall be provided in each enclosed compartment, including any and all special compartments provided with a minimum of 4 cubic feet. (No Exceptions)

## **DOOR OPEN HAZARD LIGHT**

There shall be a flashing red light located on the cab dash in clear view of the driver. This light shall be illuminated automatically whenever any passenger or equipment compartment door is open. The light shall be marked "Do Not Move Apparatus When Light Is On".

## **LICENSE PLATE LIGHT**

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

## **UNDERBODY/CAB GROUND LIGHTS**

Six (6) DOT # 4310 recessed 4" - 10 LED ground illumination lights (3 on each side), with outward facing angle brackets shall be provided and installed. Two (2) shall be located under the cab doors, and two (2) shall be located to light the rear tailboard area. Two (2) shall be located under the pump panel area. The lights shall activate with the parking brake.

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## **VISUAL & AUDIBLE WARNING SYSTEM EMERGENCY LIGHTING**

**NFPA-1901 Emergency lighting shall consist of:**

### **CAB UPPER ZONE WARNING LIGHTS**

One (1) 58” Code Three Model 2758NFPA2 all LED light bar with 8 modules shall be provided and installed on the cab roof.

### **CAB LOWER ZONE WARNING LIGHTS**

Code Three LED 45BZR warning red light heads shall be installed as follows:

- Two (2) in chassis grille (one each side)
- One (1) left front fender
- One (1) right rear fender

### **APPARATUS BODY WARNING LIGHTS**

Ten (10) Code Three LED 45BZR series **red** lights shall be provided and installed as follows:

- Four (4) rear facing Red
  - Two Upper Zone
  - Two Lower Zone
- Two (2) in the upper portion of the body. Left Front & Left Rear
- Two (2) in the upper portion of the body. Right Front & Right Rear
- Two (2) in the lower zone wheel well area.

### **TANKER UPPER REAR WARNING**

Two (2) Code Three LED rotators shall be provided and installed on the Upper Rear stanchions, (1) Red & (1) Amber.

### **SCENE LIGHTING**

Six (6) Code Three 4135Z26 series clear 7x3 scene lights shall be installed as follows:

- Two (2) rear facing upper zone. (One each side)
- Two (2) in the upper portion of the body. Left Front & Left Rear
- Two (2) in the upper portion of the body. Right Front & Right Rear

# Lumpkin County 1500 Gallon Pumper

## **SIREN**

One (1) Code Three 3942 100-watt siren shall be furnished and installed in the warning light switch tower between the driver & officer. The hard-wired noise-canceling microphone shall be installed on the dash within easy reach of the driver or officer. The siren shall feature Manual, Wail, Yelp, Air Horn, Piercer tones, Radio Repeat and Public Address. It shall have a two (2) year standard warranty from the manufacturer.

## **SIREN SPEAKER**

There shall be a 100-watt siren speaker furnished and installed **in** the front bumper. No surface mounted speakers shall be permitted. (No Exceptions)

## **FEDERAL Q2B MECHANICAL SIREN**

One (1) Federal Q2B mechanical siren shall be installed in the bumper on the driver's side. This siren shall be recessed with the grille exposed. Two (2) floor mounted foot switches shall be provided, One (1) for the officer and One (1) for the driver.

## **REFLECTIVE STRIPING**

One (1) 6" White Scotchlite stripe on each side, conforming to Federal Specification for Reflectivity, shall be provided down both sides of the body. Customer supplied insignia shall be applied to each side on the cab door.

At least of 50 percent of the rear vertical surfaces of the apparatus shall be equipped with a minimum of 4 in. alternating red and yellow, fluorescent yellow, or fluorescent yellow green and red chevron retro-reflective striping sloping downward and away from the centerline of the vehicle at an angle of 45 degrees.

All retroreflective materials required by 15.9.3.1 and 15.9.3.2 shall conform to the requirements of ASTM D 4956, Standard Specification for Retroreflective Sheeting for Traffic Control, Type I or better. Section 6.1.1 for Type I Sheeting. All retroreflective materials used to satisfy the requirements of 15.9.3.1 that are colors not listed in ASTM D 4956, Section 6.1.1, shall have a minimum coefficient of retroreflection of 10 with observation angle of 0.2° and entrance angle of -4°. Fluorescent yellow and fluorescent yellow green retroreflective materials used to meet the requirements of 15.9.3.2 shall conform to the minimum requirements specified for yellow Type I Sheeting in ASTM 4956 D, Section 6.1.1. Any printed or processed retroreflective film construction used to meet the requirements of 15.9.3.1 and 15.9.3.2 shall conform to the standards required of an integral colored film as specified in ASTM 4956 D, Section 6.1.1.

## **TOUCH-UP PAINT**

A container of touch-up paint will be provided to match the cab color.

# Lumpkin County 1500 Gallon Pumper

## **KUSSMAUL PUMP PLUS AND 1000 WATT INVERTER**

A Kussmaul Pump Plus 1000 system with auto-eject plug and 1000 watt inverter shall be installed on the apparatus. The unit will supply a conditioning charge to the chassis batteries and two 110-volt receptacles for up to 1000 watts of electricity. It will also keep the air pressure at operating pressure to reduce the chance of delay.

## **SUPER AUTO EJECT 20 AMP KUSSMAUL**

A Kussmaul 20 amp Super auto-eject electrical receptacle with a yellow weatherproof cover and box shall be installed on the left side of the cab above the wheel well. It shall automatically eject the plug when the starter button is depressed.

The U.L. maximum allowable amperage draw on receptacles is generally 80% of their listed rating, for example, the 20 amp receptacle should not carry more than 16 amp continuous load. When adding the different amperage draws of the components being installed on the chassis, be sure to factor in whether the components will draw a continuous load or intermittent load.

## **LOOSE EQUIPMENT DELIVERED WITH APPARATUS**

### 1. Ground Ladders

One (1) Alco-Lite 24' Aluminum Extension Ladder

One (1) Alco-Lite 14' Aluminum Roof Ladder with folding hooks

One (1) Alco-Lite 10' Aluminum Folding Attic Ladder

### 2. Pike Poles

One (1) 8' fiberglass handle

One (1) 10' fiberglass handle

### 3. Suction Hose and Adapters

Two (2) 10' sections of Kochek PVC light weight 6" suction hose with long handle female swivel on one end and a male rocker lug on the other end with 6" NST threads.

One (1) 6" NST Kochek BS60 barrel type strainer and a Kochek MM601 compartment mounting bracket.

### 4. Fire Service Hose

Eight (8) sections, Key Fire Hose ECHO-10 1.75"x 50' Green

Eight (8) sections, Key Fire Hose ECHO-10 1.75"x 50' Red

Twenty Four (24) sections, Key Fire Hose ECHO-10 3.0"x 50' Yellow

Four (4) sections, Key Fire Hose ECHO-10 3.0"x 25' Blue

Four (4) sections, Key Fire Hose ECHO-10 2.5"x 50' Blue

### 5. Nozzles

Three (3) Pistol Grip

One (1) Play Pipe