



One (1)

**CAB and CHASSIS**

The cab and chassis shall be a medium four door with a 10" raised roof, flat floor, aluminum tilt cab, built specifically for the fire service.

One (1)

**FRAME**

The frame side rails shall be "C" channel type, 10.25" x 3.5" x .38" 110,000 psi minimum yield high strength steel, with a RBM of 1,827,257 inch pounds and a section modulus of 16.61 cubic inches.

A minimum of seven (7) fully gusseted bolted assembly cross members shall be installed using grade 8 flanged head bolts and flanged lock nuts.

The area between the axle suspension hangers shall be free of any holes or fasteners in the flanges. No welding shall be incorporated in attachment of components. All frame dimensional cutting shall be by a plasma cutter. All relief areas shall be cut in with a minimum 2" radius at intersection points with ground smooth edges to prevent a stress focal point.

The frame shall carry a lifetime warranty to the original purchaser.

One (1)

**FRONT TOW HOOKS**

Two (2) painted steel tow hooks shall be bolted to the frame under the front bumper.

One (1)

**CHASSIS WHEELBASE**

The chassis wheelbase shall be 200" and the CA is 146.

One (1)

**FRONT BUMPER**

A one-piece, 10 gauge 304, polished stainless steel front bumper shall be provided. The bumper shall be a 12" high, two (2) rib wrap-around type.

The bumper shall be extended 24" ahead of the cab.

One (1)

**AIR HORNS**

Dual Hadley model #H00912A Stuttertone 24" air horns shall be installed behind the 24" front bumper extension in the center. A 1/4" airline "teed" equal distance from each horn shall supply the air horn system.

One (1)

**AIR HORN ACTUATION**

Air horn actuation shall be accomplished by the steering wheel horn button and a right side officer's mounted lanyard.



One (1)

**ADDITIONAL AIR RESERVOIR**

An additional 1200 cubic inch air reservoir shall be installed and isolated to prevent depletion of the air to the air brake system and to act as a supply tank for operating air equipment. It shall be plumbed with a 90 psi pressure protection valve on the reservoir supply side.

One (1)

**FUEL TANK**

The fuel tank shall have a minimum capacity of fifty (50) gallons. The baffled tanks shall be made of 14 gauge phosphate coated steel with chromate epoxy exterior finish.

The fuel tank shall be mounted under the frame, behind the rear axle with a three-piece strap hanger assembly with a "U" strap bolted midway on the fuel tank front and rear so the tank can be easily lowered and removed for service purposes. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

The tank shall have a vent port to facilitate rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2"NPT fill ports for right or left hand fill. A .5"NPT drain plug shall be centered in the bottom of the tank.

The standard fuel line for ISC and ISL engines shall be nylon material rated for diesel fuel. All other engines shall be steel wire braid reinforced rubber.

One (1)

**FRONT AXLE**

The front axle shall be an ArvinMeritor MFS-18 with a 3.74" drop and a 71.00" KPI. It shall have a capacity of 18,000 pounds GAWR.

**Suspension**

The springs shall be elliptical type, four (4) leaf, 54" long, 4" wide with a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall meet or exceed the capacity of the front axle.

**Steering**

The hydraulic power assist steering gear shall be a TRW TAS-85. A Vickers hydraulic power steering pump shall be gear driven from the engine. The steering ratio shall be 23.3:1 and have 6.2 turns stop to stop.

**Turn/Cramp Angle**

The hub piloted, MFS-18 model front axle cramp angle shall be a minimum of 50 degrees when using the 12R-22.5 front tires.



One (1)

**FRONT WHEEL BEARINGS OIL LUBRICATED**

The front axle wheel bearings shall be oil lubricated and come equipped with an oil level visual inspection window.

One (1)

**FRONT BRAKES**

The front brakes shall be ArvinMeritor 16.5" x 6" S-cam type with ArvinMeritor automatic slack adjusters.

One (1)

**FRONT SHOCK ABSORBERS**

Two (2) Bilstein monotubular design, nitrogen gas charged shock absorbers shall be part of the front axle suspension. Bilstein shall warranty the shock for a period of five (5) years.

One (1)

**FRONT TIRES**

The front tires be Michelin 315/80R 22.5 20PR "L" tubeless radial XZA1 highway tread with 22.5 x 9.0 ten (10) stud disc wheels. The tires and wheels be rated at 18,000 pounds.

One (1)

**FRONT WHEELS STEEL**

The front wheels shall be Accuride hub piloted, 9.00" x 22.5" steel wheels.

One (1)

**REAR AXLE**

The rear axle shall be an ArvinMeritor model #RS-24-160 with single reduction gearing and shall have a rated capacity of 24,000 pounds GAWR.

One (1)

Rear axle ration to allow speed capabilities of 70-73 miles per hour.

**OIL LUBRICATED REAR WHEEL BEARINGS**

One (1)

The rear axle shall have oil lubricated wheel bearings.

**REAR BRAKES**

One (1)

The rear brakes shall be ArvinMeritor 16.5" x 7" S-cam type with ArvinMeritor automatic slack adjusters.

**DRIVELINES**

One (1)

All drivelines shall be Spicer 1710 heavy duty series with 'glide coat' splines on all slip shafts.

**TOP SPEED**

The top speed of the vehicle shall be approximately 70-73 mph at governed engine rpm.



One (1)

**REAR SUSPENSION**

The rear suspension shall be a Reyco 79KB vari-rate, captive slipper type, with 57.5" x 3" springs. One (1) adjustable and one (1) fixed torque rod shall be provided.

The spring capacity must meet or exceed the capacity of the rear axle.

One (1)

**REAR TIRES**

The rear tires shall be Michelin 11R 22.5 16PR "H" tubeless radial XZE highway tread with a minimum rating of 24,020 pounds.

One (1)

**REAR WHEELS**

The single rear axle wheels shall be Accuride hub piloted, 8.25" x 22.5" steel.

One (1)

**ABS BRAKE SYSTEM**

A Meritor Wabco four sensor four modulator anti-lock braking system shall be installed on the front and rear ArvinMeritor axles for safer vehicle control during braking and reduced stopping distance in skid conditions.

The electronic monitoring system shall incorporate diagonal circuitry to monitor wheel speed during braking through a sensor and tone ring on each wheel.

A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. A momentary test switch shall be installed to test the system for diagnostic codes.

The ABS system shall automatically disengage the auxiliary braking system device when required.

The Meritor Wabco ABS system shall have a three (3) year or 300,000 mile warranty provided by Meritor Wabco Vehicle Control Systems.

One (1)

**SINGLE REAR AXLE AIR BRAKE SYSTEM**

A FMVSS 121 and NFPA rapid build-up, compliant air brake system shall be provided. It shall include three (3) air reservoirs with a total of 4136 cubic inches of air capacity.

A Bendix E6 floor mounted tread valve shall be mounted in the cab for service brake control.

A Bendix PP1 control valve shall operate the parking brake system.

Emergency braking shall be controlled through the Bendix treadle valve and modulated through a Meritor Wabco inversion valve.

The rear axle spring brakes are to automatically apply in case of air pressure loss below 60 psi with a mechanical means for releasing the spring brake chambers.



One (1)

**AIR DRYER**

A Meritor Wabco system saver 1200 spin-on desiccant air dryer with a 12-volt, 100-watt automatic heated moisture ejector shall be installed in the air brake system.

The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure.

The Meritor Wabco air dryer shall come with a three (3) year or 300,000 mile warranty provided by Meritor Wabco Vehicle Control Systems.

One (1)

**MANUAL DRAINS ON AIR TANKS**

Manual drains shall be installed on all reservoirs of the air brake system.

One (1)

**NYLON AIR LINE TUBING**

A dual air system plumbed with color coded reinforced nylon tubing air lines shall be installed. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) shall be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall be fiber reinforced neoprene covered hoses.

One (1)

**ENGINE**

A Cummins ISC-330 turbocharged, air charge cooled engine shall be provided.

Type:  
In-Line six (6) cylinder, 4 cycle

Horsepower:  
330 @ 2000 rpm (Governed @ 2200 rpm)

Torque:  
950 lbs. ft. @ 1300 rpm

Displacement:  
504.5 cubic inch

Governor:  
Electronic

The engine wiring harness shall include circuits for multiplex Borg Warner gauges, engine oil pressure warning lamp, engine temperature warning lamp, hand throttle, high idle, PSG systems and a J1939 data link in the drop out at the back of the cab. The harness shall end in connector to allow an optional pump panel harness be plugged into it.



An engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge shall be part of the engine's lubrication system.

One (1)

An external mounted transmission cooler shall be part of the engine cooling system.

**ENGINE EXHAUST BRAKE**

A Jacobs extarder engine exhaust brake shall be installed in the engine exhaust system to serve as an auxiliary braking device. An on/off switch shall be located on the instrument panel. The driver releasing the accelerator shall activate the exhaust brake when the switch is in the "on" position.

One (1)

The exhaust brake shall activate an aggressive downshifting of the transmission to enhance the exhaust brake performance.

**AIR COMPRESSOR**

The air compressor on the engine shall be a Wabco capable of producing a minimum of 18.7 cfm at 1250 engine rpm. It shall be gear driven, engine oil pressure lubricated and cooled by the engine cooling system. The air compressor shall have a five (5) year warranty.

One (1)

**FUEL FILTER - CUMMINS ENGINE**

A standard engine equipped secondary Fleetguard filter shall be installed on the engine.

A primary fuel/water separator shall be installed remote mounted on the cross member behind the transmission filter with a water-in-fuel (WIF) sensor. The sensor shall activate the WIF light and alarm in the instrument panel.

One (1)

**EXHAUST SYSTEM**

The single pipe exhaust system shall be installed under the right side frame with the discharge forward of the rear tires.

The exhaust system shall consist of an aluminized steel muffler, 0.065" wall aluminized steel exhaust pipe supported by bolted on frame brackets, stainless steel flex tubing between the engine and muffler and overlapping band clamps for the system joints.

One (1)

**AIR CLEANER**

The air cleaner shall be Farr #62891-001 dry type with a replaceable element, it shall have an outside air intake with an ember separator filter and an indicator light in the warning light cluster to show when the air cleaner element requires replacement.

One (1)

**COOLING SYSTEM FAN**

The engine cooling system shall incorporate a heavy-duty composite fan, belt driven on the engine on the engine. A shroud and recirculation shield system shall be used to ensure air that has passed through the radiator is not drawn through it again.



One (1)

**TRANSMISSION**

The transmission shall be an Allison 3000 EVS five (5) speed automatic with electronic controls. The transmission shall have two (2) 10-bolt PTO pads.

The transmission shall be equipped with a water to oil transmission cooler to ensure adequate cooling. The transmission shall have two (2) internal oil filters.

Fourth gear lock-up range may be accomplished by wiring for a pumping application.

The transmission gear ratios shall be:

1st	3.49:1
2nd	1.86:1
3rd	1.41:1
4th	1.00:1
5th	0.75:1
Rev	5.03:1

One (1)

**TRANSMISSION TOUCH PAD**

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and reach.

One (1)

**TRANSMISSION MODE**

The transmission, upon start-up, shall select four speed operation. By pressing the "mode" switch on the shift pad (mode on) provides five (5) speed overdrive.

One (1)

**SYNTHETIC TRANSMISSION FLUID**

Castrol "Transynd" or an equivalent synthetic TES 295 transmission fluid shall be utilized to fill the EVS transmission.

One (1)

**COOLING SYSTEM**

The cooling system shall have sufficient capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the engine and transmission manufacturer and EPA requirements. The complete cooling system shall be mounted in a manner to isolate the system from vibration and stress. The individual cores shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining core(s).

**Radiator**

The radiator shall be a cross-flow design constructed completely of aluminum with welded side tanks. The radiator shall have a minimum of a 603 square inch core and be bolted to the bottom of the charge air cooler to allow a single depth core, thus allowing a more efficient and serviceable cooling system. The radiator shall also be equipped with a drain cock to drain the coolant for serviceability.



### Surge Tank

The cooling system shall be equipped with a surge tank that is capable of being filled and removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a cap that meets the engine manufactures pressure requirements as well as the system design requirements.

### Coolant

The cooling package shall have Shell Rotella Extended Life Coolant installed. The use of supplemental coolant additives (SCA) shall not be allowed, as this is part of the extended life coolant makeup. The use of Extended Life Coolant provides longer life and change intervals providing improved performance. The coolant shall contain ethylene glycol and deionized water to keep the coolant from freezing to a temperature of -34 degrees F.

### Coolant Filters

The engine shall be equipped with a coolant filter.

### Hoses/Clamps - Radiator

All radiator tubes shall be formed from aluminized steel tubing and installed with silicone hoses with stainless steel constant torque clamps.

### Recirculation Shields

Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting the performance. When a center hosewell is installed an additional shield may be required to redirect the airflow into the coolers.

### Charge Air Cooler

The charge air cooler shall be a cross-flow design constructed completely of aluminum with welded side tanks. The charge air cooler shall have a minimum of a 401 square inch core and shall be bolted to the top of the radiator to allow a single depth core, thus allowing a more efficient and serviceable cooling system.

### Hoses/Clamps - Charge Air Cooler

All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "T" style clamps meeting the engine manufactures requirements.

### Transmission Cooler - Non-retarder and Retarder Applications

The transmission cooler shall be a cross flow air to oil design constructed completely of aluminum with welded side tanks. The transmission cooler shall have a minimum of a 140 square inch core and shall be bolted to the bottom of the radiator to allow a



single depth core, thus allowing a more efficient and serviceable cooling system. The transmission cooler shall be mounted in such a manner as not to extend below the chassis frame by more than one inch, thus allowing greater approach angles and ground clearance.

#### Transmission Heat Exchanger - Non-retarder Application

Transmission oil to water heat exchanger shall be installed to aid in cold climate conditions maintaining the transmission temperature at the operational level.

One (1)

### **FLAT FLOOR MFD 10" RAISED ROOF TILT CAB**

The cab shall be a Spartan Chassis Flat Floor, MFD (medium four door), 10" raised roof, aluminum tilt cab, capable of seating eight (8) firefighters.

The raised roof shall extend from the back of the cab to the center of the front doors to provide additional headroom for the driver and officer.

The cab shall be of the Eurospace interior design allowing for easy communication inside the cab. The cab overall length shall be 128.0" with 54.0" from the centerline of the front axle to the back of the cab.

The rear cab wall shall be 0.090" thick aluminum. The rear floor to the headliner height shall be approximately 65.0".

The cab front skin and floor shall be 0.190" thick aluminum. The inside width shall be 88.0" and the front floor to headliner height above the driver and officer shall be approximately 65.0".

All glass used in the cab shall be automotive tint. The windshield shall have a maximum of 2808 square inch area and be of the wraparound design, 52.0" wide and 27.0" high for maximum visibility. The left and right windshield shall use the same interchangeable piece of glass. All cab windows shall be the same height as the windshield to provide full panoramic visibility.

A molded rubber 11" grab handle shall be provided on the hinge post inside the cab at the driver and officer door for entering and exiting the cab.

The driver and officer seats shall have an 8" high x 16.25" wide x 18.75" deep compartment in the seat box beneath them. The compartment shall have an opening of 6" high x 14.25" wide.

Intermittent parallel arm-type electric wipers with separate motors and electric powered "wet arm" type windshield washers shall be provided. Access to the wiper motors shall be through an access panel located on the front cab face.

One (1)

### **STEERING COLUMN AND WHEEL**

The Douglas Autotech steering column shall be a seven (7) position tilt and 2.25" telescopic type with an 18" steering wheel. The steering wheel shall be covered with black absorbite padding.



One (1) The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

**INTERIOR TRIM AND FLOOR MAT**

The cab interior soft vinyl and ABS trim surfaces, including the seats shall be gray in color.

One (1) The pebble grain, non-slip vinyl covered, foam backed, sound deadening, multi-layer insulating floor mat shall be gray. This floor mat shall be two ply material with 0.25" thick closed cell foam and a 0.06" thick wear surface.

**HEATER/DEFROSTER**

One (1) A 57,600 Btu, front overhead heater and defroster shall be provided. The heater shall be located above the windshield between the padded sun visors and contain the temperature and blower controls.

**AIR-CONDITIONING**

The cab shall be equipped with a combination heater air-conditioning unit mounted on the engine tunnel.

The combination heater/air-conditioning unit has eight (8) adjustable louvers, a temperature control valve and two (2) three speed blowers capable of circulating 550 cubic feet of air per minute. This unit is rated at 42,500 BTU for cooling and 36,000 BTU for heating.

The air-conditioning condenser is 42.0" wide x 10.46" deep x 10.0" high. It is capable of circulating 1250 cubic feet of air per minute and is rated at 41,000 BTUs. The condenser will be located in the center of the roof forward of the raised roof against the slope.

The air-conditioning compressor shall be an engine driven Seltec TM-16 and utilize R-134A refrigerant.

A seasonal shut-off valve for the heater shall be supplied at the front of the right hand corner of the cab.

One (1)

**CAB TILT ACTUATION**

The entire cab shall tilt 45 degrees to allow for easy maintenance of the engine and transmission.

The cab tilt actuation shall be with an electric over hydraulic lift pump with a control box on a pennant for safe visual operation.

The lift system shall have an ignition interlock and red lock down indicator lamp, which shall illuminate when holding "down" switch to indicate safe road operation. It shall be necessary to activate the master battery switch with the park brake set in order to tilt the cab.



Two cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab pivots shall be 1.90" ball and be anchored to frame brackets with 1.25" diameter studs.

Two spring loaded hydraulic hold down hooks outboard of the frame shall be installed for holding the cab securely to the frame.

A steel safety assembly shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety assembly shall fall over the lift cylinder when the cab is in the "up" position. A cable release system shall also be provided to clear the safety assembly from the lift cylinder when lowering the cab.

One (1)

**WHEEL WELL LINERS**

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. The two-piece liners shall consist of an inner liner 16" wide made of ABS plastic and an outer fenderette 3.50" wide made of 12 gauge polished aluminum.

One (1)

**EXTERIOR CAB ASSIST HANDLES**

Four (4) 18" knurled anti-slip one-piece exterior assist handles shall be installed, one (1) behind each cab door. The assist handle shall be made of 14 gauge 304 stainless steel and be 1.25" diameter to enable easy grabbing with the gloved hand.

One (1)

**CAB WINDOWS**

Fixed cab side windows, 16.0" x 26.0" (416 square inches) shall be installed behind the front cab doors one each side of the cab. Each window shall be the same height as the windshield to provide maximum visibility.

One (1)

**FLAT FLOOR CAB DOORS**

The cab doors shall be flush, full-length type with hidden 0.38" stainless steel piano type door hinges. All doors shall be equipped with push button type exterior latches, suitable for use with firefighter gloves, and identical keyed locks that are designed to prevent accidental lockout.

The interior latches shall be flush paddle type, which are incorporated into an upper door panel.

The front doors shall measure 43.0" wide x 77.0" high with 0.19" thick aluminum skins. The front steps shall be a two (2) step configuration with the lower step constructed of an open grate material and the intermediate step covered with embossed, NFPA compliant, aluminum tread plate.

The front door shall have full roll down window 27.0" x 26.0" with a total glass area of 702 square inches each.

The following measurements shall apply:  
First step: 13.5" deep x 32.0" wide  
Intermediate step: 8.63" deep x 33.0" wide



Ground to first step: approximately 21.0"  
First step to intermediate step: 11.0"  
Intermediate step to floor: 11.0"

The rear doors shall measure 34.0" wide x 87.0" high with 0.19" thick aluminum skins. The rear steps shall be a two (2) step configuration with the lower step constructed of an open grate material and the intermediate step covered with embossed, NFPA complaint, aluminum tread plate.

The side rear door windows shall be roll down type 27.5" x 26.0" with a total glass area of 715 square inches each.

The following measurements shall apply:  
First step: 11.0" deep x 21.5" wide  
Intermediate step: 11.5" deep x 23.5" wide  
Ground to first step: approximately 21.0"  
First step to intermediate step: 12.5"  
Intermediate step to floor: 12.5"

One (1)

#### **ENGINE TUNNEL LIGHT**

A Grote model #60181-5 rectangular 1.5" x 2.25" x 1.13" clear work light shall be provided and installed under the engine tunnel.

One (1)

#### **ENGINE COVER**

The fixed type engine cover shall be a maximum of 23.0" high x 41.5" wide. The back of the tunnel shall be 51.0" from the back wall.

The cover shall be an integral part of the cab and made of 0.13" thick aluminum. The exterior shall be covered with a multi-layer foam backed, sound deadening pebble grain mat and the underside of the cover shall be heavily insulated with 1" multi-layer foam with a non-conductive Mylar backing and held in place with adhesive, aluminum pins and retention caps.

The cover shall be equipped with a hinged access door to permit routine engine fluid checks without the need of tilting the cab.

The cover shall incorporate the integral rocker switch console.

One (1)

#### **DRIVER SEAT**

The driver seat shall be a Seats Inc. 911 "Universal" 2-way high back. The seat shall have tapered and padded seat cushion and back, with a minimum of 39.0" from the cushion to the headliner.

The seat shall be equipped with adjustable lumbar support, adjustable tilting seat back, and "knee rake" bottom cushion adjustment.

The seat shall be equipped with a three (3) point shoulder harness with lap belt and an automatic retractor attached to the cab.



One (1)

**SCBA OFFICER SEAT**

Officer's seat shall be a Seats Inc. 911 "Universal" SCBA style for the quick donning of an air pack.

The seat back shall include a vertically split hinged headrest and ZICO "CRS" brackets with 6" tank retention clips. A removable padded vinyl cover shall be supplied over the SCBA cavity.

The seat shall have tapered and padded seat cushion and back with a minimum of 39.0" from the cushion to the headliner.

The seat shall be equipped with an integrated three (3) point shoulder harness with lap belt and an automatic retractor built into the seat frame.

One (1)

**FLIP-UP CREW SEATS**

Two (2) outer forward-facing seats with flip-down seat cushions shall be installed at the rear of the cab.

Each seat shall be equipped with an integrated three (3) point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

One (1)

**SCBA CREW SEATS**

The two (2) outer rear facing crew area seats shall be Seats Inc. 911 "Universal" SCBA style for the quick donning of an air pack.

The seat back shall include a vertically split hinged headrest and ZICO "CRS" brackets with 6" tank retention clips. A removable padded vinyl cover shall be supplied over the SCBA cavity.

Two (2) forward facing Seats Inc. "ABTS" SCBA seats shall be installed at the back wall of the cab. The seat back shall include an angle hinged split headrest and ZICO "CRS" brackets with 6" tank retention clips. A removable padded vinyl cover shall be supplied over the SCBA cavity.

The center forward facing seats shall be installed on a 42" wide aluminum riser mounted in the center of the cab at the rear wall. The riser shall have a hinged door on each end.

Each seat shall be equipped with an integrated three (3) point shoulder harness with lap belt and an automatic retractor built into the seat frame.

One (1)

**IMPERIAL 1200 COVERED SEATS**

The seats shall be covered with Imperial 1200 vinyl coated polyester material.



One (1)

**CAB MIRRORS**

Two (2) Velvac, model 2025 or approved equal, low mount chrome plated or stainless steel mirrors shall be mounted, one on each side of the cab doors.

One (1)

**ELECTRICAL SYSTEM**

A single start electrical system shall be installed.

The electrical system shall be 12 volt, suppressed per SAE J551 with three (3) Douglas BCI-31 950 CCA batteries with 210 minute reserve capacity and 3/0 welding type dual path starter cables per SAE J541.

Wiring shall be appropriate gauge with 311 degree F insulation. All wires in the chassis shall be circuit numbered and function coded in addition the SAE wires shall be color coded. The complete wiring harness shall be protected by 250 degree F minimum high temperature flame retardant loom and VN-400S nylon fire retardant.

The following shall be supplied:

- One (1) Cole-Hersee #EX26654A ignition switch.
- One (1) Cole-Hersee #2484 master battery switch.
- One (1) on board battery conditioner with quick disconnect connector (see electrical section of these specifications for more information)
- One (1) starter button.
- Rocker type headlight switch with instrument lamp slide dimmer.
- Windshield wiper switch, multiple speed intermittent with integral washer switch.
- Self-canceling steering column mounted turn signal switch with integral hazard and head lamp dimmer switch.
- Twelve (12) LED backlit rocker switches and legends for accessories.
- Master rocker switch, installed below eye level to the right of the instrument panel.

The interior lighting includes:

- 9.65" long x 4.80" wide flush mount combination red/clear dome lamps over front and rear doorsteps (clear lamp is door activated and individually switched).
- 4.5" long x 2.5" wide x 1.75" high red flashing open door lamp overhead center.

One (1)

**INSTRUMENTATION**

An ergonomically designed instrument panel shall be provided. The instrument panel shall contain the following red backlit gauges and LED indicators, all within clear view of the driver.

- One (1) electronic tachometer with integral digital hour meter.
- One (1) electronic speedometer. The speedometer shall include a digital odometer/trip odometer.
- One (1) three function gauge with primary air pressure, secondary air pressure and fuel level.
- One (1) four function gauge with engine oil pressure, coolant temperature, transmission temperature and voltmeter.



The center of the instrument panel shall contain a cluster of indicator lamps informing the driver of the following:

**RED LAMPS**

- Low air system one (1) or two (2)
- Low engine oil pressure
- High engine coolant temperature
- High transmission temperature
- Low coolant level (with option)
- Air filter restriction
- Low fuel level (activates at 1/4 full)
- Stop engine
- High or low voltage
- Parking brake set

**GREEN LAMPS**

- Directional left and right indicators
- Auxiliary braking device active
- High idle active (with high idle option)

**YELLOW**

- Check engine
- Check transmission
- ABS brakes
- Wait to start
- Engine maintenance

**BLUE LAMP**

- High beam headlight on

**AUDIBLE WARNING SYSTEM FOR THE FOLLOWING:**

- Low air system
- Low engine oil pressure
- High engine coolant temperature
- High transmission temperature
- Low coolant level
- High and low voltage
- Stop engine

Thermal reset circuit breakers and relays shall be installed behind the electrical center cover.

One (1)

**HEADLIGHTS - QUAD**

Four (4) rectangular halogen headlamps with separate high and low beams in bright bezels shall be provided. The headlamps shall be equipped with a "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the ignition switch is in the "On" position and the parking brake is released.

Wig-wag system shall be installed and wired to switch on the driver's side of the cab.



Two (2) outboard amber turn signals shall be mounted in matching bezels located above the headlamps.

Two (2) round side turn signal/marker lights shall be provided on the front cab corners.

One (1)

**MARKER LAMPS**

Five (5) DOT approved Weldon model #9186-1500-20 Light Emitting Diode (LED) I.C.C. lamps shall be installed on the face of the cab above the windshield.

One (1)

**INTERIOR LIGHTING**

The cab interior lighting shall consist of the following:

A red/white dome lamp shall be located over each door. The white lamp shall be activated by its respective door when opened and both activated by an individual switch on the light.

A clear light shall be located in the molded panel of each door and activated when the door is opened. The light shall be 6.5" long x 3" high.

A three (3) light module with dual map lights shall be located in the headliner, over the engine tunnel.

One (1)

**FLASHING DOOR AJAR LIGHT**

A red flashing door ajar light shall be located in the headliner, centered in the cab. The light shall be 6.00" long x 2.50" wide x 1.75" high and labeled "Do Not Move Apparatus". The light shall be wired to indicate an open door on the cab when the parking brake is released.

One (1)

**ALTERNATOR**

A 270 amp Leece Neville 12 volt alternator model #4864JB with integral regulator and #10 screw AC terminals shall be installed.

One (1)

**INTERIOR TEXTURE FINISH**

The interior metal surfaces of the cab shall be painted with a Zolatone gray texture finish.

One (1)

**FRAME PAINT**

The frame and running gear of the chassis shall painted with a standard black paint. The frame paint shall be applied before airlines and electrical wiring is installed.

One (1)

**EXTERIOR PAINT**

All cab painting must be completed prior to the installation of glass, accessories or any other cab trim to assure complete paint coverage and maximum corrosion protection.



The entire cab must be disc ground to remove any surface oxidation or surface debris that may hinder the paint adhesion.

Upon the application of required body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The entire cab then shall be coated with an intermediate surfacer that is designed to fill minor surface defects, provide an adhesive bond between the primer and the paint, and improve the color and gloss retention of the color coats.

The cab shall be finish sanded and painted with two (2) to four (4) coats of an acrylic urethane type system designed not only for color retention but to resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene.

The maximum overall film thickness of the top coat shall not exceed five (5) mils.

The Spartan standard PPG (DBHS or DCC), Sikkens FLNA or Dupont Imron (5000 or 6000) paint shall be warranted for seven (7) years against cracking, checking or peeling and loss of gloss caused by chalking or fading.

Cab underside and doors shall be rust proofed with a ten (10) year or 100,000 mile warranty certificate against perforation issued in the Fire Department's name.

One (1)

**FIRE EXTINGUISHER**

A 2.5 pound BC D.O.T approved fire extinguisher shall be shipped loose with the cab.

One (1)

**ONE YEAR CHASSIS WARRANTY**

The chassis manufacturer shall warrant to the original purchaser the custom fire truck chassis for a period of twelve (12) months with the exception of the actual fire apparatus chassis frame which carries a lifetime warranty. The warranty period shall begin on the date the vehicle is delivered to the original purchaser. The warranty may include conditional items, which shall be listed in the detailed warranty document that shall be provided upon request.

One (1)

**CAB WARRANTY**

The cab shall be warranted for a period of ten (10) years. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

One (1)

**ENGINE WARRANTY**

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

One (1)

**TRANSMISSION WARRANTY**

The Allison 3000 EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.



One (1)

**OPERATORS MANUAL AND PARTS LIST**

A chassis operator's manual and parts list with wiring and air plumbing diagrams shall be provided. The wiring and plumbing diagrams shall be of the chassis model.

One (1)

**ENGINE AND TRANSMISSION OPERATION MANUAL**

One (1) engine operation and maintenance manual and one (1) transmission operation manual shall be included in the Spartan operator's manual.



## CHASSIS ADDITIONS AND MODIFICATIONS

One (1)  
CC-39-1500

### FRONT BUMPER GRAVELSHIELD

There shall be a horizontal gravel shield fabricated from bright 1/8" aluminum treadplate installed at the front bumper to cover the area between the bumper and the cab.

Bumper extension shall be modified by the body builder. Extension length to be 16".

One (1)  
CC-39-3100

### CENTER HOSEWELL

A recessed style hose well for storage is to be provided in the center of the front bumper extension. Hose well shall be constructed of .125 aluminum material and have a smooth interior surface.

Hose well shall have a drain hole in each corner.

The tray shall hold 100 ft. of 1-3/4" DJ fire hose.

One (1)  
CC-50-0520

### REAR MOUNT FUEL TANK

There shall be a rear mounted fuel tank furnished with the chassis.

One (1)  
CC-50-0530

### CAST ALUMINUM FUEL FILL ASSEMBLY

There shall be a cast aluminum fuel fill assembly furnished in the driver's side behind rear axle for the rear mount fuel tank. The fuel fill assembly shall consist of a polished cast aluminum housing with fuel fill neck and cap.

One (1)  
CC-50-4700

### WHEEL SIMULATOR KIT

Front and Rear Stainless Steel simulator kit shall be provided. Kit is to include **AMERICAN MADE** RealWheels American Road Series **mirror finish**, 304L grade, non-corrosive stainless steel front and rear full wheel simulators, D.O.T user friendly. They shall simulate the look of aluminum wheels and come complete with stainless steel lug nut covers (chrome plated steel lug nut covers not acceptable). The rear simulators shall come complete with stainless steel hub covers.

One (1)  
CC-50-5500

### FRONT MUD FLAPS

Heavy-duty, black colored, rubber mud flaps shall be furnished and installed behind the front wheels of the vehicle. Mud flaps shall extend the full width of the front tires and are to be attached with stainless steel fasteners.



One (1)  
CC-50-6000

**REAR MUD FLAPS**

Heavy-duty, black colored, rubber mud flaps shall be furnished and installed behind the rear wheels of the vehicle. Mud flaps shall extend the full width of the rear duals and are to be attached with stainless steel fasteners.

One (1)  
CC-51-1100

**HORIZONTAL CHASSIS EXHAUST**

The chassis exhaust system shall be extended to the front of the right rear wheel.

One (1)  
CC-60-1000

**AUTOMATIC TIRE CHAINS**

On-Spot automatic chains shall be provided and mounted at the rear wheels and have a control switch mounted in the chassis cab accessible to the driver.

One (1)  
CC-65-0400

**ALTERNATOR**

The alternator shall be of adequate size to meet the NFPA requirements and to accommodate the specific apparatus electrical load.



One (1)  
DD-00-0440

**WATEROUS CSU-1500 GPM SINGLE STAGE FIRE PUMP**

The centrifugal type fire pump shall be a Waterous model CSU midship mounted with a rated capacity of 1500 GPM. The pump shall meet NFPA 1901 requirements.

One (1)  
DD-01-1500

**SINGLE STAGE FIRE PUMP**

A Waterous Model CSUY fire pump shall be midship mounted, single stage centrifugal type. In addition to meeting NFPA 1901 requirements, it shall be constructed and mounted in accordance with the following specifications.

Fire pump shall incorporate high strength involute toothform Morse HV chain drive transmission. Benefits of the chain drive include quiet, noiseless operation at high shaft speeds, and improved power-transmitting capabilities due to the fact that the chain wraps itself halfway around the gear distributing a very uniform pattern of tooth engagement. Pump transmissions utilizing spur or helical drive gears that create high noise levels at elevated speeds and only permit minimal tooth to tooth engagement are not acceptable.

The shift engagement shall be accomplished by a free sliding collar and shall incorporate an internal locking mechanism to insure that collar will be maintained in ROAD or PUMP operation.

Suction intake arms shall be provided with removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

At time of delivery the pump shall be tested and rated as follows:

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

Impeller hubs shall be "Flame Plated", impregnated with tungsten carbide to assure maximum pump life and efficiency despite the presence of abrasive particles, such as fine sand, in the water being pumped.

The impeller shaft shall be of a "separable" design to allow true separation of the transmission from the pump without disassembly or disturbing either component. Fire pumps requiring disassembly of pump body and transmission to service either component are not acceptable.

The main pump body shall be horizontally split and shall be in two sections for easy removal of the entire impeller assembly including wear rings, without disturbing setting of the pump on the chassis. Pump case halves shall be bolted together on a single horizontal plane using a single gasket.

The pump body is to be of close grain grey iron with all moving parts which come into contact with water to be of bronze or stainless steel.

The pump must be tested by the pump manufacturer for 10 minutes hydrostatically at a pressure of 500 psig. Certification by the pump manufacturer must be provided.



The pump shall be provided with a plate giving the rated flow at "capacity" and "pressure" test pressures, together with the R.P.M. of the engine at those pressures and deliveries and mounted in clear view of the pump operator's panel. Data plate shall include model and serial numbers of the pump body and chain transmission, hydro and discharge test pressures, and the date of pump and transmission manufacture.

All pump components including relief valve, pump shift, and priming system shall be manufactured by the Waterous Company to insure sole source responsibility and engineered compatibility.

**PRIMING SYSTEM**

The pump shall be capable of taking suction and discharging water with a lift of 10 feet in not more than 30 seconds with the pump dry, through 20 feet of suction hose of appropriate size. It shall be capable of developing a vacuum of 22" at an altitude of up to 1000 feet.

A vacuum test with a capped suction of at least 20' long shall develop 22" of vacuum and hold a vacuum with a drop not in excess of 10" in 5 minutes.

One (1)  
DD-04-0080

**VPO/VPOS OILLESS PRIMING SYSTEM**

A Waterous VPO/VPOS oil less priming system shall be supplied with the pump.

One (1)  
DD-04-0100

**MANUAL CONTROL PRIMING PUMP**

Priming pump shall be activated by a mechanical/electric valve with a single pull control located at the pump operator's panel area. Valve actuation may be accomplished while the main pump is operational, if necessary to assure a complete prime.

One (1)  
DD-04-0500

**PNEUMATIC PUMP SHIFT**

The pump shift shall be air operated and shall incorporate an air cylinder with an electric actuating switch to shift from road to pump and back.

The pump shift switch shall be mounted in the cab and identified as "Pump Shift" and include instructions permanently inscribed on the pump shift switch plate. The In-Cab operating switch uses a spring loaded lock to prevent it from accidentally being moved.

\*A "Pump Engaged" indicator shall be provided in the driving compartment to indicate that the pump shift has been successfully completed.

\*An "Ok to Pump" indicator shall be provided in the driving compartment to indicate that the pump is engaged, the chassis transmission is in pump gear, and the parking brake is engaged.



\*A "Throttle Ready" indicator shall be provided at the pump operator's panel that indicates that the apparatus is in "OK to Pump" mode or that the chassis transmission is in neutral and the parking brake is engaged.

\*An interlock system shall be provided to prevent advancement of the engine speed at the pump operators panel unless the chassis transmission is in neutral and the parking brake is engaged, or the apparatus is in "OK to Pump" mode.

\*Controls for the pump shift are to be in the cab, and easily accessible.

One (1)  
DD-04-5000

#### **MECHANICAL SHAFT SEAL**

The pump shall be equipped with self-adjusting, maintenance free, "Mechanical Shaft Seal" which is designed to be functional in the unlikely event of a seal failure. Pumps with packing which requires periodic adjustment and/or replacement will not be acceptable.

One (1)  
DD-04-7220

#### **CLASS ONE GOVERNOR**

Class 1, pressure governor for electronic engines shall be furnished and installed on the apparatus. The system shall include an alpha/numeric display to show pump pressure and engine RPM. The control panel shall include a RPM/PSI mode switch, an on/off power switch, increase and decrease switches for throttle control, a preset switch to select preset pressure or RPM, and an idle switch to return to idle. The pressure governor shall be connected to the electronic engine and maintain the specified preset discharge pump pressure or a preset engine speed.

The device will be furnished, installed and tested by the apparatus body builder.

One (1)  
DD-04-7500

#### **MANIFOLD DRAIN**

A manifold drain valve shall be furnished with all pump drains connected to it so that the entire pump system may be drained by one control.

Drain valve assembly shall consist of a stainless steel plunger and a bronze body rigidly attached to the fire pump transmission.

A push-pull control with chrome plated "T" handle is to be provided and located at the driver's side of the pump house, properly identified as MASTER DRAIN.

One (1)  
DD-99-0500

#### **FIRE PUMP WARRANTY**

The Waterous fire pump shall carry the pump manufacturer's five (5) year warranty covering defective parts and workmanship. A copy of the pump manufacturer's warranty policy shall be provided with the completed apparatus.



One (1)  
DH-20-1000

**UL TEST**

The pump shall undergo an Underwriters Laboratories Incorporated test per Class A requirements of NFPA #1901 prior to delivery of the completed apparatus. The UL acceptance certificate shall be furnished with the apparatus on delivery.

One (1)  
DH-20-1200

**ALTITUDE REQUIREMENTS**

The apparatus shall be designed to meet the specified rating at 2200 feet altitude.

One (1)  
DH-20-2000

**PUMP COOLING LINE**

A 3/8" cooling line shall be installed to recirculate water from the pump back to the water tank, to cool the pump during pro-longed pumping operations. The cooling line shall be controlled at the operator's position with a quarter turn valve.

One (1)  
DH-20-5000

**HEAT EXCHANGER**

A heat exchanger shall be provided on the pump driving engine cooling system. The heat exchanger shall not allow mixing of the pump driving engine coolant and water from the fire pump.

A gated line shall be installed to provide water from the fire pump to the pump driving engine heat exchanger to assist in engine cooling during pumping operations. The heat exchanger line shall be controlled at the pump operator's panel.

One (1)  
EE-01-2000

**WATEROUS PUMP INSTALLATION**

The Waterous fire pump shall be installed in conjunction with the body manufacturing process. Fire pump installation shall include installation of the fire pump, modification and/or fabrication of new drivelines and all pump-mounting brackets. All drivelines shall be spin balanced prior to final installation.

One (1)  
EE-02-1000

**INTAKE RELIEF VALVE**

A 2-1/2" intake relief valve preset at 125 psi shall be permanently installed on the suction side of the fire pump. The valve shall have an adjustment range of 75 psi to 250 psi, and shall be designed to automatically self-restore to a non-relieving position when excessive pressure is no longer present.

Discharge side of the intake relief valve shall be plumbed to the right side below the running boards, away from the pump operator, and shall terminate with a 2-1/2" NST male chrome threaded adapter, marked with an engraved tag "Intake pressure relief outlet - Do Not Cap".



One (1)  
EE-02-5600

**DRIVER SIDE STEAMER INLET**

There shall be one (1) steamer inlet furnished on the driver side of pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

Steamer inlet to be as short as possible to allow suction fittings to be attached without extending past the side running boards.

One (1)  
EE-02-5700

**PASSENGER SIDE STEAMER INLET**

There shall be one (1) steamer inlet furnished on the passenger side of pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

Steamer inlet to be as short as possible to allow suction fittings to be attached without extending past the side running boards.

One (1)  
EE-09-4000

**DRIVER SIDE ELECTRIC OPERATED VALVE**

There shall be an electrically operated butterfly valve furnished on the driver's side pump panel. Gate valve shall be electrically operated and have control on the pump operator's panel. The power valve operating mechanism shall prevent movement of the valve from the fully closed position to the fully open position or vice versa, in less than three seconds. Valve shall be mounted directly to the pump and be located behind the side pump panel. The valve shall be capable of withstanding the same pressures as the pump. The valve will have a built in adjustable relief valve installed on the supply side of the valve that dumps to atmosphere. The butterfly valve shall have a 3/4" bleeder/drain valve.

One (1)  
EE-09-4600

**PASSENGER SIDE ELECTRICALLY OPERATED VALVE**

There shall be an electrically operated butterfly valve furnished on the passenger's side pump panel. Gate valve shall be electrically operated and have control on the pump operator's panel. The power valve operating mechanism shall prevent movement of the valve from the fully closed position to the fully open position or vice versa, in less than three seconds. Valve shall be mounted directly to the pump and be located behind the side pump panel. The valve shall be capable of withstanding the same pressures as the pump. The valve will have a built in adjustable relief valve installed on the supply side of the valve that dumps to atmosphere. The butterfly valve shall have a 3/4" bleeder/drain valve.

One (1)  
EE-12-0500

**GATED REAR SUCTION**

A rear suction intake shall be provided with six (6) inch NST male thread at the inlet. Intake shall be gated with a five (5)" butterfly valve. There shall be an adjustable suction relief valve installed on the supply side of the valve. The suction relief valve shall discharge to atmosphere. A



chrome-plated inlet fitting with six-inch NST thread shall be provided, complete with a removable strainer screen. Suction pipe shall be Schedule 40, 5" ID in size, and shall be provided with 1/4 turn bronze flange mounted drain valves at all low points of the line. The suction shall be bolted to the pump and be assembled with a minimum of two heavy-duty victaulic type couplings.

The rear suction piping shall extend straight back through the rear of the body directly above the rear step.

The intake shall be located above the rear step on the passenger's side.

One (1)  
EE-12-0540

### **ELECTRICALLY OPERATED SUCTION VALVE**

The suction valve shall be electrically operated and have control switch at the pump operator's panel. The power valve operating mechanism shall prevent movement of the valve from the fully closed position to the fully open position or vice versa, in less than three seconds. The control switch shall have a colored identification label.

One (1)  
EE-20-0500

### **SUCTION CAP DRIVER'S SIDE**

The driver's side suction inlet shall be equipped with a chrome-plated, long handled, cap capable of withstanding 500 PSI.

One (1)  
EE-20-1000

### **SUCTION CAP PASSENGER SIDE**

The passenger's side suction inlet shall be equipped with a chrome-plated, long handled, cap capable of withstanding 500 PSI.

One (1)  
EE-20-8000

### **STORZ ADAPTER WITH CAP**

One (1) 6" NST Female X 5" Storz adapter shall be provided with 5" Storz cap and retaining device.

Storz adapter shall be provided for the rear intake.

One (1)  
ES-02-1500

### **2-1/2" GATED SUCTION INTAKE DRIVER SIDE**

A 2-1/2" independent gated suction intake shall be provided on the driver's side pump panel. Intake shall be provided with a quarter-turn valve and control. The intake shall have a 3/4" drain valve with handle. Each intake shall have chrome-plated female swivel adapter with removable internal screen and a chrome-plated plug type cap with end chain.

One (1)  
ES-02-1510

### **SUCTION VALVE CONTROL**

Suction valve shall have swing type control handle located adjacent to valve.



One (1)  
FA-01-0000

### **PUMP DISCHARGES**

Each gated discharge outlet shall include an Akron heavy-duty brass, quarter-turn, swing-out ball valve. All lines to have victaulic couplings or hose with stainless steel fittings installed where flex may occur to prevent cracking of the plumbing system. Each discharge shall have 3/4" cast bronze 1/4 turn drain valve complete with reinforced teflon seals, and blowout proof stem rated to 600 psi. A chrome-plated zinc handle shall be provided on each drain valve, complete with a 1" X 1 1/2" recessed identification label. Drains shall be aligned in a straight horizontal row at the lower edge of the corresponding pump panel so as to allow for ease of identification and operation. Each drain shall be labeled and numbered to correspond to the respective discharge outlet and coloring.

Individual discharge controls are to be aligned in a straight horizontal row across the pump operator's control panel, directly in-line with the corresponding discharge outlet line pressure gauges.

One (1)  
FA-01-0020

### **STAINLESS STEEL PLUMBING**

All rigid piping three-inch diameter or less shall be **STAINLESS STEEL** type with tapered thread or victaulic type couplings.

Two (2)  
FA-01-0500

### **DRIVER SIDE DISCHARGE OUTLET**

Each 2-1/2" discharge outlet on the driver's side pump panel shall have a 2-1/2" quarter turn valve with control on pump operator's panel. There shall be a chrome plated 2-1/2" NST adapter that extends through the pump panel. Each discharge shall be provided with chrome-plated 30-degree discharge elbow.

Two (2) 2-1/2" discharges shall be provided on the driver's side pump panel.

Two (2)  
FA-01-0501

### **MANUAL VALVE**

Discharge valve shall be swing-out type with manual control handle located on pump operator's panel.

One (1)  
FA-01-1000

### **PASSENGER SIDE DISCHARGE OUTLET**

Each 2-1/2" discharge outlet on the passenger's side pump panel shall have a 2-1/2" quarter turn, swing-out valve with control on pump operator's panel. There shall be a chrome-plated 2-1/2" NST adapter that extends through the pump panel. Each discharge shall be provided with chrome-plated 30-degree discharge elbow.

One (1) 2-1/2" discharge shall be provided on the passenger's side pump panel.



One (1)  
FA-01-1001

**MANUAL VALVE**

Discharge valve shall be swing-out type with manual control handle located on pump operator's panel.

One (1)  
FA-01-1500

**DRIVER SIDE REAR DISCHARGE OUTLET**

There shall be one (1) 2-1/2" discharge outlet located on the driver's side rear of the body below the hose bed. The discharge outlet shall have a 2-1/2" quarter turn, swing-out valve with control on pump operator's panel. There shall be a chrome-plated 2-1/2" NST adapter that extends through the rear of the body. The discharge shall be provided with a chrome-plated 30-degree discharge elbow.

One (1)  
FA-01-1501

**MANUAL VALVE**

Discharge valve shall be swing-out type with manual control handle located on pump operator's panel.

One (1)  
FA-01-1510

**MANUAL DRAIN VALVE**

The driver's side rear 2-1/2" discharge outlet shall have a 3/4" drain with individual control on side pump panel. There shall be additional automatic drains furnished as required to drain the plumbing system between the pump and the front discharge connection.

Four (4)  
FA-01-3220

**2-1/2" CAPS AND CHAINS**

The following discharge outlets shall be equipped with a 2-1/2" chrome-plated cap and chain.

All 2-1/2" discharges shall have chrome plated caps and chains.

One (1)  
FA-01-5000

**PASSENGER SIDE LDH OUTLET**

One (1) LDH discharge outlet on the passenger's side pump panel. The discharge outlet shall be plumbed with 4" I.D. pipe, and have quarter turn valve with control on pump operator's panel. The valve shall have a slow close device. The discharge shall extend through the pump panel. The discharge outlet shall terminate with a 4" NST male connection.

One (1)  
FA-01-5002

**MANUAL VALVE WITH SLOW CLOSE**

Discharge valve shall be three-inch (3") swing out type, with slow close and manual control handle located on pump operator's panel.



One (1)  
FA-01-5010

**MANUAL DRAIN VALVE**

The passenger's side LDH discharge outlet shall have a 3/4" drain with individual control on side pump panel. There shall be additional automatic drains furnished as required to drain the plumbing system between the pump and the front discharge connection.

One (1)  
FA-01-8070

**STORZ ADAPTER**

The following discharge outlets shall have a 4" NSTF x 5" Storz 30-degree drop adapter.

Storz adapter shall be provided for the large diameter discharge located on the passenger's side pump panel.

One (1)  
FA-01-8090

**5" STORZ CAPS AND CHAINS**

The following discharge outlets shall be equipped with a 5" storz cap and chain.

Storz cap and chain shall be provided for the passenger's side large diameter discharge.

One (1)  
FB-02-1000

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

One and one half (1-1/2") discharge located at front bumper. Front discharge shall be plumbed using two-inch (2") pipe and wire reinforced high-pressure hose coupled with stainless steel fittings. Front discharge outlet shall have two-inch quarter turn swing out valve with control on pump operator's panel. The front discharge shall be provided with a 1-1/2" brass 90-degree swivel adapter with 1-1/2" NST male outlet.

One (1)  
FB-02-1001

**MANUAL VALVE**

Discharge valve shall be swing out type with manual control handle located on pump operator's panel.

One (1)  
FB-02-1010

**MANUAL DRAIN VALVE**

Front discharge outlet shall have a 3/4" drain with individual control on side pump panel. There shall be additional automatic drains furnished as required to drain the plumbing system between the pump and the front discharge connection.

One (1)  
FB-02-1215

**FRONT DISCHARGE HOSE CONNECTION**

The hose connection for the front discharge outlet shall be located on top of the front bumper extension. The hose connection shall have a continuous swivel adapter located on top of the front bumper extension.



One (1)  
FB-02-2500

**MONITOR PROVISION**

There shall be a three-inch (3") deluge discharge above fire pump. Deluge outlet shall be plumbed with 3" quarter turn, swing out valve and 3" I.D. pipe with 3" NPT male thread. The three-inch valve shall have a slow close device. Deluge outlet shall have control on pump operator's panel.

One (1)  
FB-02-2502

**MANUAL VALVE WITH SLOW CLOSE**

Discharge valve shall be swing out type, with slow close and manual control handle located on pump operator's panel.

One (1)  
FB-02-2505

**MANUAL DRAIN VALVE**

Monitor shall have a 3/4" drain with individual control on side pump panel.

Two (2)  
FC-31-1500

**1-3/4" SPEEDLAY ASSEMBLY IN FRONT OF PUMP**

Speedlay hose bed(s) shall be designed to carry 200 feet of 1-3/4" double jacket fire hose. Speedlay hose bed(s) shall be located in front of the fire pump. The floor of the speedlay hose bed(s) shall be perforated to allow for drainage. The walkway side of the speedlay(s) shall have a large opening with radius corners for access to the hose coupling. The speedlay(s) shall be an integral part of the pump compartment with all panels bolted in place and removable. Polished stainless steel hose roller assemblies shall be provided at the sides and lower edges of the speedlay opening on each side of the apparatus body.

The speedlay discharge(s) shall be plumbed using rigid pipe or flexible high-pressure hose coupled with stainless steel fittings. The speedlay(s) shall be provided with 2" brass valve, and a 2" 90 degree swivel adapter with 1-1/2" NST male outlet thread.

Two (2) 1-3/4" speedlay hose beds shall be provided.

Zero (0)  
FC-31-1501

**MANUAL VALVE**

Discharge valve shall be swing out type with manual control handle located on pump operator's panel.

Zero (0)  
FC-31-1510

**MANUAL DRAIN VALVE**

Each crosslay/speedlay shall have a 3/4" drain with individual control on side pump panel.



One (1)  
FF-26-1000

**FOAM SYSTEM**

A Foam Pro Model #1600 built in foam injection system shall be provided with the controls at the operator's panel.

The foam system shall be a fully automatic, electronic, direct injection foam proportioning system. The system shall be capable of Class A foam concentrate. The foam proportioning operation shall be based on an accurate direct measurement of water flows with no water flow restriction. The foam system shall be installed in accordance with the manufacturer's recommendations.

The system shall be equipped with a control module. It shall be installed on the pump operator's panel and enable the pump operator to perform the following functions;

1. Activate the foam system
2. Change foam concentrate proportioning rates of .1% to 1%.
3. Flash a "low concentrate" warning light when the foam concentrate tank runs low of concentrate and in two minutes if foam concentrate is not added to tank, shut the foam concentrate pump down.

The foam system shall have a 12-volt, 1/3-hp electric motor driven positive displacement piston type foam concentrate pump with a rated capacity of .01 to 1.6 gpm with operating pressures up to 400 psi.

The FoamPro system shall be plumbed to the following discharge outlet.

The foam system shall be plumbed to the two (2) speedlays and the front bumper discharge.

One (1)  
FF-27-0100

**SINGLE FOAM TANK PLUMBING SYSTEM**

The foam tank shall be plumbed with three-quarter inch (3/4") valve and corrosion resistant hose from the foam tank to the foam inlet. There shall be a three-quarter inch (3/4") drain line furnished on the foam tank. Drain valve to be located on foam tank with corrosion resistant hose piped to below the frame level of the chassis.

One (1)  
FF-27-2000

**FOAM TANK**

A 25-gallon foam concentrate tank shall be furnished as an integral component of the booster tank. The foam tank shall have a separate fill tower provided in a location to allow easy access for filling. Fill tower shall be equipped with a pressure/vacuum vent and have a sealed airtight cover. Tank shall be plumbed to the on board "Class A" foam system. A valved drain shall be provided at the lowest point of the foam tank. The drain shall be plumbed to drain directly to the surface below the apparatus without contacting other body or chassis components.



The following labels shall be attached to the foam tank:

"CLASS A FOAM TANK FILL"

"WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM"

One (1)  
FH-03-0500

#### **TANK PUMP VALVE**

A Waterous 3-1/2" full flow ball valve shall be furnished from the tank to the pump, complete with a flexible connection and enclosed in the pump compartment.

The valve shall be manufactured by the Waterous Company and shall include a spring loaded, self-adjusting seal to preclude the need for periodic adjustment, and a chrome-plated brass ball providing durability against sand and other debris.

A built-in check valve shall be furnished in the pump to avoid the possibility of backfilling the booster tank, through the tank to pump suction line.

Tank suction is to be located in a sump assembly located below the bottom of the tank and properly baffled to prevent surging of water. A 3" cleanout plug shall be provided in the bottom of the tank sump.

One (1)  
FH-03-6000

#### **TANK FILL/COOLING LINE**

A gated discharge line from the pressure side of the pump to the tank shall be furnished so the tank can be filled from draft or hydrant. Valve shall have control on the operator's panel. The valve is to be one and one-half inch, (1-1/2") swing out type ball valve and be plumbed to tank with flexible type hose.



One (1)  
FJ-00-0202

### **POLY BOOSTER TANK**

The booster tank shall be of a specific configuration and is 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 transverse swash partitions shall be manufactured of polypropylene and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of polypropylene and extend from 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 interlock with one another and are welded to each other as well as to the walls of the tank.

A forward mounted sump shall be provided in the tank. The sump shall be constructed of polypropylene and be located in the left front quarter of the tank. A polypropylene pipe shall be installed that will sweep from the front of the tank to the sump location. The sump shall have a 3" N.P.T. threaded coupling on the bottom for a plug. This shall be used as a combination clean out and tank drain. An anti-swirl plate shall be located above the sump.

There shall be two standard tank outlets; one for tank-to-pump suction lines, and one for a tank fill line. All tank couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

The tank shall carry a lifetime warranty from its manufacturer.

One (1)  
FJ-01-0208

### **FILL TOWER**

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of polypropylene and with a minimum dimension of 8" x 14" outer perimeter. The fill tower shall be located in the left front corner of the tank. The fill tower shall have a polypropylene screen and a polypropylene hinged cover. Inside the fill tower, shall be fastened a combination vent overflow pipe. The vent overflow shall be polypropylene pipe that is designed to run through the tank and shall be piped behind the rear wheels.

One (1)  
FJ-01-2000

### **BOOSTER TANK**

A 750-gallon capacity polypropylene booster tank shall be provided.

One (1)  
FJ-02-7600

### **HOT DIP GALVANIZED BOOSTER TANK SUBFRAME**

The booster tank shall be mounted on a steel sub frame. Steel sub frame shall consist of two (2) longitudinal 3" x 4 pound channels and two (2) 3" x 4 pound channels welded together to form a tank retention cradle. The tank retention cradle shall prevent fore and aft, and side to side movement of the tank. Additional 3" x 4 pound transverse cross member channels shall be installed to support the floor of the booster tank. The cross members shall have a maximum



spacing of 20" for the polypropylene tanks. There shall be an additional full-length longitudinal member installed in the center of the tank support area. The booster tank shall rest on heavy rubber channels that isolate the polypropylene tank from the sub frame.

The booster tank sub frame shall be hot dip galvanized after fabrication.

One (1)  
FK-01-1600

### **EXTRUDED ALUMINUM PUMP HOUSE STRUCTURE**

The pump house structure shall be fabricated of extruded aluminum. The structure shall be welded together and have gusset plates on each corner. The pump house shall be mounted separate from the body and chassis and be bolted to the chassis frame rails.

The exposed areas of the pump house structure shall be overlaid with polished aluminum treadplate.

One (1)  
FK-02-1500

### **TOP MOUNTED OPERATOR'S CONTROL PANEL**

All pump discharge controls are to be mounted above the fire pump at a top mounted operator's control panel to provide around the truck visibility.

Specified Speedlay hose beds shall be located directly below the forward portion of the operator control panel.

Access to the top mounted control panel shall be provided from both sides of the truck with a large full width walkway ahead of the control panel.

Access handrails shall be 1 1/4" in diameter extruded aluminum with rubber insert and chrome plated end brackets shall be provided and installed on each side, for easy access to the walkway.

All linkage rods shall be attached using threaded fittings or clevis connectors. Rods that are provided with welded fittings or connections are not acceptable.

All of the controls shall be clearly identified with permanently engraved plate type labels.

A full control panel width polished light hood with a minimum of three (3) Weldon model 2025 sealed light assemblies shall be provided to illuminate the entire top mount pump operator's control console.

Additional polished light hoods with a minimum of two (2) Weldon model 2025 sealed light assemblies shall be provided to illuminate the right and left side pump panels. Lights shall be controlled by the operator's panel light switch.

There shall be two lights surface mounted in the lower forward facing panel to illuminate the walkway.



**GAUGE PANEL**

Engine gauges and master pump gauges shall be mounted on the upper incline plane of the gauge and valve control panel. Both the upper gauge panel and lower valve control panel to be full width and completely removable for access to the pump compartment. The valve controls and individual pressure gauges to be located on the lower flat surface of the valve control panel. All valves and control handles shall have removable escutcheons for easy valve service without removing the entire panel. All manually operated valve handles shall have twist to lock style controls.

One (1)  
FK-02-2400

**PUMP PANEL PUMP ENGAGEMENT LIGHT**

One (1) light in the control panel light hood shall come on with a successful pump engagement. This shall be in addition to the "OK to Pump" light on the control panel.

One (1)  
FK-02-2500

**CONTROL CONSOLE MATERIAL**

The top mount pump operator's control console is to be constructed of 14-gauge type 304 brushed stainless steel material.

One (1)  
FK-02-3500

**SIDE PANEL MATERIAL**

The right and left side pump panels shall be constructed entirely of 14-gauge type 304 brushed stainless steel material. The panels are to be completely "bolted" in place for ease of removal.

One (1)  
FK-02-4100

**PUMP COMPARTMENT SIDE ACCESS DOORS**

The side pump panels shall be provided with a full panel width vertically hinged access doors located in the upper portion of the side panel. The doors shall be approximately 18" high and as wide as possible, and shall be constructed of polished aluminum treadplate. Two (2) flush mounted, push type latches shall be furnished to hold the door closed. The inspection door shall be attached with a stainless steel hinged and have a retainer cable attached to prevent the door from opening too far.

One (1)  
FK-05-2000

**RECESSED HOSEWELL IN DRIVER SIDE RUNNINGBOARD**

A recessed hose well storage area shall be installed in the driver's side running board, below the main pump for storage of preconnected soft suction hose.

The hose well shall hold 25' of 5" fire hose.

One (1)  
FK-05-2500

**RECESSED HOSEWELL IN PASSENGER SIDE RUNNINGBOARD**

A recessed hose well storage area shall be installed in the passenger's side running board, below the main pump for storage of preconnected soft suction hose.



The hose well shall hold 25' of 5" fire hose.

One (1)  
FK-10-0000

**PUMP OPERATORS PANEL**

The following equipment shall be installed on the pump operator's panel.

One (1)  
FK-10-1100

**MASTER GAUGES**

Class One #LFP410, 4-1/2" diameter liquid filled pressure gauge registering up to 600-lbs per square inch with 1/4" pipe thread connection. The gauge shall be of the type that will not be injured when subjected to a vacuum. The gauge is to have a white face with black lettering. The gauge is to be located at the right of the gauge panel and labeled "DISCHARGE" with an engraved label.

Class One #LFP410, 4-1/2" diameter liquid filled compound gauge shall be provided on the suction side of the pump registering at least 600-lbs pressure and 30-inches of vacuum. The gauge shall have a white face with black lettering. The gauge is to be located to the left of the master discharge gauge and labeled "INTAKE" with an engraved label.

One (1)  
FK-10-2700

**PRESSURE GAUGES**

Class One #LFP220, 2-1/2" diameter liquid filled pressure gauges shall be provided. The gauges are to have white faces with black lettering. The gauges shall read -30 to 600 lbs. Line pressure gauges shall be individually identified with engraved labels.

Individual line pressure gauges are to be mounted adjacent to the corresponding discharge valve control.

Three (3)  
FK-10-2900

There shall be one (1) pressure gauge for each 1-1/2" discharge outlet.

Four (4)  
FK-10-3000

There shall be one (1) pressure gauge for each 2-1/2" discharge outlet.

One (1)  
FK-10-3100

There shall be one (1) pressure gauge for each deck gun outlet.

One (1)  
FK-10-3200

There shall be one (1) pressure gauge for each large diameter discharge outlet.

One (1)  
FK-12-1100

**INFORMATION CENTER**

A Class 1 Enfo III master engine gauge and warning device shall be furnished and installed on the pump operator's panel. The device will monitor the following engine systems;

-Engine RPM display



- System voltage display and alarm
- Engine oil pressure display and alarm
- Engine water temperature display and alarm.

One (1)  
FK-12-5200

#### **PUMP PANEL IDENTIFICATION LABELS**

All discharges shall be provided with color-coded labels. Identification labels shall be provided at the discharge control, the discharge outlet, and at the discharge drain valve control, color-coded according to NFPA recommended standards.

One (1)  
FK-12-7100

#### **PUMP PANEL WATER TANK LEVEL GAUGE**

A Class One ITF Intelli-tank water tank level gauge shall be provided on the pump operator's panel. The Intelli-tank display features wide angle viewing and four (4) ultra-bright LED's for high visibility, even in direct sunlight. The Intelli-tank utilizes a pressure transducer, ILO of probes, to provide nine (9) accurate levels of indication.

One (1)  
FK-12-9200

#### **PUMP PANEL FOAM TANK LEVEL GAUGE**

A Class One ITF Intelli-tank foam tank level gauge shall be provided on the pump operator's panel. The Intelli-tank display features wide angle viewing and ultra-bright LED's for high visibility, even in direct sunlight. The Intelli-tank utilizes a pressure transducer, ILO of probes, to provide nine (9) accurate levels of indication.

One (1)  
FK-13-1500

#### **UL TEST CONNECTIONS**

A pump pressure and vacuum test block assembly shall be provided and mounted at the pump operator's control panel. The test block assembly shall include plug type caps.



## **APPARATUS BODY SPECIFICATIONS**

One (1)  
HA-00-0200

### **HOSEBODY**

The apparatus homebody is to be properly reinforced without the use of angles or structural shapes, and free from all projections that might injure the fire hose.

The main apparatus homebody shall run the full length of the apparatus body from behind the pump panel area to the rear face of the body.

The upper rear interior of the beavertail extrusions on the right and left side shall be overlaid with brushed stainless steel to protect the painted surface from damage by hose couplings

One (1)  
HA-00-0320

### **HOSEBED CAPACITY**

The hose bed will be configured to store 800 feet of LDH hose and 1000 feet of 2-1/2" DJ hose.

Exact hose bed requirements shall be determined prior to construction.

One (1)  
HA-00-0400

### **HOSEBED FLOORING**

Floors of the hose beds are to be provided with removable slat style extruded aluminum hose bed gratings, spaced 1/2" apart for proper hose ventilation. Hose bed gratings are easily lifted out of the main hose bed for access to the top of the specified booster water tank.

Two (2)  
HA-00-1600

### **MAIN HOSEBED DIVIDER**

Adjustable hose bed dividers shall be provided in the main hose bed.

The hose bed divider(s) shall be fabricated of 1/4" smooth aluminum sheet stock, pressed into a "T" shaped aluminum extrusion for added strength along the bottom edge of the divider.

The divider shall be fully adjustable, mounted using aluminum "C" channel tracks at the front and rear of the divider for full side to side adjustment.

Two (2) hose bed dividers shall be provided.

One (1)  
HD-00-1300

### **LADDER MOUNTINGS**

The ladders shall be mounted in a compartment, beside the water tank and below the hose bed, on individual poly scratch resistant slides. There shall be an aluminum treadplate door on the rear with push button latch for access to the interior of the compartment.



One (1)  
HD-00-2510

**GROUND LADDERS FURNISHED BY BODY BUILDER**

The body builder shall furnish the ground ladders. See equipment section of this document for make and model of ladders.

One (1)  
HD-00-5200

**HARD SUCTION HOSE TRAYS**

Hard suction hoses shall be mounted in extruded aluminum, self-draining carrier trays with hold down device. The carrier tray(s) shall be mounted on the driver's side of the body.

One (1)  
HD-00-7015

**HARD SUCTION HOSE FURNISHED BY BODY BUILDER**

The hard suction hose shall be furnished by the body builder. See equipment section of this document for make and model of hard suction hose.

Two (2)  
HD-01-0500

**PIKE POLE(S) MOUNTED IN LADDER COMPARTMENT**

There shall be room for the pike pole(s) to be mounted in the compartment, along with the specified ladders.

Provisions for two (2) fire department supplied pike poles shall be provided.

One (1)  
KB-02-0200

**ALUMINUM BODY**

The body shall be fabricated of aluminum extrusions, smooth aluminum sheet and aluminum treadplate.

The aluminum extrusion alloy shall be 6061 with a temper rating of T6, and have a tensile strength of 45,000 PSI and yield strength of 40,000 pounds. The aluminum extrusions shall 3" x 3" aluminum tubing and specially designed extrusions where applicable.

The smooth aluminum sheet material alloy shall be 5052 with a temper rating of H32, and have a tensile strength of 33,000 PSI and yield strength of 28,000 pounds.

The aluminum treadplate alloy shall be 3003 with a temper rating of H22, and have a tensile strength of 30,000 PSI and yield strength of 28,000 pounds.

The extrusions shall be designed as structural-framing members with the smooth aluminum and treadplate fabricated to form compartments, hose beds, and floors. All aluminum material shall be welded together using the latest mig spray pulse arc welding system.

Compartments to be sweep out design and to be water and dust proof. All compartments shall be made to the maximum practical dimensions to provide maximum storage capacity.

All exterior compartments shall have polished aluminum drip moldings installed above the doors where necessary to prevent water from entering the compartments.



Wheel well panels shall be double break formed smooth aluminum that is welded in place. There shall be no visible bolt heads, retention nuts or fasteners on the exterior surface of the panel. To fully protect the wheel well area from road debris and to aid in cleaning, a full depth radius wheel well liner shall be provided. The frame side of the wheel well area on each side of the opening shall be attached to the frame side of the front and rear compartments. All seams on the frame side of the body shall be welded and caulked to prevent moisture from entering the compartments.

The rear wheel wells shall be radius cut for a streamlined appearance. A polished aluminum fenderette shall be furnished at each rear wheel well opening, held in place with stainless steel fasteners.

### **FASTENERS**

All aluminum and stainless steel components shall be attached using stainless steel fasteners.

Compartment door hinges, handrails and running boards shall be attached using minimum 1/4" diameter machine bolt fasteners.

3/16" diameter fasteners shall only be used in nonstructural areas such as; door handles, trim moldings, gauge mounting, etc.

One (1)  
KB-02-0300

### **CS 1/8" ALUMINUM BODY**

The aluminum sheet material used in fabricating the body shall be a minimum of .125 (1/8") in thickness.

One (1)  
KB-10-0100

### **BODY DIMENSIONS**

Apparatus body shall be up to 144" long and 96" wide, reference the drawing for actual body length. Body compartments shall be divided into upper and lower areas with the upper area approximately thirteen-inches in depth, and the lower area approximately twenty-three inches in depth. The hose bed shall be 68" wide.

One (1)  
KK-01-1000

### **APPARATUS BODY SUB-FRAME**

The apparatus body sub frame shall be constructed entirely of heavy steel structural channel material.

Two full frame lengths, three-inch (3") 4 pound per foot longitudinal steel channels shall form the sides of the body sub frame and sides of the water tank cradle. Sub frame cross members shall be fabricated with three inch (3") 4 pound per foot heavy steel channel cross members welded to the longitudinal body sub frame sides and the full length frame pads.

Two full frame length 1/2" x 3" flat steel frame pads shall be attached to the body sub frame and rest on top of the chassis frame rails for proper frame weight distribution.



The steel frame pads, longitudinal steel channels and sub frame cross members shall be attached to the chassis frame rails using heavy "U" bolt fasteners to allow removal of the sub frame and body assembly from the chassis. There shall be a barrier provided between the sub frame and body to prevent electrolysis.

The rear sub frame and lower body platform support members shall be of the "two piece" design, fabricated of 4.3 lb. Per foot heavy channel and welded to the full length sub frame channel liners at the rear.

A minimum of two rear platform support channels shall be provided and constructed of 4.3 lb. Per foot heavy steel material. Each support channel shall have welded in gusset where the support meets the rear sub frame rails.

After fabrication the entire sub frame assembly shall be hot dip galvanized to prevent corrosion. The hot dip galvanized sub frame shall have a lifetime warranty.

One (1)  
KK-02-0400

#### **COMPARTMENT VENTS**

All body compartments shall have a minimum of one (1) louvered panel bolted into a wall to provide the proper airflow inside the compartment. There shall be a filter installed behind the louvered panel. The filter shall be accessible for cleaning by removing the louvered panel on the interior of the compartment.

One (1)  
KK-02-0500

#### **BODY AND PUMP HOUSE FLEX JOINT**

When equipped with a fire pump, the body and pump house shall be a separate freestanding component forming a true flex joint between the body and pump house. The intent is to allow either to be easily removed as a single unit without disturbing the other and to provide a flex joint between the two modules. Designs where the pump house and body are interjoined as a common unit do not meet the technical requirement of providing a flex joint or the repairability requirement of these specifications.

One (1)  
KK-02-0652

#### **WHEEL WELL LINER AND FENDERETTES**

For ease of accessibility and maintenance, wheel well panels shall be double break formed painted smooth plate that is welded in place.

To fully protect the wheel well area from road debris and to aid in cleaning, a full depth (minimum of 25") radius wheel well liner shall be provided. Wheel well liner shall be smooth aluminum to prevent corrosion.

The rear wheel wells shall be radius cut for a streamlined appearance. A polished aluminum fenderette shall be furnished at each rear wheel well opening, held in place with concealed stainless steel fasteners.



One (1)  
KK-02-3700

**REAR TOW EYES**

There shall be two tow eyes furnished under the rear of the body and attached directly to each chassis frame rail. There shall be a reinforcement spreader bar connecting the two tow eyes. Tow eyes are to be constructed of 3/8" plate steel with a 4" I.D. hole, large enough for passing through a tow chain end hook.

One (1)  
KK-03-0050

**APPARATUS COMPARTMENTATION**

There shall be large enclosed compartments on both sides of the body, starting at the front of the homebody and continuing to the rear of the apparatus. These compartments shall be as large as possible, using all available space.

The aluminum treadplate compartmentation tops on each side of the body shall be extended out and downwards a minimum of .50" over the compartment doors forming a drip rail. Corners shall be TIG welded.

Lower or rear face compartments, if specified shall be provided with polished aluminum drip rails.

One (1)  
KK-03-0070

**SIDE BODY COMPARTMENT ROLL-UP DOOR CONSTRUCTION**

Exterior side equipment compartments so specified shall be equipped with roll-up shutter doors to be installed as specified herein.

The drum assembly shall be fully enclosed and protected from the elements. Pendent plates supporting the door roll assembly shall be bolted in place, adjustable and capable of being removed with common hand tools. Pendent plates and supports that are welded in place do not meet the maintenance and service criteria of these specifications.

Six (6)  
KK-03-0072

**PAINTED ROLL UP DOORS**

The specified roll-up doors shall be painted to match the apparatus body:

One (1)  
KK-03-0080

**ROLL UP DOORS**

R.O.M. Robinson brand extruded aluminum shutter style doors with lift bar latch mechanisms and associated hardware shall be provided and installed as specified.

One (1)  
KK-03-0099

**DRIVER SIDE**

The driver side of the apparatus body shall consist of the following configuration.



One (1)  
KK-03-6200

#### **DRIVER SIDE COMPARTMENTS**

Three body compartments shall be furnished as follows:

- One compartment ahead of the rear wheels with full height roll-up door.
- One compartment above rear wheels with roll-up door.
- One compartment behind the rear wheels with full height roll-up door.

One (1)  
KK-04-0100

#### **PASSENGER SIDE COMPARTMENTS**

The passenger side of the apparatus body shall consist of the following compartment configuration.

One (1)  
KK-04-6200

#### **PASSENGER SIDE COMPARTMENTS**

Three body compartments shall be furnished as follows:

- One compartment ahead of the rear wheels with full height roll-up door.
- One compartment above rear wheels with roll-up door.
- One compartment behind the rear wheels with full height roll-up door.

One (1)  
KK-50-0640

#### **REAR BODY CONFIGURATION**

Rear apparatus body compartments shall be as follows:

- There shall be one compartment with full height roll-up door.

The rear roll-up compartment door shall be left unpainted.

One (1)  
KK-50-4300

#### **RECESSED REAR BODY**

The rear vertical surface of the body shall be recessed in from the rear edge of the body on each side. The rear body corners shall be square with a recessed step and standing area between the body sides.

One (1)  
KM-49-1002

#### **EXTERIOR COMPARTMENT FLOOR COVERING**

All enclosed compartment floors with exterior opening doors on the apparatus body shall be covered with black colored rigid Turtle Tile for improved ventilation and added scuff protection for the compartment floor.



Seven (7)  
KM-49-1602

**ALUMINUM UNISTRUT CHANNEL**

Extruded aluminum unistrut channel shall be installed in the following compartments for future addition of adjustable shelves.

All compartments shall be provided with unistrut channel for future shelving.

One (1)  
KM-49-1615

**SLIDE-OUT TRAY**

Slide-out trays shall be constructed of 3/16" aluminum material. Trays shall have with heavy-duty roller bearing slides with a latch to hold the tray in the "open" and "closed" positions. Tray shall have capacity of 500 pounds.

The location of the slide-out tray shall be in the rear compartment.

One (1)  
KM-49-1628

**PULL-OUT VERTICLE TOOL BOARD**

There shall be a pullout tool board furnished in the compartment. Tool board shall be 3/16" smooth aluminum and have adjustable rollers top and bottom.

The location of the pull-out tool board shall be determined prior to construction.

One (1)  
KM-50-0100

**DRIVER SIDE AIR BOTTLE COMPARTMENTS IN WHEELWELL**

SCBA storage compartment shall be provided and located in the driver side rear wheel well of the apparatus body. Compartment door and frame shall be constructed entirely of cast aluminum and have hinged style door. The compartment bottom and rear wall shall be lined with rubber material to protect paint finish of the air cylinder.

Two (2) SCBA storage compartments shall be provided on the driver's side wheel well area.

One (1)  
KM-50-0250

**PASSENGER SIDE AIR BOTTLE COMPARTMENTS IN WHEELWELL**

SCBA storage compartment shall be provided and located in the passenger side rear wheel well of the apparatus body. Compartment door and frame shall be constructed entirely of cast aluminum and have hinged style door. The compartment bottom and rear wall shall be lined with rubber material to protect paint finish of the air cylinder.

Two (2) SCBA storage compartments shall be provided on the passenger's side wheel well area.



One (1)  
KR-01-0100

### **EXTRUDED ALUMINUM RUB RAILS**

Full body length polished aluminum rub rails shall be bolted in place on the right and left body sides and in the pump panel area. The rub rails shall extend outward beyond the body sides for protection of the compartments and doors. There shall be a bolt on aluminum corner casting on each rear corner to blend the rear tailboard assembly with the side rub rails.

The side rub rails shall be a heavy extruded aluminum "C" channel.

One (1)  
KR-04-0002

### **SIDE AND REAR OVERLAYS**

Overlay panels shall be constructed of 3003 polished aluminum treadplate. Polished aluminum overlay shall be provided and installed in the following areas:

- The front face of each side compartment.
- The rear body face and vertical area above tailboard and below hose bed.
- Driver's side and passenger compartment top extending down over side to the compartment doors then forming a drip rail above doors.
- Front face of hose bed above booster tank.

Overlay shall be installed with "Aluminized" stainless steel bolts to prevent corrosion.

One (1)  
KR-04-3000

### **SLIP-RESISTANT WALKWAY SURFACE**

All exterior surfaces designated as stepping, standing, and walking areas shall have an aluminum slip-resistant overlay material installed. The slip-resistant overlay material shall have a raised serrated surface that will allow moisture to drain out either side. The recessed surface shall be one piece solid material to prevent road spray and debris from entering the top surface from below. The slip-resistant overlay material shall meet the requirements of NFPA 13-7.3. The slip-resistant surface shall be installed in the following areas of the apparatus body:

- Step areas of the side running boards.
- Rear step running board step.
- Walkway and standing platforms

One (1)  
KR-04-4903

### **REAR STEP/RUNNING BOARDS**

The apparatus body running boards and rear step shall be constructed with slip-resistant surface and shall have bright aluminum treadplate trim around the outside edges.



One (1)  
KR-04-4910

**REAR STEP/TAILBOARD**

A single piece .188 rear step/tailboard shall be furnished that is a minimum of 16.00" deep and full width of the apparatus body, from rub rail to rub rail. The tailboard shall be provided with a removable casting on each corner for a pleasing appearance.

One (1)  
KR-10-0000

**HANDRAILS**

Access handrails shall be 1 1/4" in diameter extruded aluminum with rubber insert. Access rail escutcheons and brackets shall be chrome plated and attached with stainless steel bolts. Anchoring of posts and framing members for railings of all types shall be of such construction that the completed railing structure shall be capable of withstanding a load of at least 225 pounds applied in any direction at any point along the rail.

One (1)  
KR-10-0100

**REAR HANDRAILS**

Two (2) vertical access handrails shall be provided and mounted on the rear of the apparatus body, one on each side. Each rear handrail to be approximately 48" long.

Three (3)  
KS-01-1800

**CAST ALUMINUM STEPS**

Three (3) NFPA approved cast aluminum steps shall be provided and mounted at the rear of the body on the driver's side. All access steps shall have a minimum surface area of 35-square inches, and have a slip-resistant standing surface. The step shall be capable of supporting a 500-lb. load.



One (1)  
NA-00-0010

**ELECTRICAL**

Electrical wiring, hydraulic lines, air system tubing, and control cables shall be fastened to the frame or body structure of the apparatus and shall be furnished with protective looms, grommets, or other devices, so that any such connector and/or wiring will be protected from shear or tear.

The body 12-Volt electrical system shall be designed specifically for the apparatus body. Automatic reset circuit breakers shall be provided and installed in all circuits.

Wiring data shall be provided with the completed apparatus.

The following electrical equipment and lights shall be provided and installed:

One (1)  
NA-00-0080

**WIRING SYSTEM**

All electrical wiring shall be 14-gauge heavy strand copper with type GXL crosslink high temperature insulation, being circuit function printed every three-inches along its entire length.

Wiring data shall be provided with the completed apparatus.

The following electrical equipment and lights shall be provided and installed:

One (1)  
NA-00-1000

**TAIL & STOP LIGHTS**

Two (2) Weldon #2010 rectangular red stop/tail lights shall be provided and mounted at the rear of the body, one on each side.

One (1)  
NA-00-2500

**DIRECTIONAL LIGHTS WELDON 2010**

Two (2) Weldon #2010, rectangular amber directional signal lights with black arrows shall be provided and mounted at the rear of the body, one on each side below the stop/tail lights.

One (1)  
NA-00-4000

**BACKUP LIGHTS WELDON 2010 (RECT)**

Two (2) Weldon #2010, rectangular clear backup lights shall be provided and mounted, one on each side at the rear of the body. The backup lights shall be mounted below the rear stop/tail and directional lights.

One (1)  
NA-00-5300

**CLEARANCE LIGHTS**

There shall be clearance marker lights installed meeting all DOT requirements. The vehicle clearance lights shall be recess mounted within the rear center tailboard step.



One (1)  
NA-00-5400

**LICENSE PLATE BRACKET**

A license plate mounting bracket shall be provided complete with a chrome-plated shielded indirect type light. Bracket shall be mounted at the rear of the apparatus body.

One (1)  
NA-00-5600

**BACKUP ALARM**

An automatic, electronic reverse alarm shall be provided and installed. An alarm shall activate whenever the reverse gear is selected in the transmission.

One (1)  
NA-00-6300

**LOAD MANAGER**

The apparatus shall be equipped with a Kussmaul model 091-79 Automatic Load Shedding System for performing continuous electrical load management. The Load Manager shall have the following features:

- Monitor 12-volt system and detect low voltage.
- Capability to control two (2) loads.
- Automatic reset when voltage rises.
- Adjustable voltage setpoint.

The load manager shall be protected against reverse polarity and shorted outputs, and be enclosed in a metal enclosure to enhance EMI/RFI protection. CSFA shall provide for all electrical loads in excess of the NFPA minimum electrical requirements that exceed the alternator output.

Seven (7)  
NA-01-1010

**COMPARTMENT LIGHTING**

All side and rear exterior equipment compartments shall be provided with one (1) clear compartment light mounted to the side walls of the compartment. Compartment lights shall switch on automatically when the compartment door is opened and switch off when the door is closed.

One (1)  
NA-01-3000

**OPEN COMPARTMENT/HAZARD WARNING LIGHT**

A red flashing, warning light shall be provided and installed in the driver's compartment to indicate an open passenger or apparatus compartment door. The hazard light shall also be attached to folding equipment racks and light towers as specified. Light shall be properly marked and identified.



One (1)  
NB-02-5100

**BATTERY DISCONNECT SWITCH**

A master battery on/off switch shall be furnished by the chassis manufacturer and mounted in a convenient location to the driver. The master battery switch shall disconnect the batteries from all chassis and body accessories.

One (1)  
NB-02-6200

**BATTERY CONDITIONER**

A 110-volt Kussmaul Auto-Charge 1000, single system, 18-amp, automatic battery charger and power supply shall be provided and installed within the chassis cab and wired to the battery system. Battery charger shall be 18-amp output type designed to automatically charge the battery system when shoreline power is connected. The charger shall be equipped with a bar graph type charge level indicator to indicate the charge rate. The charger shall have an electronic sensing circuit to sense the true battery voltage while eliminating the need for external sensor wires. Charging is completely automatic, when the battery is fully charged, all charging stops. There is no over charging and no water boil off.

The charger shall have a built in 3-amp battery saver for rechargeable hand lights.

One (1)  
NB-02-7620

**AUTO-EJECT**

A Kussmaul "Super Auto-Eject" 20-amp automatic disconnect device shall be provided and installed on the 110 volt shoreline connection complete with weatherproof cover and matching plug. The Auto-Eject shall be activated by the chassis starter switch to disconnect the plug. The Super Auto-Eject shall be completely sealed to prevent contamination of the mechanism by inclement weather and road conditions. The Super Auto-Eject shall have an internal switch to open and close the A.C. circuit after the mating connector is inserted and before the connector is removed.

One (1)  
NB-02-9500

**DASH MOUNTED EMERGENCY ELECTRICAL SWITCH PANEL**

An electrical switch panel shall be designed and mounted in the cab dash area as furnished by the custom chassis manufacturer. All switches shall be provided with back lighted snap-in legend inserts.

**SWITCHES**

All emergency light switches shall be lighted, rocker style. Switches shall be internally lit when the switch circuit is in the on position. A plug-in identification label is to be provided and installed adjacent to each rocker switch with backlighting provided behind the label.

An internally lighted switch shall be provided and wired through a heavy-duty relay to activate power to the emergency lights. The emergency lights shall be activated by a single "MASTER SWITCH" on the electrical console.



One (1)  
NB-10-5000

**REAR STEP LIGHTS**

Two (2) chrome plated lights shall be furnished and installed on the rear face of the body to illuminate the rear step area. Lights shall be wired to the panel light switch at the pump operator's panel.

One (1)  
NB-10-5400

**ENGINE COMPARTMENT WORK LIGHT**

An engine compartment work light shall be provided complete with a switch mounted on the light head.

One (1)  
NB-10-5600

**PUMP COMPARTMENT WORK LIGHT**

A pump compartment work light shall be provided and installed within the pump compartment area complete with a switch mounted on the light head.

One (1)  
NB-10-6200

**UNDER CAB LIGHTING**

The under cab lights shall be supplied with the chassis.

One (1)  
NB-10-6800

**UNDER BODY LIGHTING**

There shall be two (2) lights furnished below the pump house running board, one on each side. The lights shall be wired to turn on and off with a switch located on the pump operator's panel.

One (1)  
NB-10-6900

**UNDER BODY LIGHTING REAR STEP**

There shall be two (2) lights furnished below the rear step, one on each side. The lights shall be wired to turn on and off with a switch located on the pump operator's panel.

One (1)  
NB-30-0200

**REAR DECK LIGHTS**

Two (2) Unity #AG series, chrome-plated, six-inch rear mounted lights with swivel type mounting bracket and individual switches shall be provided.

One light shall be a **35-watt 75,000 candlepower spot** lamp, and one light shall be a **35-watt 1,100 candlepower flood** lamp.



Two (2)  
NB-30-0700

**TELESCOPING 12 VOLT SPOT/FLOODLIGHTS**

Federal Signal Nightfighter 12-volt spot/flood light Model FL3SF-LC shall be provided and mounted on a telescopic pole on the front of the apparatus body. The light shall be wired to the chassis 12-volt system with a switch provided on the light.

Two (2) 12-volt telescoping lights shall be provided at the front of the body, one on each side at the rear of the pump panel.

Additional switches shall be located on the cab switch panel to turn on the lights from inside the cab.

One (1)  
NC-02-9010

**AIR HORNS**

Two (2) chrome-plated Grover "Stuttertone" air horns shall be provided and recess mounted in the front bumper extension. A pressure protection valve to prevent the use of air horns or other air operated accessories when the system air pressure drops below 80 psi shall be provided.

Air horns shall be controlled from the following switch positions.

One (1)  
NC-02-9030

One (1) overhead lanyard control shall be provided in the front of the cab for activation of the air horn. The lanyard control shall be accessible to both the driver and the officer when seated.

One (1)  
NC-02-9040

**HORN SELECTOR SWITCH**

An air horn/horn selector switch shall be provided and mounted on the switch console to select activation of the chassis horn, or the air horns.

One (1)  
NC-03-2000

**ELECTRONIC SIREN**

A Code 3 Model 3692 V-CON, 200-watt electronic siren with Hi-Lo and hardwired microphone shall be provided and mounted in the cab.

One (1)  
NC-03-5000

**SPEAKER**

Cast Products Model GS1004, 100-watt speaker shall be provided and recess mounted in the front bumper of the chassis. The speaker shall be connected to the electronic siren control unit.

One (1)  
NC-04-3200

**HEADLIGHT FLASHER**

The headlight circuit of the chassis shall be provided with a heavy-duty headlight flasher system designed for emergency vehicles. Flasher shall include override for high beam headlights and



controlled by switch located on the electrical module in the chassis cab. Headlight flasher to be turned off when the park brake is set.

One (1)  
NE-04-0950

#### **EMERGENCY LIGHTING**

The upper and lower zones "A", "B", "C", "D" of the apparatus shall have the following emergency lighting equipment:

One (1)  
NE-04-5900

#### **LIGHT BAR**

One (1) Code 3 model 574NFPA1 74" mounted on chassis cab roof to meet the NFPA upper zone A lighting requirement. Light bar to have the following equipment.

- (4) 50-watt standard rotators
- (4) 2 step cascade mirrors
- (2) 3 step cascade mirrors

One (1)  
NE-05-0100

#### **REAR LIGHTS**

Two (2) Code 3 model 550F rotating lights mounted on the rear of the apparatus body to meet the NFPA Zone B, C, D upper level lighting requirement. The lights shall be activated through the master emergency light switch located on the electrical console. Each light to have the following equipment.

- (1) 50-watt fast rotator
- 1 Red lens / 1 Amber lens

One (1)  
NE-05-1210

#### **UPPER ZONE "B, C, D" LIGHT MOUNTING**

The upper rear lights designated for Upper Zone "B" shall be mounted on the upper outside corners of the apparatus body, one on each side.

One (1)  
NE-05-2150

#### **ZONE A FRONT LIGHTS**

The lower front zone "A" lights shall be furnished with the chassis.

One (1)  
NE-05-4600

#### **ZONE B & D SIDE LIGHTS**

There shall be three (3) Code 3 model 4135BZ halogen flashing lights with bezels furnished on each side of the apparatus to meet the NFPA Zone B & D lower level lighting requirement. One light mounted as far forward as possible, one light mounted as far to the rear as possible, and one light mounted between the front and rear lights. The halogen lights shall be connected to a flasher and be activated through the master emergency light switch located on the electrical console.



One (1)  
NE-05-8600

### **ZONE C REAR LIGHTS**

There shall be two (2) Code 3 model 4135BZ halogen flashing lights with bezels furnished on the rear of the apparatus body to meet the NFPA Zone C lower level lighting requirement. The halogen lights shall be activated through the master emergency light switch located on the electrical console.

One (1)  
NS-00-0100

### **12 VOLT ELECTRICAL CERTIFICATION**

The low voltage electrical system shall be tested and certified per NFPA 1901 requirements.

A certificate of compliance shall be provided with the completed vehicle upon delivery.

Minimum electrical load consists of the total amperage required to simultaneously operate the following in a stationary mode at the incident scene.

- The propulsion engine and transmission.
- All Clearance and marker lights.
- The communication radio. (Default of 5.0 amps used for testing).
- Illumination of all walking surfaces, the ground at all egress points, controls and instrument panels and 50% of the total compartment lighting load.
- Minimum warning lights required for "Blocking Right of Way" mode.
- The current to simultaneously operate any fire pump, aerial device & hydraulic pumps.
- Anything defined by the purchaser to be critical to the mission of the apparatus.

The first test for the electrical system is the **Reserve Capacity Test**. All the above listed components operate with the engine shut off. After 10 minutes all electrical loads are shut off and the battery system must have adequate reserve power to start the engine.

The second test is the **Alternator Performance Test at Idle**. All the above listed components operate with the engine at an idle. There can be no current draw from the batteries of the apparatus.

The third test is the **Alternator Performance Test at Full Load**. All electrical components shall be activated with the engine operating at governed RPM for two hours. During the test the system voltage can not drop below 11.7-volts or have excessive battery discharge for more than 120 seconds. Any loads not listed in the minimum electrical load may be load managed in order to pass the test.

All of the above tests must be conducted with the engine compartment at approximately 200 degrees.



One (1)  
PA-01-0002

**PAINTING**

All bright metal fittings if unavailable in stainless steel shall be heavily chrome-plated. Iron fittings shall be copper plated prior to chrome plating.

All seams shall be caulked both inside and along the exterior edges with an automotive sealant to prevent moisture from entering between any body panels.

The body and all parts shall be thoroughly washed with grease cutting solvents prior to any sanding. After the body has been sanded and the minor imperfections filled and sanded, the body shall be washed again with a solution to remove any contaminants on the surface. The first coating to be applied is a self-etching primer for maximum adhesion to the body metal. The next three coats shall be an acrylic, urethane, primer surfacer. The primer surfacer coat is to be hand sanded with 600-grit sandpaper to insure maximum gloss of the paint. The last step is the application of at least three coats of Concept Acrylic Urethane two component color.

The fire pump and all rigid discharge and suction plumbing shall be painted silver in color.

While constructing the truck body, all aluminum parts shall be properly fitted on the body. The backside of all aluminum parts shall be sanded smooth of any burrs and sharp edges.

All aluminum parts shall be bolted to the body using stainless steel fasteners. Cadmium plated fasteners are not acceptable.

During reassembly of the apparatus, care shall be exercised in fitting and fastening the parts back in their respective position on the vehicle.

Six (6)  
PA-01-0015

**PAINTED ROLL UP DOORS**

The roll-up doors on each side of the body shall be painted to match the apparatus body:

One (1)  
PA-01-0200

**UNDERCOATING**

The body sub frame shall be undercoated with a heavy-duty automotive type undercoating before the rubber backing and the compartments are attached. After the body has been attached to the sub frame and all final items have been installed the entire body assembly shall be undercoated

One (1)  
PA-01-1520

**INTERIOR COMPARTMENT LINER**

The interior compartment walls shall be coated with a heavy spray on lining material. The lining material shall dry to form an impervious one-piece covering to protect the compartment interiors from damage. The lining material shall be dark gray in color.

The color of the compartment lining material to be light gray in color.



One (1)  
PA-01-3500

**WHEEL PAINTING**

The exterior faces of the front and rear wheels, shall be finished painted to match the apparatus body. Wheels shall be properly prepared and finished with primer coats and topcoats as specified.

The outer two-inches of each outside wheel rim shall be painted Silver in color, unless otherwise specified.

One (1)  
PA-01-4500

**PAINT BODY TO MATCH CHASSIS**

The apparatus body to be painted to match the chassis.

The color shall be red.

One (1)  
PA-02-1910

**LETTERING**

Lettering shall be done in gold leaf mylar letters, shaded in black, and encapsulated in clear mylar. Lettering to be placed on each cab door as directed by fire department. Maximum of fifty (50) letters.

One (1)  
PA-02-2600

Exact lettering requirements shall be determined prior to construction.

One (1)  
PA-02-8200

**REFLECTIVE SAFETY STRIPE**

A 1" x 6" x 1" wide 3M brand Scotchlite #680-10 reflective multi-stripe shall be affixed to the perimeter of the vehicle. There shall be a 1" gap between each of the stripes. Striping shall be placed up to 60" above ground level and shall conform to NFPA reflectivity requirements. At least 60% of the perimeter length of each side and width of the rear, and at least 40% of the perimeter width of the front of the vehicle shall have reflective stripe.

The side stripe shall be applied in a Large "Z" design

The stripe shall be white in color.

One (1)  
PC-00-0100

**IDENTIFICATION & SAFETY LABELS**

A permanent plate shall be installed in the driver's compartment to specify the quantity and type of the following fluids in the vehicle:

1. Engine oil.
2. Engine coolant.
3. Transmission fluid.
4. Pump Transmission Lubrication Fluid.



5. Pump Primer Fluid (If applicable).
6. Drive Axle Lubrication Fluid.
7. Air-conditioning refrigerant.
8. Air-conditioning lubrication oil.
9. Power steering fluid.
10. Transfer case fluid.
11. Equipment rack fluid.
12. Air compressor system lubricant.
13. Generator system lubricant.

When trucks have been UL certified, a permanent plate with pump performance data and serial numbers shall be installed on the pump panel.

A permanent plate shall be installed in the driver's compartment specifying the maximum number of personnel the vehicle is designed to carry per NFPA standards. It shall be located in an area visible to the driver.

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". The warning sign shall be placed so it is visible from all seating positions.

An accident prevention sign stating "DANGER DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION, DEATH OR SERIOUS INJURY MAY RESULT". The warning sign shall be placed so it is visible from the rear step of the vehicle.

If an inlet located at the pump operator's position is valved, it shall be provided with a permanent label that states "WARNING SERIOUS INJURY Or DEATH COULD OCCUR IF INLET IS SUPPLIED BY A PRESSURIZED SOURCE WHEN THE VALVE IS CLOSED".

One (1)  
TA-01-0100

#### **OPERATION / SERVICE MANUALS**

The manufacturer shall provide with the vehicle upon delivery, one (1) complete delivery manual. These manuals shall be in a notebook type binder, with reference tabs for each section of the vehicle. Within each section shall be:

1. Individual component manufacturer instruction and parts manuals.
2. Warranty forms for body.
3. Warranty forms for all major components.
4. Warranty instructions and format to be used in compliance to warranty obligations.
5. Wiring diagrams.
6. Installation instructions and drawings for major parts.
7. Visual graphics, electronic photos of installations of major parts.
8. Necessary normal routine service forms, publications and components of body portion of the apparatus.
9. Technical publications on training and instructions for major body components.
10. Warning and safety related notices for personnel protection.
11. Cab and chassis manuals on parts, service and maintenance shall be provided.



12. UL Pump Certification sheets, including the Manufacturer's Record of Apparatus construction details.
13. Certificate of Compliance to Electrical Warning System Low Voltage test.
14. Line Voltage Electrical System test certificate.
15. Water tank capacity certificate.



One (1)  
VA-00-0000

**ADDITIONAL EQUIPMENT**

The following equipment shall be furnished by the apparatus body builder.

**LADDERS**

One (1)  
VA-01-0400

A 24-foot, 2-section aluminum fire department extension ladder, ALCO-LITE Model PEL-24, shall be furnished.

One (1)  
VA-01-0425

A 14-foot aluminum roof ladder with folding hooks, ALCO-LITE model PRL-14, shall be furnished.

One (1)  
VA-01-0435

A 10-foot folding aluminum attic ladder, with mounting brackets, ALCO-LITE model FL-10, shall be furnished.

Two (2)  
VA-03-6000

**HARD SUCTION HOSE**

A 10-foot length of 6" lightweight PVC, flexible fire department suction hose, first quality non-collapsible type, of a design having a low friction loss and which will not collapse under a vacuum of 23".

Hard suction hose to be equipped with lightweight couplings. Long handles on female and rocker lugs on male couplings.

Two (2) 10-foot lengths of 6" hard suction hoses shall be provided.

One (1)  
VA-04-3100

**SUCTION STRAINER**

A 6" NST chrome-plated barrel type suction hose strainer shall be provided.



One (1)  
1B-00-0500

**WARRANTY**

We warrant each new motorized fire apparatus manufactured by CENTRAL STATES FIRE APPARATUS for a period of ONE YEAR from the date of delivery, except for chassis and other components noted herein.

Under this warranty we agree to furnish any parts to replace those that have failed due to defective material or workmanship where there is no indication of abuse, neglect, unusual or other than normal service providing that such parts are, at the option of CENTRAL STATES FIRE APPARATUS, made available for our inspection at our request, returned to our factory or other location designated by us with transportation prepaid within thirty days after the date of failure or within one year from the date of delivery of the apparatus to the original purchaser, whichever occurs first, and inspection indicates the failure was attributed to defective material or workmanship.

The warranty on the chassis and chassis supplied components, storage batteries, generators, electrical lamps and other devices subject to deterioration is limited to the warranty of the manufacturer thereof and adjustments for the same are to be made directly with the manufacturer by the customer.

This warranty will not apply to any fire apparatus that has been repaired or altered outside our factory in any way, which in our opinion might effect its stability or reliability.

This warranty shall not apply to those items that are usually considered normal maintenance and upkeep services: including, but not limited to, normal lubrication or proper adjustment of minor auxiliary pumps or reels.

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability in connection with the sales of our apparatus unless made in writing by CENTRAL STATES FIRE APPARATUS.

One (1)  
1B-00-2600

**10 YEAR ALUMINUM BODY WARRANTY**

Central States Fire Apparatus LLC (CSFA) warrants to the original purchaser only, that the all aluminum body, fabricated by Central States Fire Apparatus, under normal use and with reasonable maintenance, be structurally sound and will remain free from corrosion perforation for a period of TEN (10) years.

This warranty does not apply to the following items that are covered by a separate warranty: paint finish, hardware, moldings, and other accessories attached to this body. In addition, this warranty does not apply to any part or accessory manufactured by others and attached to this body.

CENTRAL STATES FIRE APPARATUS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE ALUMINUM BODY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND HEREBY DISCLAIMED.



Central States Fire Apparatus will replace without charge, repair or make a fair allowance for any defect in material or workmanship demonstrated to its satisfaction to have existed at the time of delivery or not due to misuse, negligence, or accident. If Central States Fire Apparatus elects to repair this body, the extent of such repair shall be determined solely by Central States Fire Apparatus, and shall be performed solely at the Central States Fire Apparatus factory, or at an approved facility. The expense of any transportation to or from such repair facility shall be borne by the purchaser and is not an item covered under this warranty.

Central States Fire Apparatus will not be liable for damages and under no circumstances will its liability exceed the price for a defective body. The remedies set forth herein are exclusive and in substitution for all other remedies to which the purchaser would otherwise be entitled.

Central States Fire Apparatus will be given a reasonable opportunity to investigate all claims. The purchaser must commence any action arising out of, based upon or relating to agreement or the breach hereof, within twelve months from the date the cause of the action occurred.

One (1)  
1B-00-3700

#### **PAINT WARRANTY**

The PPG paint performance guarantee will cover the areas of the vehicle finished with the specified product for a period of SEVEN (7) years beginning the day the vehicle is delivered to the purchaser.

The areas as outlined on the Guarantee Certificate, will be covered for the following paint failures:

#### **GUARANTEE INCLUSIONS:**

#### **FULL APPARATUS BODY MANUFACTURED AND PAINTED BY CENTRAL STATES FIRE APPARATUS:**

- \* Peeling or delamination of the topcoat and/or other layers of paint.
- \* Cracking or checking.
- \* Loss of gloss caused by cracking, checking, or hazing.
- \* Any paint failure caused by defective PPG Fleet Finishes which are covered by this guarantee.

All guarantee exclusions, limitations, and methods of claims are covered in the full certificate provided to the original purchaser.

One (1)  
1B-02-1000

#### **STAINLESS STEEL PLUMBING WARRANTY**

Subject to the provisions, limitations and conditions set forth in this warranty, Central States Fire Apparatus, LLC (hereby referred to as "seller"), hereby warrants to each original purchaser only that stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of ten (10) years. This covers



structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of the delivery and shall terminate upon the transfer of possession or ownership by original purchaser.

This warranty is conditioned upon normal use and reasonable maintenance of such plumbing; prompt written notice of all defects to seller or one of the seller's then authorized dealers in the area; no repair or additions there to except by seller or authorized by it; said defect not resulting from misuse, negligence, accident, remount, overloading beyond applicable weight rating by customer or third parties. If any such conditions are not complied with, this warranty shall become void and unenforceable.

Should repairs become necessary under the terms or the warranty, the extent of that repair shall be determined solely by the seller and shall be performed solely at Central States Fire Apparatus, LLC or a repair facility designated by the seller. The expense of any transportation to or from such repair facility shall be that of the purchaser and is not an item covered by this warranty.

Seller reserves the unrestricted right at any time from time to time to make changes in the design of and/or improvements on its products without thereby imposing any obligation on itself to make corresponding changes or improvements in or on its products theretofore manufactured.

**EXCLUSIONS AND LIMITATIONS:** THIS MANUFACTURER'S WARRANTY IS PROVIDED IN PLACE OF ANY AND ALL OTHER REPRESENTATIONS OR IMPLIED WARRANTIES. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTY ON BEHALF OF CENTRAL STATES FIRE APPARATUS, LLC OR ANY OF ITS DISTRIBUTORS OTHER THAN SET FORTH IN THIS MANUFACTURER'S WARRANTY. YOUR RIGHT TO SERVICE AND REPLACEMENT OF PARTS ON THE TERMS EXPRESSLY SET FORTH HERIN ARE YOUR EXCLUSIVE REMEDIES AND NEITHER THE MANUFACTURER NOR ANY OF ITS DISTRIBUTORS SHALL BE LIABLE FOR DAMAGES, WHETHER ORDINARY, INCIDENTAL OR CONSEQUENTIAL.

One (1)

**CAB WARRANTY**

The cab shall be warranted for a period of ten (10) years. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

One (1)

**ENGINE WARRANTY**

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

One (1)

**TRANSMISSION WARRANTY**

The Allison 3000 EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.