



## **Base Airwolf C2 4-door**

### **FIRE APPARATUS WARRANTY**

The Rosenbauer (General Division) warrants each new motorized fire apparatus manufactured by General Safety Equipment for a period of ONE YEAR from the date of delivery, except for the chassis and other components noted herein which are covered by a separate manufacturers warranty.

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 General Safety Equipment, 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.

All warranty work performed must be completed at the General Safety Equipment factory or a General Safety Equipment approved service center. The expense of any transportation to or from the factory or approved service center shall be borne by the purchaser and is not an item covered under this warranty.

The warranty on the chassis and chassis supplied components, fire pump, water tank, generator, electrical components and other devices not manufactured by General Safety Equipment is limited to the warranty and warranty terms of the manufacturer thereof.

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

This warranty shall not apply to those items which are usually considered normal maintenance and upkeep services, including, but not limited to, electrical lamps, valve seals, normal lubrication and/or proper adjustment of minor items.

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 General Safety Equipment.

### **5 YEAR BODY WARRANTY**

The Rosenbauer (General Division) warrants the aluminum bodies, fabricated by General Safety Equipment, under normal use and with reasonable maintenance, shall remain structurally sound for a period of FIVE (5) years.

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

GENERAL SAFETY EQUIPMENT MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO THE APPARATUS BODY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

General Safety Equipment 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 General Safety Equipment elects to repair this body, the extent of such repair shall be determined solely by General Safety Equipment, and shall be performed solely at the General Safety Equipment factory. The expense of any transportation to or from the factory shall be borne by the purchaser and is not an item covered under this warranty.

General Safety Equipment will not be liable for consequential 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.

### **PAINT WARRANTY**

The PPG five year paint performance guarantee will cover the areas of the vehicle finished with the specified product for a period of FIVE (5) 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 GENERAL SAFETY EQUIPMENT:

- 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.

#### GUARANTEE EXCLUSIONS:

- Paint deterioration caused by blisters or other film degradation due to rust or corrosion originating from the substrate.
- Hazing, chalking or loss of gloss caused by improper care, abrasive polishes, cleaning agents, heavy duty pressure washing, or aggressive mechanical wash systems.
- Paint deterioration caused by abuse, accidents, acid rain, chemical fallout or acts of nature.
- Custom finishes, exotic finishes or any finish other than standard finish procedures.
- Failures resulting from product misuse or abuse.
- Repairs done over previously refinished areas unless stripped to bare metal or appropriate substrate.
- Claims presented without proper warranty documentation.
- Failure on finishes containing Non PPG or Non PPG finishes approved products.
- Failure on finishes performed by Non PPG Certified Refinish Technicians.
- Failure on finishes performed by Non PPG Certified Repair Centers.
- Failure on finishes performed by PPG Certified refinishes who have allowed their certification to expire.

**UPF POLY-TANK IIE  
THE ALL-OUT NO FAULT LIFETIME WARRANTY**

**UNITED PLASTIC FABRICATION INC.** Warrants each UPF POLY-TANK IIE Booster/Foam tank to be free from manufacturing defects in material and workmanship for the service life of the vehicle (vehicle must be actively used in fire suppression). The UPF POLY-TANK IIE must be installed in accordance with the United Plastic Fabricating installation manual. Every UPF POLY-TANK IIE is thoroughly inspected and tested for leaks before leaving our facility. Should any problems develop with your UPF POLY-TANK IIE booster/foam tank and will not meet performance criteria during the service life of the vehicle, notify UPF in writing or call our TOLL FREE SERVICE HOT LINE 1-800-USA-POLY. Provide UPF with the serial number and a description of the problem. If the tank problem would render the truck out of service, UPF will dispatch a service technician WITHIN 48 HOURS (2 DAYS) to repair the tank. (This time period is for North American Only). If the vehicle can remain in service, UPF will dispatch a service technician with a mutually agreed upon time period.

We will repair, or at our option, replace the tank with a new UPF POLY-Tank IIE. UPF will cover customary and reasonable costs to remove and install the UPF POLY-TANK IIE. This warranty will not cover tanks that have been improperly installed, misused or abused, and the serial number must not have, been altered, defaced or removed. UPF will not cover any unauthorized third party repairs or alterations. Any of these actions may void the warranty.

**THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION OF THE FACE HEREOF. THERE IS NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. ADDITIONALLY, THIS WARRANTY IS IN LIEU OF ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF UNITED PLASTIC FABRICATION, INC.**

This warranty contains the entire warranty. It is the sole warranty and price agreements or representation, whether oral or written, are either merged herein or expressly canceled. UNITED PLASTIC FABRICATION, INC. Neither assumes, nor authorizes any person supposing to act on its behalf, to change, nor assume for it, any warranty or liability concerning its product.

**IN NO EVENT WILL UNITED PLASTIC FABRICATION, INC BE LIABLE FOR AN AMOUNT IN EXCESS OF THE PRESENT RETAIL, PURCHASE PRICE PLUS INSTALLATION AND REMOVAL COST OF THE BOOSTER TANK, FOR ANY LOSS OR DAMAGE, WHETHER DIRECT OR INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHERWISE ARISING OUT OF FAILURE OF ITS PRODUCT.**

This warranty give you specific legal rights, and you also may have other rights, which vary from state to state. Some states do not allow exclusion or limitation of incidental or consequential damage, so the above limitation or exclusion may not apply to you. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

**ADVISORY CIRCULAR**

This apparatus will be constructed in accordance with and meet the current FAA Advisory Circular No. 150/5220-10D and NFPA 414.

**VEHICLE TILT ANGLE CERTIFICATION**

A vehicle tilt angle certification test shall be performed on the completed apparatus upon completion of the unit at the apparatus manufacturers factory.

The test shall be performed with all requested equipment properly placed and installed.

A metal data plate shall be affixed to the drivers door of the vehicle. This data plate shall list the following: vehicle empty weight, maximum gross weight, the actual front and rear axle loaded weights,

and the recorded tilt table angle(s) achieved for both the left and right tilt angles.

This test shall be conducted on a tilt table assembly, meeting SAE J2180, static rollover threshold for heavy trucks.

The vehicle shall be restrained and tilted until the vehicle tilt or slide angle can be positively determined. No Exceptions are allowed to this tilt angle certification requirement.

**CHASSIS**

**MODEL YEAR**

2009

**MAKE**

Ford F-550 2-door Super Cab 4X4

**WHEELBASE**

162"

**TOW HOOKS**

Steel, painted black

**BUMPER**

Argent painted

**FRONT AXLE**

Solid Monobeam axle rated at 7,000 lbs.

**FRONT SUSPENSION**

Leaf type springs with gas type shock absorbers and stabilizer bar.

**REAR AXLE**

Solid axle rated at 13,660 lbs.

**REAR SUSPENSION**

Leaf type springs with gas type shock absorbers and stabilizer bar.

**WHEELS/TIRES**

225/70SR19.5F front and dual rear tubeless BSW tires on 19.5 x 6" rims, 8 hole steel disc wheels

**BRAKE SYSTEM**

4- wheel disc with ABS

**STEERING**

Power

## **ELECTRICAL SYSTEM**

12volt, standard equipment.

### **Includes:**

Tachometer, trip odometer, voltmeter (man trans), oil pressure, coolant temperature gauge (auto trans), air filter minder, fuel gauge and indicator lights  
AM/FM stereo with digital clock  
Dome light (front and rear with crew cab)  
Interval windshield wipers  
Roof clearance lights  
Sealed beam halogen headlights

## **POWER SOURCE**

Two (2) power points located on instrument panel (includes lighter)

## **ALTERNATOR**

Dual 160 amp (combined 320 amp, ambulance package)

## **BATTERY SYSTEM**

Dual 12 volt 750 amp cca/78 amp

## **GRILLE**

Stationary argent painted

## **PAINT TYPE**

Base coat/clear coat 1-tone.

## **PAINT CLASS**

Single custom color.

## **ENGINE**

6.4L Power Stroke diesel V8, 325 hp @ 3000 rpm with 600 ft of torque @ 2000 rpm

## **EXHAUST SYSTEM**

Single stainless steel exhaust system

## **TRANSMISSION**

5-speed electronic automatic transmission with 4X4 transfer case and 4-wheel drive system with manual locking hubs.

## **FUEL TANK**

40 US gallon

## **CAB INTERIOR**

Black vinyl floor covering, visors with passenger mirror

## **SEATS**

Heavy duty front bucket seats with rear bench seat.

## **AIR CONDITIONING**

Blend air conditioning with integral heater and defroster.

## **LEAF SPRINGS**

Four (4) additional leaf springs shall be added to the rear axle and suspension to maintain a level apparatus body during the life of the vehicle.

## **FRONT MUD FLAPS**

One (1) pair of mud flaps shall be installed behind the front wheels of the apparatus using stainless steel brackets with stainless steel threaded fasteners and Ny-Lok nuts.

## **REAR MUD FLAPS**

Heavy duty black 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 to heavy stainless steel angle support brackets with stainless steel threaded fasteners and Ny-Lok nuts.

## **250 GPM CROSSMOUNT PUMP SYSTEM WITH BRIGS & STRATON DIESEL ENGINE**

A Darley Model 2 1/2" AGE 34BS engine driven fire pump shall be midship mounted with a rated capacity of 250 GPM. In addition to meeting NFPA 1901 requirements, it shall be constructed and mounted in accordance with the following specifications.

Pump shall deliver the percentage of rated discharge at pressures indicated below:

- 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

The high-grade bronze impellers and wear rings.

The pump body is to be of high quality seawater resistant light alloy.

The pump manufacturer shall test the pump for 10 minutes hydrostatically at a pressure of 500 psig. Hydrostatic Certification by the pump manufacturer shall be provided.

Fire pump shall be driven by a Isuzu liquid cooled diesel engine. The pump shall be coupled direct to the engine and mounted across the chassis frame rails. The pump engine shall be connected to the chassis fuel tank with separate fuel system. The pump engine electrical system shall be independent of the chassis electrical system but wired to the chassis batteries. All pump engine controls shall be located on the pump operators control panel.

## **STEAMER**

There shall be one (1) steamer inlet furnished. Steamer inlet shall be located, one on the left side of the pump panel. The suction inlet shall have 2 1/2" NST threads. The suction inlet shall have a removable

strainer provided inside each external inlet.

## **PUMP DISCHARGES**

All gated discharge outlets shall include a Class One 3/4" cast bronze 1/4 turn drain valve complete with a chrome plated bronze ball, reinforced teflon seals, and blow-out 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 ID label. Each drain shall be labeled and numbered to correspond to the respective discharge outlet and coloring.

When applicable, front bumper discharges and deck gun discharges shall be provided with a Class 1 automatic drain valve.

All 3" or larger discharge valves shall have an operating mechanism which will not permit changing the position of the flow regulating element of the valve from full close to full open, or vice versa, in less than 3 seconds.

## **STAINLESS STEEL PLUMBING/HIGH PRESSURE HOSE**

All plumbing shall be a combination of stainless steel rigid plumbing and high pressure hose.

## **SIDE MOUNT PLUMBING ASSEMBLIES**

### **1" GATED DISCHARGES, CLASS 1**

Class 1, 1" ball valve gated discharge line(s) shall be furnished with the valve located adjacent to the booster reel and plumbed using 1" I.D. wire reinforced, high pressure hose. Valve(s) shall be operated using a Class One chrome plated handle control assembly.

Outlet located;

One (1) discharge line plumbed to the specified booster hose reel.

### **2" GATED DISCHARGES, AKRON ELECTRIC (CAB CONTROLLED)**

Akron model #8820, 2" ball valve gated discharge lines shall be furnished and controlled from within the cab with the valves located within the enclosed pump compartment and plumbed using 2" I.D. wire reinforced, high pressure hose. Valves shall be operated with Akron electric actuators with open/close switches, position indicator lights, with solid state controls. Valves shall be provided with emergency manual overrides. Control assemblies shall be aligned in a straight horizontal row directly below the corresponding line pressure gauge.

Outlet(s) located;

One (1) discharge located at the front bumper for the bumper turret, plumbed using 2" I.D. wire reinforced, high pressure hose.

## **ENGINE/PUMP SWITCHES**

Control panels with digital pressure gauge, throttle control, engine warning lights and engine start/stop shall be provided one (1) in the cab.

## **PUMP PANEL IDENTIFICATION TAGS**

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, colored according to

NFPA recommended standards.

### **CAB MOUNTED PUMP OPERATORS CONTROL PANEL**

The fire pump shall be located in the front compartment of the apparatus body. All NFPA required gauges and controls shall be furnished on an individual panel located in the chassis cab. All of the pump controls shall be clearly identified with permanently engraved plate type labels.

Lighting shall be provided with a pump operator's panel mounted switch.

### **UPF BOOSTER TANK**

#### **BOOSTER TANK**

A 300 gallon capacity polypropylene booster tank shall be provided.

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 provided 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.

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 6" x 6" outer perimeter. The tower shall be located in the left front corner of the tank. The 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.

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 which shall be a 1 1/2" N.P.T. coupling. 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.

### **BALL VALVE TANK TO PUMP**

A 3" electric operated suction valve with control on pump operators panel shall be furnished from the tank to the pump, complete with a flexible connection and enclosed in the pump compartment.

A check valve shall be provided and installed in the line between the tank and the pump to prevent the possibility of backfilling the booster tank thru the tank to pump suction line.

Tank suction shall be located in a sump assembly located below the bottom of the tank, properly baffled

to prevent surging of water. A 3" cleanout plug shall be provided in the bottom of the tank sump.

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

One (1) 1 1/2" electrically operated tank refill and pump re-circulating line.

### **MANUFACTURERS PUMP TEST**

The pump shall undergo a three (3) hour pump test provided by the body builder to insure proper pressures and flow rates prior to delivery of the completed apparatus.

The pump shall be tested at the manufacturer's plant to meet the requirements of FAA-5220-10D circular for Rapid Intervention Vehicles class 1, 2 or 3, and NFPA 414 2007 edition table 4.1.1d for vehicle water tank capacity 120 to 528 gallons.

### **BUMPER TURRET**

An Akron model 3463 Fire Fox 12 volt electrically controlled monitor and nozzle shall be furnished and installed on the front bumper of the apparatus. The unit shall be capable of flowing up to 250 GPM. Controls for the monitor shall be mounted inside the chassis cab. The monitor shall be plumbed with two (2") inch flexible hose with stainless steel couplings and have a two (2") valve. The valve shall be electrically operated with valve control located in chassis cab. There shall be a 3/4" drain furnished in the supply line to the monitor.

When a bumper turret is required, proper switching shall be provided in the cab for operation of normal pressure water to the turret within reach of the Driver and Officer.

### **FIRE RESEARCH AROUND-THE-PUMP CLASS B FOAM SYSTEM**

Fire Research model MF201 manual around-the-pump Class B foam system shall be installed. It shall be capable of mixing Class B foam concentrate with water. The system shall have a panel mounted metering valve. Foam concentrate flow rates through the metering valve shall be manually controlled to provide the correct amount of concentrate at the eductor.

The eductor shall be installed in a water by-pass loop between the pump intake and pump discharge. The flow in this around-the-pump loop shall create suction to draw the foam concentrate into the eductor, mix it with the water, and inject it into the intake side of the pump.

The system shall provide the following features and capabilities:

1. Valve position selector
2. Valve position table
3. Instruction plate

#### Class B

Foam concentrate induction rate:	30 GPM maximum
Discharge flow rate:	50 - 1000 GPM
Proportioning ratio:	3 % and 6 %

### **FOAM CONCENTRATE TANK**

One (1) 40 gallon polypropylene foam concentrate tank shall be provided and installed within the main booster water tank, unless otherwise specified, to allow easy access for filling. Tank shall be plumbed to the on board foam system.

## **FOAM TANK DRAIN/FILL CONNECTION**

One (1) 1 ½" drain/fill connection with manually operated ball valve and internal strainer shall be located on the drivers side.

Fill connection shall have 1 ½" NSTM fitting unless otherwise specified.

## **AFFF**

40 gallons in 5 gallon buckets shall be provided with the apparatus.

## **HIGH PRESSURE VALVE**

A 1 1/2" electrically operated valve shall be provided to feed the high pressure manifold. The valve shall be controlled from the cab and rear of truck and shall be properly labeled.

## **DRY CHEMICAL SYSTEM**

### **AGENT CONTAINER(S) AND COMPONENTS**

A 500 lb. Dry Chemical System shall be provided and mounted on the apparatus.

The system shall be constructed and stamped in accordance with the ASME "Code for Unfired Pressure Vessels" and hold at least 500 usable lbs of a potassium-based dry chemical fire extinguishing agent. The fill opening shall be easily accessible and provided with a compatible funnel to permit filling from dry chemical storage containers.

The pressure relief device shall conform to the appropriate ASME codes that will protect both the container and the low pressure piping.

A system pressure gauge shall be provided at the dry chemical reservoir.

A check valve shall be provided in the gas piping to prevent the agent from being forced back into the propellant gas line.

Two (2) spring loaded locking agent system activation control switches shall be located adjacent to the dry chemical hose reel, one (1) to charge the nitrogen cylinder and one (1) to control the chemical valve.

The agent pressurization system shall ensure fluidization of the dry chemical at the time of activation.

There shall be provisions for purging agent from all piping and hose after use without discharging the remaining chemical.

There shall be provisions for the de-pressurization of the chemical container without the loss of the remaining chemical.

All system components shall remain within vehicle GVWR and mounting shall not adversely affect vehicle center of gravity.

Designs, where nitrogen bottles are being stored in front of the first axle shall be not accepted due to the high risk of explosion in case of an accident.

The system shall have manually activated valves for the hose reel hand line nozzle, by pass and blow down valves located at the agent tank.

### **AGENT DELIVERY PIPING AND VALVES**

The piping, couplings, and valves shall be sized to provide the gas flow into the system and the agent flow out of the chemical container needed to meet the requirements for the discharge nozzle.

All piping and fittings shall conform to the appropriate ASME code. The completed system shall be designed and installed so as to withstand the recommended working pressure of the system.

The integrity of the installed discharge piping shall be tested at a pressure equal to 150 percent of the system working pressure.

A connection/valve shall be installed immediately downstream of the agent tank to test integrity of all lines and valves in the discharge system from an independent outside source without pressurizing the agent tank.

Material for all piping, couplings, and valves shall be resistant to agent, weather, and galvanic corrosion. When line flexibility is required, stainless steel braided lines shall be used.

Piping shall be securely mounted and provided with flexible couplings where needed to minimize stress. All valves shall be quarter-turn type, selected for ease of operation and freedom from leaks, designed for the abrasive effects of dry chemicals.

#### **PROPELLANT, PROPELLANT CONTAINERS AND COMPONENTS**

The propellant gas shall be dry nitrogen. Sufficient container capacity shall be provided to ensure enough gas to discharge all of the agent and to permit purging of all pipes and hose lines after use.

All propellant gas cylinders and valves shall comply with US Department of Transportation (DOT) requirements. Cylinders shall bear the DOT marking, including evidence of a current hydrostatic test. Pressure gages shall be provided which will indicate the pressure on the propellant gas system downstream of the pressure regulator and in the propellant cylinders at all times.

Cylinder valves, gages, and piping shall be arranged or protected to preclude accidental mechanical damage during fire fighting operations.

The pressure reduction system shall automatically reduce the normal storage cylinder pressure to (and hold it at) the designed operating pressure of the dry chemical container. The regulator may be of a type without pressure indicating gages.

Pressure regulating devices shall be equipped with a spring-loaded relief valve that will relieve any excess pressure that may develop in the regulator.

All pressure regulating devices shall be sealed or pinned at the designed operating pressures after final adjustment by the system manufacturer.

Regulators must be of a high flow variety which allows a rapid build-up time for system pressure for a full system charge and operation.

Regulators shall allow for continuous discharge of the agent at not less than 7 lbs. per second, while maintaining discharge distance until such time as the agent tank is completely empty.

The nitrogen cylinder shall be mounted within a compartment for minimal exposure to the elements and shall be restraint for safe operation.

#### **DUAL AGENT HOSE REEL**

One (1) dual agent hose reel with leak proof ball bearing swing joint, adjustable friction brake and electric rewind and manual back up shall be furnished and mounted on the apparatus.

100' x 1" twinned hand line hose shall be provided and mounted on the reel.

#### **DRY CHEMICAL NOZZLE**

One (1) twin agent 1" nozzle shall be provided with the specified hose reel.

#### **DRY CHEMICAL POWDER (PKP)**

500lbs. of potassium based dry chemical fire extinguishing agent shall be provided for the dry chemical system.

#### **CAB MOUNTED PRESSURE GAUGE**

A Class 1 model PSIS digital pressure gauge shall be mounted within the truck cab, within easy view of the driver, to monitor the turret discharge pressure for Pump-And-Roll operations.

#### **DATA PLATE AND PLACARDS**

The manufacturer will provide at time of delivery the following placards and signage as specified by the purchaser and required by the specified governing bodies.

A test data plate will be provided at the pump operators position which gives the rated discharges and pressures together with the speed of the engine as tested for the proposed unit. Plate will comply with

requirements of NFPA 414.

A permanent data plate will be affixed in the drivers compartment specifying the quantity and type of the following fluids used in the completed vehicle when equipped with the specified component.

1. Engine Oil
2. Engine Coolant
3. Chassis Transmission Fluid
4. Pump Transmission Lubrication Fluid when applicable
5. Pump Primer Fluid when applicable
6. Drive Axle Lubrication Fluid
7. Air Conditioning refrigerant
8. Air Conditioning lubrication oil
9. Power steering fluid
10. Cab tilt mechanism fluid when applicable
11. Transfer case fluid
12. Hydraulic ladder rack fluid when applicable
13. Air compressor system lubricant
14. Generator system lubricant when applicable

Permanent placards will be affixed and visible to all seated occupants instructing the occupants to wear their seat belts.

A permanent placard will be affixed to the rear step area to instruct that riding on the rear step is prohibited.

All warning placards required by NFPA 414 standards and required by the purchasers specifications for the apparatus will be provided and installed.

#### **EXTERNAL TANK FILL**

An external tank fill shall be provided and installed on the left side of the pump. The tank fill shall include an externally mounted quarter turn 2-1/2" Akron ball valve with a chrome plated female swivel, plug and chain.

#### **CAB TANK LEVEL GAUGE**

A Class One Intelli -Tank LED water level gauge shall be provided on the dash of the cab.

#### **CAB FOAM TANK LEVEL GAUGE**

A Class One Intelli -Tank LED foam level gauge shall be provided on the dash of the cab.

#### **BODY DIMENSIONS**

Apparatus body shall be up to 116" long and 95" wide, reference drawing for actual body length.

#### **APPARATUS BODY MATERIAL**

The main structure of the body shall be fabricated of 1/8" aluminum sheet material.

No dissimilar metals shall be welded in place at any location of the apparatus body.

All polished 4-way aluminum treadplate material shall be #3003 H-22, C-102 pattern bright treadplate of the specified thickness.

All of the compartments shall be equipped with "sweep-out" style floors.

Due to the fact that the body is to be designed to be in service for a minimum of 20 years, the walls and floors of the body shall be assembled in such a manner to minimize the possibility of corrosion, body fatigue and distortion.

## **FASTENERS**

All threaded fasteners used in the apparatus body shall be attached with Ny-Lok type nuts.

All aluminum and stainless steel components shall be attached using stainless steel fasteners. Zinc or cadmium plated fasteners are not acceptable for use with any aluminum or stainless steel components used on the vehicle.

Compartment door hinges, handrails, and runningboards shall be attached using minimum 1/4" diameter machine screw fasteners.

3/16" diameter fasteners shall only be used in non-structural areas such as; door locks, trim molding, gauge mounting, etc.

## **APPARATUS BODY SUB-FRAME**

The surface of the chassis frame rails shall be isolated from the apparatus substructure by an elastomeric isolator.

The main body subframe shall be constructed of 2" x 4" extruded aluminum extrusion cross members. The main crosstubes shall be routed through and fully welded to the body super-structure.

## **INTERIOR COMPARTMENT CONSTRUCTION**

Compartment sides and walls shall be welded to the super-structure. Seams shall be sealed using an engineered grade polyurethane adhesive-sealant.

Compartment flooring shall be .190 smooth aluminum welded in place.

The tops of the side exterior compartments shall be constructed of 3003-H14 alloy aluminum treadplate.

## **SHELVING TRACKS**

The vertical extrusions forming the framework of the side exterior compartmentation shall be designed to incorporate FULLY RECESSED adjustable shelving standards. Shelving tracks shall run full height of **ALL** side exterior equipment compartment.

The intent of this requirement is to allow full use of the available storage areas without the interference of shelving tracks extending into and reducing the interior widths of the compartments which will allow equipment to be stored within the full width of the compartment interiors.

Shelving, when specified, shall have a width of no less than .25" of the overall compartment width.

Adjustable shelving tracks welded or bolted onto interior walls of the compartments do not meet the intent of these specifications.

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

Exterior side equipment compartments shall be equipped with roll up style doors.

### **COMPARTMENTS LEFT SIDE**

The left side compartment interior ahead of the rear axle shall be 36" wide x 52" high.

The left side compartment interior above the rear wheels shall be 36" wide x 37" high.

The left side compartment interior behind the wheels shall be 36" wide x 37" high.

The compartments on the left side shall be provided with roll up doors.

The right side front compartment shall be fully transverse for mounting of the fire pump and pump engine with the wheel well compartment and right rear compartment behind the rear axle 22" deep with the specified doors in the closed position.

### **COMPARTMENTS RIGHT SIDE**

The right side compartment interior ahead of the rear axle shall be 36" wide x 52" high.

The right side compartment interior above the rear wheels shall be 36" wide x 37" high.

The right side compartment interior behind the wheels shall be 36" wide x 37" high.

The compartments on the right side shall be provided with roll up doors.

The left side front compartment shall be fully transverse for mounting of the fire pump and pump engine with the wheel well compartment and left rear compartment behind the rear axle 22" deep with the specified doors in the closed position.

### **TOW EYES**

Two (2) tow eyes shall be furnished under the rear of the body and attached directly to the chassis frame. Tow eyes are to be constructed of 1/2" plate steel with a 3" I.D. hole, large enough for passing through a tow chain end hook.

### **COMPARTMENT LIGHTING**

All side exterior equipment compartments shall be provided with one (1) rubber shock mounted sealed and weathertight clear compartment light.

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

For ease of accessibility and maintenance, wheel well panels shall be polished aluminum treadplate.

To fully protect the wheel well area from road debris and to aid in cleaning, a full depth (minimum of 24.00") radius wheel well liner constructed of exterior grade .25" black polyethylene sheet shall be provided. For ease of removal, the liner shall be held in place via means of a self-tension retention system. Due to possible corrosion and contamination by road debris in the wheel well area, mechanical fasteners shall not be used to secure the wheel well liner.

The rear wheel wells shall be radius cut for a streamlined appearance. A polished aluminum radius

fenderette shall be furnished at each rear wheel well opening, held in place with concealed fasteners.

### **APPARATUS COMPARTMENTATION**

There shall be large enclosed compartments on both sides of the body, starting at the front of the hosebody 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 downward 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.

All high side compartment tops shall be NFPA approved non-slip treadplate.

### **SIDE AND REAR OVERLAYS**

.125" polished aluminum treadplate overlays and panels shall be provided and installed in the following areas:

The front face of each side compartment and center rear panel of the apparatus body.

Overlays shall be bolted in place and sealed to prevent any moisture entry between the overlay and the body structure.

### **REAR COMPARTMENT**

A large full width enclosed storage compartment shall be provided across the rear face of the apparatus body a minimum of 26" deep.

The entire rear face of the apparatus body is to be constructed of .125 polished aluminum treadplate material, bolted in place and removable.

The rear compartment shall be provided with the specified large 42" wide by the full height roll-up style compartment door.

### **FLAT BACK BODY**

The rear vertical surface of the body shall be flat from side to side.

### **REAR BODY (ANGLE OF DEPARTURE)**

The lower portion of the rear body shall be raised approximately 4 1/2" to provide a 30 degree angle of departure for off road use.

Aluminum treadplate shall be used to cover the underside of the departure angle unless a pintle hook or receiver hitch is called out which will require the area to be left open.

### **COMPARTMENT FLOOR COVERING**

All enclosed compartment floors of the apparatus body shall be covered with black colored rigid Turtle Tiles for improved ventilation, and added scuff protection.

## **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.

## **ROLL UP DOOR FINISH**

The roll up doors provided shall be left a satin anodized natural finish.

## **REAR ACCESS LADDER**

The top of the apparatus shall be accessible from the ground by a ladder. The ladder shall be an all welded construction of aluminum tubing and extrusions with the steps having a non-slip surface. The bottom 12" of the ladder shall fold up in a secured position when not in use to maintain a high angle of departure.

The ladder will be located on the rear of the apparatus.

## **FUEL FILL**

One (1) fuel fill shall be provided and recess mounted in the rear compartment floor area of the apparatus body with large engraved identification label.

## **SCBA BRACKETS**

NFPA compliant SCBA mounting bracket(s) shall be provided and mounted in the enclosed storage compartments as per instructions of Fire Department. Brackets shall be provided with retention straps and plastic coated clips for bottle scuff protection.

## **PAINT PROCESS**

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

Tacked free of any dust particles, the body and all parts shall be individually sprayed using the following minimum procedure and materials:

- One (1) coat of self etching primer
- Two (2) coats of urethane primer
- Two (2) color coats of the specified color
- Three (3) coats of clear urethane

When a fire pump is provided, the fire pump, pump compartment structural components, and all rigid discharge and suction plumbing is to be painted Silver in color unless otherwise specified by the customer. No exceptions.

While constructing the truck body, all aluminum parts shall be properly fitted on the body and then removed. The back side 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. Zinc or 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.

## **INTERIOR COMPARTMENT FINISH**

The interior body compartments shall be left a natural finish.

## **CAB AND CHASSIS PAINT**

The complete chassis cab shall be finish painted to match the apparatus body. Painting procedures are to be as specified.

## **TOUCH-UP PAINT**

Touch-up paint shall be furnished with the completed truck at final delivery.

## **LETTERING**

16" high lettering shall be done in Scotchlite reflective lettering. Lettering to be placed on each cab door as directed by fire department.

## **LETTERING/NUMBERING (CAB ROOF)**

A maximum of two (2) 24" high Scotchlite reflective letters or numbers shall be provided and installed on the chassis cab roof as directed by fire department.

## **STRIPING**

A 8" wide white 3M brand Scotchlite #680-10 reflective stripe shall be affixed to the perimeter of the vehicle. Striping shall be placed up to 60" above ground level and shall conform to NFPA reflectivity requirements. At least 50% of the perimeter length of each side and width of the rear, and at least 25% of the perimeter width of the front of the vehicle shall have reflective stripe.

## **ELECTRICAL**

The apparatus shall have the ability to function in an electromagnetic environment most common to fire ground operations. The electrical system shall be designed for full compatibility with low level control frequencies and any high powered two-way radio systems.

All wiring shall be protected by circuit breakers or fuses. Circuit breakers shall be the automatic reset type unless operational requirements and/or safety concerns dictate manual reset type. Automotive type fuses shall be used when required to protect delicate electronic equipment. All circuit protection devices shall conform to the Society of Automotive Engineers (SAE) standards. All circuit protection devices shall be sized according to 125% of the anticipated load to prevent any wire and/or component damage when subjected to extreme current overload.

All apparatus builder supplied wiring (excluding battery cables) shall be GXL high temperature (250 degrees minimum) type, color and number coded and imprinted with circuit function every 2 inches. Wiring connectors shall be the crimp type with plastic sleeve or shrink tube insulation covering the crimped area to prevent accidental grounding. In-line connectors shall also utilize shrink tubing for a weatherproof connection.

All externally exposed, non-plug type, electrical connections shall be given a hand applied or sprayed application of an industrial standard insulation coating with a minimum rating of 2100 volts per mil thickness. Insulation shall protect the connection from water induced electrical corrosion and accidental short-circuiting. Should the connection be loosened or removed during the manufacturing process another coating shall be applied after it has been refastened or replaced.

All solenoids, relays, terminal blocks and circuit breakers shall be protected against corrosion, excessive heat, vibration, physical damage and water spray.

Any electrical component or device installed in an exposed area on the outside of the cab or body shall be mounted in such a manner, or protected by a gasket, caulking or other means, so that moisture will not accumulate in it.

All exposed electrical wiring shall be run in an automotive type split plastic conduit or woven fabric type loom and shall have rubber grommets installed wherever the harness passes through any sheet metal panels.

An operational test shall be conducted to ensure that all installed electrical equipment is properly connected and is in working order. Additionally all warning lights shall be run continuously for not less than three (3) hours.

Wiring data shall be provided with the completed apparatus.

Exposed wiring will be not be allowed in compartment interiors. No Exception.

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

#### **REAR STEP LIGHTS**

Two (2) KD Lamps model #856-3360 chrome plated lights shall be provided 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 operators panel.

#### **CLEARANCE LIGHTS**

Truck-Lite halogen vehicle clearance marker lights with reflectors mounted in accordance with Highway Safety Standards shall be furnished and installed. Clearance and marker lights shall be recess mounted within the center tailboard/step.

#### **MID BODY TURN SIGNALS**

Halogen mid mounted body turn signals shall be installed recess mounted in the vehicle rub rails.

#### **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.

### **BACKUP ALARM**

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

### **TAIL & BACKUP 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.

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.

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

### **OPEN COMPARTMENT WARNING LIGHT**

A RED flashing, warning light shall be provided and installed in the drivers compartment to indicate an open passenger or apparatus compartment door. Light shall be properly marked and identified.

### **ELECTRONIC SIREN**

A Code 3 Model 3692 V-CON, 200 watt electronic siren with HyperYelp and hardwired microphone shall be provided and mounted on top of the cab dash unless stated otherwise, elsewhere in these specifications.

### **SPEAKER**

One (1) Cast Products Model SAD4302, 100 watt speaker shall be provided and recess mounted in the front bumper of the truck and connected to the electronic siren control unit.

### **RED WARNING LIGHT**

One (1) Code 3 model 550F rotating light mounted on the roof of the cab to meet AC No. 150/5220-10D lighting requirement. The light shall be activated through the master emergency light switch located on the electrical console. The light shall have the following.

- (1) 50 watt fast rotator
- Red lens

### **AMBER RUNNING LIGHT**

One (1) Code 3 model 550F rotating light mounted on the roof of the cab to meet AC No. 150/5220-10D lighting requirement. The light shall be activated with the chassis ignition and shall be wired to turn off when the red warning light is activated. The light shall have the following.

- (1) 50 watt fast rotator
- Amber lens

### **ZONE A FRONT LIGHTS**

There shall be two (2) Code 3 model 41-35 red halogen lights furnished on the front grill to meet the NFPA Zone A lower level lighting requirement. The lights shall be connected to a relay and shall be activated through a switch located on the electrical console.

### **LOWER ZONE C REAR LIGHTS**

There shall be two (2) Code 3 model 41-35BZ red halogen flashing lights 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.

### **ELECTRICAL CONSOLE**

An electrical console shall be constructed of .125" smooth aluminum material and mounted in the cab of the truck chassis. Console shall be designed and installed accessible from the driver and passenger seats. The top face of the console shall be designed as the switch panel for all emergency light 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.

A paddle style internally lighted switch shall be provided and wired through a heavy duty relay to activate power to the individual rocker switches for the emergency lights. Switch shall allow for pre-selection of emergency lights and shall be identified; MASTER SWITCH.

### **ENGINE COMPARTMENT WORK LIGHT**

One (1) Truck-Lite model #80351 engine compartment work light(s) shall be provided complete with a push button activation switch mounted on each light head.

### **UNDERBODY LIGHTS**

Truck-Lite model 40003, underbody lights meeting NFPA requirements shall be provided and mounted below runningboard level, each side of the body controlled by the park brake switch. Lights are to be a minimum 4" diameter sealed and weathertight. Fixtures are to be mounted in bolt on brackets using shock absorbing rubber grommet mounts for ease of repair or replacement.

### **UNDERCAB LIGHTING**

Undercab lights meeting NFPA requirements shall be provided and mounted below each cab door controlled by the park brake switch. Lights are to be a minimum 4" diameter sealed and weathertight. Fixtures are to be mounted in bolt on brackets using shock absorbing rubber grommet mounts for ease of repair or replacement.

## **BATTERY DISCONNECT SWITCH**

A green lighted master switch shall be provided and mounted in a convenient location to the driver, connected to a heavy duty solenoid to disconnect the batteries from all chassis and body accessories.

## **IGNITION SWITCH**

A non-removable ignition key shall be provided.

## **BATTERY CONDITIONER**

A 110 volt Kussmaul Auto-Charge 1000, single system, 15 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 15 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 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.

## **110 VOLT SHORELINE**

A 110 volt 20 amp manual shoreline connection shall be provided in the driver's step area.

## **ADDITIONAL EQUIPMENT**

The following equipment shall be provided on the completed apparatus by the apparatus manufacturer.

## **OPERATION/SERVICE MANUAL**

The following applicable documentation shall be supplied upon delivery:

Two (2) electronic copies of Operation/Service manual of the apparatus operations and service manuals supplied by components manufacturers.  
Pump certification when applicable including manufactures record of apparatus construction details.  
Certificate of compliance to Electrical Warning System Low Voltage test.  
Water tank capacity certificate when applicable.  
Line Voltage Electrical System test certificate.  
(NFPA 19-14.4.1 - 19.14.4.2)  
Certificate of approval for stationary pumping when applicable.

All manuals shall be formatted on CD.

## **FAA TESTING**

The apparatus shall be tested at the manufacturer's plant to meet the requirements of FAA-5220-10D circular for Rapid Intervention Vehicles class 1, 2 or 3, and NFPA 414 2007 edition table 4.1.1d for vehicle water tank capacity 120 to 528 gallons. A copy of the test report shall accompany the apparatus upon delivery.