

SPECIFICATIONS

FOR A

BRUSH TRUCK

CHASSIS

MANUFACTURER: Ford

MODEL: 2004 F-350 4 x 2 Regular Cab Chassis

See chassis specifications section for complete chassis vehicle profile.

WINCH

A Ramsey Quick Mount winch model QM 9000 shall be provided with the completed unit. The winch shall have a rated line pull of 9,000 lbs. It shall be equipped with a locking pin and 80 of 1/4" galvanized aircraft cable with replaceable clevis hook. The winch shall be equipped with a 24" long quick disconnect battery power lead. At each hitch location a matching electrical connector shall be installed along with a dust/weather cover to protect the truck connection.

A Remote control power switch shall be provided on a 12' long cord.

Hitch pin provided.

WINCH MOUNTING (Front)

On the front of the apparatus (chassis), there shall be a wraparound grill guard installed along with a 2-inch square receiver hitch. It shall be adequately supported to facilitate the use of an electric winch. The receiver location shall be centered at the lowest point on the grill guard. (The color shall be Flat Black Finish)

At the hitch location, a matching electrical connector for the winch shall be installed along with a dust/weather cover to protect the truck connection.

WINCH MOUNTING (Rear)

On the rear of the apparatus (chassis), there shall be a 2-inch square receiver hitch installed below the rear step of the unit. It shall be adequately supported to facilitate the use of an electric winch. The receiver location shall be centered under the rear step.

At the hitch location, a matching electrical connector for the winch shall be installed along with a dust/weather cover to protect the truck connection.

EXHAUST SYSTEM

The exhaust pipe shall be extended to exit on the right side of the unit ahead of the rear wheels.

REAR TOW EYES

Under the rear tail board there shall be structural steel reinforcement attached to frame rails of chassis to support tow eye assemblies. Mounted at rear center of apparatus it must be capable to with stand the requirements of towing (not lifting) the apparatus without damage.

UNFINISHED WHEELS

The wheels on chassis shall remain the color of the factory-installed wheels as per request of the Fire Department.

FLUID IDENTIFICATION PLATE

A permanently engraved plate shall be installed in the cab specifying the quantity and type of fluids used in the apparatus.

FUEL TYPE PLATE

A permanently engraved plate shall be installed on or near the fuel fill to designate the chassis fuel type.

SEATING LABEL

There shall be a label located in the cab or in view of the driver, stating maximum seating capacity.

VEHICLE HEIGHT LABEL

There shall be a label located in the cab or in view of the driver, stating the overall height of the vehicle.

SEAT BELT WARNING LABEL

There shall be a label located at all seating areas, warning personnel that death or serious injury could result from not wearing seat belts while the vehicle is in motion.

RIDING ON STEP WARNING LABEL

There shall be a label located at all exterior stepping surfaces, stating "Warning: Death or serious injury may result from riding on any stepping surface when the vehicle is in motion.

REAR MUD FLAPS

There shall be a set of anti-spray black mud flaps shall be installed in the rear wheel well.

8' ALUMINUM PLATFORM BODY

Install a custom 8' x 96' aluminum platform on to an F-350 chassis. The platform shall be securely fastened to the chassis using a minimum of six (6) steel U-bolts. "Sleeper slat thickness shall be adjusted accordingly and shall allow proper clearance for tire travel, and fuel neck angle. Chassis fuel neck shall be installed behind the rear wheels secured to the body understructure and flush with the outside rub rail.

An ICC under ride protection and an assistance step shall be installed off the rear of the chassis frame to allow easier access to the skid unit. ICC under ride shall be constructed of structural steel channel. Step shall not exceed 20" stepping height. It shall have a skid-resistant surface with an open grate type material.

Heavy-duty mud flaps shall be installed the rear wheels. Secured to the body understructure.

The platform shall have a combination of storage compartments above the deck. All compartments shall be constructed of Aluminum tread plate.

Each box shall have a horizontally mounted continuous hinge door with a "D" ring handle or paddle latch which will allow easy opening of the compartment door, even with gloved hands and have a closed cell neoprene rubber gasket installed around the perimeter of the door to carry off water.

The Driver side and Passenger side boxes shall extend from the front body headache rack down the sides of the bed, they shall measure approximately 16" tall by 16" deep by 96" long. The boxes shall have individual doors that swing down.

The smooth aluminum surfaces around the body as well as the tread plate surfaces shall remain aluminum finish.

Any exposed or bare steel surfaces below the body assembly shall be painted black or undercoated.

GRAB RAIL

A grab rail of 1" diameter aluminum extrusion anti slip grip shall be mounted on the rear of the apparatus one on each side of the rear compartment. Handrail shall meet or exceed the National Fire Associations Pamphlet 1901.

FOLDING STEPS

There shall be a total of two (2) NFPA compliant folding step supplied and installed. One on each side of the unit on the rear of the body.

GRAB RAIL

A grab rail of 1" diameter aluminum extrusion antislip grip, shall be mounted on the rear of the apparatus one on each side of the rear compartment. Handrail shall meet or exceed the National Fire Protection Associations Pamphlet 1901.

SKID UNIT 200 gallon Poly Tank

A 200-gallon Poly tank shall be supplied on the skid unit. Tank shall be constructed of 1/2" thick Polypropylene sheet. Tank shall have a lifetime warranty. Tank shall be a matte-black finish (painted finish optional).

Tank construction shall include integral baffle partitions, which meet or exceed NFPA requirements. All baffle partitions are reinforced to provide maximum strength, and shall allow air and water flow for minimum surging.

There shall be a 70% transparent plastic liquid sight level on the right side of the rear of the tank. The sight level on the tank shell shall allow the water level inside the tank to be seen without the assistance of electrical instruments.

The tank shall have a 10-gallon foam tank with fill lid incorporated in to the tank. The fill lid shall be labeled as FOAM TANK FILL.

SKID

The pump skid will be made of 2 steel tube braced and reinforced and design to provide support for tank, pumps reels and manifolds. A steel cage shall be assembled to support the hose reel above the pump and provide additional support for plumbing, panel, and controls. The platform or pump deck shall be constructed of steel plate and to be well supported to distribute the weight of the pump and manifold.

Skid structure shall provide tow motor access provisions to allow for easy installation and removal from bed of vehicle.

Skid will have a procedure for mounting depending on the design that is chosen and the vehicle that it will be mounted in. Mounting procedures are to be approved by manufacturer prior to delivery.

SUCTION HOSE STORAGE

The skid shall be elevated approximately 6" using channel for adequate support for a storage area for two (2) 2-1/2" x 8ft. PVC long handles suction hoses. A tread plate aluminum door shall be provided to secure items during transit. The door shall be secured using a continuous stainless steel hinge

PUMP AND ENGINE

The pump shall be a Hale Hp 100X High Pressure / Low Volume powered by an 18 horsepower Briggs and Stratton gasoline engine.

The engine shall be an overhead valve, V-twin, air cooled Vanguard Briggs and Stratton 18 horsepower engine.

1. Suction Inlet 2 NPT Female inlet. (Anything less is not acceptable).
2. Discharge 1 1/2 NPT Female discharge. (Anything less is not acceptable).
3. A hand primer shall be furnished on slip on unit only. Hand primer shall have a minimum 12-ft. lift with max 2.3 GPM.
4. Stainless steel pump shaft with bronze impeller with replaceable wear rings.

5. Pump casing High strength aluminum alloy with bronzes fittings.
6. Mechanical pump seal, self-adjusting and lubricated.
7. Band clamp design for easy repair and maintenance.
8. Loose control panel. (Throttle control, master on/off switch, start button, choke control, low oil pressure warning light, 2-½ discharge gauge).

PERFORMANCE

150 GPM @ 50 PSI
100 GPM @ 150 PSI
20 GPM @ 290 PSI

Minimum acceptable performance 75 GPM at 150 PSI. Also, pump will perform at 120 GPM at 120 PSI. Pump test and certification to be performed by manufacturers. Pump test certification to be issued on each pump unit at time of delivery along with operating procedures.

FUEL TANK

Fuel tank should be a 6-gallon tank with an angle iron holder bracket mounted on right side of engine. Fuel tank shall be mounted with steel hardware. An automotive style fuel filter shall be incorporated between the fuel tank and the engine.

BATTERY

A red No. 6 battery cable shall be connected to the pump motor and shall run to the disconnect switch of the truck. A second No. 6 battery cable shall run from the pump motor to the skid frame and on to the chassis frame.

PLUMBING

All plumbing shall be run in a neat and orderly fashion. All plumbing connections shall utilize Teflon tape and pipe dope. As stated earlier, the unit shall utilize a manifold water distribution system. The top front of the module cage shall be 4 tubing to act as the distribution point for the water. The interior of the manifold will be covered with an industrial coating to protect from corrosion. The manifold shall have five fittings to distribute the water as described below.

VALVES

All suction and discharge valves shall be quarter turn ball valves.

FITTING #1 MANIFOLD INLET

The pump outlet shall connect to the manifold inlet via a length of 1 ½ Tank Flex hose with bolt on clamps.

FITTING #2 RETURN LINE

A return line of 1 booster hose shall be utilized to return water back to the tank when the discharges are inactive for a length of time. A ¼ turn 1 ball valve shall be provided inline.

FITTINGS #3 & #4 1 ½ DISCHARGES

Two (2) 1 ½ discharges shall be provided off of the manifold. Each discharge shall incorporate a ¼ turn 1 ½ ball valve, a block style elbow to face the front of the unit, a 1 ½ NPT (M) x 1 ½ NST (M) brass adapter, and a 1 ½ brass cap with chain. The cap and chain shall be secured to the valve handle so that they are not lost or misplaced.

FITTING #5 1 DISCHARGE (TO HOSE REEL)

A length of 1 booster hose shall connect the manifold to the hose reel. A ¼ turn 1 ball valve shall be provided inline.

FITTING #6- 2 SUCTION

The pump shall receive water from the tank through a 2 line with suction rated hose. This line shall have a ¼ turn 2-flow ball valve. The pump piping shall include a 2 T fitting coated with an industrial coating for corrosion resistance off of the previous tank suction as described above. At the end of this 2 line, there shall be installed a brass threaded adapter from 2 male pipe thread to 2.5 female National Standard Fire Hose threaded swivel. This outboard suction inlet shall be equipped with a strainer and a chain retained brass male Rocker lug plug. All piping and components shall be cleaned and made free of burrs and rough surfaces. All nuts, bolts, and washers shall be grade 5 steel. All piping shall be adequately braced.

HOSE REEL

One Hannay Model EPF 32-23-24 RT with FH-3 roller/spool assembly with Hannay top wind bracket. The hose reel shall be mounted on top to the module cage to allow the hose to be pulled off the rear of the unit. 150 of 1" hose will be provided with the unit ready to receive a nozzle. (Nozzle is not included in bid price). Hose reel is to be mounted with steel bolts, washers, and lock nuts. One electrical push button with silver contacts and flexible rubber protective boot to prevent water entry to the contact points shall be installed on the pump panel as described further in the specifications. Reel shall be equipped with 150 ft. of 1 inside diameter molded booster hose coupled with Brass Bar Way or equal 1 NST coupling complying with N.F.P.A. 2320. (Boston Booster hose 800 PSI #82-0575) or equal. A clip shall be provided on the front of the unit to secure the hose in place when not in use.

GAUGE PANEL

The panel should have the following or equivalent:

Throttle Level

Hose Reel Electrical Rewind Push Button

Master On/Off Switch

Start Push Button
Choke Control
Low Oil Pressure Warning Light
Discharge Gauge: 2 12
(63.5 mm) Diam. Glycerine filled, 0 to 400 PSI (0 to 28 BAR)
Similar to Hale Part # 168-0070-22-0

ELECTRICAL SYSTEM

All electrical components shall be of moisture proof type, readily removable for servicing and protected against external heat. All switches and other electrical devices shall be heavy-duty type and shall carry the anticipated maximum circuit load with insulation in accordance with recommended standards of the Society of Automotive Engineers for such loading at potential use. Wiring shall be waterproof, fully protected against heat, oil, and mechanical injury and include enclosure in an automotive type loom. Each circuit shall be coded for identification throughout its length with colored or numbered wire. All connections shall be made with lugs or terminals mechanically secured to said conductors. Where circuits are to be completed through grounds, provisions shall be made on valve bodies or bolts thereof. Wire cable shall be installed as necessary for all electrical components of the completed assembly. A 15 - amp ATC fuse shall be mounted between battery and deck lights. This shall be easily accessible and protected with clear plastic cover. All wiring and components shall be installed in a neat workmanship manner. Wiring for the hose reel shall be No.6 cable and properly connected to the reel circuit breaker. All wiring and cables shall be enclosed in convoluted slit loom and held in place by loom clamps. On the left and right front legs of the module cage a switch for the deck lights shall be mounted. A guard shall be in place around these switches to protect them from breakage. Two (2) 12-volt sealed beam work lights shall be mounted to the module cage one on each side of the hose reel. All lights shall be wired through the engine ignition switch so they will only work when the engine ignition switch is in the on position.

IDENTIFICATION TAGS

Tags shall incorporate bold contrast letters to indicate the following functions:

Hose Reel Rewind Switch
Pressure Gauge
Low Oil Warning Light
Tank Fill Valve
Primer Light Switch Both Sides
1 Discharge
1 ½ Discharges
Return Line
2 ½ Suction
Extended Oil Drain
Manufacturer Name and Phone Number

PREPARATION AND PAINTING OF MODULE

Before painting, the entire module shall be completely sandblasted to bare metal and cleaned. Two coats of oxide primer shall then be applied to a thickness of 1 to 2 mills. Next, the entire module shall be sanded with 600-grit sandpaper and tacked with a tack

cloth. The module shall then receive 2 coats of Red Acrylic Enamel totaling 3 to 4 mills. When complete there shall be a minimum of 5 mills. All holes must be drilled prior to preparation and painting. Units shall be clean and ready for service upon delivery.

FOAM PRO Foam Proportioning System

The apparatus shall be equipped with an electronic, fully automatic, variable speed, direct injection, rotary gear pump, discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrates. Foam proportioning operation shall be based on direct measurement of water flow, and remain consistent within the specified flows and pressures.

The system shall be equipped with an electronic control unit; suitable for installation on the pump operator panel that provides digital indication of system operation. Incorporated within the control unit shall be a microprocessor that receives input from the system flow meters, while receiving input as to foam concentrate pump output, comparing these values to ensure the operator preset proportional amount of foam concentrate is injected into the discharge side of the fire pump.

A paddle wheel type flow meter shall be installed in the discharge specified to be foam capable.

The control unit shall enable the pump operator to activate the foam proportioning system and select proportioning rates from 0.1% to 1.0%.

A 12 volt electric motor driven positive displacement plunger pump, with a rated capacity of 1.7GPM (6.4 L / PM) with operating pressures up to 200 PSI, shall be installed in a suitable location on the apparatus. The motor shall be controlled by the microprocessor. It shall receive signals from the control module, and power the 1/3 HP electric motor in a variable speed duty cycle to ensure the correct proportion of concentrate is injected into the water stream.

A full flow check valve shall be provided in the discharge piping to prevent the foam from contaminating the pump and tank. A PSI opening pressure check valve shall also be provided in the concentrate line.

Components of the Proportioning system is as follows:

- Operator control module
- Paddlewheel flow meter
- Pump and electric motor/motor driver
- Wiring harness
- Low level tank switch
- Foam tank
- Foam injection check valve

An installation and operation manual shall be provided with the system, along with the 1 year limited warranty.

The system shall be installed and calibrated by a certified Foam Pro dealer.

12 Volt Electrical Wiring (Pick-Up Chassis)

12 VOLT WIRING

Persons familiar with emergency vehicle systems shall perform all electrical work.

Circuits shall serve all of the emergency electrical equipment separate and distinct from the vehicle chassis circuits. Body wiring shall be color and function coded, grease, oil and moisture resistant, routed in protected locations, neatly and securely fastened, and all apertures properly grommeted for passing wiring. Solderless insulated connectors shall be provided where required.

The electrical system shall be completely controlled through a distribution center. The center shall incorporate automatic reset circuit breakers connected to relays to control each electrical circuit. Each circuit breaker and relay shall be sized to the load to be carried.

The 12-volt electrical system shall be controlled through a switch panel located in the cab and at a location that is easily accessible for the driver. The panel shall include switches arranged in the most convenient and practical manner that is possible.

The switch panel shall operate the relays and not carry the circuit load. The panel shall control individually all emergency warning light circuits, which shall also be controlled by warning master switch.

All compartment wiring shall run in conduit and securely fastened.

All heavy ampere-carrying cables requiring terminals shall have the terminals both crimped and soldered for good electrical connections. These circuits shall include the starting charging and siren circuits.

All wiring shall be color-coded and a schematic shall be supplied upon delivery of the truck. The diagram shall represent the exact wiring application, not a proposed system.

The distribution center, relays, strobe power packs and all other control devices shall be located in a convenient location for service.

Body shall be equipped with all lighting as required by Federal Motor Vehicle Safety Standards.

All electrical and emergency lighting equipment shall be supplied with automatic reset circuit breakers of appropriate amperage. All circuits shall be operated through a Bosch or equal continuous duty relay to remove load from all switches.

BATTERY DISCONNECT SWITCH

A Cole Hersey brand M-284-01 master battery disconnect switch shall be installed in a convenient location to the driver.

BATTERY LIGHT

A green "battery on" pilot light that is visible from the driver's position shall be provided.

BRAKE / TURN / BACKUP LIGHTS

New stop, tail, backup and marker lights shall be installed. The type used shall be shock resistant brand 4" round lights.

BACKUP ALARM

An Ecco brand backup alarm shall be installed and shall be activated when the unit is placed in reverse gear.

COMPARTMENT LIGHTS

A 5" diameter interior light shall be installed in all locations where compartment lights are required. All compartment lights shall operate off one master switch located on the switch panel in the cab.

Minimum of one compartment light per compartment shall be installed in the body.

COMPARTMENT OPEN LIGHT

A large red light shall be mounted in the cab visible from the driver and officer's seat.

Each compartment door shall be equipped with a door open indicator switch. When contact is broken at these switches, it shall activate the compartment open light in the cab.

ENGINE COMPARTMENT LIGHT

There shall be one (1) light installed in the engine compartment to illuminate the engine area. There shall be a switch located adjacent to or on the light.

GROUND AREA LIGHTING

There shall be six (6) high intensity water-resistant lights mounted under the unit to provide proper ground area illumination in areas designed for the personnel to climb onto or descend from the apparatus.

LOAD MANAGER

There shall be one (1) Kussmaul Load Manager 1901 automatic load shedding system installed on the unit. The load manager monitors the vehicle battery voltage so if the voltage drops, outputs are individually deenergized. An output indicator terminal is provided to permit connecting an LED indicator, which is energized whenever the load-shed circuit is functioning.

LOW VOLTAGE ALARM

There shall be one (1) low voltage alarm installed on the unit. There shall be an audio and visual indicator installed in the cab.

BATTERY CHARGING RECEPTACLE

The battery charging receptacle location shall be adjacent to its respective battery system.

SPOTLIGHT

There shall be a Sho-Me 300,000 CP hand held spotlight is hard wired installed in the cab of the chassis.

LIGHT BAR

One (1) PowerArc model LED-FC2-SL46 LB 46" lightbar shall be mounted on the cab roof the lightbar shall be equipped with 7elements. Red, Clear, Red lenses shall be used. The lightbar shall be switched from the in cab switch panel. This lightbar in combination with the lower lighting devices fulfills the requirements for Zone A, B, C, and D. This lightbar must be visible from all four sides.

Any clear warning light(s) in the lightbar shall be disabled automatically for the "Blocking Right of Way" mode.

WARNING LIGHTS

A PowerArc NFPA 1901 lower zone warning lighting package shall be installed on the unit.

There shall be a total of two (2) PowerArc model PP2 red lights shall be mounted on the unit. Two (2) PP2 red lights shall be mounted on the front lower half of the unit (zones A lower),

There shall be two modes of operation, calling for the right-of-way and blocking the right-of-way. When the master optical warning system switch is closed, and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for the right-of-way shall be energized. When the master optical warning system switch is closed, and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of the right-of-way shall be energized.

There shall be a total of four (4) Power Arc model PP4 red lights mounted on the unit. Two (2) shall be installed (Recessed) in the front fenders, while two (2) shall be installed (Recessed) in the upper rear apron of the platform.

There shall be two modes of operation, calling for the right-of-way and blocking the right-of-way. When the master optical warning system switch is closed, and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for the right-of-way shall be energized. When the master optical

warning system switch is closed, and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of the right-of-way shall be energized.

HEAD LIGHT FLASHER

There shall be one (1) Code 3 710 head light flasher installed on the unit. The chassis high beams shall render the head light flasher inoperable.

ELECTRONIC SIREN

There shall be one (1) Federal Brand Model SS2000-LMS Smart Load Management System installed in a convenient location inside the cab. The SS2000 shall perform load management of the 12 volt electrical system as well as the 100 watt siren amplifier and light control system. It shall have a remote control head mounted to the dash for easy access.

SPEAKER

There shall be one (1) Federal siren speaker model MS100 Dynamax installed on the front bumper of chassis.

PAINT

The body exterior shall have no mounted components prior to painting to assure full coverage of metal treatments. Compartment doors will be painted separately to assure proper paint coverage on body, doorjambes and door edges.

All painted surfaces shall follow the following procedure to insure a lasting finish.

Metal surfaces shall be sanded to remove all burrs and imperfections in aluminum, before etching and treatment.

A wax & grease solvent shall be used to clean and prep the aluminum surface. The surface shall then be rinsed with freshwater. This step removes wax, grease and other surface contaminants, thus leaving a bright, clean and conditioned surface.

A self-etching, aluminum primer shall be applied next. The self-etching primer shall fill all of the minor imperfections, scratches, etc. in the metal. This step produces a corrosion resisting conversion coating that fends off oxidation and other surface contaminants leaving a surface that gives excellent paint adhesion.

A sandable primer shall be sprayed on the metal that seals the surface for the polyurethane paint. A minimum coating thickness of 2 mil shall be applied. Primer is then sanded smooth leaving the best surface for topcoat.

The apparatus body shall then be painted with a minimum of three (3) coats of high luster final finish polyurethane paint.

These steps are followed as recommended by the paint manufacturer to provide a lasting and high quality gloss finish. All paint products shall be provided by the same

manufacture as the topcoat finish.

The body shall be painted White to match the (PAINT COLOR & CODE) supplied by the Fire Department.

STRIPE

There shall be a 4" wide, Red Scotchlite stripe installed on the apparatus cab and body. The stripe shall cover a minimum of fifty percent (50%) of perimeter of each side of the apparatus and fifty percent (50%) of the perimeter of the rear of the apparatus and twenty-five (25%) of the perimeter of the front of the apparatus. The department shall specify the exact location of the stripe.

ASSORTED FASTENERS

One (1) bag of assorted stainless steel, and chrome fasteners used in the assembly of the apparatus shall be provided with the delivery of the apparatus.

WIRING SCHEMATICS

A complete set of detailed electrical wiring schematics shall be provided with the completed unit. The schematic shall clearly labeled and describe all electrical circuits for an accurate reference.

SERVICE MANUAL AND PARTS LIST

A service manual shall be provided with the completed unit. Manual shall include equipment and component information as well as warranty and service information.