

Attachment 1- Slip-on Firefighting Unit- Minimum Specifications

Cab and Chassis

Category	Sub-Category	Additional	Requirement
General			The following specifications are for a complete slip-on firefighting unit to be mounted in any vehicle except vehicles specifically defined as UTV's.
General			Each unit requested shall have a specifications sheet included that clearly indicates compliance with all of the requirements.
General			The entire slip-on unit, including water tank, shall be mounted on a platform that can accommodate forklift blades or has integral lifting points to allow the unit to be removed from the host chassis.
General			The fully loaded weight of the completed unit shall not exceed the gross vehicle weight rating (GVWR) of the host chassis.
General			All tubing shall use metal fittings, rated to 500 pounds per square inch and requiring no special tools.
General			No underside nuts or bolts shall be used.
General			Non-slit corrugated loom shall cover all water lines.
General			The electrical function of the slip-on unit shall be wired to operate only when the master switch is ON.
Pump Motor			The pump shall be driven by a four-cycle gasoline or diesel powered auxiliary air-cooled 4- cycle California Air Resources Board (CARB) compliant electric start engine with backup recoil starter, fixed mounted on the rear and integrated on the slip-on unit.
Pump Motor			The pump motor exhaust shall include a US Forest Service (USFS) qualified spark arrestor.
Pump Motor			The pump motor shall include a fuel tank with a two-gallon (minimum) capacity.
Pump Motor			The pump unit shall be equipped with a low-pressure shutdown switch set at manufacturer's recommended safe pressure.
Pump Motor			The pump motor shall be equipped with low oil protection.

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Pump Motor			All serviceable items such as air filters, oil filters, drains, and fuel pumps shall be accessible for routine maintenance.
Pump Motor			There shall be custom fabricated tread plate safety shield(s) to prevent damage or injury if the potential exists for loose clothing, hands, or foreign objects to enter any other moving parts of the auxiliary pump.
Pump			The pump shall be capable of delivering the minimum performance requirements from the tank, and at a 5-foot lift through 24 feet of 1 ½-inch suction hose and a suction strainer.
Pump			The pump shall be capable of achieving the same minimum performance criteria when water supply is from the water tank through the tank to the pump valve.
Pump Certification			The pump, when dry, shall be capable of taking suction and discharging water in compliance with National Fire Protection Association (NFP A) 1900 (previously 1906).
Pump Certification			The pump shall be tested at the manufacturer's facility.
Pump Certification			The conditions of the pump test shall occur as outlined and in accordance with current NFP A 1901 (previously 1906).
Pump Certification			The pump shall deliver the percentage of rated capacities at pressures indicated: 100% of rated capacities at 150 PSI (100KPA) net pump pressure.
Pump Certification			The pump manufacturer shall certify that the pump can deliver the following minimum capacities as measured at the pump head:
Pump Certification			50 GPM at 100 psi net pump pressure
Pump Certification			30 GPM at 150 psi net pump pressure
Pump Certification			200 psi shutoff pressure
Pump Certification			The pump shall have a self-adjusting mechanical pump seal.

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Foam System			Optional selection by ordering entity.
Plumbing			All plumbing components shall be fabricated from stainless steel or brass and high pressure, flexible hose where appropriate.
Plumbing			All plumbing components shall be designed to allow easy disassembly of components for repairs and maintenance.
Plumbing			Full-flow quarter turn ball valves shall be used throughout.
Plumbing			All visible quarter turn ball valves shall be in the closed position when the valve handle is perpendicular to the run of the pipe and in the open position when the handle is parallel to the run of the pipe.
Plumbing			Any blind valves shall be labeled "open" and "closed."
Plumbing			All controls shall be accessible from the ground without climbing onto the utility, platform, or pickup bed.
Plumbing	Valve Labeling		Each valve shall be labeled as to its function immediately adjacent to the valve control.
Plumbing	Valve Labeling		The valves shall be labeled in accordance with the US Forest Service valve numbering system in common use with off-road firefighting agencies.
Plumbing	Valve Labeling		A placard with an identification key shall be affixed at the rear of the unit.
Plumbing	Valve Labeling	Suction Side	A manual hand diaphragm primer.
Plumbing	Valve Labeling	Suction Side	The primer shall be equipped with an internal or external check valve.
Plumbing	Valve Labeling	Suction Side	The primer valve shall be labeled #6.
Plumbing	Valve Labeling	Suction Side	The primer shall develop 17 inches of HG vacuum, prime and pump water from a 10-foot lift in 30 seconds (maximum)and pump water from a 17-foot lift.
Plumbing	Valve Labeling	Suction Side	Overboard Suction supply through a minimum 2-inch NH Valve (labeled #8).
Plumbing	Valve Labeling	Suction Side	A Y strainer shall be installed prior to the pump to strain water from both overboard suction and tank.

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Plumbing	Valve Labeling	Suction Side	The strainer shall have a screw-off cap to allow access and easy cleaning of the filter element in the field.
Plumbing	Valve Labeling	Suction Side	Tank to Pump line shall be 2-inch (minimum) with valve labeled #1.
Plumbing	Valve Labeling	Suction Side	Two (2), eight-foot sections of not collapsible, clear PVC suction hose with appropriate female fittings to attach to Overboard suction and male fittings to attach to foot valve.
Plumbing	Valve Labeling	Suction Side	One (1), foot valve barrel strainer with appropriated fitting to attach to the suction hose.
Plumbing	Valve Labeling	Discharge Side	The pump to tank line shall be 1- inch (minimum).
Plumbing	Valve Labeling	Discharge Side	The pump to tank line shall include a check valve prior to a quarter turn shut off (labeled #2).
Plumbing	Valve Labeling	Discharge Side	A 1/4-inch pump cooler line shall be installed and plumbed around the pump to tank valve and into the tank fill tower.
Plumbing	Valve Labeling	Discharge Side	The cooler line shall include a shut off valve (labeled #17).
Plumbing	Valve Labeling	Discharge Side	One (1) 1.5-inch NH rear discharge valve (labeled #3) with cap and aircraft cable retainer shall be installed.
Plumbing	Valve Labeling	Discharge Side	One (1) booster hose reel with 1-inch net positive suction head (NPSH) outlet, and capacity for 100 feet of 1-inch inside diameter hardline, shall be provided and mounted on the unit.
Plumbing	Valve Labeling	Discharge Side	The reel shall be installed in a fashion that allows unobstructed hose deployment on both the driver and passenger side of the vehicle.
Plumbing	Valve Labeling	Discharge Side	Outriggers, spools and roller assemblies shall be installed on both sides of the reel (driver and passenger sides).
Plumbing	Valve Labeling	Discharge Side	A one inch (minimum) flexible line shall be plumbed from the discharge plumbing manifold to the hose reel, the line shall be equipped with quarter turn shut off valve (labeled #4) to turn off water supply in the event the supply line or hose on the reel is damaged.
Plumbing	Valve Labeling	Discharge Side	The water supply inlet shall be equipped with a 90-degree swivel joint.
Plumbing	Valve Labeling	Discharge Side	The reel shall be provided with a 12- volt electric rewind and brake.

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Plumbing	Valve Labeling	Discharge Side	One (1) Integrated storage for 200 feet of 1-inch synthetic hose, and the compartment or tray shall allow the hose to be pre-connected to the #3 discharge.
Plumbing	Valve Labeling	Discharge Side	A check valve(s) shall be installed on each discharge.
Plumbing	Valve Labeling	Discharge Side	A placard shall be installed on the slip-on unit with pump operation instructions.
Plumbing	Valve Labeling	Winterization	The pump shall have a drain (labeled # 11) at the bottom of the volute that will fully drain the pump.
Plumbing	Valve Labeling	Winterization	All plumbing shall be capable of being drained for winterization by opening all valves.
Plumbing	Valve Labeling	Winterization	The tank shall be capable of being drained with gravity (through the tank to pump and suction valves) or retaining the tank water when the plumbing is drained.
Plumbing	Valve Labeling	Winterization	A placard shall be installed on the slip-on unit with instructions for proper winterization.
Plumbing	Printed Materials for the Pump-		One set of printed operation, service, and parts manuals shall be provided.
Plumbing	Printed Materials for the Pump-		Each manual shall be presented with a table of contents.
Plumbing	Printed Materials for the Pump-	Manuals shall contain the following:	Operating instructions, descriptions, specifications, and ratings for the chassis, installed components, and auxiliary systems.
Plumbing	Printed Materials for the Pump-	Manuals shall contain the following:	Warnings and cautions pertaining to the operation and maintenance of the fire apparatus and firefighting systems.
Plumbing	Printed Materials for the Pump-	Manuals shall contain the following:	Charts, tables, checklists, and illustrations relating to lubrication, cleaning, troubleshooting, diagnostics, and inspections.
Plumbing	Printed Materials for the Pump-	Manuals shall contain the following:	Instructions regarding the frequency and procedure for recommended maintenance.
Plumbing	Printed Materials for the Pump-	Manuals shall contain the following:	Maintenance instructions for the repair and replacement of installed components.
Plumbing	Printed Materials for the Pump-	Manuals shall contain the following:	Parts listing with descriptions and illustrations for identification.

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Plumbing	Controls/Gauges/Lights		Any connection to the chassis shall provide easy access to simplify connecting and disconnecting and accommodate removal of the unit.
Plumbing	Controls/Gauges/Lights		All units shall be equipped with the following in an easily accessible location:
Plumbing	Controls/Gauges/Lights		Liquid filled 2.5-inch (minimum) freeze protected 0-300 psi pressure gauge.
Plumbing	Controls/Gauges/Lights		Hour meter.
Plumbing	Controls/Gauges/Lights		Ignition start/stop switch,
Plumbing	Controls/Gauges/Lights		Throttle control,
Plumbing	Controls/Gauges/Lights		Choke, low pressure shut down switch, and
Plumbing	Controls/Gauges/Lights		Primer controls.
Plumbing	Controls/Gauges/Lights		The plumbing area and controls shall be equipped with weatherproof lighting.
Water Tank			Water Tank design will maximize water carrying capability while limiting negative effect on chassis center of gravity and stability.
Water Tank			Additionally, the water tank shall adhere to the following criteria:
Water Tank			The water tank shall be constructed from ½ (minimum) Polypropylene and have a capacity minimum capacity of 100 Gallons.
Water Tank			This material shall be non-corrosive stress relieved thermoplastic, be black in color and U.V. stabilized for maximum protection.
Water Tank			The tank assembly shall be provided with provisions for securely attaching to the slip-on unit with accessible hardware for removal.
Water Tank			The tank shall be designed to be removable from the platform structure for maintenance or replacement.

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Water Tank			All exposed edges on the tank and fill tower shall be rounded.
Water Tank			The tank shall have a manual fill tower (labeled WA 1ER) with debris strainer, located on the top at the rear.
Water Tank			The fill tower shall have a cap.
Water Tank			The fill tower shall be constructed of same material as the rest of the tank and shall have a minimum dimension of 6 inches by 6 inches or 6 inch diameter out perimeter.
Water Tank			The water tank shall be vented.
Water Tank			The tank construction shall meet all baffling requirements of NFP A 1900 (previously NFP A 1906), latest edition.
Water Tank			The tank shall be equipped with an internal piping that terminates ½ inches from the bottom of a sump.
Water Tank			The sump shall have an outlet on the bottom for cleanout and draining.
Water Tank			The tank shall be equipped with an anti-cavitation device.
Water Tank			The Tank shall be equipped with a sight gauge to view the level of water.
Electrical System-			1 - Qwik-connector (or equivalent) for the 12volt battery to slip-on unit connection.
Electrical System-			4' of 4-gauge (red) and 4' of 4 - gauge (black) battery cables along with male and female connectors are supplied by the manufacturer.
Slip-On Unit Warranties-			The slip-on unit manufacturer shall be responsible for the costs of repairs to the apparatus that have been caused by defective workmanship or materials for a reasonable period following the receipt of the unit.