**ONE STEP™ CAFSystem Preferred Specification**

**A. Compressed Air Foam System**

The Waterous One Step**™** compressed air foam system (CAFS) shall be installed to provide compressed air foam to three discharges (either (3) 1.75” hoselines or (2) 1.75” hoselines and (1) 2.5” hoseline) of the vehicle. The user must be able to operate either two (2) 1.75” CAFS handlines simultaneously OR (1) 1.75” handline and (1) 2.5” handline simultaneously.

1. **Air Compressor**

The air compressor shall be an oil-flooded, rotary screw type, sized to supply a minimum of 150 CFM of free air at minimum of 125 P.S.I.G. The air compressor shall be capable of maintaining prolonged pressures at 125 P.S.I.G. throughout its service life. The sump/pressure vessel shall have an oil level indicator, air pressure relief valve and threaded fill cap/plug.

1. **Pneumatic Modulating Inlet Valve**

The air compressor shall be controlled by a pneumatic modulating inlet valve mounted on the air end inlet. This controller shall sense air pressure and control the air delivery of the air end while maintaining constant pressure.

1. **Systems with balancing pressure valves will not be permitted.**
2. **Air Compressor Drive**

The compressor shall be belt driven directly and no clutch installment will be allowed. (150-D). The compressor shall be PTO driven. (-P) The compressor system shall operate in unload and fixed (125 PSI). The compressor system shall be automatically controlled by the CAFS controller touch screen.

1. **Air Compressor Oil System**

The air compressor system shall feature a spin-on, full-flow oil filter unit to control oil flow to the cooler.

**A. Modular Air/Oil Separator Unit**

A modular air/oil separator unit with spin-on element shall be provided with the sump tank. Replacement elements for the oil filter and separator shall be readily available.

**B. Oil Lines**

All oil lines shall be routed in braided hose conforming to SAE 100R1 standards for hydraulic hose.

1. **Air Compressor Cooling System**

The air compressor shall be cooled by the apparatus fire pump, utilizing an all copper and brass shell and tube heat exchanger. Water shall flow through the heat exchanger whenever the fire pump is operating. An in-line strainer shall be provided on the water inlet side of the heat exchanger to prevent clogging. The strainer shall be removable for cleaning.

The compressor cooling system shall be capable of maintaining recommended operating temperatures throughout its full operating range at ambient temperatures up to 115°F.

1. **Air Controls and Instruments**

A 7” digital control panel shall be provided to control functions of each compact foam generator. Air pressure, pressure of each ONE STEP™ CAFSystem discharge, air pressure and compressor oil temperature will be displayed by the touchscreen. The air control should be automatically controlled by the 7” touchscreen panel. When the ONE STEP™ CAFSystem is not activated the compressor shall run in an unloaded state.

1. **Plumbing**

Each CAFS outlet shall have a dedicated electronically driven foam generator which must ensure the adequate and proper mixture of air, water and foam solution in order to deliver a constant, reproducible and efficient firefighting extinguishing media.

A closed loop control valve shall be supplied for total control of the water pressure supply to the foam generators for CAFS operation.

The foam generators shall have a water flow on/off function, an air flow on/off function, volume control, and check valves.

The two (2) foam generators for 1.75” handlines shall have a minimum water flow of 55 GPM of water per minute each. The foam generator for the 2.5” handline shall have a minimum water flow of 70 GPM. All foam generators shall provide an extinguishing media with a minimum expansion ratio of 6.5.

Each outlet shall be equipped with a mixing pressure control valve in order to ensure the same quality of foam at all times for the safety of firefighters.

Each outlet shall be calibrated to a constant foam flow and consistency. No manual adjustments shall be allowed in order to prevent operator error.

1. **Safety Mode**

In the event of a foam system / air system failure, the foam generator discharges shall be capable of having full individual pressure and flow control with or without foam.

1. **System**

Drawings of a top, side and rear view of these foam generating devices shall be provided during the bid.

During the bid, Pressure loss charts must be provided validation for flows and hose diameters for all three outlets.

During the bid, Maximum delivery length and height must be provided for all three outlets.

1. **Foam Management System – Aquis 2.5™**

A fully automatic electronic direct foam injection system is furnished and installed. The system is capable of Class A foam concentrates. The system includes the following:

1. **Digital Electronic Control Display**

The system shall be controlled by a screen on the 7” panel. It shall be installed on the pump operators panel and enable the pump operator to perform the following control and operation functions:

1. Provide touch screen control of foam proportioning rates from 0.1% to 1%.
2. Show current flow-per-minute of water
3. Show total volume of water discharged during and after foam operations are completed
4. Show total amount of foam concentrate used
5. Flash a “safety alert” warning when the foam concentrate tank(s) run(s) low
6. Flash a “safety alert” warning in the event of an electronic malfunction.
7. Provide a manual back-up mode, controlled by the operator

1. **12 or 24 Volt Electric Motor (1/2hp) - Model: Aquis 2.5™**

A 12 or 24 volt electric motor driven Comet positive displacement foam concentrate pump, rated at 2.5 GPM @ 150 psi and with operating pressures up to 450 psi (32 bar).

or

1. **12 or 24 Volt Electric Motor (1/2hp) - Model: Advantus™ 3E**

A 12 or 24 volt electric motor driven Hydra-Cell positive displacement foam concentrate pump, rated at 3 GPM @ 150 psi (11.3 l/min @10 bar) and with operating pressures up to 450 psi (32 bar).

or

1. **12 or 24 Volt Electric Motor (3/4hp) - Model: Advantus™ 6E**

A 12 or 24-volt electric motor driven Hydra-Cell positive displacement foam concentrate pump, rated at 6 GPM @ 150 psi (22.6 l/min @ 10 bar) and with operating pressures up to 450 psi (32 bar).