

DANKO Redi-CAFS Response Unit

WATER - FOAM - HI-ENERGY CAFS

DEMO Unit C-23

The Danko Firematic Compressed Air Foam System (Redi-CAFS) virtually produces Hi-Energy CAFS without the use of a fire pump by using only high-pressure compressed air or dry nitrogen cylinders.

During operation the vessel water tank is pressurized creating a discharge to a manifold where the foam is metered from the foam storage tank into the water discharge stream, then air is injected into the foam and water mixture to produce Hi-Energy CAFS Foam.

This system will be capable of discharging plain water, water with foam, or Hi-Energy CAFS.

The Redi-CAFS system shall be mounted on a Cushman Haulster Off-Road Haulster.

WATER TANK

This unit consists of a 100-Gallon capacity pressure vessel water tank. The vessel shall be fabricated of steel and be ASME certified tested to 200 PSI working pressure and completely hot dipped galvanized inside and outside after complete fabrication.

Air pressure relief valve preset at 200 PSI to be supplied, and will protect the vessel from being over pressurized.

A ¾" quarter-turn valve located on the operators panel with a chrome handle will be used to bleed off the air in the vessel when refilling with water. The valve shall be plumbed to the top of the vessel with a ¾" hose. The valve will be used to bleed off the air in the vessel when refilling with water.

DRAIN VALVE

The vessel shall have a 1/2" quarter turn drain valve.

WATER LEVEL GAUGE

The water tank shall have a visual site water level tube type gauge located on the operators panel. The tube shall be made up of a clear glass tube recessed in an U-Channel for protection. The glass tube to be easily removable for service or replacement purposes.

HIGH PRESSURE AIR CYLINDERS

Two (2), DOT 4500 PSI rated high-pressure air cylinders to be furnished to power the system. Each cylinder to be 440 cubic feet and pressurized to 4500 PSI. The cylinders shall have a high-pressure screw-type shut-off valve with a rubber hand wheel cover.

The two (2) storage air cylinders to be located one on each side of the water vessel tank in an open-end compartment with an cinch to secure the tanks. The cylinder compartments to be fabricated of 3/16" smooth aluminum, and the interior to be lined with 4" wide .020" thick self-adhesive acrylic tape to protect the air bottles. They shall be designed to allow for easy removal and replacement of the cylinders. The cylinders shall recess completely into the storage compartments to protect the shut-off valve from being damaged.

HIGH PRESSURE AIR MANIFOLD AND FILL INLET

A high-pressure air manifold shall be designed to connect two air cylinder hoses, an air pressure gauge, the system charge valve, and the air fill inlet as one unit. The manifold to be constructed and machined out of aluminum and then black anodized to prevent corrosion.

High-Pressure Air Inlet to be provided on the operators panel and plumbed to the air manifold to refill the air cylinders without removing them from the unit. The inlet shall have a 6000 PSI aluminum check valve and a style CGA-347 male brass fill adapter with a leak proof screw on cap and chain.

A liquid filled high-pressure air gauge to be furnished on the control panel and connected to the air manifold. The gauge shall be 2-1/2" diameter and have a range of 0-7500 PSI.

HIGH PRESSURE SYSTEM CHARGE AIR VALVE

The discharge side of the air manifold shall be supplied with a quarter-turn high-pressure valve to engage the Redi-CAFS System. This manifold valve when closed will let the cylinders valves be open at all times for a constant air pressure gauge reading of the cylinders.

AIR PRESSURE REGULATOR

High-pressure air regulator to be adjustable from 0-150 PSI working range setting shall be supplied and located on the operator panel. The adjustable air regulator is used to control the air pressure that is induced into the pressure vessel to create tank discharge pressure and air is also simultaneously injected into the stream of water/foam solution to create Hi-Energy CAFS Foam. The adjustable air regulator shall control the CAFS nozzle pressure up to 150 PSI.

A water jacket shall be designed to encapsulate the regulator allowing the water from the vessel to circulate around the regulator and then to the discharge. The ambient temperature of the water prevents the air regulator from freezing during operation. The water jacket shall be constructed of Acetal Copolymer Plastic. The water jacket shall be plumbed with 3/4" size rubber hoses.

The water jacket shall have a drain valve.

FOAM TANK

The foam storage tank shall have a capacity of 6-gallons of foam concentrate and to be fabricated of stainless steel. The foam tank to have a 1-1/2" NH chrome plated fill opening on top of the tank with a chrome plated 1-1/2" NH cap and chain. The foam concentrate tank to be plumbed to the foam eductor.

The foam tank shall be furnished with an air release check valve to automatically release the air pressure in the foam tank when the vent valve is open. The valve is also used to prevent water from entering the foam tank when refilling the water tank.

FOAM LEVEL GAUGE

The foam tank shall have a visual site foam level tube type gauge located on the operators panel. The tube shall be made up of a clear glass tube recessed in an U-Channel for protection. The glass tube to be easily removable for service or replacement purposes.

FOAM TANK FILL PUMP

A 12-Volt refill foam pump to be mounted behind the control panel and connected to the foam tank. The inlet shall be a male 3/4" GHT brass fitting on the operators panel. The inlet shall have a cap.

There shall be a 3/4" NH x 48" suction hose supplied to attach to the foam inlet to fill the foam cell from the foam bucket.

The pump shall be controlled at the operators panel with a push button.

PLUMBING

All plumbing shall be brass and stainless steel piping and fittings.

All quarter-turn ball and check valves to be brass.

METERING VALVES AND MIXING MANIFOLD

The foam, water, air metering valves, and mixing manifold to be constructed from Acetal Copolymer plastic. The valves to be rotary action type with a knob to be machine fabricated from aluminum, knurled, permanently calibrated etched number setting for precise metering, and then anodized.

The CAFS Mixing Manifold to be designed to connect the three metering valves together as a cluster unit.

AIR INJECTION METERING VALVE

Air injection valve with an off position to be supplied and the control to be located on the operators panel. The air injection valve shall have an adjustable CFM air flow to produce Hi-Energy CAFS.

FOAM EDUCTOR METERING VALVE

Balanced pressure foam eductor valve to be supplied with an off position and shall have an adjustable calibration from .05 to 3.0 percent foam, the control to be on the operators panel.

WATER METERING VALVE

A water valve with an off position to be supplied and the control to be located on the operators panel. The valve shall be metered to furnish the proper texture of Hi-Energy foam to produce wet or dry foam. The expansion rate to be up to a 20:1 ratio and will make over 2000 gallons of finished foam.

INTAKE

The vessel shall have a 1-1/2" NH intake with a chrome female swivel and a full flow quarter-turn valve to be located on the operators panel. The inlet shall have 1-1/2" check valve to be supplied between the water vessel and the intake valve to protect against reverse water pressure from the inlet.

The intake shall have a 1-1/2" NH chrome plug with chain.

The intake shall have a liquid filled intake pressure gauge furnished on the intake valve. The gauge to be 2-1/2" diameter with a range of 0-300 PSI.

DISCHARGE SELECTOR VALVE

A 1-1/2" selector valve to be mounted behind the discharge valve to direct the flow to either the 1-1/2" discharge or to the booster reel.

1-1/2" DISCHARGE OUTLET

The discharge to have a male outlet to be located on the left side of the unit. The discharge outlet shall have a 1-1/2" full flow quarter-turn valve with a chrome push-pull handle located on the operators panel.

The discharge shall have a stainless steel scrubber furnished at the manifold to produce a high-energy textured foam.

The discharge shall have a liquid filled discharge pressure gauge to be furnished on the control panel. The gauge shall be 2-1/2" diameter with a range of 0-300 PSI.

1" BOOSTER REEL

NOTE: The 1-1/2" discharge outlet and the booster reel can only be used individually.

One (1), Hannay aluminum Model SBEF24-23-24RT electric rewind hose reel, with a capacity of 150' of 1" booster hose.

The booster reel to be cross-mounted on top of the water tank. One (1), enclosed hose guide shall be mounted, on the rear of the reel to provide assistance in pulling the hose off from the rear.

BOOSTER HOSE

One (1), 1" x 100' section of Niedner Reeltex 300 PSI working pressure booster hose coupled with 1" NH FRC couplings shall be supplied and installed on the booster reel.

One (1), PAC nozzle mounting bracket.

STORAGE COMPARTMENT

One (1) horizontal equipment storage compartment to be located on the left side of the vessel with an opening of 44" W x 22" H, with a usable depth of 12" and fabricated of smooth aluminum. This compartment to have a single aluminum treadbrite flip-down type door with automotive seal and a chrome twist latch, and shall be sweep-out type.

OPERATORS PANEL

The unit shall have an operators panel located at the rear of the unit for easy operation. The panel to be fabricated of 3/16" smooth aluminum.

The operators panel shall have a shroud at the top with one light to illuminate the panel. The switch shall be located at the light fixture.

The panel shall be labeled with permanent meter benzyls and labels at all instruments and controls.

The panel to consist of:

- | | | |
|-----|---|------------|
| (a) | 5000 PSI Rated High Pressure Adjustable Regulator
<i>(OPERATION RANGE)</i> | 0-150 PSI |
| (b) | High Pressure Air Cylinder Gauge (2-1/2" Diameter) | 0-7500 PSI |
| (c) | Air Injection Control | |
| (d) | Foam Injection Control | |
| (e) | Wet-Dri Control | |
| (f) | Discharge Control | |
| (g) | Discharge Pressure Gauge | |
| (h) | Gated Intake Control | |
| (i) | Vessel Air Vent Valve | |
| (j) | Vessel Water Drain Valve | |
| (k) | Water Level Gauge | |
| (l) | Foam Level Gauge | |
| (m) | High-Pressure Air Fill Inlet | |
| (n) | System Charge Air Valve | |
| (o) | Operator Panel Light with Switch | |

PAINT

The apparatus and components shall undergo a degreasing/cleaning process, starting with a clear, acidic liquid, designed to remove surface soils and oxidation, it deposits a light phosphate coating. These coatings gives aluminum and steel a superior base for good paint adhesion.

After the cleaning process, a fast build epoxy primer shall be applied and sanded prior to the top finish coatings. The finish painting process shall consist of applying two (2), coats of high quality, urethane paint to maintain proper film thickness.

Complete unit to be painted as follows:

BODY PAINT COLOR: RED
 PAINT BRAND: PPG
 PAINT NUMBER:

EMERGENCY SIGNAL LIGHTS

A Federal PA300 siren with a noise-canceling microphone shall be mounted on the dash.

One (1), Federal Model TS100 100-Watt Speaker shall be mounted and supplied with the completed unit.

One (1), Federal Sentry Model SY12FS rotating red light to be installed on top of the vehicle cab.

BACK-UP ALARM

The backup alarm shall be an electronic 97-decibel rated alarm installed at the rear of the vehicle. This alarm shall alert personnel any time the transmission is shifted into reverse gear.

FIRE EQUIPMENT ACCESSORIES *(To be supplied with the completed unit)*

Akron style 2108 1" Pistol Grip shutoff with a full 1-1/2" waterway and 1-1/2" NH male outlet.

Akron style 1430 stackable straight tips to be furnished in 3/4" and 5/8" bore sizes.

CUSHMAN OFF-ROAD FULL-TON HAULSTER

The Cushman Haulster Model 898738 shall have a 4-cycle, 3-Cylinder, liquid-cooled EFI engine, 3-speed automatic transmission, 11.16:1 hypoid differential, independent front suspension, unitized welded chassis, heavy-duty carbon steel channel frame, dent resistant, non-rusting polyethylene body and polyurethane hood, diamond pattern steel deck, 4-wheel hydraulic brakes, power steering, front coil over shock, keyed ignition switch, 12-volt power port, headlights, stop/taillight, light switch, horn, park brake "on" indicator, battery, fuel gauge, tachometer, hour meter, temperature gauge, low oil pressure light, volt meter, 20.50 x 8.50 – 10 load range C tires.

The Cushman Haulster shall also be equipped with a Roll Over Protection System (ROPS) and seatbelts.

The unit shall be painted Steiner Red unless otherwise specified.