



young engineering manufacturing, inc.

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Surge Suppressor Specification Sheet (Fuel Handling)

1. General

- a. Surge Suppressors shall be the hydropneumatic, bladder type design with dry nitrogen for the gas charge. The surge suppressors shall limit the system pressure of _____ psig to a maximum of _____ psig when there is _____ stoppage of _____ gpm flow (in _____ seconds) of aviation turbine fuel in system due to hydrant valve closing or complete stoppage of _____ gpm of aviation turbine fuel by closing of any isolation valve in _____ seconds. Bladder precharge shall be 85% of system pressure or as recommended by the manufacturer for this system.
- b. Dimensions of surge suppressors shall be as follows:
 - i. Nominal volume of each shall be _____ gallons.
 - ii. Surge suppressors shall not exceed _____" in diameter and _____" in vertical height and as shown on the contract drawings.
- c. Manufacturer shall be Young Engineering and Manufacturing, Inc., San Dimas, California, surge suppressor or approve equal.
- d. The surge controls supplier shall furnish a service person trained to provide installation checkout assistance and to supervise operation and testing necessary to place the surge control system into service.

2. Vessel

- a. Vessel shall be vertical type constructed of carbon steel SA-515 Gr. 70 material conforming to ASME code Section VIII, Division 1, Table UCS-23, latest edition and designed for a working pressure of 275 psig at 120 deg. F. Vessel shall bear the ASME code stamp.
- b. Vessel shall be constructed with a stainless steel removable top for inspection or replacement of the bladder without removing the surge suppressor from the line. This assembly shall be fitted with a charging valve for gas precharging and a pressure gauge to show bladder pressure.
- c. Vessel shall come provided with two steel mounting brackets 24" up from the 4' inlet flange face, sized 4" x 4" x 3/8" in dimensions and located 180 degrees apart. Each bracket shall be provided with a 3/4" hole for bolting to support structure. Holes shall be 26" center to center or in accordance with approved shop drawings. Vessel shall be provided with lifting lug.
- d. No parts in contact with aviation turbine fuel shall be constructed of copper or galvanized material.

3. Bladder

- a. Bladder material and all necessary elastomers shall be Buna-N.
- b. Two spare bladders shall be furnished.



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4. Flanged Inlet/Outlet Assembly

- a. Flanged outlet/inlet assembly shall include the following:
 - i. Flanged four (4) inch mainstream 150lb. class ANSI flange.
 - ii. A stainless steel perforated screen with holes sized to prevent both extrusion of the bladder and absorb kinetic energy as flow enters or leaves the surge suppressor.
 - iii. An inlet/outlet nozzle complete with an energy dissipation device designed to provide unrestricted flow into vessel and restricted flow from vessel. In no case shall there be an orifice in the flowpath less than 3-1/2" in equivalent diameter.
 - iv. The flange shall have a 1/2" NPT bleed connection to relieve fluid pressure during gas precharging.

5. Pressure Gauge

- a. Each surge suppressor shall be provided with a pressure gauge. Gauges and accessories shall be as manufactured by U.S. Gauge.
- b. All gauges shall be selected so that under normal operating conditions the pointers will be approximately vertical and at midpoints of scales.
- c. Gauges shall be of the glycerin-filled type and shall have all internal parts immersed.
- d. Pressure gauges shall be 2 inch dial size, with plastic cases, 1% accuracy over full range.

6. Finish Coatings

- a. All internal and external surfaces except stainless steel, bronze, or aluminum parts shall be coated by surge suppressor manufacturer. Finish thickness shall be 6.0 mil minimum.
 - i. Coatings shall be applied in accordance with Paint Application Specification SSPC-PA 1-64 of the latest edition of Steel Structures Painting Manual, Steel Structures Painting Council, 4400 Fifth Avenue, Pittsburgh, Pennsylvania USA.
 - ii. The degree of surface cleaning shall conform to "White Metal" sandblasting specification SSPC-SP 5-63 of the latest edition of Steel Structures Painting Manual.
 - iii. The internal surfaces shall be coated with one of the following:
 - 1 coat Cook Interior Steel Tank Primer 920-Y-131
 - 1 coat Cook Interior Steel Tank Finish 920-Y-966or
 - 1 coat Ameron Amercoat 395 Primer
 - 1 coat Ameron Amercoat 395 Finish



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- iv. The external carbon steel surface shall be coated with the following, or approved equal:
 - 1 coat Ameron Amercoat 71-2 mil thickness
 - 1 coat Ameron Amercoat 450-2 mil thickness

7. Space Available

- a. The surge suppressor shall fit within the spaces provided in the isolation valve pits with the piping, valves, and ladders installed as shown on the drawings.

8. Shop Drawings

- a. The equipment manufacturer, before beginning fabrication, shall submit five (5) copies of detailed drawings that are Shop Drawings and equipment lists to the Engineer for approval.
- b. Lists shall be accompanied by bulletins, plates, and schedules indicating the relative characteristics and ratings with capacities of the equipment.
- c. When standard equipment is modified to suit the conditions required, the Shop Drawings shall be supplemented with certification from the equipment manufacturer.

9. Operating and Maintenance Instruction Manuals

- a. Furnish to the engineer six (6) sets of instruction books on a good grade paper together with spare parts list, maintenance instructions and approved Shop Drawings covering such items of equipment and the operation of the equipment in detail.

10. Submittal Requirements

- a. The surge suppressor supplier shall include the following documents with his proposal package:
 - i. All surge suppressor data, including a computer calculated hydraulic transient analysis, shall be submitted to the Engineer for approval. Data shall demonstrate that the size and number of surge suppressors being supplied meets the requirements of these specifications. The analysis shall model the simulation of valve closures and provide a time versus pressure record.
 - ii. All calculations and data shall be certified and stamped by a registered professional engineer.
 - iii. The Analysis shall be based on the piping shown on the contract drawings.

11. Test Requirements

- a. After installation of the surge suppressor and placement of the Turbine Fuel Hydrant System Extension in operation, the trained service person shall inspect the overall installation and shall supervise performance testing. The contractor shall assist as required to simulate operating conditions by arranging for use of hydrant carts, refuelers, etc., as all approved by engineer.