SECTION 15052

PANTOGRAPH - HOSELESS TYPE

INDEX

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PART 1 GENERAL

1.1 APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

MILITARY SPECIFICATIONS

MIL-N-5877D	Nozzle, Pressure Fueling Servicing, Locking, Type D-2, Nominal 2-1/2 Inch Diameter.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

B16.5-81	Pipe Flanges and Flanged Fittings
B40.1-85	Gage Pressure and Vacuum Indicating, Dial Type, Elastic Element

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A36-84A	Structural Steel

[AIR FORCE REGULATIONS (AFR)

AFR 127-6	Air Force Safety System Engineering Analysis (AFSSEA) Safety Program]

NOTE: CONTACT COMMAND FUEL FACILITIES ENGINEER FOR DIRECTION

1.2 SUBMITTALS
The submittal requirements of Section entitled ["Mechanical General Requirements"] ["General Requirements"], applies to the following list. All items shall be submitted for Government approval.

NOTE: SELECT SECTION ENTITLED "MECHANICAL GENERAL REQUIREMENTS" FOR NAVFACENGCOM PROJECTS OR SECTION ENTITLED, "GENERAL REQUIREMENTS", FOR C.O.E. PROJECTS.

1.2.1 Shop Drawings

Scaled assembly drawings identifying components and showing dimensions and tolerances.

1.2.2 Manufacturer's Data

Complete technical literature shall be submitted on specific function equipment. Submittals shall include but not necessarily be limited to the following:

a. Pressure fueling nozzle.

b. Shut-off valve with 40 mesh strainer.

c. Swivel joints - flanged and compact types.

d. Sampling and drain assembly.

e. Pressure gage assembly.

f. Venting assembly.

1.2.3 Certificates of Compliance

a. Materials of construction.

[b. AFSSEA Approval]

NOTE: CONTACT COMMAND FUEL FACILITIES ENGINEER FOR DIRECTION

1.2.4 OMSI Submittals

OMSI information shall be submitted for the equipment items or systems listed below. Refer to Section entitled "Operating and Maintenance Support Information (OMSI)", for the information to be submitted for various types of equipment and systems.

a. Pressure fueling nozzle.

b. Shut-off valve with 40 mesh strainer.

c. Swivel joints - flanged and compact type.

d. Sampling and drain assembly.

e. Pressure gage assembly.

f. Venting assembly.

PART 2 PRODUCTS

[2.1 PANTOGRAPH

Pantograph submitted under this specification shall have been approved by the AFSSEA Team in accordance with AFR 127-6.]

NOTE: CONTACT COMMAND FUEL FACILITIES ENGINEER FOR DIRECTION

2.2 DESIGN CONDITIONS

Design conditions shall be as specified in section entitled "Mechanical Equipment, Fueling". Components to be ANSI B16.5 Class 150 (275 psig at 100 degrees F, except swivel joints and pressure fueling nozzle shall be 125 psig at 100 degrees F).

2.3 CONSTRUCTION

2.3.1 The pantograph shall be designed in such a way that all wheel supports rest upon the apron regardless of the different pavement conditions.

2.3.2 The pantograph shall consist of [two] [three] main [ ] foot sections, plus one dispensing end.

NOTE: INSERT REQUIRED PANTOGRAPH NUMBER OF SECTIONS AND LENGTH OBTAINED FROM COMMAND FUEL FACILITIES ENGINEER.

2.3.3 The dispensing end shall be supported by a hydraulically actuated cylinder to counter balance the weight of the pressure fueling nozzle, shut-off valve, swivel joints and connecting pipes to ensure that only minimum force occurs when connecting pantograph to aircraft. One person shall be able to operate the dispensing end.

2.3.4 The pantograph shall be equipped with supporting structures each mounted on two spring-loaded casters. Structural steel shall conform to ASTM A 36.

2.3.5 To avoid sagging, reinforcing shall be welded to the underside of the pipe sections.

2.3.6 Provide a draw bar or pull cable with handle for positioning the pantograph.

2.3.7 The overall electrical resistance throughout the entire length of the pantograph shall not exceed 1 Kilo Ohm. Grounding straps across the swivel joints are not permitted.

2.3.8 The pantograph shall be equipped with a permanent sampling and drain assembly, pressure gage assembly and venting assembly.

2.3.9 All pantograph swivel joints (flanged and compact type) shall be stainless steel single plane swivel capable of 360 degree rotation.

2.3.10 The dispensing end shall be designed to couple to aircraft at heights of 12 inches to [ ] feet above the apron.

NOTE: INSERT REQUIRED HEIGHT REACH OF PANTOGRAPH. CONTACT COMMAND FUEL FACILITIES ENGINEER FOR DIRECTION.

2.4 SIZE CRITERIA

Nominal diameters shall be as follows:

Piping sections	4 inch
Flanged connection	ANSI B16.5 125 lb.
Shut-off valve with 40 mesh strainer	2 1/2 or 3 inch
Compact swivel joint	2 1/2 inch
Flanged swivel joints	3 inch and 4 inch
Pressure fueling nozzle	2 1/2 inch outlet

2.5 DESIGN REQUIREMENTS

2.5.1 Flanged Swivel Joints

Flanged swivel joints shall be capable of rotating 360 degrees. Welded swivel joints and welding of swivel joints to the pipe and/or elbow is not permitted. Swivel joints shall be of the non-lubricated type with non-lubricated bearings.

No leakage shall be permitted under positive or negative pressure conditions. No leakage shall be permitted under high or low temperature conditions. Welding of swivel joint to 6-bolt flange connector is not permitted. The swivel joints shall be warranted for two years against leakage.

There must be electrical continuity from one flange to the other without the use of ground straps.

2.5.2 Spring-Loaded Casters

The pantograph shall be equipped with spring loaded casters made of steel or cast steel, galvanized or hot-dip galvanized. The caster swivel head shall be quipped with two lubricated ball bearings with grease nipples. The wheels shall be equipped with two lubricated grooved ball bearings with grease nipples. The wheels shall be coated with non-abrasive polyurethane, 90 shore or 40 Series alathane.

2.5.3 Sampling and Drain Assembly

Assembly shall provide for both sampling and draining of fuel. Material shall be Type 316 stainless steel. Assembly shall consist of a 1/2 inch ball valve and 1/2 inch quick disconnect coupling with aluminum dust cap. Material for ball valve, quick disconnect coupling shall be Type 316 stainless steel.

NOTE: CONSULT WITH COMMAND FUEL FACILITIES ENGINEER FOR CURRENT REQUIREMENTS.

2.5.4 Pressure Gage Assembly

Assembly shall consist of 4 1/2 inch ANSI B40.1 metal case pressure gage and pressure gage stop cock or ball valve. Pressure gage shall be silicone liquid filled type with an indicating range 0-275 psig. Material shall be Type 316 stainless steel.

2.5.5 Venting Assembly

Assembly shall consist of a 1/2 inch ball valve and shall terminate with a 180 degree pipe gooseneck and screwed cap.

2.5.6 Shut-Off Valve with Strainer

2 1/2 inch or 3 inch shut-off valve with 40 mesh strainer. It shall be mounted upstream of the pressure fueling nozzle and shall provide safe shutoff of the pantograph for inspection of the strainer.

2.5.7 Compact Swivel Joint

A 2 1/2 inch compact swivel joint shall be mounted between the shut-off valve with strainer and the pressure fueling nozzle. The compact swivel shall be non-lubricated type.

2.5.8 Pressure Fueling Nozzle

MIL-N-5877, 2 1/2 inch straight nozzle type (D-2) shall be provided for the connection between pantograph and aircraft. Design shall be for single point fueling of aircrafts at a flow rate of 600 gpm with maximum pressure drop of 30 psig. Nozzle shall be provided with a permanently

installed quick disconnect coupler, aluminum dust plug with chain. Gammon GTP-235-3/8 Jet Test QD meets this specification. Provide pressure gage with 0-100 psig indicating range mounted on actuator for use with quick disconnect coupler.

2.6 MATERIALS

The type of materials which come in contact with the fuel shall be noncorrosive. Refer to Section entitled ["Mechanical General Requirements"] ["General Requirements"] for metallurgic specification. Additional requirements are as follows:

NOTE: SELECT SECTION ENTITLED "MECHANICAL GENERAL REQUIREMENTS" FOR NAVFACENGCOM PROJECTS OR SECTION ENTITLED "GENERAL REQUIREMENTS" FOR C.O.E. PROJECTS.

2.6.1 Stainless Steel Piping

Schedule 10S.

2.6.2 Fittings and Bends

Same thickness of adjoining pipe.

2.6.3 Components

Aluminum alloy or stainless steel.

2.7 ASSEMBLY

The pantograph shall be delivered completely assembled.

PART 3 EXECUTION

3.1 INSTALLATION

The pantograph shall be tested as described in Section, "System Start-Up, Fueling".

--End of Section--