TRANSNET NATIONAL PORTS AUTHORITY

SPECIFICATION FOR COMPRESSED AIR SYSTEMS

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SUMMARY VERSION CONTROL

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Note: Only the latest amendments and/or additions are reflected in italics in the body of the document.

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1. AIR COMPRESSOR

1.1 Air compressors shall be supplied complete in all respects with electric motor, air receiver, air filter and intake muffler, unloading and regulating devices for continuous operation, fusible plugs or other protective devices guarding against excessive delivery temperature; compressor oil temperature gauge, pressure gauge; tachometer and the usual standard equipment supplied.

1.2 When employing fusible plugs as a protective device against excessive delivery temperature, they shall be fitted as close as possible to the outlet orifice of each stage to fuse at a temperature of 6°C above the highest permissible working temperature of the compressor, such temperature shall be stated by the Tenderer. The Transnet Drawing NO CME 4638/0-000 [latest] depict the method of fitting the fusible plug and the source of supply. If the Transnet standard plug cannot be fitted, this shall be stated by the Tenderer.

1.3 The valve covers shall be secured by studs.

1.4 The following details of the compressor shall be stated:

1.4.1 Type of compressor.

1.4.2 Capacity at sea level.

1.4.3 Delivery temperature of air.

1.4.4 Maximum working temperature.

1.4.5 Working pressure, maximum and normal.

1.4.6 Cooling system for the compressor.

1.4.7 Air intake filter.

1.4.8 Materials used in the construction of the compressor.

1.4.9 Oil and water separator.

1.4.10 Safety devices incorporated in the compressor.

1.4.11 Sound intensity level of the compressor where it is mounted.

2. AIR RECEIVER

2.1 Air receivers shall be in accordance with B.S. 5169-1975, Class 3, Grade E except material, or an established equivalent [which shall be stated] and supplied with the following equipment:

2.1.1 Spring loaded, lock-up type safety valve.

2.1.2 Pressure gauge.

2.1.3 Drain pipe and cock.

2.1.4 Air filter.

2.2 The steel and welding electrodes, used in the construction of the air receiver, shall be in accordance with B.S. 1501-151-28A [latest] Grade B.333 R.11, respectively, or equivalent established standard specification [which shall be stated].

2.3 The successful Tenderer shall be required to furnish a hydraulic test certificate [in duplicate] for the air receiver and is to state whether the receiver has been tested in terms of an accepted code such as ASME, BSS Lloyds or Transnet Code 7.

2.4 The air receiver shall be of welded construction and design to withstand at least 5 times the authorized maximum working pressure.

2.4.1 If there is any question as to whether the construction of an air receiver is such that it will withstand at least 5 times the authorized maximum working pressure, this can be verified from the following formula:

$$FS = \frac{1\,000 \times TS \times t \times E}{P \times R}$$

Where:

FS = factor of safety

TS = tensile strength of shell [430 Mpa for symbol 8 steel]

t = thickness of plate in mm

P = authorised maximum working pressure as indicated on the test plate [kPa]

E = efficiency of welded longitudinal seam, assumed to be 1,00 for properly welded seam

R = inside radius of shell in mm

2.4.2 The ends of the air receiver shall be at least as thick as the shell plate.

2.5 Tell-Tale Holes

2.5.1 Tell-tale holes are required for air receivers of up to and including 500 litre capacity only.

2.5.2 Tell-taile holes are to be drilled with a standard 5 mm drill to a depth from surface of air receiver to point of drill calculated by the formula:

$$D = \frac{600\ P \times R}{105}$$

$S - 60\ P$

Where:

D = extreme depth [mm]

P = authorised maximum working pressure [kPa]

R = inside radius of air receiver [mm]

S = 1/5 of minimum tensile strength [MPa]

2.5.3 In no case shall tell-tale holes be less than 1,6 mm in depth.

A stop attachment on the drill is recommended to ensure uniform and accurate depth penetration.

2.5.4 Tell-tale holes shall be spaced at no greater than 310 mm centres both longitudinally and circumferentially and shall be drilled over the entire surface of the air receiver - both shell and ends. One row of holes shall be located in line with the drain hole on the bottom centre line of the air receiver.

2.6 The following details of the air receiver shall be stated:

2.6.1 Standard to which air receiver is manufactured;

2.6.2 Overall dimensions of air receiver;

2.6.3 The mass of the air receiver.

3. COMPRESSED AIR RETICULATION SYSTEMS

3.1 Compressed Air pipelines shall be to SABS 62 [latest] medium black, uncoated with plain ends, suitable for welding and having a nominal bore to cater for all the compressed air required for the application.

3.2 Shut-off valves shall be of the flanged diaphragm type with diaphragms suitable for the use with compressed air at the required pressure.

3.3 Flanges shall be in accordance with and drilled to SABS 1123 table 15.

3.4 The tap-off points required for maintenance shall be 25 mm ball type valves with screwed female ends. [Number of tap-off points to be stated].

3.5 Water traps and separators shall be provided to ensure that the compressed air is dry at points of usage.

Considering the high humidity, Tenderers are to ensure that the air used for reverse pulse cleaning of example filter bags is sufficiently dry to prevent clogging.

3.6 The drain pipes shall lead to the floor in an approved position for drainage.

3.7 All fittings such as bends, elbows, nipples, etc. shall be to the relevant BS and/or SABS Specifications.

3.8 Flanges are to be welded to the pipes only to accommodate necessary valves and expansion joints. All intermediate joints shall be welded.