

PART 1 - GENERAL

<u>1.1 SUMMARY</u>	.1	Section Includes: .1 Materials and installation for piping, fittings, equipment used in compressed air systems. .2 Sustainable requirements for construction and verification.
<u>1.2 RELATED SECTIONS</u>	.1	Section 01 33 00 - Submittal Procedures.
	.2	Section 01 45 00 – Testing and Quality Control.
	.3	Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
	.4	Section 01 78 00 - Closeout Submittals.
<u>1.3 REFERENCES</u>	.1	American Society of Mechanical Engineers (ASME) .1 ASME Boiler and Pressure Vessel Code Section VIII-2016, Pressure Vessels. .1 BPVC-VIII B BPVC Section VIII - Rules for Construction of Pressure Vessels Division 1. .2 BPVC-VIII-2 B, BPVC Section VIII - Rules for Construction of Pressure Vessels Division 2 - Alternative Rules. .3 BPVC-VIII-3 B, BPVC Section VIII - Rules for Construction of Pressure Vessels Division 3 - Alternative Rules High Press Vessels. .2 ASME B16.5-2017, Pipe Flanges and Flanged Fittings. .3 ASME B16.11-2016, Forged Fittings, Socket-Welding and Threaded.
	.2	American Society for Testing and Materials International (ASTM) .1 ASTM A53/A53M-20, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless. .2 ASTM A181/A181M-14, Standard Specification for Carbon Steel Forgings for General Purpose Piping.
	.3	Canadian Standards Association (CSA International) .1 CSA B51:19, Boiler, Pressure Vessel, and Pressure Piping Code.

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- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Safety Data Sheets (SDS).
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- 1.4 SUBMITTALS
- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet for piping, fittings and equipment.
 - .2 Submit WHMIS SDS. Indicate VOC's for adhesive and solvents during application and curing.
 - .3 Shop Drawings:
 - .1 Submit shop drawings to indicate project layout including layout, dimensions and extent of piping system.
 - .1 Vertical and horizontal piping locations and elevations and connections details.
 - .2 Test Reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
 - .3 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .4 Instructions: submit manufacturer's installation instructions.
 - .5 Closeout Submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
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- 1.5 QUALITY ASSURANCE
- .1 Pre-Installation Meeting:
 - .1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installations.
 - .1 Verify project requirements.
 - .2 Review installation conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.
 - .2 Health and Safety:
 - .1 Do construction occupational health and safety in accordance with Section 01 35 29 - Health and Safety Requirements.

1.6 DELIVERY,
STORAGE AND
HANDLING

- .1 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
 - .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan (WMP).
 - .4 Separate for reuse and recycling and place in designated containers Steel, Metal, Plastic waste in accordance with Waste Management Plan (WMP).
 - .5 Handle and dispose of hazardous materials in accordance with Regional and Municipal regulations.
 - .6 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.

PART 2 - PRODUCTS

2.1 REGULATOR

- .1 Factory assembled, heavy-duty with mounting bracket and low pressure side relief valve.
- .2 Maximum inlet pressure: 1034 kPa.
- .3 Operating temperature: minus 18 degrees C to plus 52 degrees C.
- .4 Pressure range in regulator: 34 kPa to 900 kPa.
- .5 Gauge range: 0 kPa to 1500 kPa.

2.2 AIR FILTRATION

- .1 Particulate filter for the removal of solid particle contaminants and the separation of bulk liquids.
- .2 Housing: high quality aluminum with manual drain.
- .3 Filter element: 5 micron plastic.
- .4 25mm inlet/outlet.
- .5 Maximum inlet pressure: 1,600 kPa.
- .6 Maximum airflow rate 30 L/s.

- .7 Provide six (6) spare filter elements for each filter.

2.3 PIPING

- .1 Piping: to ASTM A53/A53M, schedule 80 seamless black steel.
- .2 Fittings:
- .1 NPS2 and smaller: to ASME B16.11, schedule 80 steel, screwed.
- .2 Couplings: to ASME B16.11, threaded half coupling type.
- .3 Unions: 1000 kPa malleable iron with brass-to-iron ground seat.
- .4 Dissimilar metal junctions: use dielectric unions.
- .3 Joints:
- .1 NPS2 and smaller: screwed.

2.4 BALL VALVES

- .1 Three-piece design or top entry for ease of in-line maintenance.
- .1 To ASTM A181/A181M, Class 70, carbon steel body screwed ends, carbon steel ball and associated trim suitable for compressed air application.
- .2 To withstand 1034 kPa maximum pressure.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 COMPRESSED AIR PIPING CONNECTIONS AND INSTALLATION

- .1 Install shut-off valves at outlets, major branch lines and in locations as indicated.
- .2 Install unions to permit removal or replacement of equipment.
- .3 Install tees in lieu of elbows at changes in direction of piping. Install plug in open ends of tees.
- .4 Grade piping at 1% slope minimum.
- .5 Make branch connections from top of main or quick branch drop pipe if using aluminum piping system.
- .6 Install compressed air trap at bottom of risers and at low points

in mains. Distance between drain points to be 30 m maximum.

3.3 FIELD QUALITY
CONTROL

- .1 Site Tests/Inspection:
.1 Testing: pressure test for 4 h minimum, to 1100 kPa,
with outlets closed and with compressor isolated from system.
Pressure drop not to exceed 10 kPa.

3.4 CLEANING

- .1 Cleaning: blow out piping to clean interior thoroughly of oil and
foreign matter.
- .2 Check entire installation is approved by authority having
jurisdiction.
- .3 Perform cleaning operations as specified and in accordance with
manufacturer's recommendations.
- .4 Upon completion and verification of performance of installation,
remove surplus materials, excess materials, rubbish, tools and
equipment.

END OF SECTION