

Part 1 General

1.1 REFERENCES

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.2 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
 - .1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.

1.3 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

Part 2 Products

2.1 CONTROL VALVES

- .1 Provide valves in accordance with general valve specification. Provide position indicators on valves and pilot positioners on sequenced valves.
- .2 Valves shall "fail safe" in normally open or closed position as dictated by freeze, humidity, fire or temperature protection.
- .3 Two-way valves for liquids shall have equal percentage characteristics. Size valve operators to close valves against pump shut off head. Size for maximum 20 kPa drop.

2.2 THERMOSTAT (LOW VOLTAGE)

- .1 Low voltage wall thermostat:
 - .1 For use on 24 V circuit at 1.5 A capacity.
 - .2 With heat anticipator adjustable 0.1 to 1.2 A.
 - .3 Temperature setting range: 10 degrees C to 25 degrees C.

2.3 THERMOSTAT GUARDS

- .1 Thermostat guards: lockable, clear plastic . Slots for air circulation to thermostat.

2.4 FLOW SWITCH

- .1 Flow switch for 3.4 L/s water, pipe size as indicated, CSA Enclosure, rated at 16 A at 120 V. Maximum liquid temperature: 121 degrees C. Maximum liquid gauge pressure of 1034 kPa ambient temperature range 0 degrees C to 82 degrees C.

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 INSTALLATION

- .1 Install control devices.
- .2 Install remote sensing device and capillary tube in metallic conduit. Conduit enclosing capillary tube must not touch heater or heating cable.

3.3 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning
- .2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

3.4 RADIATION

- .1 Thermostat shall modulate 2-way heating control valve.

3.5 HEATING WATER CONTROL

- .1 Provide flow switches in each pump discharge to provide on-off indication.
- .2 Heating system to be activated below 18 degrees Celsius and deactivated above.
- .3 Outdoor sensor shall reset a discharge water sensor and controller to modulate the boilers gas valve. The boilers supplied outdoor control to be used to vary water temperature based on outside conditions.
- .4 Provide flow switch in pump circuit to indicate alarm. Provide alarm bypass switch.

- .5 Provide on local control panel:
- System graphic
 - System supply temperature
 - System supply control point adjustment
 - System return temperature
 - Pump on-off switch
 - Pump on-off indication
 - Boilers lead-lag switch

END OF SECTION