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Installation, Operation and Maintenance Instructions

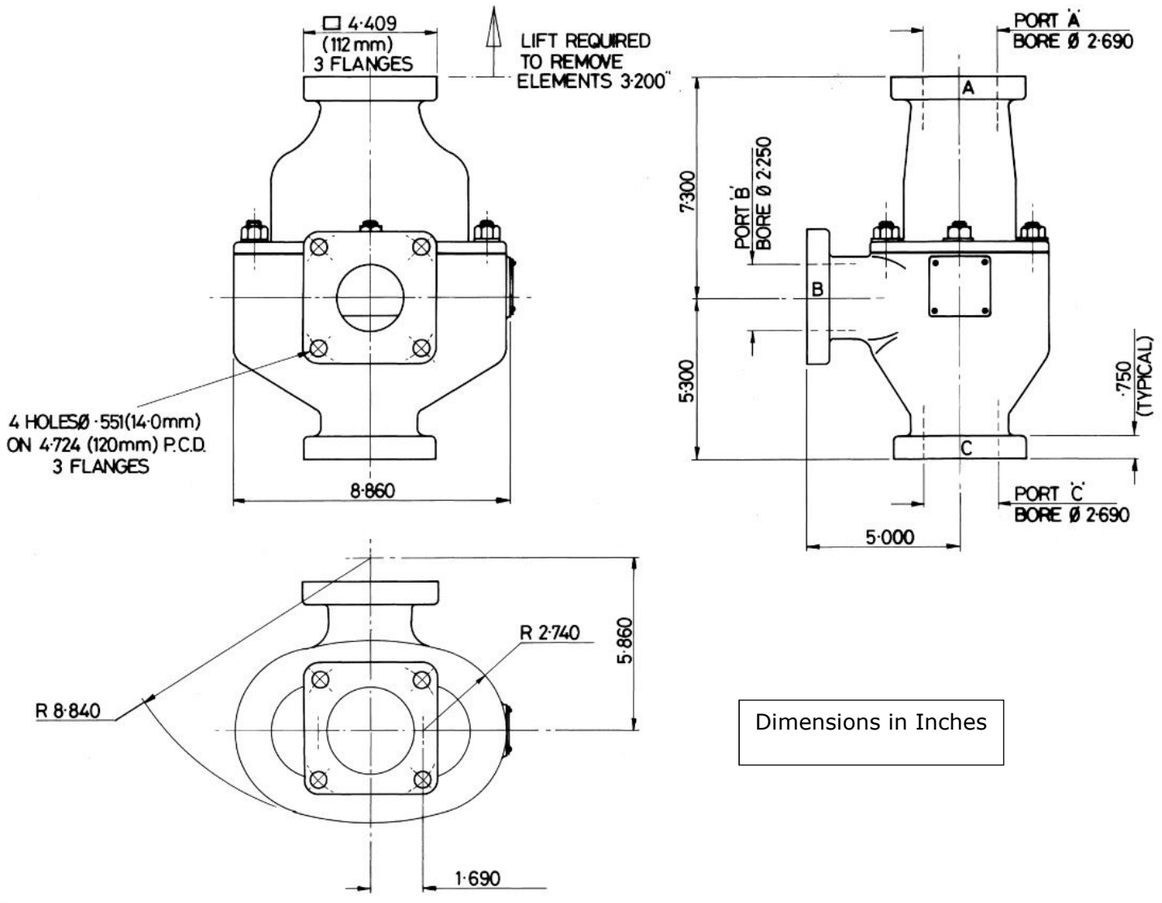
20100D - Thermostatic Valve

Description

A thermostatic valve available in a wide range of control temperatures featuring 112mm square flanges and two AMOT type 1096X temperature elements.
Part number construction is as follows:

20100D	**Temperature °F** -	**Leak Hole Code**	**-AA** (standard) **-***** (special customer requirements)
	See Specification for available temperatures	See Specification for available leak hole codes	

Example → 20100D130-0-AA (130°F, no leak hole and standard build)



Dimensions in Inches

Item	**Basic Material**
Valve Body	Cast Iron
External Fasteners	Steel, Zinc Plated
Internal Fasteners	Stainless Steel
Temperature Element	Brass and Stainless Steel Assy
Seat	Stainless Steel
Sleeve	Brass

CAUTION
In situations where the valve has been subject to prolonged low temperatures, such as on-site or warehouse storage, great care must be taken to raise the temperature of the valve at a controlled rate of not more than 1°C/minute, in order to prevent damage to the component parts.

Specification

Nominal Temperature	**Start To Open Temperature**	**Full Open Temperature**	**Maximum Continuous Temperature**	**Maximum Temp for Short Periods**
045°F (7°C)	1°C	11°C		35°C
055°F (13°C)	8°C	20°C	35°C	40°C
057°F (14°C)	8°C	20°C	35°C	40°C
075°F (24°C)	20°C	30°C	38°C	54.5°C
090°F (32°C)	27°C	35°C	43.5°C	60°C
095°F (35°C)	29.5°C	40.5°C	49°C	68°C
100°F (38°C)	34°C	42°C	50°C	63°C
110°F (43°C)	37.5°C	47°C	56°C	74°C
115°F (46°C)	40°C	50°C	61°C	79°C
120°F (49°C)	43°C	54.5°C	65.5°C	76.5°C
130°F (54°C)	51°C	60°C	68.5°C	82°C
135°F (57°C)	54°C	63°C	71°C	84°C
140°F (60°C)	57°C	66°C	74°C	88°C
145°F (63°C)	60°C	69°C	79°C	94°C
150°F (66°C)	62.5°C	71.5°C	82°C	95°C
155°F (68°C)	65.5°C	74°C	85°C	96°C
160°F (71°C)	68°C	78°C	88°C	102°C
165°F (74°C)	71°C	79.5°C	88°C	102°C
170°F (77°C)	74°C	83°C	93.5°C	107°C
175°F (79°C)	76.5°C	85°C	101.5°C	118°C
180°F (82°C)	79.5°C	88°C	104.5°C	121°C
185°F (85°C)	82°C	91°C	106°C	121°C
195°F (91°C)	86.5°C	98°C	107.5°C	121°C
205°F (96°C)	93°C	101.5°C	107.5°C	121°C
215°F (102°C)	98.5°C	107°C	115°C	120°C
225°F (107°C)	102°C	113°C	118°C	125°C
230°F (110°C)	104°C	115°C	118°C	125°C
240°F (116°C)	108°C	122°C	123°C	125°C

Parameter	**Value**
Maximum Pressure	10 Bar
Flow Coefficient Kv	85
Flow Coefficient Cv	98
Weight (approximate)	20 kg

Can be used for mixing or diverting modes

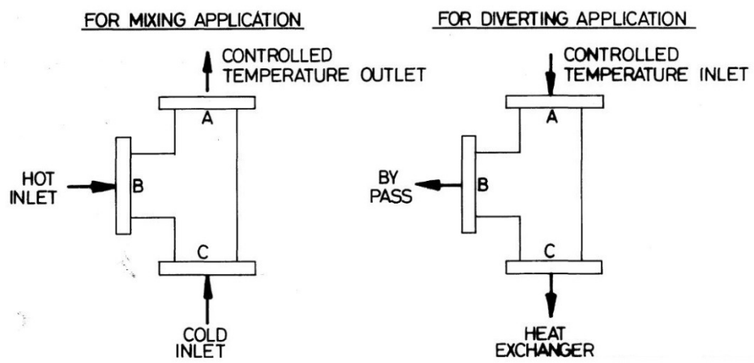
Code	**Leak Hole Diameter**
0	No Leak Hole
A	1/2" Diameter
B	1/4" Diameter
C	3/8" Diameter
D	1/8" Diameter
E	1/16" Diameter
F	3/32" Diameter
G	3/16" Diameter
H	5/16" Diameter

Certification

The component must not be put into service until the Final Machinery into which it is incorporated has been declared inconformity with the relevant provisions of European Machinery Directive where appropriate.
The component has been assessed against the requirements of the European Pressure Equipment Directive (PED) and is designated as a Pressure Accessory as defined in the Directive, suitable for use with Group 1 (hazardous) and Group 2 (non-hazardous) Liquids. The component has been manufactured in accordance with Sound Engineering Practice and as such is not CE marked under the Pressure Equipment Directive.

20100D - Thermostatic Valve

Installation



Before starting installation

1. Upon receipt, the valve should be checked for damage sustained in shipping. All AMOT valves have nameplates attached, which are stamped with the valve model number and serial number.
2. Before installation, ensure that the valve is suitable for the purpose, checking temperature, pressure and material parameters, and any special approval requirements. Check that the intended pipe fittings are suitable for the application.
3. Check that the valve size has been selected in accordance with the anticipated flow rate through the valve. To maintain good temperature regulation the pressure drop across the valve should be in the 0.14 to 0.5 bar (2 to 7 psi) range.
4. If the valve is to be fitted at a high point in the system, the system should be vented to prevent trapped air around the temperature elements.
5. For optimum temperature regulation the system should be designed so that the element is in the mid-position under nominal conditions. To achieve this it may be necessary to balance the fluid flow by inserting an orifice in the by-pass circuit.

Mounting the valve in the pipe

The valve may be mounted in any orientation; but should be properly supported and not subjected to excessive bending. Ensure the pipe flange connections are correctly aligned to avoid stressing the valve body. For the main flanged ports bolting and gaskets should comply with the relevant standard. All relevant local regulations must also be observed.

Start up

1. Upon installation and on start-up of the system, all parts of the circuit should be closely monitored to ensure correct performance. A system in which the valve has been properly selected for the anticipated flows should operate very closely to the valve's nominal temp rating.
2. Water cooling systems will usually operate at or slightly below the nominal temp. Lubricating oils and most other higher viscosity fluids will operate at or slightly above the nominal temperature.
3. In any system where the indicated temperatures are more than 2.7°C (5°F) from the nominal temperature, then an effort should made to locate the cause.
4. Any system operating at an indicated 5.5°C (10°F) or more from the nominal anticipated temperatures may well be malfunctioning and the cause should be located and rectified.

Operation

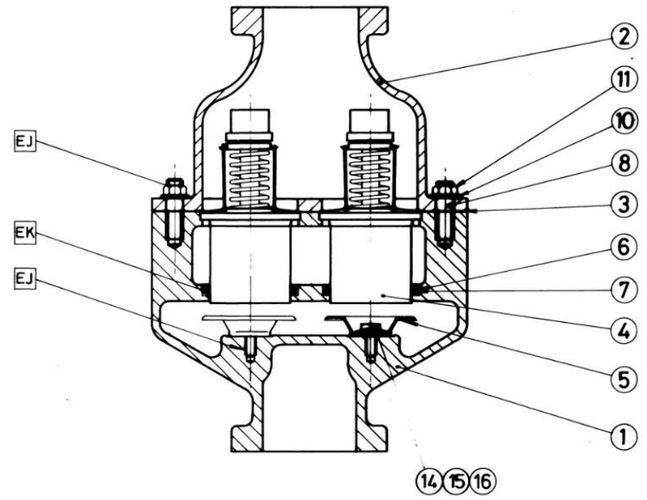
The valve is fully automatic in operation and does not require user intervention to operate.

Maintenance

The valve must be removed from the pipe system before any maintenance can be done to the valve.

Dismantling the valve

1. Remove housing nuts (11) and split valve. Remove the lower housing (2) taking care not to damage the elements. Remove and discard housing gasket (3) ensuring any traces of the gasket are removed from the housing mating faces.
2. Simply pull the element from the upper housing.
3. Inspect valve seat for wear or damage. If required replace valve seat (5), remove by unscrewing capscrew (14).



Reassembling the valve

1. Lubricate gasket (3) liberally with a good grade of petroleum grease, allow to soak.
2. If valve seat changed, refit capscrew with Loctite 2400 locking compound (EJ).
3. Lightly grease and stretch new 'O' ring (7) and fit into upper housing (1). Position 'O' ring concentrically to assist element assembly.
4. Insert element into the upper housing taking care not to damage the 'O' ring.
5. Position lubricated gasket on upper housing joint face (1). Place lower housing (2) over upper housing, secure with nuts (11) and washers (10), use Loctite 2400 locking compound (EJ).

Spare Parts

Reference	Description	Part No.	Quantity
3	Gasket	40799	1
4	Temperature Element (standard)	1096X***	2
5	Seat	9585L001	2
7	O-Ring	1183	2
10	Lockwasher	43010L120	4
11	Nut	43000L120	4
14	Capscrew	11132L062	2
15	Lockwasher	11133	2
16	Plain Washer	11226L001	2

Where *** = nominal temperature in °F, for elements with leak hole add code letter after ***

Trouble Shooting Guide

System Temperature too cold	System Temperature too hot
Insufficient heat rejected to coolant to maintain temperature.	Cooling capacity of system inadequate.
Wrong nominal element temperature selected	Thermostatic valve too small for flow rate causing high pressure drops and possible cavitation problems.
Thermostatic valve greatly oversized or cooling capacity of system much greater than required.	Valve installed backwards, reducing flow to cooler as temperature increases.
Thermostatic valve installed backwards, thus sending water to cooler at low temperatures. Worn or leaking O-rings allowing leakage to cooler.	Elements may have seen sufficient over-temperature to prevent full movement, thus preventing full cooling.
Excessive pressure drops across valve.	Foreign matter stuck between sliding valve and seat.
Foreign matter preventing closure of elements.	Solids building up on element sliding valve preventing correct operation.
Bimetallic type thermometers will indicate low if calibrated in oil	Bypass will not close due to worn or pitted seats, sliding valve, seals etc.