	उत्पाद मानक PRODUCT STANDARD ELECTRICAL MACHINES ENGINEERING	TG60620	
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TEMPERATURE CONTROL VALVE

1.0 SCOPE:

This specification covers the requirements of Temperature Control Valve used for regulation of seal oil flow through Plate type heat exchangers / Coolers, in single flow seal oil units, with a view to control the temperature of seal oil entering the seals in hydrogen cooled turbo generators.

2.0 Application standard:

There is no national standard pertaining to this item.

3.0 Designation:

A Temperature Control Valve shall be designated as below

3.1 On Drawings:

Material specification column	: TG 60620
Description column	: Temperature Control Valve
Material code column	: W90414905415

3.2 On Indent:

Temperature Control Valve as per product standard number TG60620.

3.3 On Enquiries & Purchase Order:

In addition to incorporating the above information, a copy of this specification shall be enclosed.

4.0 Design and construction of Temperature Control Valve:

4.1 General:

The temperature control valve shall be suitable for tropical and humid atmosphere with ambient temperature in the range of 0-60°C.

				नाम NAME	दिनांक एवं हस्ताक्षर SIGN. & DATE
TSX	D.L.OBEROI		अनुवादक TRANSLATED BY		
PSC Member	AK Malhotra		निर्माणकर्ता WORKED BY	Kapil Narula	
QAX	N K Manwani	26.8.06	जांचकर्ता CHECKED BY	AK Malhotra	
सहमत विभाग AGREED DEPTT.	नाम NAME	दिनांक एवं हस्ताक्षर DATE & SIGNATURE	पर्यवेक्षणकर्ता SUPERVISED BY	KR Gupta	

WORKED	Jagadish Chauhan	26.04.22	स्वीकृति :		GR. ND	
CHECKED	Gopal Chauhan	26.04.22	APPROVED :	DEVRAJ (AGM/EME)	3.40	
REV. NO.	02		निर्माण PREPARED	जारी ISSUED	दिनांक : DATE	
DATED	26.04.2022		EME, HEEP, HWR	EME, HEEP, HWR	26-08-06	
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INVENTORY NO. P6347

4.2 DESCRIPTION

The temperature control valve shall be able to maintain a constant oil temperature and shall be suitable to be employed as a mixing valve. The operation of the valve shall be independent of oil pressure and its design shall be service and maintenance friendly. It shall be possible to replace internal parts of the valve locally, without removal of valve from the pipeline. It shall be possible to employ temperature control valve in any position.

4.3 The temperature control valve shall be equipped with an internal, easily replaceable thermostat, which takes its flushing oil at the place of measurement (assembly location). The temperature of oil shall be transformed into another physical parameter, say expansion and changed of length (of the valve stroke). The temperature control valve shall not require any auxiliary power. At rising temperature and over shooting of temperatures the opening commences, the pipe side is raised from the valve seat and increases the flow of oil from the cooler and proportionately decreasing the flow the of oil in the bypass circuit. This change in flow of oil shall be proportional to the change in temperature of oil. Refer Fig. 1.

4.4 The maximum overall dimension of the equipment shall be as per Fig. 2.

5.0 TECHNICAL REQUIREMENTS

5.1 TECHNICAL DATA OF TEMPERATURE CONTROL VALVE

- Operating temperature : max. 120^{0}C
- Rated pressure : 16 bar.
- Allowable differential pressure : 16 bar
- Flow medium : Turbine Grade ISOVG46
- End connections : Flanged as per DIN 2533, Form E
- Emergency adjustment of valve : It shall be possible to set any position of valve, in case of breakdown of thermostat.
- Temperature Range at outlet : 35 to 43 deg. C for Var. 00
  37 to 47 deg. C for Var. 01
- Nominal flow : Refer Table-1

5.2 MATERIAL OF CONSTRUCTION

S.No.	Matcode	Body Material
01	W90414905415	GGG 40.3 or equivalent
02	W90414905423	GGG 40.3 or equivalent
03	W90414907930	SS316 or equivalent

6.0 QUALITY ASSURANCE, INSPECTION AND TESTING

6.1 The manufacturer shall conduct all tests required to ensure that the equipment conforms to the requirements of application codes and standards.

6.2 The minimum tests/checks to be carried out on Temperature control valves as envisaged by BHEL are.

- Performance tests on the valve. (Check flow, temperature)
- Testing the chemical composition of the material of casing.
- Hydraulic test at 24 Kg/cm^2 for 10 minutes.
- Seat leakage test at 16 Kg/cm^2 for 10 minutes.
- Back seat test at 16 Kg/cm^2 for 10 minutes.

7.0 DOCUMENTS TO BE FURNISHED ALONGWITH OFFER (IN TWO COPIES EACH)

7.1 Cross-sectional assembly drawing with various dimensions, bill of material, mounting detail etc.
7.2 Valve catalogue.
7.3 List of spare parts.
7.4 Cleaning painting and conservation procedure.

8.0 DOCUMENTS TO BE SUPPLIED AFTER ORDER PLACEMENT

8.1 Documents for approval

8.1.1 Assembly drawing including dimensions, bill & material with specification etc.

8.2 Documents for final submission

8.2.1 Two copies of test certificates as per clause 6.2.
8.2.2 Three copies O & M manual.

9.0 GUARANTEE

9.1 The supplier shall guarantee trouble free and satisfactory operation of the equipment for a period of 12 months after commissioning at site or 24 months from the date of dispatch whichever is earlier.
9.2 The supplier shall repair/ replace the defective parts at his own cost during the guarantee period.

10.0 CROSS REFERRED DOCUMENTS

DIN2533

TABLE-1

S.No.	Var	Matcode	Application	Size	Nominal Flow at Rated load (M^3/Hr.)	Applicable Figure	Remark
01	00	W90414905415	Seal Oil Temperature Control	NB50	13.2	1	For THRI single flow SOS
02	01	W90414905423	Seal Oil Temperature Control	NB65	24.6	1	For THDF single flow SOS
03	01	W90414907930	Seal Oil Temperature Control	NB65	24.6	1	For THDF single flow SOS

TABLE-2

S. No	NB	D	g	b	h	T	EL	K	L	No. of Thermostats	WT. (KG)
1.	50	165	102	23	150	165	225	125	4X18	1	25
2.	65	190	122	25	165	146	254	145	4X18	2	28

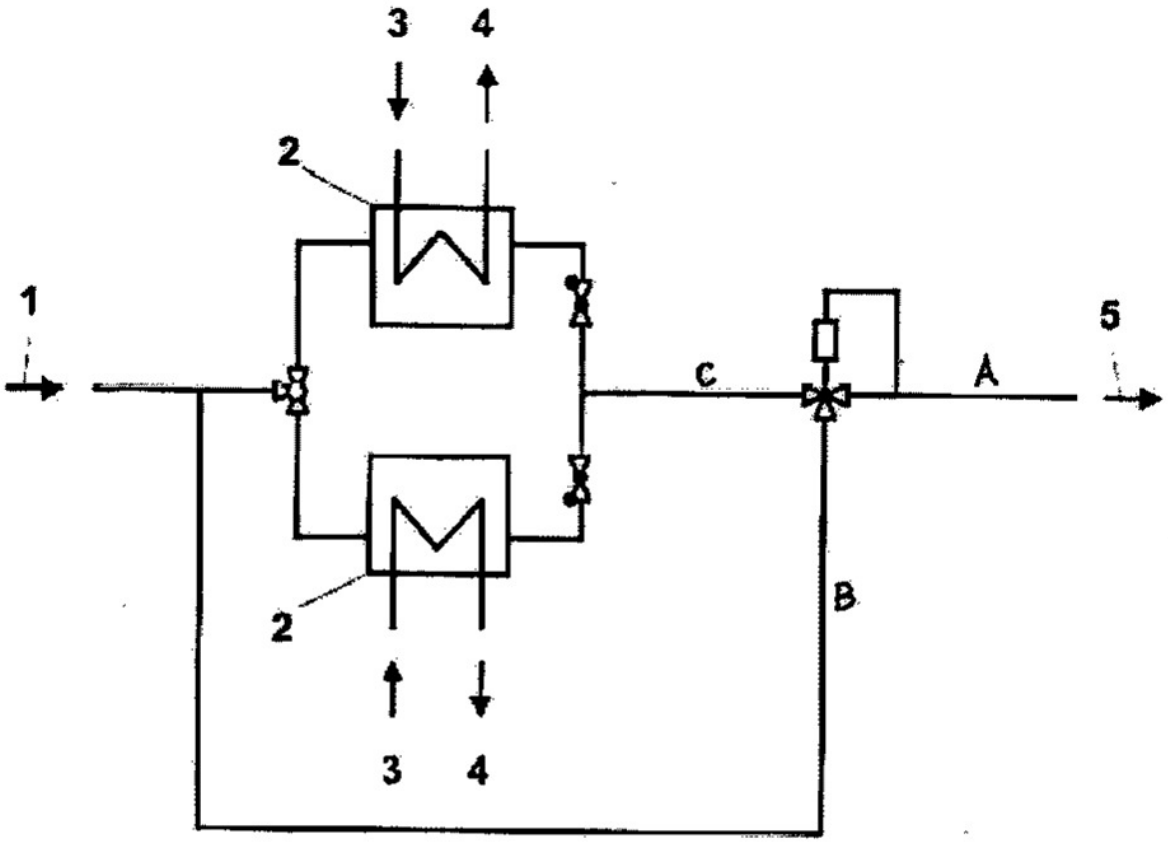

Fig. 1

LEGEND:

1	Seal Oil Inlet
2	Seal Oil Cooler
3	Cooling Water inlet to Cooler
4	Cooling Water outlet from Cooler
5	Seal Oil Outlet

Rev. 02	निर्मणिकर्ता Worked by	KN		26/9/06
	जांचकर्ता Checked by	AKM		26/9/06

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दिनांक एवं हस्ताक्षर	BHEL	उत्पाद मानक PRODUCT STANDARD ELECTRICAL MACHINES ENGINEERING	TG60620 पृष्ठ 6 का 6 Page 6 of 6

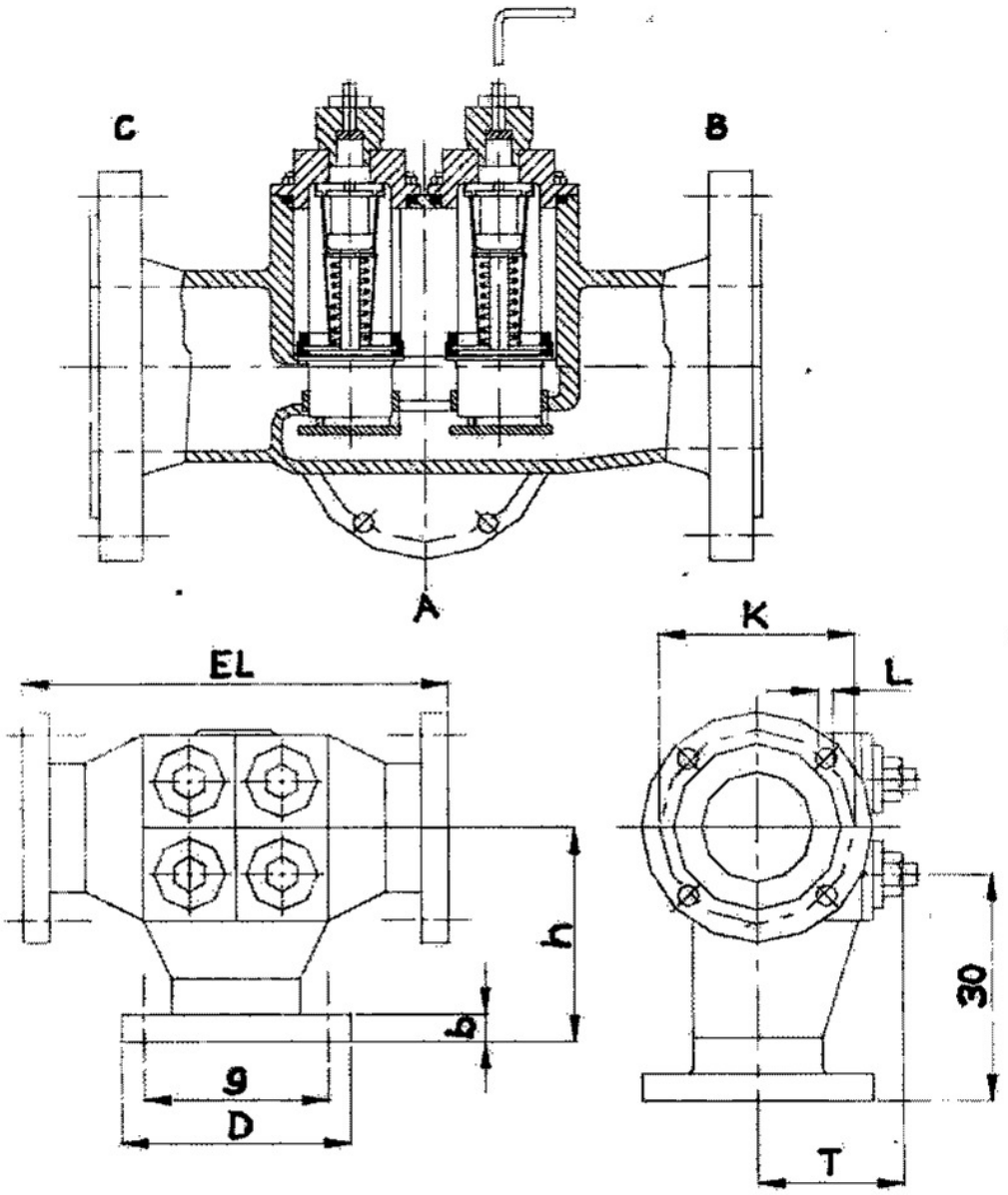

Fig. 2

As Mixing Valve: Path A – for the seal oil outlet
Path B – from the bye-pass line
Path C – from the outlet of seal oil cooler

For dimensions, refer Table-2

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सामग्री सूची संख्या INVENTORY NO. P-6347	Rev. 02		निर्माणकर्ता Worked by	KN	26/8/06
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