



An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

<u>TITLE</u> Supply of Start up control valves for Yadadri 5x800 MW project.	Phone: +91 431 2576186/ 7598195371 Fax : +91 431 252 0719 Email : sudheer@bhel.in rksamy@bhel.in
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Reference Enquiry Number: 1801900361/14	Enquiry Date: 25.04.2019	Due date for submission of quotation: 22.05.2019
You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order		

CORRIGENDUM - 1

Details of Corrigendum
Corrigendum – 1 1. Inlet temperature of Hot start -140 bar condition for MEFCV is revised to 336.6°C . Revised data sheet is attached.

SUDHEER APPIRE DDYGARI
Senior Engineer / Purchase
Materials Management / BOI
BHEL, TRICHY - 620 014



SPECIFICATION FOR STARTUP CONTROL VALVES

SPECIFICATION NO.: BM/SCV:001/ANNX-I

SECTION: Boiler Mountings/PE (FB)

REV. NO.: 01

DATE: 15.05.19

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ANNEXURE-I

Customer No: 1823-1827

Tag Nos.: HAG15AA301, HAG15AA302

Qty.: 2 Nos. / BOILER

SEPARATOR LEVEL CONTROL (HWL-1 & HWL-2) VALVE DATA SHEET

PART – A

(TO BE FILLED UP BY PURCHASER)

PART – B

(TO BE FILLED UP BY
BIDDER)

GENERAL	PROJECT SERVICE LOCATION DUTY PIPE SIZE (inlet / outlet) PIPE MATERIAL (inlet / outlet) MEDIUM	5X800MW YADADRI TPS HWL-1 & HWL-2 OUTDOOR MODULATING D508 X 70 / D508 X 70 SA106 Gr.C/ SA106 Gr.C FEED WATER	
	MODEL No. TYPE OF BODY: GUIDING: No. OF PORTS BODY SIZE: PORT SIZE: DESIGN CV BODY RATING (ASME) END CONNECTION BODY MATERIAL PACKING MATERIAL BONNET TYPE TRIM FORM TRIM MATERIAL: SEAT / PLUG : CAGE / STEM BALANCED / UNBALANCED FLOW VALVE OUTLET VELOCITY REQUIRED LEAKAGE CLASS NOISE LEVEL (dBA) VALVE LIFT mm ANTI FLASHING TRIM	Z type Inlet: Butt Welded; Style-P, d1 =385.5 mm Outlet: Butt Welded; Style-P, d1=384.5 mm F11 GRAFOIL/GRAPHITE FLOW TO CLOSE < 50% Sonic Velocity V LESS THAN 85 dBA	
ELECTRO HYDRAULIC ACTUATOR	MODEL No. & SIZE CLOSE AT: OPEN AT (kg/cm ² (g)) SHUT OFF DIFFERENTIAL STEM ORIENTATION MANUAL OVERRIDE TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN, TRIP VALVE POSN. ON SIGNAL (4-20mA) FAILURE VALVE POSN. ON FLUID SUPPLY FAILURE	YES <12 Secs / <12 Secs / < 3 secs FAIL TO CLOSE FAIL TO CLOSE	
PERFORMANCE OF VALVE	LINEARITY HYSTERESIS SENSITIVITY ACCURACY (OVERALL)	± 2% ± 1% ± 0.5% ± 2%	

SERVICE CONDITIONS

Sl. No.	LOAD	No of valves Operating	FLOW/ Valve kg/s	INLET PR. kg/cm ² (g)	OUTLET PR. kg/cm ² (g)	INLET TEMP (°C)	Sp. Gravity	Calc. Cv	Valve Lift %	Valve outlet velocity	Noise Level dBA
01.	Cold Start Min Water flow	1	34.5	5.3	0.0	37.8					
02.	Cold Start Min OT flow	1	255.1	4.9	0.0	37.8					
03.	Cold Start Swell flow*	2	196.5	4.2	0.0	100					
04.	Hot Start 140 bar Min OT flow*	1	255.1	144.5	0.0	336.6					
05.	Hot Start 140 bar Swell flow*	2	196.5	143.6	0.0	336.6					
06.	Hot Start 160 bar Min Water flow*	1	34.5	165.3	0.0	347.3					

*- 2 Phase flow at valve outlet



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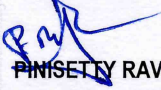
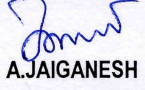
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ACTUATOR SIZING PRESSURE : 274.6 kg/cm² (g)
BODY DESIGN: PRESSURE / TEMPERATURE : 298.1 kg/cm² (g) / 374°C
TEST PRESSURE : 2 x Design Pressure
IBR FORM – III C : REQUIRED
TOTAL WEIGHT (VALVE+ ACTUATOR+ ACCESSORIES) : kg

Valves should be directly weldable to connecting pipe without the use of reducers. ONLY GLOBE "Z" VALVES ACCEPTABLE.

PART – A (TO BE FILLED UP BY PURCHASER)			PART – B (TO BE FILLED UP BY BIDDER)
ACCESSORIES	ELECTRO HYDRAULIC POSITIONER POSITION LIMIT SWITCH POSITION TRANSMITTER SOLENOID VALVE E/H CONVERTER JUNCTION BOX HAND PUMP LOCAL POSITION INDICATOR HYDRAULIC POWER UNIT(COMMON FOR HWL AND MEFCV) ELECTRONIC CONTROL UNIT (COMMON FOR HWL AND MEFCV)	REQUIRED REQUIRED REQUIRED NOT REQUIRED REQUIRED REQUIRED REQUIRED REQUIRED REQUIRED REQUIRED REQUIRED	
ELECTRO HYDRAULIC POSITIONER	MANUFACTURER & MODEL No. ENCLOSURE CLASS INPUT SIGNAL OUTPUT SIGNAL INCREASE IN SIGNAL	IP-65 4 - 20 mA TO SUIT ACTUATOR TO OPEN / TO CLOSE	
LIMIT SWITCH	MANUFACTURER & MODEL No. OPEN: INT: CLOSE CONTACT TYPE RATING (AC/DC) ENCLOSURE CLASS	1 No. FOR OPEN & 1 No. FOR CLOSE DPDT 2 NO + 2 NC 5A 240V, AC and 0.2A, 220V, DC IP65 / NEMA 4	
POSITION TRANSMITTER	MANUFACTURER & MODEL No. TYPE SUPPLY OUTPUT RATING ACCURACY ENCLOSURE CLASS	LVDT 2 WIRE TYPE 24V DC 4 – 20 mA / 0-100 Ohms +/- 1% FS IP65 / NEMA 4	
HAND WHEEL	ORIENTATION	SIDE MOUNTED	
JUNCTION BOX	No. OF WAYS SIZE CABLE GLANDS: (SIZE / QTY) ENCLOSURE CLASS	THIRTY SIX REQUIRED REQUIRED IP65 / NEMA 4	
E/H CONVERTER	INPUT SIGNAL : POWER SUPPLY SPLIT RANGE ENCLOSURE CLASS	4 – 20mA, DC / 24V, DC YES / NO // YES / NO IP65 / NEMA 4	
SIGN. : NAME : DATE :	PREPARED BY  P. M. RAVIRAJA	CHECKED BY  A. JAIGANESH	APPROVED BY  V. GUNASEKARAN VENDOR SEAL SIGN.: NAME: DATE:



SPECIFICATION FOR STARTUP CONTROL VALVES

SPECIFICATION NO.: BM/SCV:001/ANNX-I

SECTION: Boiler Mountings/PE (FB)

REV. NO.: 01

DATE: 15.05.19

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Customer No: 1823-1827

Tag Nos.: HAG31AA301

Qty.: 1 No. / BOILER

MINIMUM ECONOMISER FLOW CONTROL VALVE DATA SHEET

PART – A

(TO BE FILLED UP BY PURCHASER)

PART – B

(TO BE FILLED UP BY
BIDDER)

GENERAL	PROJECT SERVICE LOCATION DUTY PIPE SIZE (inlet / outlet) PIPE MATERIAL (inlet / outlet) MEDIUM	5 X 800MW YADADRI TPS MEFCV OUTDOOR MODULATING D323.9 x 45 / D323.9 x 45 SA106 Gr.C/ SA106 Gr.C FEED WATER	
BODY	MODEL No. TYPE OF BODY: GUIDING: No. OF PORTS BODY SIZE: PORT SIZE: DESIGN CV BODY RATING (ASME) END CONNECTION & RATING (ASME) BODY MATERIAL PACKING MATERIAL BONNET TYPE TRIM FORM TRIM MATERIAL: SEAT / PLUG : CAGE / STEM BALANCED / UNBALANCED FLOW VALVE OUTLET VELOCITY REQUIRED LEAKAGE CLASS NOISE LEVEL (dBA) VALVE LIFT mm ANTI-CAVITATION TRIM	"Z" BUTT WELDED; STYLE-P, d1 = 245.15mm SA105 GRAFOIL FLOW TO CLOSE < 8 m/s V LESS THAN 85 dBA	
ELECTRO HYDRAULIC ACTUATOR	MODEL No. & SIZE CLOSE AT: OPEN AT (Kg/cm ² (g)) SHUT OFF DIFFERENTIAL STEM ORIENTATION MANUAL OVERRIDE TRAVEL TIME FOR OPEN TO CLOSE, CLOSE TO OPEN VALVE POSN. ON SIGNAL (4-20mA) FAILURE VALVE POSN. ON SUPPLY FAILURE	YES <12 Secs / <12 Secs STAY PUT STAY PUT	
PERFORMANCE OF VALVE	LINEARITY HYSTERESIS SENSITIVITY ACCURACY (OVERALL)	± 2% ± 1% ± 0.5% ± 2%	

SERVICE CONDITIONS

Sl. No.	LOAD	FLOW kg/s	INLET PR. kg/cm ² (g)	OUTLET PR. kg/cm ² (g)	Pr. Drop kg/cm ²	INLET TEMP (°C)	Spec. gravity	Calc. Cv	Valve Lift %	Valve outlet velocity	Noise Level dBA
01.	Ambient	255.1	23.8	10.4	13.4	37.8					
02.	Cold Start -80 bar	255.1	95.9	89.4	6.5	295					
03.	Hot Start -140 bar	255.1	153.3	150.3	3	336.6#					
04.	Hot Start -160 bar	255.1	172.4	170.7	1.7	347.3					

#Rev -01: Inlet temperature of Hot start -140 bar condition is revised to 336.6 °C.



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ACTUATOR SIZING PRESSURE : 323.5 kg/cm² (g)
 BODY DESIGN: PRESSURE / TEMPERATURE : 323.5 kg/cm² (g) / 348°C
 TEST PRESSURE : 2 x Design Pressure
 IBR FORM – III C : REQUIRED
 TOTAL WEIGHT (VALVE+ ACTUATOR+ ACCESSORIES) : kg.

Valves should be directly weldable to connecting pipe without the use of reducers. ONLY GLOBE “Z” VALVES ACCEPTABLE.

PART – A (TO BE FILLED UP BY PURCHASER)			PART – B (TO BE FILLED UP BY BIDDER)	
ACCESSORIES	ELECTRO HYDRAULIC POSITIONER POSITION LIMIT SWITCH POSITION TRANSMITTER SOLENOID VALVE E/H CONVERTER JUNCTION BOX HAND WHEEL (SIDE MOUNTED) LOCAL POSITION INDICATOR HYDRAULIC POWER UNIT(COMMON FOR HWL AND MEFCV) ELECTRONIC CONTROL UNIT (COMMON FOR HWL AND MEFCV)	REQUIRED REQUIRED REQUIRED NOT REQUIRED REQUIRED REQUIRED REQUIRED REQUIRED REQUIRED REQUIRED		
ELECTRO HYDRAULIC POSITIONER	MANUFACTURER & MODEL No. ENCLOSURE CLASS INPUT SIGNAL OUTPUT SIGNAL INCREASE IN SIGNAL	IP-65 4 - 20 mA TO SUIT ACTUATOR TO OPEN / TO CLOSE		
LIMIT SWITCH	MANUFACTURER & MODEL No. OPEN: INT: CLOSE CONTACT TYPE RATING (AC/DC) ENCLOSURE CLASS	1 No. FOR OPEN & 1 No. FOR CLOSE DPDT 2 NO + 2 NC 5A-240V, AC and 0.2A, 220V, DC IP65 / NEMA 4		
POSITION TRANSMITTER	MANUFACTURER & MODEL No. TYPE SUPPLY OUTPUT RATING ACCURACY ENCLOSURE CLASS	LVDT 2 WIRE TYPE 24V DC 4 – 20 mA / 0-100 Ohms +/- 1% FS IP65 / NEMA 4		
HAND WHEEL	ORIENTATION	SIDE MOUNTED		
JUNCTION BOX	No. OF WAYS SIZE CABLE GLANDS: (SIZE / QTY) ENCLOSURE CLASS	THIRTY SIX REQUIRED REQUIRED IP65 / NEMA 4		
E/H CONVERTER	INPUT SIGNAL : POWER SUPPLY SPLIT RANGE ENCLOSURE CLASS	4 – 20mA, DC / 24V, DC YES / NO // YES / NO IP65 / NEMA 4		
SIGN. : NAME : DATE :	PREPARED BY P. NISETTY RAVIRAJA	CHECKED BY A. JAIGANESH	APPROVED BY V. GUNASEKARAN	VENDOR SEAL SIGN.: NAME: DATE: