

BHEL Hyderabad	FIP for RFCL, Ramagundam	Dt: 3.08.17
PE&SD	NIT no in www.bhel.com :NIT_33293 Tender id in mjunction (eps) : T7I1Q06750	Rev 00 Page 1 of 1

Corrigendum 4

Name of the Work: **Field Instrumentation Package for RFCL 1x32.5 MW Co-gen Project, Ramagundam**

Tender No.: **T7I1Q06750**/NIT_33293 published on 20.06.2017

With reference to above tender, following corrigendum –2 is released.

Sl. N o.	File No.	Document No./Title/ Reference	As Published	Should be read as
1.	File 1	tech spec PY56217	Amendment to tech spec PY 56217 Rev 02:: spec PY 56217 Rev 02:: Price format : BOM Annexure -[I] of PY 56217 Rev 01	Revised Price format : Revised BOM Annexure -[I] of PY 56217 Rev 02 :: Field instruments BOM is revised and it is reflected in R02 of <i>Annexure -[I] of PY56217 which is attached here.</i>
2	2	Extension of due date for offer submission	02.08.2017	Due date for offer submission extended up to 10.08.2017

Bidders are requested to submit a copy of this corrigendum(as part of technical bid) duly signed by the authorized signatory & stamped with official seal as a token of Bidder's unqualified acceptance to this corrigendum.

Sd/-
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PE & SD, BHEL, R.C. PURAM
HYDERABAD- 502 032
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Amendment-2 (No. PY 56217/T-2, Rev.00)

to

Tech. Spec PY56217 Rev 00

Enquiry No: T7I1Q06750, [FIELD INSTRUMENT PKG \[BOP + UB + HRSG\]](#), RFCL Ramagundam Project

S.No	Reference	Subject	Addition/Deletion/Modification
1	Annexure -[I] of PY 56217	FIP BOM	<u>Modification:</u> Field instruments BOM is revised and it is reflected in R02 of <i>Annexure-[I] of PY56217 which is attached here.</i>

Note: All other requirements of enquiry specifications remain unchanged.

BILL OF MATERIAL & PRICE FORMAT [for Main Supply + Mandatory Spares]**FIELD INSTRUMENT PACKAGE [BOP + UB + HRSG]****STEAM AND POWER GENERATION PACKAGE, RFCL**

ESP-001-2A Rev.00		PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	Std. / Doc. Number		
			Annexure -[I] of PY 56217		
			Rev. No.	02	
TABLE -1 : BOM for Material Code - PY9756217006 [MAIN SUPPLY]					
S. No	Type of instrument	Main Supply Quantity (No's) [I]	Unit Rate [II]	TOTAL PRICE [I*II]	REMARKS
1	Pressure Transmitter with integral manifold [upto 100 kg/cm2(g)]	85			Note-5
2	Pressure Transmitter with integral manifold [Above 100 kg/cm2(g)]	42			Note-5
3	Pressure Transmitter with Remote seal [upto 100 kg/cm2(g)]	7			Note-5
4	Differential Pressure Transmitter with integral manifold	72			Note-5
5a	Differential Pressure Transmitter Remote seal Type (Remote seal required only for HP)	5			Note-5
5b	Differential Pressure Transmitter Remote seal Type (Remote seal required for HP & LP)	13			Note-5
6	Temperature Transmitter	175			Note-5
7a	Level Gauge [Reflex type] - Side mounted Process connection : 1" 600RF (0-350 mm)	1			
7b	Level Gauge [Reflex type] - Side mounted Process connection : 1" 300RF (0-350 mm)	4			
8	Level Gauge [Reflex type] - Side mounted Process connection : 1" 300RF (0-800 mm)	1			
9	Level Gauge [Reflex type] - Side mounted Process connection : 1" 300RF (0-1500 mm)	8			
10	Level Gauge [Reflex type] - Side mounted Process connection : 1" 300RF (0-1000 mm)	2			
11a	Pressure Gauge (Bourdon Tube) [upto 60 kg/cm2(g)] [Dial Size : 150 mm]	126			
11b	Pressure Gauge (Bourdon Tube) [Range: 0 -250 kg/cm2(g)] [Dial Size : 250 mm]	3			
12	Pressure Gauge (Bourdon Tube) [Above 60 kg/cm2(g)]	25			
13	Pressure Gauge (Diaphragm seal) [upto 60 kg/cm2(g)]	11			
14	Diff. Pressure Gauge (Bourdon Tube)	10			
15	Diff. Pressure Gauge (Remote Seal)	5			
16a	TG (Bimetallic) With Thermowell [TG range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 300 RF, U≤400mm]	42			
16b	TG (Bimetallic) With Thermowell [TG range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 300 RF, U = 900 mm]	2			Thermowell construction as per attached Drawing -1 enclosed with this amendment

BILL OF MATERIAL & PRICE FORMAT [for Main Supply + Mandatory Spares]**FIELD INSTRUMENT PACKAGE [BOP + UB + HRSG]****STEAM AND POWER GENERATION PACKAGE, RFCL**

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S. No	Type of instrument	Main Supply Quantity (No's) [I]	Unit Rate [II]	TOTAL PRICE [I*II]	REMARKS
17	TG (Bimetallic) With Thermowell [TG range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 600 RF, U≤400mm]	5			
18a	TG (Bimetallic) With Thermowell [TG range upto 600 Deg C; Thermowell & flange: SS316, 2" 1500 RJ, U≤400mm]	3			
18b	TG (Bimetallic) With Thermowell [TG range upto 600 Deg C; Thermowell & flange: SS316, 2" 1500 RJ, U>500mm]	5			
19	TG (Gas filled) With Thermowell [TG range upto 800 Deg C; Thermowell & flange: A 335 P91, 2" 2500 RJ, U≤400mm]	4			
20a	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 300 RF; U≤400mm]	32			
20b	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 300 RF; U = 900 mm]	2			Thermowell construction as per attached <u>Drawing -1</u> enclosed with this amendment
20c	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 300 RF; U = 1120mm with adjustable flange]	4			Construction as per attached <u>Drawing -2</u> enclosed with this amendment
20d	R - type Thermocouple With Thermowell and suitable branch cable of 15 meters [TC range upto 1400 Deg C; Thermowell & flange: INCONEL, 1.5" 300 RF; U = 1120mm with adjustable flange]	4			1) All other technical specifications as per sheet 18 of PY56217. 2) Construction as per attached <u>Drawing -2</u> enclosed with this amendment
21	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 600 RF; U≤400mm]	7			
22a	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 2" 1500 RJ; U≤400mm]	5			
22b	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 2" 1500 RJ; U>500mm]	5			
23	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: A335 P11, 2" 1500 RJ; U≤400mm]	1			
24	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: P22, 2" 2500 RJ; U≤400mm]	1			

BILL OF MATERIAL & PRICE FORMAT [for Main Supply + Mandatory Spares]**FIELD INSTRUMENT PACKAGE [BOP + UB + HRSG]****STEAM AND POWER GENERATION PACKAGE, RFCL**

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			Annexure -[I] of PY 56217		
			Rev. No.	02	

TABLE -1 : BOM for Material Code - PY9756217006 [MAIN SUPPLY]

S. No	Type of instrument	Main Supply Quantity (No's) [I]	Unit Rate [II]	TOTAL PRICE [I*II]	REMARKS
25	K - type Thermocouple With Thermowell [TC range upto 800 Deg C; Thermowell & flange: P91, 2" 2500 RJ; U≤400mm]	15			
26	Thermowell [Thermowell & flange: SS316, U-280, 2" 1500 RJ]	0			
27	Thermowell [Thermowell & flange: P91, U-320, 2" 2500 RJ]	0			
28	FRP Canopies for Transmitters	200			
29	FRP Canopies for JBs	145			
30	FRP Canopies for Positioners	43			
31	Magnetic Flow Meter	2			
32	Universal Hand held calibrator with charger & common for all SMART instruments	4			
MAIN SUPPLY Total prices (Rs.) ::					

BILL OF MATERIAL & PRICE FORMAT [for Main Supply + Mandatory Spares]**FIELD INSTRUMENT PACKAGE [BOP + UB + HRS]****STEAM AND POWER GENERATION PACKAGE, RFCL**

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			Annexure -[I] of PY 56217	
			Rev. No.	02

TABLE -2 : BOM for Material Code - PY9756217032 [Mandatory Spares]

S. No	Type of instrument	Mandatory Spares Quantity (No's) [I]	Unit Rate [II]	TOTAL PRICE [I*II]	REMARKS
1	Pressure Transmitter with integral manifold [upto 100 kg/cm2(g)]	8			Note-5
2	Pressure Transmitter with integral manifold [Above 100 kg/cm2(g)]	4			Note-5
3	Pressure Transmitter with Remote seal [upto 100 kg/cm2(g)]	1			Note-5
4	Differential Pressure Transmitter with integral manifold	7			Note-5
5a	Differential Pressure Transmitter Remote seal Type (Remote seal required only for HP)	1			Note-5
5b	Differential Pressure Transmitter Remote seal Type (Remote seal required for HP & LP)	2			Note-5
6	Temperature Transmitter	17			Note-5
7a	Level Gauge [Reflex type] - Side mounted Process connection : 1" 600RF (0-350 mm)	1			
7b	Level Gauge [Reflex type] - Side mounted Process connection : 1" 300RF (0-350 mm)	1			
8	Level Gauge [Reflex type] - Side mounted Process connection : 1" 300RF (0-800 mm)	1			
9	Level Gauge [Reflex type] - Side mounted Process connection : 1" 300RF (0-1500 mm)	1			
10	Level Gauge [Reflex type] - Side mounted Process connection : 1" 300RF (0-1000 mm)	1			
11a	Pressure Gauge (Bourdon Tube) [upto 60 kg/cm2(g)] [Dial Size : 150 mm]	12			
11b	Pressure Gauge (Bourdon Tube) [Range: 0 -250 kg/cm2(g)] [Dial Size : 250 mm]	1			
12	Pressure Gauge (Bourdon Tube) [Above 60 kg/cm2(g)]	3			
13	Pressure Gauge (Diaphragm seal) [upto 60 kg/cm2(g)]	1			
14	Diff. Pressure Gauge (Bourdon Tube)	1			
15	Diff. Pressure Gauge (Remote Seal)	1			
16a	TG (Bimetallic) With Thermowell [TG range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 300 RF, U≤400mm]	4			
16b	TG (Bimetallic) With Thermowell [TG range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 300 RF, U = 900 mm]	1			Thermowell construction as per attached Drawing -1 enclosed with this amendment

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S. No	Type of instrument	Mandatory Spares Quantity (No's) [I]	Unit Rate [II]	TOTAL PRICE [I*II]	REMARKS
17	TG (Bimetallic) With Thermowell [TG range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 600 RF, U≤400mm]	1			
18a	TG (Bimetallic) With Thermowell [TG range upto 600 Deg C; Thermowell & flange: SS316, 2" 1500 RJ, U≤400mm]	1			
18b	TG (Bimetallic) With Thermowell [TG range upto 600 Deg C; Thermowell & flange: SS316, 2" 1500 RJ, U>500mm]	1			
19	TG (Gas filled) With Thermowell [TG range upto 800 Deg C; Thermowell & flange: A 335 P91, 2" 2500 RJ, U≤400mm]	1			
20a	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 300 RF; U≤400mm]	3			
20b	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 300 RF; U = 900 mm]	1			Thermowell construction as per attached <u>Drawing -1</u> enclosed with this amendment
20c	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 300 RF; U = 1120mm with adjustable flange]	1			Construction as per attached <u>Drawing -2</u> enclosed with this amendment
20d	R - type Thermocouple With Thermowell and suitable branch cable of 10 meters [TC range upto 1400 Deg C; Thermowell & flange: INCONEL, 1.5" 300 RF; U = 1120mm with adjustable flange]	1			1) All other technical specifications as per sheet 18 of PY56217. 2) Construction as per attached <u>Drawing -2</u> enclosed with this amendment
21	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 1.5" 600 RF; U≤400mm]	1			
22a	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 2" 1500 RJ; U≤400mm]	1			
22b	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: SS316, 2" 1500 RJ; U>500mm]	1			
23	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: A335 P11, 2" 1500 RJ; U≤400mm]	1			
24	K - type Thermocouple With Thermowell [TC range upto 600 Deg C; Thermowell & flange: P22, 2" 2500 RJ; U≤400mm]	1			

BILL OF MATERIAL & PRICE FORMAT [for Main Supply + Mandatory Spares]**FIELD INSTRUMENT PACKAGE [BOP + UB + HRSG]****STEAM AND POWER GENERATION PACKAGE, RFCL**

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S. No	Type of instrument	Mandatory Spares Quantity (No's) [I]	Unit Rate [II]	TOTAL PRICE [I*II]	REMARKS
25	K - type Thermocouple With Thermowell [TC range upto 800 Deg C; Thermowell & flange: P91, 2" 2500 RJ; U≤400mm]	2			
26	Thermowell [Thermowell & flange: SS316, U-280, 2" 1500 RJ]	0			
27	Thermowell [Thermowell & flange: P91, U-320, 2" 2500 RJ]	0			
MANDATORY SPARES Total prices (Rs.) ::					

NOTES ::

- 1 This document details the price schedule format for the enquiry. No other format will be entertained. Applicable taxes and duties shall be indicated separately in commercial offer.
- 2 Duly signed & stamped un-priced price schedule format shall be submitted by vendor in the technical offer as a token of concurrence that price schedule would be submitted in this format. Any tampering / modification / additions, etc. are NOT allowed and not considered binding and is liable for rejection of the offer.
- 3 Bidders shall be evaluated on overall L1 basis.
- 4 For addition/reduction of quantity, unit rate quoted in the present offer shall be considered during ordering and shall be valid up to execution of the contract to the extent of +10% and -30% of order Value. These would include the cost up to engineering, installation of the item, wiring up in the panel and seamless integration with main system at works/site without any cost implications. All accessories required for this purpose shall be included in the price quoted.
- 5 20% of total transmitters shall be provided with SIL-2 certification.

Drawing -1 : for Thermowell with U-length of 900 mm

BHARAT HEAVY PLATE & VESSELS LTD.

Specification for Temperature Elements and Test Thermowells

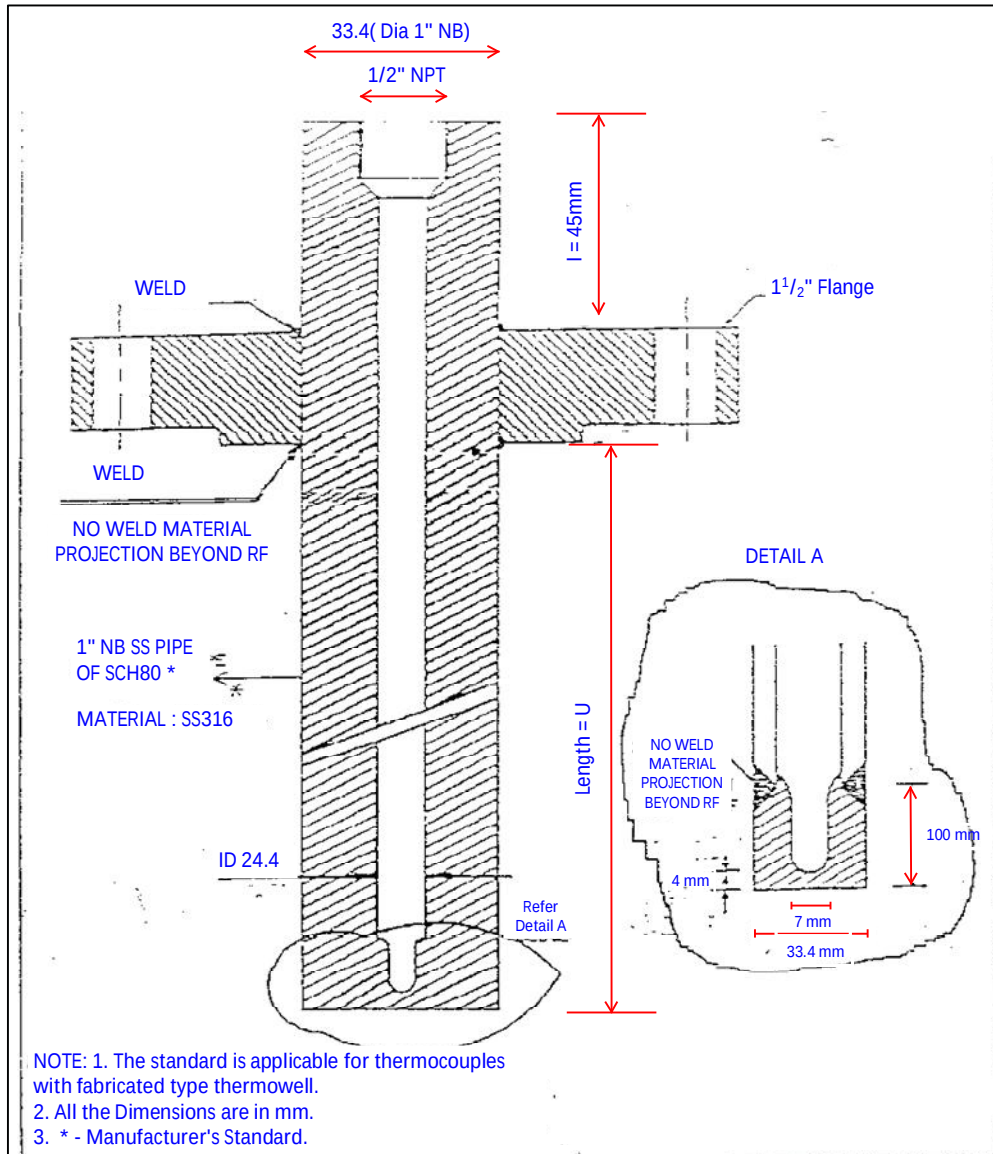
PLANT : MRPL-HRSG behind Fr5 GTG

INST-7346-48-S-006

Rev.No. 2

Sheet No.8 of 9

Temperature Elements with Fabricated type thermowell(NOT APPLICABLE)

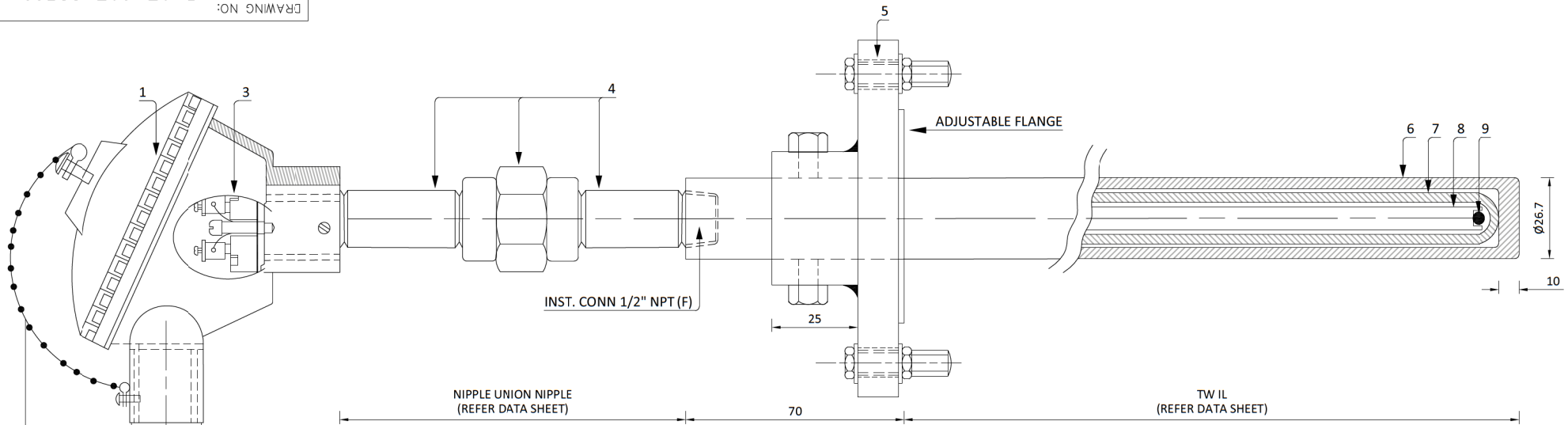


Vibration analysis of all thermowells as per ASME PTC 19.3 codes

Drawing -2 : for Thermowell with U-length of 1120 mm

09377-160-16-3

DRAWING NO:



SL. No.	DESCRIPTION	M O C
1.	CONNECTION HEAD TYPE, IP-65	DIE CAST ALUMINIUM
2.	PLUG & SOCKET WITH 6 PIN CONNECTOR	ALUMINIUM
3.	CERAMIC BLOCK WITH TERMINAL (SPRING LOADED)	BRASS NI-PLATED
4.	N/U/N 1/2" NB SCH. 80, 1/2" NPT(M)	SS-316
5.	1.5" ANSI B 16.5 150#RF ADJ. FLANGE	C.S. WITH Gd PLATED FASTENERS AND GASKETS
	NUTS, BOLTS & GASKETS	G.I
6.	OUTER TUBE OD X ID : 26.7 X 16 mm	COMPRESSED FIBER TYPE-STYLE-20
7.	INNER TUBE OD X ID : 15 X 10 mm	INCONEL-600
8.	INSULATING TUBE 4-HOLE Ø8.5 mm WITH INCONEL REINFORCEMENT TUBE	CERAMIC KER - 710
9.	ELEMENT PT-RH 13% PT 'R' TYPE, DUPLEX, WIRE SIZE : 24AWG	PT - RH 13% PT

As per FIP BOM

As per FIP BOM & data sheet

REV	DATE	ALTERED : 200317
01	200317	CHD./APPD. :
ZONE	GENERAL REVISION	

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TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

STANDARD



Bharat Heavy Electricals Ltd
UNIT: HIGH PRESSURE BOILER PLANT
TIRUCHIRAPPALLI - 620014

DEPT. : C & I



ALL
DIMENSIONS
ARE IN MM

SCALE
NTS

WEIGHT (Kg)

REF TO ASSY / OLD DWG

ITEM
NO

No OF
ITEMS

TITLE
R-TYPE DUPLEX T/C WITH ADJUSTABLE
FLANGED INCONEL ~~600~~ THERMOWELL

CARD
CODE

DRAWING NO :

REV

Sheet 06 Of 10

U 01

3-97-097-22360

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