



An ISO 9001
Company

Bharat Heavy Electricals Limited
(High Pressure Boiler Plant)
Tiruchirappalli-620 014, Tamil Nadu, India
Dept: MATERIALS MANAGEMENT/BOI

Annexure – A- Terms and Conditions

ACCEPTANCE OF TECHNO - COMMERCIAL TERMS AND CONDITIONS BY THE BIDDERS

Description of the Equipment:		Weighing Module (150Lbs)
Projects		
Sl. No.	Terms and conditions	Vendor's confirmation
1 (a)	Technical: Supply of Weighing Module shall be as per Technical Spec for Weighing Module of BHEL FEED Controls (TDC: TCI:345: REV00) attached with the enquiry.	
1 (b)	Inspection by BHEL-QC or BHEL's designated third party inspection agency.	
2	Firm Price: The quoted / finalised rates shall be firm till execution of the supplies. Offer with PVC clause will not be considered.	
3 (a)	Delivery term (Indigenous): The quote shall be on FOR BHEL Trichy Stores basis as indicated below, inclusive of Packing, forwarding & Freight to your account. Transit Insurance in BHEL scope.	
4(a)	Delivery term (Imports): CFR Chennai port Delivery Within 8 weeks from the date of PO/ Despatch clearance for each project. Clearance may be given all together or separately for individual project. Liquidated damages shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value. The quote shall be on CFR Chennai Port basis with freight break up details and Place of delivery –Chennai PORT OF LOADING SHOULD BE INDICATED WITHOUT FAIL. PORT OF DISCHARGE should be CHENNAI . Offer will be evaluated on total cost to BHEL upto BHEL/Trichy stores basis.	
4(b)	Delivery term (Imports): General Terms & Conditions-I Bidders should submit their offer for CFR / Chennai Port basis with freight break up details and Place of delivery. No other charges other than the quoted Freight rate will be paid by BHEL excepting applicable Terminal Handling Charges, Container cleaning Charges, DO charges to Shipping Liner at Discharge Port. For CFR terms, moved through CONTAINERS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that	

	the freight charges quoted is on LILO (LINER IN LINER OUT) basis including extra charges, if any, like Container Imbalance Charges, Trade Imbalance charges or any other charges payable to the Liner. 14 FREE DAYS FOR Container detention shall be provided. If any deviation is taken by Tenderer, a loading of 22% on the freight rate per MT shall be considered by BHEL for arriving at the Total Landed Cost. In case of shipment through Containers on CFR basis, the BL should bear the endorsement that “14 free days for Container Detention is applicable”. For CFR terms, moved through BREAK BULK BASIS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis. Bidder to Indicate Port of Loading without fail.	
4(c)	Custom Duty : BCD @ 10% .	
4 (d)	Delivery Period : 8 weeks from PO .	
5 (a)	Payment terms (Indigenous): 100% direct payment after 45 days from the date of dispatch against site acknowledgement LR copy. Payment will be made against 10% PBG valid for 18 months from the date of despatch. Payment terms (Imports): BHEL Payment term is 100% payment on CAD basis after 45 days from the date of receipt of documents, specified in PO, at BHEL bank. Payment will be made against 10% PBG valid for 18 months from date of despatch. <u>General Note: -</u> The bidder in the event of an order, should furnish a Bank Guarantee from an Indian Bank approved by BHEL, at no extra cost in a format prescribed by BHEL, along with the order, for an amount equivalent to 10% (Ten percent) of the value of the contract. The PBG shall be valid for a period of 18 months from the date of despatch to BHEL, Tiruchirappalli, with a claim period of two months.	
5 (b)	Loading Criteria (Indigenous) Payment Terms: Any deviation in the BHEL payment terms will attract loading as per below. “Base rate of SBI (As applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders”. If the Payment term is 90% direct payment after 45 days from the date of dispatch against submission of dispatch documents and balance 10% against site acknowledgement. For this option a loading of 2% on the 90% of the offered materials value shall be made. Payment through bank is not acceptable. If still demanded by vendor loading will be 5% on the offered material value.	

	LC will not be operated for Indigenous vendors. Offers with payment terms as LC from indigenous vendors will be rejected.	
5(c)	Loading Criteria (Imports) : Any deviation in the above payment term (as per 5(a)) will attract loading as mentioned below. “Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders. • In the case of Usance LCs the loading will be considered @ 1.5% on the offered Value. • For LC at sight the loading will be considered @ 3.5% on the offered Value. Normally CAD at sight and Confirmed LCs are liable for rejection.	
5(d)	Performance Bank Guarantee (PBG) : The bidder in the event of an order, should furnish a Bank Guarantee from an Indian Bank approved by BHEL, at no extra cost in a format prescribed by BHEL, along with the order, for an amount equivalent to 10% (Ten percent) of the value of the contract. The PBG shall be valid for a period of 18 months from the date of despatch or 12 months from the date of receipt / acceptance / commissioning of equipment at BHEL, Tiruchirapalli whichever is more, with a claim period of two months. <u>If PBG is issued by foreign counter part of the BHEL consortium Indian Bank, in case of claim against the PBG, it will be lodge in any one of the Indian counters of the Foreign Bank which issued the PBG.</u>	
6 (a)	Liquidated damages: Delivery of the goods specified in the purchase order should be made within the time prescribed. Failure to dispatch the materials in the time as per the delivery quoted in our Purchase Order would make the supplier liable to an un-conditional LD at the rate of 0.5% of the un-delivered value per week of the delay or part thereof subject to a maximum of 10% of the total order value.	
6 (b)	Loading Criteria: LD / Penalty: Any deviation on BHEL LD / Penalty clause, loading (Basic material Value) will be applied to the extent to which it is not agreed by the bidder. If vendor agree for LD clause for Un-delivered portion, than loading will be 10% on basis material cost.	
7 (a)	Guarantee / Warranty Period: Guarantee clause 18 months from the date of supply or 12 months from the date of actual put in use, whichever is earlier.	
7 (b)	Loading Criteria: Guarantee / Warranty Period: No Deviation is permitted. If still	

	vendor offered any deviation on the Guarantee / warranty period, it may lead to rejection of offer.	
8 (a)	Taxes & Duties: All Taxes, Duties, Service Taxes etc. payable as extra to the quoted price should be specifically stated in offers along with GST No / Tariff No. etc., failing which the purchaser will not be liable for payment of such Taxes and Duties. Our TIN No. 33243560005, TNGST No. 3560005, CST. No. 239383 Dt. 11-06-1991 & BHEL ECC No. AAACB4146PXM012, Assessment circle Tiruverambur.	
8 (b)	Kindly indicate the GST No of your Firm	
8 (c)	Kindly Indicate the HSN Code for enquiry serial no's	
8 (d)	Please indicate the applicable GST %	
8 (e)	Kindly Note the BHEL GST NO : 33AAACB4146P2ZL	
8 (f)	Document Submission: <u>Along with the offer:</u> 1. Filled in Commercial terms and conditions to be submitted. 2. Unpriced offer shall be submitted along with details of all line items, filled data sheets, etc. 3. Any query during enquiry stage shall be replied within three days failing which offer may be rejected as non-responsive. <u>After Purchase Order:</u> 1. Technical datasheets & QP to be submitted for BHEL approval within 10 days from the PO date. 2. If type tests has to be conducted by vendor as per specification/QP requirements, then the same has to be conducted (at NABL accredited facility, witnessed by BHEL inspection agency) and report to be submitted for BHEL / Customer for approval. 3. Any comment in the documents by BHEL to be replied / revised (as applicable) within three days. 4. Any document submitted with deviations from enquiry/PO requirements will not be treated as document submission for LD calculation purposes.	
9	Evaluation method 2 No's samples of offered weighing modules ("S" tension type loadcell with assembly) on returnable basis will be obtained from the bidders for integrated testing with BHEL's gravimetric feeder evaluation. Note : -All costs associated with sending the samples to BHEL works and taking back will be in vendor account only(Prior intimation will be given to vendor for collecting already submitted samples from BHEL end). Contact Address for Sending Samples:- Manager, 4th Floor, 24 Building,	

	BHEL Trichy-620014	
10	Vendor shall quote as per attached price and Unpriced Schedule format only.	
11	Validity: 120 days minimum from techno commercial bid opening (Part-1)	
12	Void – Intentionally left Blank.	
13	Repair & replacements: Within the guarantee period vendor has to replace / rectify the defective/ damaged items on free of cost within a reasonable time of reporting from our end.	
14	MSE VENDOR: <i>i. 20% (Minimum) of the tendered quantity is earmarked for MSE suppliers in this tender.</i> <i>ii. Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC/ST entrepreneurs.</i> <i>iii. In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately</i> MSE suppliers can avail the intended benefits only if they submit along with the offer, attested/notarized copies of either 1. EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM II) or 2. Valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limits as per the act for relevant status (MICRO or SMALL) where the deemed validity of EM II is over. <i>Date to be reckoned for determining the deemed validity will be the last date of technical bid submission (Part 1 in case of two part bid).</i> Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry, in case of any deficiency in the above required documents or in case the documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal even if submitted earlier. Documents should be notarized or attested by a Gazetted officer. Definitions of MSEs owned by SC/ST is under:	

	• <i>In case of proprietorship firm, proprietor must be SC/ST.</i> • <i>In case of partnership firm, the SC/ST partners must be holding at least 51% shares in the unit.</i> • <i>In case of private limited companies, at least 51% share must be held by SC/ST promoters.</i> Authorised Offices to Issue SC/ST certificate. The caste/Tribe/Community certificate issued by the following authorities in the prescribed form for SCs/STs can be considered. • District Magistrate / Additional District Magistrate / Collector / Deputy Commissioner / Additional Deputy Commissioner / Deputy Collector / 1st class stipendiary magistrate / Sub divisional Magistrate / Taulka Magistrate / Executive magistrate / Extra Assistant commissioner. • Chief Presidency magistrate / Additional chief presidency magistrate/Presidency magistrate. • Revenue Officer not below the rank of thasildar. • Sub-Divisional officer of the area where the individual and / or his family normally resides. <i>To avail the benefits of MSE under SC/ST category, the related documents as stated above should be submitted along with tender documents.</i>	
15	Bidder to note Risk Purchase clause is applicable.	
16	Price Bids of the vendor will be opened subject to approval of Vendor for Supply of Weighing Module(150 Lbs) by BHEL end.	
17	Documents are to be submitted along with technical bid (Part-1) 01. Covering letter 02. Unpriced offer as per BHEL format 03. Filed technical specification 04. Filed BHEL Terms and condition sheet 05. Filed Pre-Qualification requirement (PQR) along with supporting documents 06. Catalogue's 07. MSME Documents (If applicable) 08. Vendor registration documents Documents are to be submitted along with Price bid (Part-2) 01. Priced offer as per BHEL format Note: All the pages of documents are to be signed and stamped by authorized signatory of the company.	
18	Suppliers involving in fraudulent practices or delayed supply (or) non-Supply will be dealt with provision as indicated in "Guidelines for Suspension of Business Dealings with Suppliers / Contractors" which is	

hosted in website www.bhel.com The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com. 1.0 Integrity commitment, performance of the contract and punitive action thereof: 1.1 Commitment by BHEL: BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Bidder(s) in transparent and fair manner, and with equity. 1.2 Commitment by Bidder / Supplier / Contractor: 1.2.1. The bidder / supplier / contractor commit to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India. 1.2.2. The bidder / supplier / contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issues from time to time by Govt. of India / BHEL. 1.2.3. The bidder / supplier / contractor will perform / execute the contract as per the contract terms & Conditions and will not default without any reasonable cause, which causes loss of business / money / reputation, to BHEL. If any bidder / supplier / contractor during pre-tendering / tendering / post tendering / award / execution / post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then action may be taken against such bidder / supplier / contractor as per extant guidelines of the company available on www.bhel.com and / or under applicable legal provisions.	
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19	Tender will be split for cycle time reduction of our assembly requirement. Hence the total tender quantity will be split in such a way that, 60% will be offered to L1 vendor & 40% will be offered to L2 vendor, Subject to the acceptance of rate of L1 vendor. If L2 vendor is not accepting L1 counter offer rate the same will be ordered to L3 vendor. Further, if L3 vendor is also not accepting L1 counter offer rate, then the total quantity will be ordered on L1 vendor.	

		PURCHASE / MM / BOI		Annexure- D	
ENQUIRY DEVIATION					
429-024					
				PAGE	1 OF 1
SCHEDULE OF DEVIATION TO BOI ENQUIRY NO:		1701702693		DATE	13-12-17
DESCRIPTION		WEIGHING MODULE (150 LBS)			
SPECIFICATION					
DRAWING NO					
QUALITY PLAN					
PACKING PROCEDURE		QA:CI:STD:PR:02/REV.02.			
DOCUMENT REFERENCE		BHEL CALLED FOR		FIRM'S ALTERNATIVE OFFER	
Supply of material shall be exactly as per TDC:TCI:345 / REV 00 without any deviation					
CERTIFIED THAT OTHER THAN THE ABOVE DEVIATIONS, WE ARE ACCEPTING ALL THE OTHER SPECIFICATIONS AND REQUIREMENTS IN FULL TO YOUR ENQUIRY.					
STATION:					
DATE:		SIGNATURE OF FIRM'S REPRESENTATIVE		FIRM SEAL	
NOTE 1. Deviations should be taken only in the extreme case. 2. If necessary, use additional sheets with page control number.					

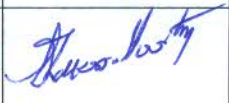
BHEL TRICHY
MM/BOI
ANNEXURE – C
Pre-Qualification requirements (PQR)

Sl.NO	Description	Vendor Confirmation
1	The BIDDER shall have a minimum of five years of continuous experience in the field of Design, Manufacture and Supply of weighing modules ("S" type (tension type) load cell with assembly) of proven design.	
2	Offered weighing modules shall have record of successful operation in Belt type Gravimetric coal feeder application for a minimum period of 5 years in a utility boiler in India.	
3	2 No's samples of offered weighing modules ('S' tension type load cell with assembly) on returnable basis will be obtained from the bidder for integrated testing with BHEL's gravimetric feeder for technical evaluation.	

Offers are liable for rejection, if not satisfying above pre-qualifying criteria.

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI
CONTROLS AND INSTRUMENTATION / FB
QUALITY ASSURANCE

PROCEDURE FOR PERFORMANCE TESTING
OF
WEIGHING MODULE
(LOAD CELL)

REV	DATE	DESCRIPTION	PREPARED		REVIEWED	APPROVED
00	11/12/2016	Initial Release	 [KV]	 [VA]		

Load Cell Performance Testing Guidelines

This guideline provides general-purpose test procedures for testing load cells.

1. Tests

1.1 Test Methods and parameters specified in this guideline are in accordance with IS: 9281.

1.2 Routine Tests

1.2.1 The following shall constitute the routine tests to be performed during inspection at vendor works:-

- a) Non-Linearity
- b) Hysteresis
- c) Repeatability
- d) Zero balance
- e) Temperature effect
- f) Creep

NOTE:

- If there is no test load equivalent to rated load, employ a test load which is as close to rated load.
- Application of load shall be done using force calibrator/UTM/ standard weights (Calibrated in any national accredited labs).
- 20% of PO quantity to be tested in presence of BHEL inspectors at vendor works or any NABL accredited labs.
- The excitation voltage for the loadcell is 10V.
- The measurement of output signal from loadcell (mV) shall be done using digital multimeter having $\pm 0.01\%$ (max. error) of reading.

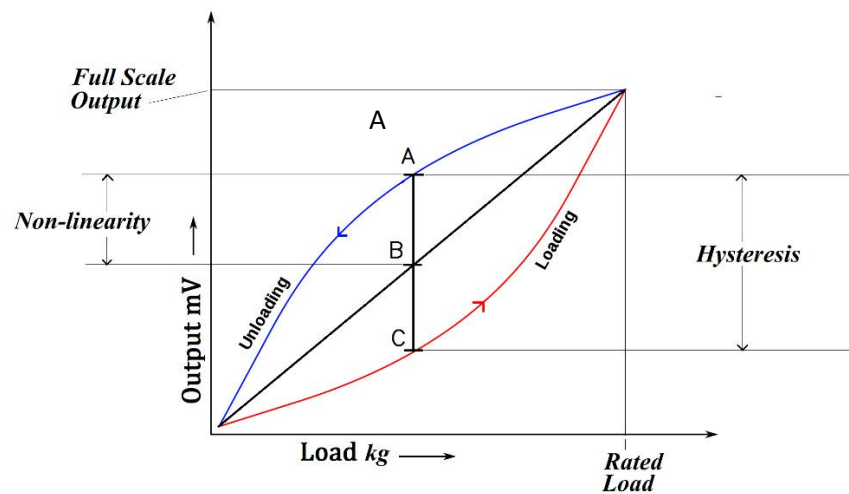
2. Calibration

- a) Apply the maximum load (68 kg), return to the minimum load (0 kg). Repeat this for three times (warming up process).
- b) Wait for the output to stabilize.
- c) Measure the initial output.
- d) Apply ascending loads in increments to maximum load refer table 1.1. Take readings after a short stabilization period for each load increment.
- e) Remove the same test loads in a descending manner, taking readings upon reaching each stabilized load.
- f) Upon removal of the last test load, record the output at minimum load (0 kg).
- g) Repeat (a) through (f) two more times.
- h) Corresponding readings (average readings from 3 runs) of the output at the various loads are taken (refer table 1.1) and a graph showing output versus load is drawn (refer figure 1.1).
- i) Note: Number of load points can be increased to obtain smooth graph.

Table 1.1

SL. NO.	Load (kg)	Output (mV) (Ascending)				Output (mV) (Descending)			
		a ₁	a ₂	a ₃	a _{avg}	d ₁	d ₂	d ₃	d _{avg}
1.	0								
2.	15								
3.	30								
4.	45								
5.	68								

Figure 1.1
Typical Graph for illustration



a. Non-linearity

The calibration data (refer table 1.1) is used to determine non-linearity. The curve joining the various points is drawn (refer Figure 1.1). The maximum deviation of the curve from the straight-line joining the end points (Terminal linearity) is then interpolated as the nonlinearity factor.

$$\% \text{ NonLinearity} = \frac{A - B}{S} * 100$$

S = Full scale (FS) output (Output at rated load)

Acceptable Limits: $\pm 0.05 \% \text{FS}$

b. Hysteresis

The calibration data (refer table 1.1) is used to determine hysteresis. The curve joining the various points is drawn (refer Figure 1.1). The maximum deviation (nominally occurring at 50% load) from the line joining the end points shall give the hysteresis value.

$$\% \text{ Hysteresis} = \frac{A - C}{S} * 100$$

S = Full scale output (Output at rated load)

Acceptable Limits: $\pm 0.03 \% \text{FS}$

c. Repeatability

The calibration data (refer table 1.1) is used to determine **non-repeatability**.

For each set of the three data points (refer table 1.2), taken at the same temperature, **non-repeatability** is the maximum deviation between any two expressed as percentage of rated output.

Table 1.2

SL. NO.	Load (kgs)	Output (mV) (Ascending)			Max.Difference Δ	Repeatability $\frac{\Delta}{E} * 100 \%$
		a1	a2	a3	$\Delta (a1, a2, a3)$	
1.	0					
2.	15					
3.	30					
4.	45					
5.	68					
Average =						

Data for Table 1.2 is taken from Table 1.1 (Calibration data).

$E = 30\text{mV}$ (Rated output RO)

Acceptable Limits: $\pm 0.02 \% \text{RO}$

d. Zero Balance

Zero balance is the load cell's zero load output which will likely read some value slightly off true zero.

$$\text{Zero Balance} = \frac{e0}{E} * 100 \%$$

$e0 = \text{mV output at No Load}$

$E = 30\text{mV}$ (Rated output)

Acceptable Limits: $\pm 1 \% \text{RO}$

e. Temperature Effect

$$\text{Temperature effect on No Load Output} = \frac{Z2 - Z1}{(T2 - T1) * E} * 100 \frac{\%}{^\circ\text{C}}$$

$$\text{Temperature effect on Rated Output} = \frac{S2 - S1}{(T2 - T1) * S} * 100 \frac{\%}{^\circ\text{C}}$$

$Z1 = \text{mV output at } T1 (T1 = -15^\circ\text{C}) \text{ at No load.}$

$Z2 = \text{mV output at } T2 (T2 = 65^\circ\text{C}) \text{ at No load.}$

$E = \text{Rated output (30mV)}$

$S = \text{Full scale output (Output at rated load)}$

$S1 = \text{mV output at } T1 (T1 = -15^\circ\text{C}) \text{ at 68kgs.}$

$S2 = \text{mV output at } T2 (T2 = 65^\circ\text{C}) \text{ at 68kgs.}$

Acceptable Limits:-

Effect on Zero: $\pm 0.0027 \% \text{RO}/^\circ\text{C}$

Effect on Rated Output: $\pm 0.0015 \% / ^\circ\text{C}$

f. Creep

The change in LOAD CELL SIGNAL occurring with time under constant load and with all environmental conditions and other variables also remaining constant.

Apply the full rated load and read the output immediately after the load has been applied after a short stabilization period (t1) and at 20 minutes (t2).

Also periodically read and record the output at a time interval over 30 mins.

t2-t1 = creep measurement period (20 min)

$$\text{Creep \% of Rated output} = \frac{e2 - e1}{E} * 100$$

e1 = mV output at t1

e2 = mV output at t2

E = 30mV (Rated output)

Acceptable Limits: $\pm 0.025 \% \text{RO}$

Test Results:

Sl.No	Tests	Acceptable Limit	Results
a.	Non-linearity	$\pm 0.05 \% \text{FS}$ (FS-Full Scale)	
b.	Hysteresis	$\pm 0.03 \% \text{FS}$	
c.	Repeatability	$\pm 0.02 \% \text{RO}$ (RO-Rated Output)	
d.	Zero Balance	$\pm 1 \% \text{RO}$	
e.	Temperature Effect	Effect on Zero: $\pm 0.0027 \% \text{RO}/^{\circ}\text{C}$ Effect on Rated Output: $\pm 0.0015 \%/^{\circ}\text{C}$	
f.	Creep	$\pm 0.025 \% \text{RO}$	

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Bharat Heavy Electricals Limited
HIGH PRESSURE BOILER PLANT, TIRUCHIRAPPALLI 620 014.

TECHNICAL DELIVERY CONDITIONS

FOR SUB – DELIVERY COMPONENTS OF

CONTROLS & INSTRUMENTATION

TDC: TCI: 345 / REV 00

PAGE 01 OF 03

TECHNICAL SPECIFICATION

FOR

WEIGHING MODULE
(LOADCELL WITH ASSEMBLY)

OF

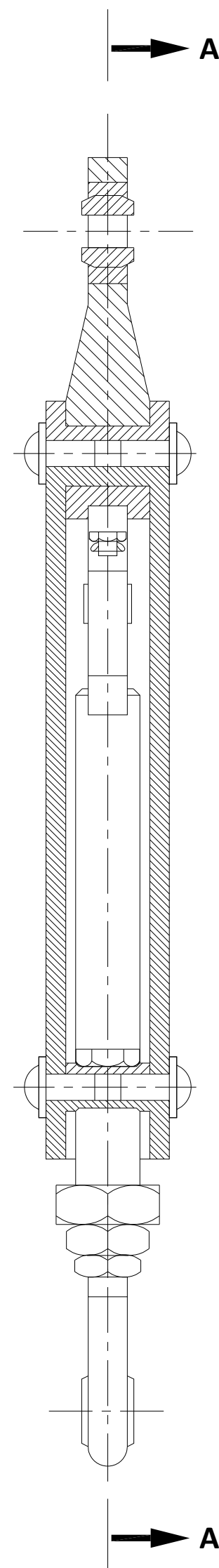
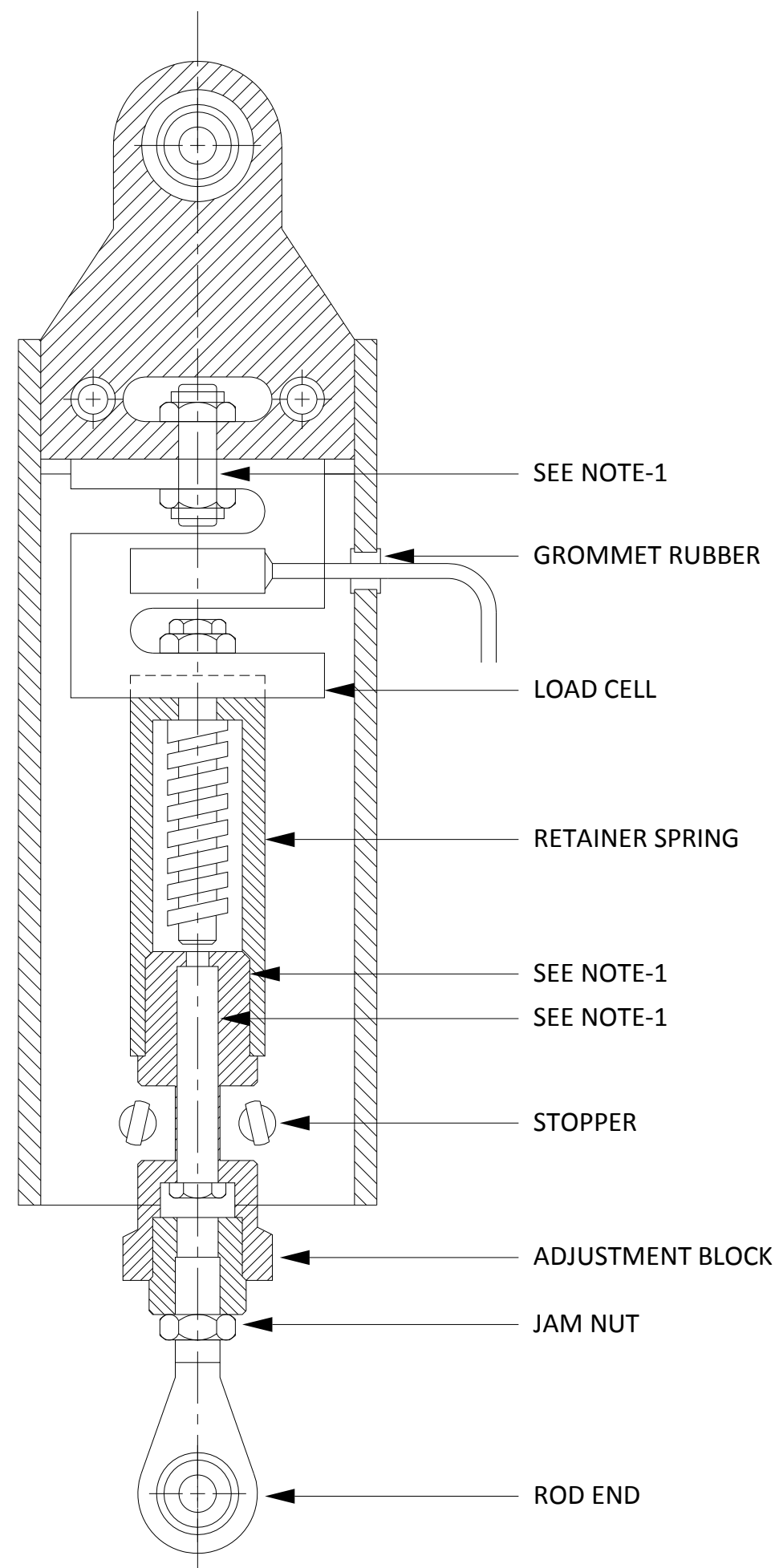
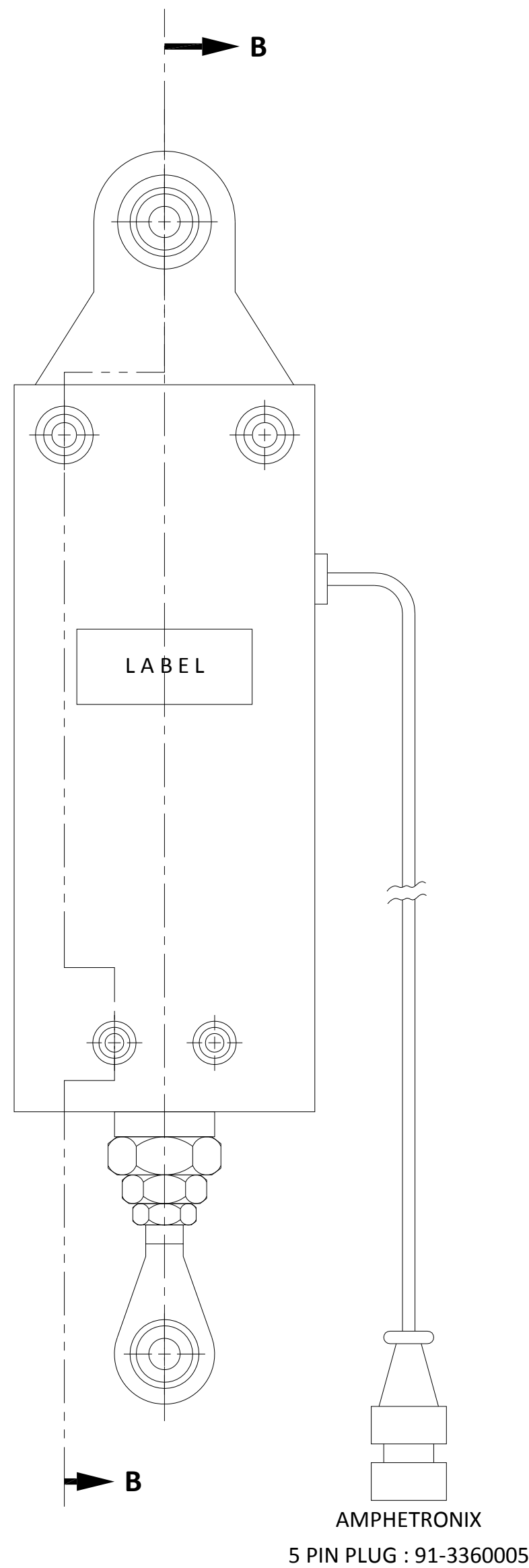
BHELFEED GRAVIMETRIC FEEDER CONTROLS

00	11/12/2017	Initial Release	 [AB]	 [KV]	 [VA]	 [TK]
Rev. No.	DATE	DESCRIPTION	PREPARED	ENGG	QAC	APPROVED
				REVIEWED		

1.	GENERAL	
1.1	Type of load cell	Strain gauge load cell. S type- Hermetically Sealed Tension Type
1.2	Connection of strain gauge elements	Wheatstone bridge configuration – Full bridge
1.3	Load cell capacity	150 lbs (68.04 Kg) OR 100 lbs (45.36 Kg) as per enquiry requirement.
1.4	Application	To produce millivolt signal proportional to the weight of coal passing over the belt in the weigh span of coal feeder.- Tension type measurement.
1.5	Mounting	As per drg. 2-95-485-03743
2.	ACCURACY – (MAX ERROR)	
2.1	Non-linearity (% FS)	±0.05
2.2	Hysteresis (% FS)	±0.03
2.3	Non-repeatability (% RO)	±0.02
2.4	Creep in 20 min (%)	±0.03
3.	TEMPERATURE	
3.1	Compensated Range (°C)	-20 to 150
3.2	Operating Range (°C)	-50 to 160
3.3	Effect on Output MAX (%/°C)	±0.0015
3.4	Effect on Zero MAX (% RO/°C)	±0.0015
4	ELECTRICAL	
4.1	Rated Output (mV/V)	3
4.2	Zero Balance (%RO)	±1
4.3	Bridge Resistance (Ohm)	350 ±1
4.4	Excitation Voltage MAX (VDC)	15
4.5	Insulation Resistance (Mega ohm)	>5000
5	MECHANICAL	
5.1	Calibration	Tension
5.2	Safe Overload (% CAPACITY)	150
5.3	Ultimate overload (% CAPACITY)	200
5.4	Cable Length (M)	4.5
5.5	Deflection	
	100 lbs	Vendor to specify
	150 lbs	Vendor to specify
5.6	End to end overall height of Weighing module adjustable using adjustable block between minimum and maximum height.	Minimum 244 mm Maximum 274 mm

5.7	Spring preload & bottoming load settings shall be done at vendor works for the following values		
		150 lbs load cell	100 lbs load cell
	Spring preload	170 lbs	80 lbs
	Bottoming load	200 lbs	100 lbs
6	NOTES		
6.1	The strain gauge load cell electrical connections are as per drg. 4-95-485-05867 and offered as a total weighing module as per 2-95-485-03743.		
6.2	Adequate protection shall be incorporated in the weighing module assembly to prevent the load cell damage from excess loading.		
6.3	Load cell shall be environmentally sealed, pressure insensitive and temperature compensated.		
6.4	Free end of the shielded cable shall be provided with a 5 pin round adopter as shown in the drg. 2-95-485-03743		
6.5	During offer stage vendor shall furnish test reports of offered weighing module as per BHEL procedure No. QA:CI:STD:PR: 20 /REV 00 for evaluation.		
6.6	Inspection & Testing shall be as per BHEL procedure No. QA:CI:STD:PR: 20 /REV 00		
6.7	Vendor to furnish VQP for review/approval.		
6.8	The insulation of load cell cable shall be PTFE and shall be suitable for temperature rating of 200°C.		

DRAWING NO: 2-95-485-03743



SECTION - AA

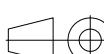
SECTION - BB

NOTE

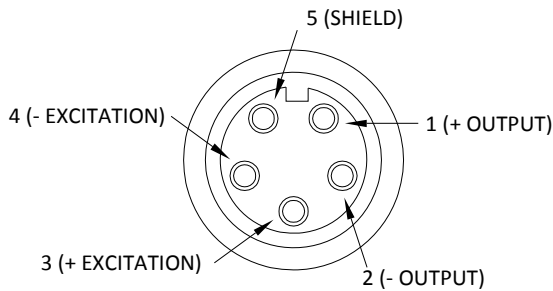
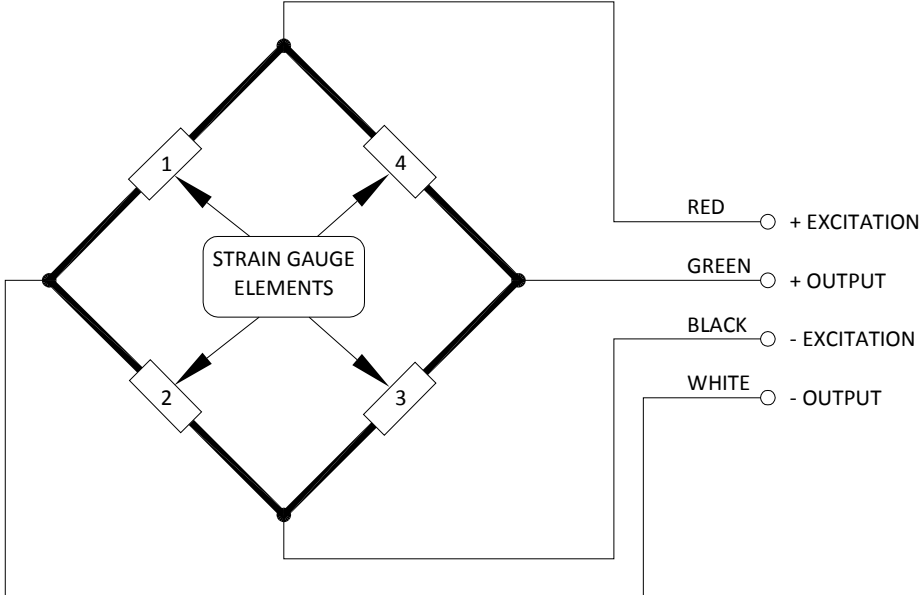
1. ADD SEALANT (LOCTITE TYPE "A" TO BACKSIDE LOWER SCREWS ONLY)
2. FIX SERIAL NO AND PART NO LABEL TO FRONT COVER AT ASSY.
3. SPRING DESIGN & ARRANGEMENT SHALL BE DECIDED SUITABLY BY THE SUPPLIER. BUT GOT APPROVED BY BHEL BEFORE PROCEEDING WITH MANUFACTURE.

REV	DATE	ALTERED : CHD./APPD. :
ZONE		

CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		STANDARD						NO. OF VAR		
 Bharat Heavy Electricals Ltd UNIT: HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI – 620014		DRN	NAME A. THAMBURA	SIGNATURE  081217	DATE 08-12-17	REF TO ASSY / OLD DWG _____			ITEM NO _____	NO OF ITEMS
		CHD	K.VEERAMANI		12-12-17					
		APPD	T.KANAGARAJ		12-12-17					
DEPT.: C & I		ALL DIMENSIONS ARE IN MM	SCALE NTS	WEIGHT (Kg) _____						
CODE : 392										
TITLE GRAVIMETRIC FEEDER WEIGHING MODULE ASSEMBLY				CARD CODE U 01	DRAWING NO : 2-95-485-03743 Sheet No. 04/15					REV 00

REV	DATE	ALTERED :
		CHD./APPD. :



**TOP VIEW OF
AMPHETRONIX 5 PIN PLUG
FEMALE SOCKETS 91-3363006 AVAILABLE
ON THE FEEDER INTEGRAL CABINET
CARD RACK ASSY.
(NOT IN SCOPE OF LOADCELL VENDOR)**

NOTE

1. LOADCELL TERMINATION SHALL BE BY 4 CONDUCTOR 28 AWG 15 FEET LONG SHIELDED CABLE, TEMPERATURE 200°C (INTEGRAL TO LOADCELL)
2. FOR TERMINATION OF LOADCELL CABLES, FEMALE SOCKETS ARE AVAILABLE ON THE FEEDER INTEGRAL CABINET CARDRACK ASSEMBLY AND LOADCELL CABLES SHALL BE SUPPLIED WITH MALE SOCKETS.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER / PROJECT

STANDARD

बी एच ई एल 		Bharat Heavy Electricals Ltd UNIT : HIGH PRESSURE BOILER PLANT TIRUCHIRAPPALLI - 620014		DRN	NAME A.Thamburaj	SIGNATURE 	DATE 09-12-17	NO. OF VAR	
				CHD	K.Veeramani		12-12-17		
				APPD	T.Kanagaraj		12-12-17		
DEPT. : C & I		ALL DIMENSIONS ARE IN MM	SCALE NTS	WEIGHT (Kg) 	REF TO ASSY / OLD DWG 			ITEM NO 	No OF ITEMS
CODE : 392									
TITLE: LOADCELL ELECTRICAL CONNECTION OF STRAIN GAUGE ELEMENTS				CARD CODE U 01	DRAWING NO : 4-95-485-05867 Sheet 01 of 01				REV 00

Sheet 01 of 01