

2-47-003-01439
DRAWING NO.:

ARRANGEMENT-P

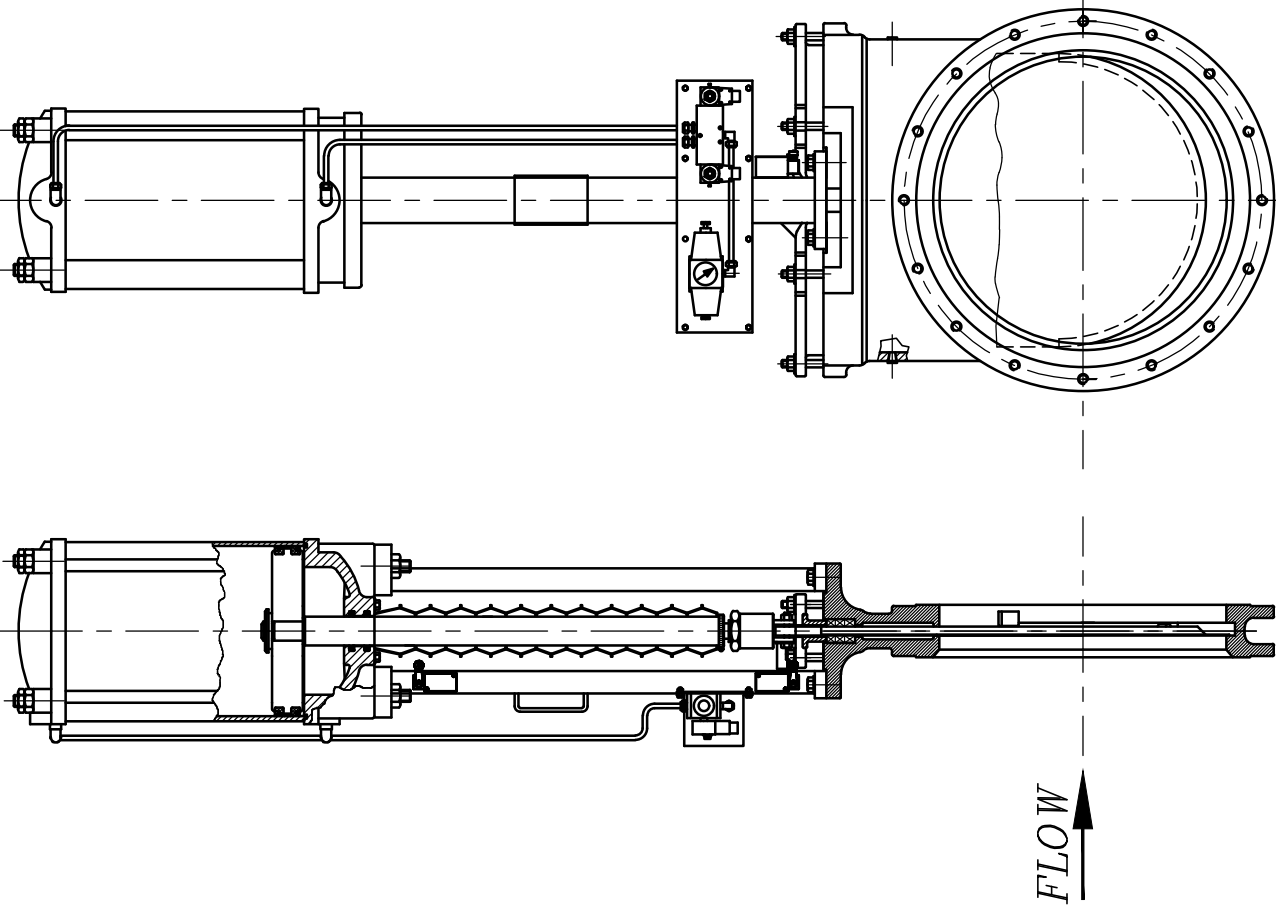
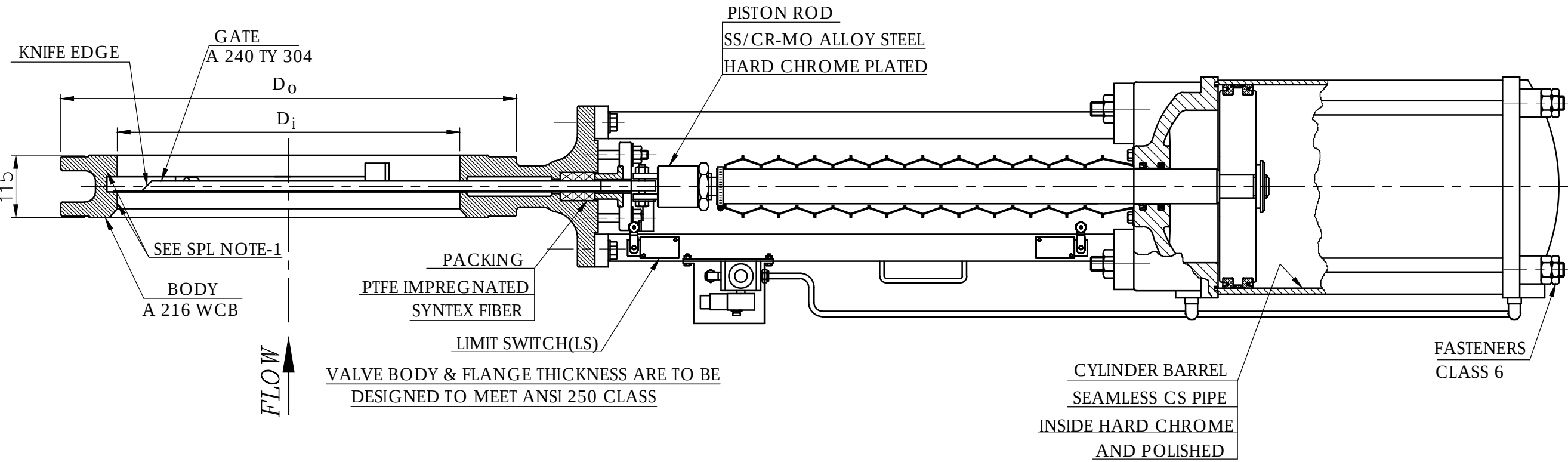
SELECTION TABLE						
VAR No.	Nb	D _i	D _o	D _p	SIZE/ QTY OF TAPPED HOLES	CYL. BORE SIZE(MIN)
01	26"	632	840	768	M24/16 Nos.	NB350MM
02	22"	530	732	670	M20/12 Nos.	NB300MM
03	20"	483	675	613	M20/8 Nos.	NB300MM
04	28"	684	890	822	M24/16 Nos.	NB350MM

SPECIAL NOTE

- FOR TOLERANCES OF UNTOLERANCED DIMENSIONS DURING MANUFACTURE REFER PLANT STD. NO TP 023 0299
- AS THE PUL COAL PARTICLES ARE OF HIGHLY EROSION, THE VENDOR HAS TO PROVIDE SUITABLE MEASURES TO COMBAT EROSION OF VALVE INTERNALS OF 350BHN HARDNESS MIN. VENDOR TO INDICATE / CONFIRM IN THE OFFER.
 - VENDOR TO SHOW PNEUMATIC HOOK UP (SCHEMATIC) DIAGRAM.
 - VENDOR TO MAKE 50% QTY AS PER "ARRANGEMENT-P"; TO MAKE 50% QTY AS PER "ARRANGEMENT-Q";

ARRANGEMENT-Q

DETAIL-R



VALVE DESIGN DATA:

- | | |
|-----------------------------|---------------------|
| 1. FLOW MEDIUM | HOT AIR + PUL. COAL |
| 2. FLOW TEMPERATURE | 90 DEG C |
| 3. DESIGN TEMPERATURE | 120 DEG C |
| 4. FLOW MEDIUM VELOCITY | 25 M / SEC |
| 5. SERVICE | COAL PIPE SHUT-OFF |
| 6. CODE REQUIREMENT TO MEET | NFPA 85 |

TERMINAL POINTS OF THE VALVE:

- UPSTREAM END FLANGE t=45 mm
- DOWN STREAM END FLANGE t= 20 mm
- ELECTRICAL TERMINAL POINT AT JUNCTION BOX. (LS & SOV TO BE INTERNALLY WIRED BY VENDOR)
- SINGLE INSTRUMENT AIR CONNECTION TO AFR. (INTER CONNECTING PIPES BY VENDOR)

ACCESSORIES DATA:

- (VENDOR SCOPE)
- SOLENOID VALVE (SOV) DUAL COIL, HEAVY DUTY, 5 PORT, 2 WAY CURRENT RATING, REFER BHEL TECH SPECN. ASCO/ROTEX
- AIR FILTER REGULATOR (AFR) 3/8" SIZE METALIC BOWL, AIR SUPPLY: 0-7 BAR, 2NO+2NC, 240V AC-5A, / 0.5A 220V DC IP 65 / IP 55, 3/4" NPT(F) CABLE ENTRY, MAKE- HONEYWELL , OMRON; QTY=2 Nos.
- LIMIT SWITCH (LS) ELECTRICAL TERMINAL FOR LS & SOV. 3/8" PVC COVERED COPPER
- JUNCTION BOX (JB) TUBING SUITABLE FOR COMPANION FLANGES SHOWN IN "DETAIL-R".
- FASTENERS GASKETS FOR COMPANION FLANGES - t=3 mm
- GASKETS MATERIAL SILICONE RUBBER 60/70A SHORE A DUROMETER OR NON-ASBESTOS GASKET OF ARAMID FIBRE WITH NBR BINDER OR HIGHER GRADE MEETING THE DESIGN REQUIREMENT.

REV. NO	DATE	ALTD	CHD	APPROVED	REV. NO	DATE	ALTD	CHD	APPROVED
02	01.08.17	MV	MV	GSK	01	28.11.12	ARK	GSK	MTP/JVA
1.	CYLINDER BORE SIZE & HARDNESS VALUE OF VALVE SEAT ADDED.				1.	VARIANT NO. 4 ADDED IN THE SELECTION TABLE. FLANGE WIDTHS ARE CORRECTED			

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



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

DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE					
TITLE					DRAWING NO : 2-47-003-01439
COAL SHUT-OFF GATE (PNEUMATIC OPERATED)					REV 02

Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as on
date..... as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost
excluding land and building and the items specified by the Ministry of Small Scale Industries vide its
notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and
furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED
Act, 2006:
Rs.....Lacs

The above Investment of Rs.....Lacs is within permissible limit of
Rs.....Lacs forMicro / Small (Strike off which is not applicable)
Category under MSMED Act 2006.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant



ANNEXURE-C

Clause: Special provisions for Micro & Small Enterprises (MSE)

1. In case MSE vendor participating in the tender quotes within the price band of L1+15%, they will be allowed to supply the complete package (project wise) requirement subject to acceptance of L1 price by MSE vendor.
2. In case of more than one such MSE, the counter offering will be to the lowest quoted MSE vendor subject to fulfillment of Point No.1
3. MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (Two years from the date of issue of acknowledgement in EM II) or 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 limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.



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:		Pneumatically Operated Gate
Projects		North Chennai and Uppur project
Enquiry No:		1801701035/04 dated 01.08.2017
Sl. No.	Terms and conditions	Vendor's confirmation
1 (a)	<u>Technical:</u> Supply of Pneumatically Operated Gate shall be as per Specification (Datasheet, Drawing, and Vendor Checklist) attached with the enquiry.	
1 (b)	Inspection by Customer/ BHEL or BHEL Approved Third Party Inspection Agencies.	
2	<u>Firm Price:</u> The quoted / finalised rates shall be Firm till execution of the supplies. Offer with Price Variation Clause (PVC) will not be considered.	
3	The tender will be operated on two part bid basis and you are requested to submit techno commercial bid and price bid through eps.	
3 (a)	<u>Delivery term (Indigenous):</u> The quote shall be on FOR respective project destination basis as indicated below, inclusive of Packing, forwarding, Freight & Transit Insurance also to yours account. <u>Total commodities rates shall include material cost, freight and insurance, packing & forward, type test charges etc.</u> <u>Ex-Works Contracts will not be entertained.</u>	
3(b)	<u>Delivery term (Import):</u> The quote shall be on CFR Chennai Port basis with freight break up details and place of delivery. • PORT OF LOADING SHOULD BE INDICATED WITHOUT FAIL. • PORT OF DISCHARGE SHOULD BE CHENNAI • Total Weight of the Consignment	
4 (a)	<u>Payment terms (Indigenous):</u> 100% direct payment after 45 days from the date of dispatch against site acknowledgement LR copy with 10% PBG <u>Payment terms (Imports):</u> BHEL Payment term is 100% payment on CAD basis after 45 days from the date of receipt of documents along with 10% PBG, specified in PO, at BHEL bank. Respective bank charges to respective account.	
4 (b)	<u>Loading Criteria (Indigenous) for arriving the L1 rate:</u> Payment Terms: Any deviation in the above BHEL payment term (as per 4(a)) will attract loading (Basic Material Value) 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 3% 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.	
4(c)	<u>Loading Criteria (Imports) for arriving the L1 rate :</u> Any deviation in the above payment term (as per 4(a)) will attract loading (Basic Material Value) 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 (a)	<u>Liquidated damages:</u> 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 order value per week of the delay or part thereof subject to a maximum of 10% of the total order value.	
5 (b)	<u>Loading Criteria for arriving the L1 rate:</u> Any deviation on BHEL LD clause, loading (Basic material Value) will be applied to the extent to which it is not agreed by the bidder.	
6 (a)	<u>Guarantee / Warranty Period:</u> Guarantee clause 18 months from the date of supply or 12 months from the date of actual put in use, whichever is earlier.	
6 (b)	<u>Loading Criteria:</u> <u>Guarantee / Warranty Period:</u> No Deviation is permitted. If still vendor offered any deviation on the Guarantee / warranty period, it may lead to rejection of offer.	
7	<u>Risk purchase:</u> If the supplier fails to deliver the goods within the delivery specified in the Purchase Order, BHEL will be entitled to terminate the contract and to Purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or despatch within the delivery period mentioned in the Purchase Order.	
8	<u>Performance Bank Guarantee:</u> BHEL require a performance Bank Guarantee to a value of 10% of the total order value covering the guarantee period. The PBG shall be in BHEL format (Format attached) which is to be opened in any one of the first class India banks. (Bank List Attached). All banks charges shall be to vendor account only. If still vendor offered any deviation on PBG leads to rejection of offer.	
9	<u>Delivery Period:</u> 3 to 4 months from the date of document approval/ Customer approval.	

10	(Indigenous Vendor) -LR date will be considered for LD calculation. (Import Vendor) - Bill of lading date will be considered for LD Calculation	
11	<u>Document Submission:</u> <u>Along with the offer:</u> 1. Filled in Commercial terms and conditions (this document) to be submitted. 2. Duly filled in Technical Specification along with the applicable GA Drawings and QP to be submitted. 3. Any query during enquiry stage shall be replied within four days failing which offer may be rejected as non-responsive. <u>After Purchase Order:</u> 1. Technical datasheets, drawings & QP to be submitted for BHEL approval within 15 days from the PO date. 2. Any comment in the documents by BHEL/Customer to be replied / revised (as applicable) within three days. 3. Any document submitted with deviations from enquiry/PO requirements will not be treated as document submission for LD calculation purposes.	
12	<u>Enquiry as a package:</u> Total requirement will be considered single package basis (project wise) for evaluation and ordering.	
14	<u>Validity:</u> 90 days minimum from techno commercial bid opening (Part-1). Any Deviation with respect to validity of your offer will not be considered. Ensure your quoted rates will have 90 days minimum validity from techno commercial bid opening. The delay in technical clarification beyond four days will be subsequently added to the validity period, Revised Price Bids will not be encouraged.	
15	<u>O & M manuals:</u> BHEL require 1 sets of printed O & M manuals with 3 soft copies in CD-ROM at no cost to be sent to BHEL/ Trichy and 3 sets of printed O & M manuals to be sent along with ordered items directly to site.	
16	<u>Inspection and testing requirements:</u> Inspection and testing requirements are to be carried out as per the specification and BHEL /Customer approved Datasheets, Drawing &QP and all test certificates are to be submitted in complete set.	
16	<u>Repair & replacements:</u> 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.	
17	<u>MSME Applicability as per Annexure C.</u> The vendors shall furnish valid certificates for availing the benefits with deemed validity in the offer itself.	
18	<u>Important Information for Indigenous Suppliers:</u>	
	• Kindly indicate the GST No of your Firm	
	• Kindly Indicate the HSN Code for all the line items.	
	• Please indicate the applicable GST % (IGST, SGST, CGST)	
	• Kindly Note the BHEL Trichy Unit GST NO : 33AAACB4146P2ZL	
	• Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GST registration number which should clearly have	

	mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.	
	Supplier shall mention their GSTN registration number in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc.	
	All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code).	
	A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL.	
	All documents like Mill Test Certificate, LR copy, Guarantee/Warranty certificate, work completion certificate, any other document mentioned in PO, shall be sent along with the vehicle/consignment. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so.	
	In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the suppliers, within the calendar month notified by BHEL.	
	For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) along with penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills.	
	Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice	

	number	
19	<u>Important Information for Import Suppliers:</u> <u>FOR CFR INCO TERMS – CONTAINERIZED CARGO</u> - 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. 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. 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”. <u>BREAKBULK CARGO</u> - 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. - The materials will be Custom cleared from Port itself. - The Indian Customs imposed, a penalty on late filing of Bill of Entries (Air/Sea Shipments) by the importer. The maximum free time allowed is 24 hrs from the time of arrival of cargo at final port of discharge. Rs.5000/- per day (for Initial 03 days) & Rs.10000/- per day (thereafter) - The vendor should furnish the Non-Negotiable Documents (Air Way Bill/Bill of Lading, Commercial Invoice, Packing List, and Certificate of Origin) either by email or post/courier to BHEL well before the landing of cargo at final port of discharge. - Vendor will be held responsible for the penalty arises against the late filing of Bill Of entry due to: - Non availability of Non-Negotiable Documents (NNDs) before the cargo arrival - Discrepancy in documents - Short landing of Consignments (For shipments on CFR/CPT/CIF/CIP – Chennai Port) - All the shipments for the contracts (POs) finalized on CFR -Chennai Port basis (i) Delivery Orders involving multiple agencies like liners/freight forwarders are not allowed. There must be a single agency office at the final discharge Port (Chennai) for issuing the Delivery Order to BHEL. (ii) The detention/demurrage charges arise due to the delay in collection of Delivery Orders from multiple agencies of liner/freight forwarder also whose offices are not at available Chennai, the same amount will be	

	deducted from Vendor's bills only. (iii) Apart from the normal charges like Terminal Handling Charges, Container cleaning Charges, Delivery Order Charges at final port of discharge no other charges will be borne by BHEL. (iv) The liner/freight forwarders should be properly communicated by the Vendor for not to claim such charges for issuing Delivery Order. If the liner/freight forwarder claims such charges in their invoices, the same amount will be deducted from the Vendor bills without any prior intimation in order to avoid the delay in Customs clearance. The likely additional/hidden costs or charges are: a. CIC - Container Imbalance Charges/Surcharges b. EIC - Equipment Imbalance Charge/Surcharges c. CAF - Container/Currency Adjustment Factor d. BAF - Bunker adjustment Factor e. RDS - Rupee Depreciation Surcharge f. CDS - Currency Depreciation Surcharge	
	<u>Transport Conditions for Import:</u> The Original Documents (Bill of Lading, Invoice, Packing List, Certificate of Origin & Test Certificate) shall reach BHEL well in advance before the vessel arrival. The soft copies of the above shall be forwarded to BHEL immediately after shipment. • In the event of delayed submission of documents by the supplier, an amount up to 5% of the invoice value will be retained towards demurrage & other charges and the difference if any between actual charges and recovery will be settled separately through supplementary invoice. • In such cases, the Supplier shall authorize the Steamer / Shipping agent / transporter to freely release the consignment to BHEL by providing a "Surrender Bill of Lading". • Otherwise, No-objection Certificate shall be issued to the Liner, authorizing BHEL to get the Delivery Order without producing the Original Bill of Lading. • This is required to ensure avoidance of demurrage at Chennai Sea-port that may arise in case of delayed presentation of documents by the Seller.	
	Note: Any other Techno –Commercial Terms indicated by the vendor in their offer elsewhere will be ignored. BHEL will proceed with tender evaluation as per Annexure A only.	

List of Consortium Banks (As on 22.02.2017)			
	Nationalised Banks		Nationalised Banks
1	Allahabad bank	19	Vijaya Bank
2	Andhra bank		Public Sector Banks
3	Bank of Baroda	20	IDBI
4	Canara Bank		Foreign banks
5	Corporation bank	21	CITI Bank N.A
6	Central bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Limited
8	Indian Oversea Bank	24	Standard Chartered Bank
9	Oriental bank of Commerce	25	J P Morgan
10	Punjab National Bank		
11	Punjab & Sindh Bank		Private banks
12	State Bank of India	26	Axis Bank
13	State Bank of Hyderabad	27	The Federal Bank Limited
14	Syndicate Bank	28	HDFC
15	State Bank of Travancore	29	Kotak Mahindra Bank
16	UCO Bank	30	ICICI
17	Union Bank of India	31	Indusind Bank
18	United Bank of India	32	Yes Bank

BANK GUARANTEE FOR PERFORMANCE SECURITY

(Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s))

Bank Guarantee No:

Date:

NAME OF ISSUING BANK

& ADDRESS

BANK EMAIL ID:

BANK PHONE NO:

SFMS Serial No *:

AUTHORISED SIGNATORIES CELL PHONE NO:

BANK FAX NO:

IFSC AND MICR CODE

Dear Sirs,

1. In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) (VENDOR CODE) with its registered office at _____² hereinafter referred to as the 'Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated³ valued at Rs.....⁴ (Rupees -----)/FC.....(in words.....) for⁵ (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to% (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

2. we,, (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs -- -----⁶ (Rupees -----) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

3. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

4. We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.
5. The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.
6. We thebank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.
7. We.....BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.
8. The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier's liabilities.
9. This Guarantee shall remain in force upto and including.....⁷ and shall be extended from time to time for such period as may be desired by Employer.
10. This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.
11. Unless a demand or claim under this guarantee is made on us in writing on or before the **claim period last date**⁸ we shall be discharged from all liabilities under this guarantee thereafter.
12. Any claim or dispute arising under the terms of this document shall only be enforced or settled in the Courts at Tiruchirappalli.

13. We..... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed.....⁶
- b) This Guarantee shall be valid up to⁷
- c) Unless the Bank is served a written claim or demand on or before (minimum 3 to 6 months from the expiry date)⁸ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

14. We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

¹ NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER AND VENDOR CODE ASSIGNED BY BHEL .

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE

⁵ PROJECT/SUPPLY DETAILS

⁶ BG AMOUNT IN FIGURES AND WORDS

⁷ VALIDITY DATE (dd /mmm /yyyy)

⁸ DATE OF EXPIRY OF CLAIM PERIOD (dd /mmm /yyyy)

***Structured Financial Messaging System (SFMS)** has been/ is being implemented by the Banks as per the Ministry of Finance's instructions for Sending and receiving Bank Guarantee and also Inland Letter of Credit Instruments. The SFMS provides a platform for secure communication within the Bank and between Banks. As such, SFMS can prove to be an excellent IT enabled platform for getting secure confirmations from the Banks in respect of Bank Guarantees issued in favor of BHEL.

e- Procurement – BHEL TRICHY

Dear Sir/Madam,

BHEL Trichy has implemented e-Procurement and it is going to be the way of working in future.

The Requirement :

1. A PC with Internet connectivity &
2. DSC (Digital Signature Certificate)(**Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION**)

The following are the benefits of e-Procurement Process.

1. Ensuring no offer is missed due to last minute submission, postal delays etc.
2. Reduced Tendering & ordering cycle time
3. Economical, smoother & speedy communication
4. Greater Transparency
5. Big step towards paperless procurement process , Minimal human error
6. No geographical barriers
7. Vendor gets alerts regarding issue of new tender enquiry, amendments, clarifications etc
8. Submission of offer from the comforts of their office from any location
9. On line clarifications
10. Direct Cost Savings such as reduced Paper costs, reduced printing costs, reduced mailing costs, reduced telephone costs and reduced fax costs.

BHEL has finalized the e-procurement service Provider

M/s m Junction services Limited, Kolkata

Godrej Water Side, 3rd Floor, Tower-1, Plot-V, Block - DP
Sector - V, Salt Lake, Kolkata-700091, West Bengal, INDIA

Please get in touch with them immediately. The contact details of the service provider is given below:

SL	NAME	e-Mail ID	Mobile No	ROLE
1	DHANARAJ.P	panneer.dhanaraj@mjunction.in	(+91) 9282403700	Customer Relationship Mgr.
2	HELP DESK	eps.customercare@mjunction.in	033 – 66106426 / 54 9163348104,9231027017	

The process of utilizing e-procurement necessitates usage of DSC (Digital Signature Certificate)(**Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION**) and you are requested to procure the same immediately, if not presently available with you. Please note that only with DSC, you will be able to login the e-procurement secured site and take part in the tendering process.

The contact details of the DSC Certifying Authority as given below

1	e-Mudhra	http://www.e-Mudhra.com	5	NIC	www.safescrypt.com
2	GNFC	www.ncodesolutions.com	6	Safescrypt	www.safescrypt.com
3	IDRBT	www.idrbtca.org.in	7	TCS	www.tcs-ca.tcs.co.in
4	MTNLTrustline	www.mtnltrustline.com			

Your early action in this regard is highly solicited.

Regards

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPALLI-620014

FUEL SYSTEMS/PRODUCT ENGINEERING (FOSSIL BOILERS)

TITLE SHEET



**SPECIFICATION FOR
POWER OPERATED SHUT OFF GATE
- KNIFE EDGE GATE VALVE WITH
PNEUMATIC ACTUATOR**

SPECIFICATION NUMBER: TCC 1041 / REVISION NO.03

REVISION STATUS

03	08-07-15	NFPA clause updated and Gasket material options revised (CL.5.6).	M.V	GSK & MTP
02	16-06-14	GASKET MATERIAL SELECTION (CL.5.6)ADDED	MCHSG	GSK & MTP
01	16-09-08	SPECIFICATION UPDATED	CSS	MTP
Rev.No.	Date	Description	Altered	Checked & Approved

	NAME	SIGNATURE	DATE
PREPARED	G.SARAVANAKUMAR	-Sd-	21.03.2007
CHECKED	M.THANDAPANI	-Sd-	21.03.2007
APPROVED	S.V.SIVARAMULU	-Sd-	21.03.2007

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 02/09
---	--	--	-------------------------------------

1.0 SCOPE

The scope covers the design, supply, manufacture, testing, certification, marking and identification and packing for shipment of Round port Knife Edge Gate Valve assembly with Pneumatic Actuator for the specified duty conditions in Annexure.

The accessories those are to be supplied with gate, are tabulated in this document. This list is to be considered as non-exhaustive. The supplier is requested to state the items that has to be supplied to meet the intent of the requirements, which will be used during the evaluation of all potential suppliers.

The use of Supplier references, catalogue numbers shall not be deemed to supersede the performance requirements of the purchase order.

2.0 EXTENT OF SUPPLY

The following extent of supply given is not necessarily exhaustive and shall not relieve the contractor of his responsibility to provide plant, equipment and services necessary to satisfy the performance criteria and guarantees specified, safely and efficiently.

Provide 6 numbers of Operation and Maintenance (O&M) instructions.

2.1 EXCLUSIONS

None.

3.0 TERMINAL POINTS

The terminal points for the extent of supply of the valves shall be,

- Fuel inlet elbow flange at valve inlet
- Coal nozzle flange at valve outlet
- All terminals connected to JUNCTION BOX (JB) & JB shall be on supplier's scope
- Single instrument air connection to air filter regulator (interconnecting pipes by Supplier)

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 03/09
---	--	---	------------------------------

4.0 TECHNICAL REQUIREMENTS

This knife edge gate valve is mounted between the fuel inlet elbow of coal – air piping and coal burner nozzle. One valve per coal pipe is envisaged. Pulverized coal – air mixture at a temperature of 90°C to 120°C flows through these gates at a velocity of 25 m/sec. The leading edge of the valve blade shall contain a 45° chamfer to eject out the accumulated dust and clean the blade guides during closing. Vendor shall include necessary provision in the valve to prevent ingress of dust and ensure friction free movement. The supplier has to ensure that the valves are suitable for operation in the specified conditions.

The supplier shall provide suitable body tapping for air to purge out the dust collected in the dead space between the body inner faces when the blade is retracted. To the body tapping supplier shall provide means for an air purge prior to valve closing. All valves shall be capable of safe, reliable operation and shall comply with the requirements of NFPA 85 / 2015 in particular to the sub-section 9.4.6.13 and 9.4.5.1.6 of less than 13.8 KPa gauge pressure for dust tight valve application.

As the coal particles are highly erosive, the valve supplier shall provide measures to combat erosion of valve internals. Vendor shall indicate the details in the offer.

Proper cable glands and tube fittings, for taking out/in cables and air tubing shall be provided. The limit switches shall be mounted on to gate valve to give signal for valve open/close condition. Overall dimensions of the gate shall be as per the attached drawing 2-47-003-01439 or 2-47-200-01750 whichever is asked for in the enquiry.

4.1 VALVE OPERATION

During service the valve is always in opened condition and will be closed only during pulveriser maintenance. The valves are remote operated by a double acting pneumatic actuator with limit switch indicating the open & closed position of the valve. Each valve shall be provided with one solenoid valve. The solenoid valve shall be energized to open and energized to close.

4.2 OPERATING ENVIRONMENT

The equipment will be required to operate in dust laden pulverized coal-air mixture, which can be expected to settle on the valve components during normal operation. The coal-air mixture is very erosive in nature and hence the interior surfaces of the valve shall be protected suitably.



**SPECIFICATION FOR
POWER OPERATED SHUT-OFF GATE
/KNIFE EDGE GATE VALVE
WITH PNEUMATIC ACTUATOR**

**SPECN.NO.
TCC-1041
REV-03**

**PAGE
04/09**

5.0 ACCESSORIES

The following accessories shall be assembled with Knife edge gate valves. The valve shall be integral part of the assembly with the power cylinder, limit switches, solenoid valve and air filter regulator and shall be supplied in fully piped up condition. Purchaser to provide only inlet air connection to the Air filter regulator.

5.1 AIR CYLINDER

The air cylinder shall be of double acting type and of heavy duty. The cylinder body shall be corrosion resistant and shall have a fine finish preferably honed that ensures minimum friction and long seal life. A self-centering cushion sleeve shall be provided at both sides of the piston. The piston rod shall be covered with leather gaiter to prevent dust and water intrusion for smooth operation.

The power cylinder shall be capable of stroking the valve to full travel on load at an air pressure of 3.0 Kg/Sq.cm (g). The material of gland seal/piston shall be suitable to withstand temperature of 120°C and a pressure of 7.0 Kg/Sq.cm (g).

5.2 SOLENOID VALVE (SV)

The heavy-duty dual coil solenoid valve shall be of ASCO make or ROTEX make with 5 ports, 2 way type and shall be as per Clause 11.3.3 of data sheet. The Solenoid valve shall be mounted at upstream side of the valve to enable easier approach at site.

5.3 AIR FILTER CUM REGULATOR (AFR)

A suitably sized air filter cum regulator of make of PLACKA / AIRMATIC / NUCON / FESTO shall be provided. The filter cum regulator shall be of metallic bowl only. The air filter cum regulator shall have the range of regulation from 6.0 kg/sq.cm (g) to 1.0 kg/sq.cm (g).

5.4 LIMIT SWITCH (LS)

Two numbers heavy duty limit switches of OMRAN or HONEYWELL make with DPDT contacts to indicate open/closed position of the valve with rating of 5A 230V AC / 0.5A 220V DC shall be provided. The enclosure shall be of IP55 class with ¾" NPT conduit for cable entry. The limit switch shall be firmly fixed on to a mounting plate.

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 05/09
---	--	---	------------------------------

5.5 COPPER TUBING & FITTINGS

Necessary PVC sheathed copper tubing of sufficient wall thickness and good quality of fittings shall also form part of the assembly.

5.6 COMPRESSION GASKET SELECTION

Gasket shall be selected to withstand the higher compression load at elevated temperatures. These gaskets shall be selected for minimum design strength of 4000psi and continuous operating temperature not less than 120° C. Preferable material of gaskets is Silicone Rubber 60/70A shore a durometer or harder rated to +232°C to +260°C or Non-asbestos gasket of aramid fiber with a NBR Binder or higher grade meeting the design requirement said above. Two gaskets per gate shall be supplied.

6.0 INSPECTION AND TESTING

Supplier shall submit QP for Purchaser's review and approval. It is expected that Quality plan shall encompass the Supplier's standard inspection to satisfy all applicable design code and its testing requirements and will involve, as a minimum, the examination of material certificates, dimensional checks on parts and sub-assemblies, examination by visual or other methods for welds and material surfaces. The Purchaser's inspecting authority is to be allowed reasonable access to the Supplier's works during manufacture/ testing before delivery, in accordance with the approved Quality plan.

6.1 TESTING

1. The smooth operation of the valve shall be tested for an instrument air pressure of 3.0 kg/sq.cm.
2. Body and seat shall be tested accordingly as called for in API or MSS or any other equivalent standard.
3. Each valve shall be tested for leak as per API or MSS or any other equivalent standard for "**no visual leak**" condition.

7.0 CODES AND STANDARDS

The Supplier is required to list all the standards applicable to the equipment covered in this specification. To be provided and agreed before manufacture proceeds. Where the Supplier considers that the standards used in the design, manufacture or operation of the equipment may vary with the contents of this specification, then the matter shall be immediately brought to the written attention of Purchaser.

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 06/09
---	--	---	------------------------------

8.0 DOCUMENTATION

- 8.1 Technical offer shall contain complete details as called for specification confirming the requirements point by point.
- 8.2 Completely filled in data sheet CLAUSE 11.0.
- 8.3 Supplier shall submit the dimensional drawing giving details of MOC, accessories, dimensions, pneumatic hook up diagram, actuator selection data, and valve test parameters. Drawings shall be submitted in AutoCAD format and legible hard copies.
- 8.4 Confirmation for BHEL dimensional drawing as per enquiry.
- 8.5 Supplier may separately quote for the list of spares for two years of trouble free operation.
- 8.6 Supplier to quote for commissioning spares along with the main offer.
- 8.7 Reference list.

9.0 GUARANTEE

The performance guarantee shall be given for minimum a period of 12 months from the date of commissioning or 18 months from the date of shipment whichever is earlier.

10.0 PACKING AND DESPATCH

After inspection, the assembly shall be cleaned, prepared and suitably protected for despatch in such a way as to minimize the possibility of damage and deterioration during transit and storage.

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 07/09
---	--	--	-----------------------

11.0 DATA SHEET

BHEL MATERIAL CODE:L181814720001001

11.1 VALVE DATA SHEET

	BHEL SPECIFICATION	VENDOR CONFIRMATION
DESIGN PRESSURE	To comply with NFPA 85, Valve body/ flanges shall be designed for 250 class.	
NORMAL WORKING PRESSURE	300-400 mm WC	
Design temperature	120°C	
Normal working temperature	90°C	
Indoor or outdoor installation	Outdoor	
Design pressure drop	Vendor to furnish	
Maximum pipe velocity	28 m/s	
Operation/frequency of use	Normally open. Closed during mill maintenance	
Flow medium	Hot air and coal particles	
Coal particle size	75 µm and less – 75% through 200 Mesh	
Erosion	The coal particles are highly erosive and the supplier shall provide measures to combat erosion of valve internals	

11.2 Mechanical Data sheet for Power operated shut-off gate

Model No.	Supplier to furnish	
Service	Coal pipe shut-off	
Valve performance code	NFPA 85 – Dust tight Valve	
Size	Valve ID = 632 mm Ref: 2-47-003-01439/01	
End Connection - Flanged	Flange details as per enclosed drawing	
Body Tapping (Yes/No)	Yes	
Remote Operation Details	Double acting pneumatic actuator, energized to open and energized to close	
Maximum Leakage Rate	"No Visual leak" as per API/MSS or equivalent specification	
Quality Plan	Supplier to furnish	
Painting Details	As per approved QP	



**SPECIFICATION FOR
POWER OPERATED SHUT-OFF GATE
/KNIFE EDGE GATE VALVE
WITH PNEUMATIC ACTUATOR**

**SPECN.NO.
TCC-1041
REV-03**

**PAGE
08/09**

BHELMATERIAL CODE: L181814720001001

	BHEL SPECIFICATION	VENDOR CONFIRMATION
Body Ends Sealed (Yes/No)	Yes	
Joining Surfaces Protected (Yes/No)	Yes	
MATERIAL SELECTION		
Body	Carbon steel (Specify grade)	
Slide	Stainless Steel (Specify grade)	
Seals	Supplier to furnish	
Body Connector	Supplier to furnish	
Insert	Supplier to furnish	
Cover	Supplier to furnish	
Gasket	Silicone Rubber 60/70A shore a durometer or harder rated to +232°C to +260°C or Non-asbestos gasket of aramid fiber with a NBR Binder or higher grade to meet design criteria	
Fasteners	SA193 GRB7 or higher strength	

11.3 ACCESSORIES

11.3.1 POWER CYLINDER

BHEL SPECIFICATION	VENDOR CONFIRMATION
Type	
Make	
Size – Diameter x Stroke	
Selection criteria of Power cylinder	Attach calculation sheet
End Connection details (Air entry)	
Bellows provided for air cylinders - Required	
Air consumption per stroke	Nm ³ /Hr

11.3.2 LIMIT SWITCH

Type	
Make & Model	
Contact	
Rating	
Enclosure IP55 Class	
Cable entry Conduit size	

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 09/09
---	--	--	-----------------------

BHEL MATERIAL CODE: L181814720001001

BHEL SPECIFICATION	VENDOR CONFIRMATION
11.3.3 Solenoid valve	5 Port-2way Dual coil
Type	
Make & Model	
Power supply / Coil Rating	240V AC ± 10%
11.3.4 Air Filter Cum Regulator	
Make	
Size	
End Connection size at BHEL TP	NPT (F)
11.3.5 Copper Tubing & Fitting provided	YES
11.3.6 Housing for accessories	Required
Confirm provision of box housing filter/regulator & solenoid valves	
11.4 Commissioning Spares Quoted with Offer	YES / NO
11.5 2/3 Years operational Spares Quoted with Offer	YES / NO
11.6 General Arrangement Drawing No.	

NOTE:

Vendor shall fill-up the valve data sheet, Mechanical data sheet, Data sheets for accessories and others (Clause 11), submit along with the offer duly signing the same.

BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPALLI-620014

FUEL SYSTEMS/PRODUCT ENGINEERING (FOSSIL BOILERS)

TITLE SHEET



**SPECIFICATION FOR
POWER OPERATED SHUT OFF GATE
- KNIFE EDGE GATE VALVE WITH
PNEUMATIC ACTUATOR**

SPECIFICATION NUMBER: TCC 1041 / REVISION NO.03

REVISION STATUS

03	08-07-15	NFPA clause updated and Gasket material options revised (CL.5.6).	M.V	GSK & MTP
02	16-06-14	GASKET MATERIAL SELECTION (CL.5.6)ADDED	MCHSG	GSK & MTP
01	16-09-08	SPECIFICATION UPDATED	CSS	MTP
Rev.No.	Date	Description	Altered	Checked & Approved

	NAME	SIGNATURE	DATE
PREPARED	G.SARAVANAKUMAR	-Sd-	21.03.2007
CHECKED	M.THANDAPANI	-Sd-	21.03.2007
APPROVED	S.V.SIVARAMULU	-Sd-	21.03.2007

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 02/09
---	--	---	-----------------------

1.0 SCOPE

The scope covers the design, supply, manufacture, testing, certification, marking and identification and packing for shipment of Round port Knife Edge Gate Valve assembly with Pneumatic Actuator for the specified duty conditions in Annexure.

The accessories those are to be supplied with gate, are tabulated in this document. This list is to be considered as non-exhaustive. The supplier is requested to state the items that has to be supplied to meet the intent of the requirements, which will be used during the evaluation of all potential suppliers.

The use of Supplier references, catalogue numbers shall not be deemed to supersede the performance requirements of the purchase order.

2.0 EXTENT OF SUPPLY

The following extent of supply given is not necessarily exhaustive and shall not relieve the contractor of his responsibility to provide plant, equipment and services necessary to satisfy the performance criteria and guarantees specified, safely and efficiently.

Provide 6 numbers of Operation and Maintenance (O&M) instructions.

2.1 EXCLUSIONS

None.

3.0 TERMINAL POINTS

The terminal points for the extent of supply of the valves shall be,

- Fuel inlet elbow flange at valve inlet
- Coal nozzle flange at valve outlet
- All terminals connected to JUNCTION BOX (JB) & JB shall be on supplier's scope
- Single instrument air connection to air filter regulator (interconnecting pipes by Supplier)

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 03/09
---	---	---	-----------------------

4.0 TECHNICAL REQUIREMENTS

This knife edge gate valve is mounted between the fuel inlet elbow of coal – air piping and coal burner nozzle. One valve per coal pipe is envisaged. Pulverized coal – air mixture at a temperature of 90°C to 120°C flows through these gates at a velocity of 25 m/sec. The leading edge of the valve blade shall contain a 45° chamfer to eject out the accumulated dust and clean the blade guides during closing. Vendor shall include necessary provision in the valve to prevent ingress of dust and ensure friction free movement. The supplier has to ensure that the valves are suitable for operation in the specified conditions.

The supplier shall provide suitable body tapping for air to purge out the dust collected in the dead space between the body inner faces when the blade is retracted. To the body tapping supplier shall provide means for an air purge prior to valve closing. All valves shall be capable of safe, reliable operation and shall comply with the requirements of NFPA 85 / 2015 in particular to the sub-section 9.4.6.13 and 9.4.5.1.6 of less than 13.8 KPa gauge pressure for dust tight valve application.

As the coal particles are highly erosive, the valve supplier shall provide measures to combat erosion of valve internals. Vendor shall indicate the details in the offer.

Proper cable glands and tube fittings, for taking out/in cables and air tubing shall be provided. The limit switches shall be mounted on to gate valve to give signal for valve open/close condition. Overall dimensions of the gate shall be as per the attached drawing 2-47-003-01439 or 2-47-200-01750 whichever is asked for in the enquiry.

4.1 VALVE OPERATION

During service the valve is always in opened condition and will be closed only during pulveriser maintenance. The valves are remote operated by a double acting pneumatic actuator with limit switch indicating the open & closed position of the valve. Each valve shall be provided with one solenoid valve. The solenoid valve shall be energized to open and energized to close.

4.2 OPERATING ENVIRONMENT

The equipment will be required to operate in dust laden pulverized coal-air mixture, which can be expected to settle on the valve components during normal operation. The coal-air mixture is very erosive in nature and hence the interior surfaces of the valve shall be protected suitably.



**SPECIFICATION FOR
POWER OPERATED SHUT-OFF GATE
/KNIFE EDGE GATE VALVE
WITH PNEUMATIC ACTUATOR**

**SPECN.NO.
TCC-1041
REV-03**

**PAGE
04/09**

5.0 ACCESSORIES

The following accessories shall be assembled with Knife edge gate valves. The valve shall be integral part of the assembly with the power cylinder, limit switches, solenoid valve and air filter regulator and shall be supplied in fully piped up condition. Purchaser to provide only inlet air connection to the Air filter regulator.

5.1 AIR CYLINDER

The air cylinder shall be of double acting type and of heavy duty. The cylinder body shall be corrosion resistant and shall have a fine finish preferably honed that ensures minimum friction and long seal life. A self-centering cushion sleeve shall be provided at both sides of the piston. The piston rod shall be covered with leather gaiter to prevent dust and water intrusion for smooth operation.

The power cylinder shall be capable of stroking the valve to full travel on load at an air pressure of 3.0 Kg/Sq.cm (g). The material of gland seal/piston shall be suitable to withstand temperature of 120°C and a pressure of 7.0 Kg/Sq.cm (g).

5.2 SOLENOID VALVE (SV)

The heavy-duty dual coil solenoid valve shall be of ASCO make or ROTEX make with 5 ports, 2 way type and shall be as per Clause 11.3.3 of data sheet. The Solenoid valve shall be mounted at upstream side of the valve to enable easier approach at site.

5.3 AIR FILTER CUM REGULATOR (AFR)

A suitably sized air filter cum regulator of make of PLACKA / AIRMATIC / NUCON / FESTO shall be provided. The filter cum regulator shall be of metallic bowl only. The air filter cum regulator shall have the range of regulation from 6.0 kg/sq.cm (g) to 1.0 kg/sq.cm (g).

5.4 LIMIT SWITCH (LS)

Two numbers heavy duty limit switches of OMRAN or HONEYWELL make with DPDT contacts to indicate open/closed position of the valve with rating of 5A 230V AC / 0.5A 220V DC shall be provided. The enclosure shall be of IP55 class with ¾" NPT conduit for cable entry. The limit switch shall be firmly fixed on to a mounting plate.

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 05/09
---	--	---	-----------------------

5.5 COPPER TUBING & FITTINGS

Necessary PVC sheathed copper tubing of sufficient wall thickness and good quality of fittings shall also form part of the assembly.

5.6 COMPRESSION GASKET SELECTION

Gasket shall be selected to withstand the higher compression load at elevated temperatures. These gaskets shall be selected for minimum design strength of 4000psi and continuous operating temperature not less than 120° C. Preferable material of gaskets is Silicone Rubber 60/70A shore a durometer or harder rated to +232°C to +260°C or Non-asbestos gasket of aramid fiber with a NBR Binder or higher grade meeting the design requirement said above. Two gaskets per gate shall be supplied.

6.0 INSPECTION AND TESTING

Supplier shall submit QP for Purchaser's review and approval. It is expected that Quality plan shall encompass the Supplier's standard inspection to satisfy all applicable design code and its testing requirements and will involve, as a minimum, the examination of material certificates, dimensional checks on parts and sub-assemblies, examination by visual or other methods for welds and material surfaces. The Purchaser's inspecting authority is to be allowed reasonable access to the Supplier's works during manufacture/ testing before delivery, in accordance with the approved Quality plan.

6.1 TESTING

1. The smooth operation of the valve shall be tested for an instrument air pressure of 3.0 kg/sq.cm.
2. Body and seat shall be tested accordingly as called for in API or MSS or any other equivalent standard.
3. Each valve shall be tested for leak as per API or MSS or any other equivalent standard for "**no visual leak**" condition.

7.0 CODES AND STANDARDS

The Supplier is required to list all the standards applicable to the equipment covered in this specification. To be provided and agreed before manufacture proceeds. Where the Supplier considers that the standards used in the design, manufacture or operation of the equipment may vary with the contents of this specification, then the matter shall be immediately brought to the written attention of Purchaser.



**SPECIFICATION FOR
POWER OPERATED SHUT-OFF GATE
/KNIFE EDGE GATE VALVE
WITH PNEUMATIC ACTUATOR**

SPECN.NO.
TCC-1041
REV-03

PAGE
06/09

8.0 DOCUMENTATION

- 8.1 Technical offer shall contain complete details as called for specification confirming the requirements point by point.
- 8.2 Completely filled in data sheet CLAUSE 11.0.
- 8.3 Supplier shall submit the dimensional drawing giving details of MOC, accessories, dimensions, pneumatic hook up diagram, actuator selection data, and valve test parameters. Drawings shall be submitted in AutoCAD format and legible hard copies.
- 8.4 Confirmation for BHEL dimensional drawing as per enquiry.
- 8.5 Supplier may separately quote for the list of spares for two years of trouble free operation.
- 8.6 Supplier to quote for commissioning spares along with the main offer.
- 8.7 Reference list.

9.0 GUARANTEE

The performance guarantee shall be given for minimum a period of 12 months from the date of commissioning or 18 months from the date of shipment whichever is earlier.

10.0 PACKING AND DESPATCH

After inspection, the assembly shall be cleaned, prepared and suitably protected for despatch in such a way as to minimize the possibility of damage and deterioration during transit and storage.

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 07/09
---	--	--	-----------------------

11.0 DATA SHEET

BHEL MATERIAL CODE:L182114720001001 & L182214720001001

11.1 VALVE DATA SHEET

	BHEL SPECIFICATION	VENDOR CONFIRMATION
DESIGN PRESSURE	To comply with NFPA 85, Valve body/ flanges shall be designed for 250 class.	
NORMAL WORKING PRESSURE	300-400 mm WC	
Design temperature	120°C	
Normal working temperature	90°C	
Indoor or outdoor installation	Outdoor	
Design pressure drop	Vendor to furnish	
Maximum pipe velocity	28 m/s	
Operation/frequency of use	Normally open. Closed during mill maintenance	
Flow medium	Hot air and coal particles	
Coal particle size	75 µm and less – 75% through 200 Mesh	
Erosion	The coal particles are highly erosive and the supplier shall provide measures to combat erosion of valve internals	

11.2 Mechanical Data sheet for Power operated shut-off gate

Model No.	Supplier to furnish	
Service	Coal pipe shut-off	
Valve performance code	NFPA 85 – Dust tight Valve	
Size	Valve ID = 632 mm Ref: 2-47-003- 01439/01	
End Connection - Flanged	Flange details as per enclosed drawing	
Body Tapping (Yes/No)	Yes	
Remote Operation Details	Double acting pneumatic actuator, energized to open and energized to close	
Maximum Leakage Rate	"No Visual leak" as per API/MSS or equivalent specification	
Quality Plan	Supplier to furnish	
Painting Details	As per approved QP	



**SPECIFICATION FOR
POWER OPERATED SHUT-OFF GATE
/KNIFE EDGE GATE VALVE
WITH PNEUMATIC ACTUATOR**

SPECN.NO.
TCC-1041
REV-03

PAGE
08/09

BHELMATERIAL CODE: L182114720001001 & L182214720001001

	BHEL SPECIFICATION	VENDOR CONFIRMATION
Body Ends Sealed (Yes/No)	Yes	
Joining Surfaces Protected (Yes/No)	Yes	
MATERIAL SELECTION		
Body	Carbon steel (Specify grade)	
Slide	Stainless Steel (Specify grade)	
Seals	Supplier to furnish	
Body Connector	Supplier to furnish	
Insert	Supplier to furnish	
Cover	Supplier to furnish	
Gasket	Silicone Rubber 60/70A shore a durometer or harder rated to +232°C to +260°C or Non-asbestos gasket of aramid fiber with a NBR Binder or higher grade to meet design criteria	
Fasteners	SA193 GRB7 or higher strength	

11.3 ACCESSORIES

11.3.1 POWER CYLINDER

BHEL SPECIFICATION	VENDOR CONFIRMATION
Type	
Make	
Size – Diameter x Stroke	
Selection criteria of Power cylinder	Attach calculation sheet
End Connection details (Air entry)	
Bellows provided for air cylinders - Required	
Air consumption per stroke	Nm ³ /Hr

11.3.2 LIMIT SWITCH

Type	
Make & Model	
Contact	
Rating	
Enclosure IP55 Class	
Cable entry Conduit size	

	SPECIFICATION FOR POWER OPERATED SHUT-OFF GATE /KNIFE EDGE GATE VALVE WITH PNEUMATIC ACTUATOR	SPECN.NO. TCC-1041 REV-03	PAGE 09/09
---	--	---	-----------------------

BHEL MATERIAL CODE: L182114720001001 & L182214720001001

BHEL SPECIFICATION	VENDOR CONFIRMATION
11.3.3 Solenoid valve	5 Port-2way Dual coil
Type	
Make & Model	
Power supply / Coil Rating	240V AC $\pm$ 10%
11.3.4 Air Filter Cum Regulator	
Make	
Size	
End Connection size at BHEL TP	NPT (F)
11.3.5 Copper Tubing & Fitting provided	YES
11.3.6 Housing for accessories	Required
Confirm provision of box housing filter/regulator & solenoid valves	
11.4 Commissioning Spares Quoted with Offer	YES / NO
11.5 2/3 Years operational Spares Quoted with Offer	YES / NO
11.6 General Arrangement Drawing No.	

NOTE:

Vendor shall fill-up the valve data sheet, Mechanical data sheet, Data sheets for accessories and others (Clause 11), submit along with the offer duly signing the same.