



TD-106-1 Rev No. 5 Form No.		PRODUCT STANDARD PULVERISERS HYDERABAD		Product STD NO.	BA 50054																
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<div style="display: flex;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); padding: 5px;"> COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company. </div> <div style="flex-grow: 1; padding: 10px;"> <p style="text-align: center;"><u>TECHNICAL SPECIFICATION FOR B.F SHUT OFF GATE WITH ELECTRICAL ACTUATOR</u></p> <p>1.0 PURPOSE This technical specification is for manufacture and supply of ball feeding shut off gate(B.F.Gate) with electrical actuator to be used in ball tube mills. These gates are also called slide gates.</p> <p>2.0 DESIGN REQUIREMENT & OPERATING PRINCIPLE These slide gates are installed in the ball feeding assembly of ball tube mills as shut off gates. The system consist of 1 no of container 2 nos of slow opening shut off gates.</p> <p>When it is planned to add the balls, the top shut off gate is opened & the balls are dropped into the lock. Then the top shut off gate is closed and the bottom shut off gate is opened so as to let the balls drop gently into the mill through the normal coal feed opening.</p> <p>3.0 GENERAL RECOMMENDATIONS</p> <p>3.1 These shut off gates shall be electric actuator driven.</p> <p>3.2 Particular care should be taken with the tightness of these shutoff gates, as the grinding circuit is under pressure.</p> <p>3.3 The bottom shut off gates must withstand the impact of the balls as they are loaded into the lock.</p> <p>3.4 Electric actuator should be as per product standard BA54088 ,if separately procured by BHEL then, the same will be delivered to shut off gate supplier. After assembling the actuator and testing the gate, the assembly should be supplied together to BHEL.</p> <p>4.0 OPERATING DATA The ball feeding gate should be resistant to ball impact.</p> <table border="0"> <thead> <tr> <th><u>PARAMETER</u></th> <th><u>VALUE</u></th> </tr> </thead> <tbody> <tr> <td>Size (Diameter)</td> <td>250 mm</td> </tr> <tr> <td>Temperature (Max) *</td> <td>100 Deg. C</td> </tr> <tr> <td>Pressure</td> <td>1000 mm wc</td> </tr> <tr> <td>Degree of tightness</td> <td>100 %</td> </tr> <tr> <td>Type of flow control</td> <td>open / shut</td> </tr> <tr> <td>Speed of operation</td> <td>120 to 150 (Sec)</td> </tr> <tr> <td>Method of operation</td> <td>Electric Actuator.</td> </tr> </tbody> </table> <p>*Normally 100 Deg. C, but accidental temperature can reach 300 Deg. C</p> </div> </div>						<u>PARAMETER</u>	<u>VALUE</u>	Size (Diameter)	250 mm	Temperature (Max) *	100 Deg. C	Pressure	1000 mm wc	Degree of tightness	100 %	Type of flow control	open / shut	Speed of operation	120 to 150 (Sec)	Method of operation	Electric Actuator.
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Revisions: Refer to record of revisions:		Prepared: TMR	Approved: JGK	Date: 05.02.04																	

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5.0 **SCOPE OF SUPPLY**

Completely assembled dia 250 mm ball feeding slide shut off gates with electrical actuator, fixing bolts, nuts & washers as per drawing no. 1-00-620-50230.(All required part details to be worked out by sub vendor to suit the final assembly dimensions.)

6.0 **LIMITS OF SUPPLY**

- Up to and including connecting flanges with connecting fasteners.
- Up to and including connecting flanges for electric actuators.
- Up to and including cover for mechanical parts.
- Corrosion protection & painting, and spare packing paste for commissioning.
- Shut off gates and actuator fixing fasteners.
- Electric Actuators + nuts for spindle.


7.0 **TECHNICAL SPECIFICATIONS**


7.1 Body Material	BS 1452 Gr 220 Cast Iron
7.2 Body Thickness	68 mm
7.3 Blade material	ASTM A240 TYPE 304 SS
7.4 Blade Thickness	10 mm
7.5 Insert	No
7.6 Body Seal Material	Viton
7.7 Body Seal Diameter	6.4 mm
7.8 Transverse Seal Material	Viton
7.9 Transverse Seal Type	Double Type B
7.10 Scraper for Traverse Seal material	BS 2875 CZ 121 Brass
7.11 Scraper for Traverse Seal Size	10 mm x 5 mm
7.12 Packing	Silicon Grease + Mineral Fibre
7.13 Spindle Material	BS970 EN56 AM Chrome Steel
7.14 Spindle diameter	30 mm
7.15 Piller material	BS970 (EN 1B)
7.16 Top plate material	BS970 (EN 1A)
7.17 NFPA (0, 35 MPA)	Yes
7.18 Thrust with safety factor	900 Da N
7.19 Minimum Motor Torque	3.6 Da Nm
7.20 Limit switches	Two Limit Switches per gate for open and closed positions.

Sealing to environment 100% against P.F. ingress for all the valves.

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		<p>8.0 <u>QUALITY</u></p> <p>8.1 The vendor has to strictly follow the Quality Plan enclosed for the actuator and shut off gate</p> <p><u>8.2 INSPECTION, SHOP ASSEMBLY AND TESTS.</u></p> <p>Dimensions of each B.F Shut off gate ,surface finish , tolerances to be strictly maintained ,checked and recorded.</p> <p>The following tests or inspection are to be done after shop assembly. The tests noted with “ * ” could be repeated at random in presence of BHEL Engineer during final acceptance.</p> <p><u>A Mechanical Test</u></p> <ul style="list-style-type: none"> - 100 cycles will be carried out on each first kind of slide gates as cycle test. - 10 * cycles will be carried out on all the other gates as a routine test. - Contractor to assemble actuator for these tests. <p><u>B Tightness Test *</u></p> <p>All the slide gates will be tried for getting a tightness of 100% with soap bubbles (no leak) under a pressure of 30 kpa.</p> <p><u>C Hydraulic Test*</u></p> <p>Each slide gate will be tried under a water pressure of 0, 35 MPa (3,5 bars)</p> <p><u>D Dimensional *</u></p> <p>All the controlled dimensions shall be checked. The flanges will be checked using jigs. All the material certificates shall be checked.</p> <p>9.0 <u>GENERAL</u></p> <p>The supplier shall give the details about their shut off gate along with electrical actuator details, materials for the components and reference list. The quality plan and test procedure should be followed.</p> <p>10.0 <u>TEST CERTIFICATES</u></p> <p>The following documents shall be supplied along with the supply of shut off gates.</p> <ul style="list-style-type: none"> A. Test certificates for chemical and mechanical properties. B. Test protocol. C. Dimensional Report. 			

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11.0 **DOCUMENTS**

The following documents shall be submitted within two months from placement of purchase order.

- A. General literature of electric actuator and shut off gate – 4 copies
- B. Operation & maintenance manual - 4 copies.
- C. Literature and O&M manuals on Electronic-media (2 nos. of CD's)
- D. List of recommended spares.

12.0 **PACKING & DESPATCH**

The shut off gate and electric actuator should be dispatched seperately, but proper match marking with proper identification shall be given on each set.


The valve spindle shall be pre greased prior to dispatch and both flanges to be covered with hard board covers.

13.0 **QUALITY PLAN**

Manufacture and supply as per quality plan No. QP.No. **HYQA/BM/159**
 Enclosed as annexure A.

LIST OF ITEM VARIANTS

VAR	ITEM DISCRIPTION	MATERIAL CODE
01	B.F.GATE	BA9750054016
02	B.F. GATE SPINDLE	BA9750054024
03	B.F.GATE DRIVE BUSH	BA9750054032
04	B.F.GATE LOCATOR BUSH	BA9750054040
05	B.F.GATE BLADE	BA9750054059
06	B.F.GATE VITON RUBBER SEAL	BA9750054067
07	B.F.GATE ACTUATOR LIMIT SWITCH	BA9750054075
08	SHUT OFF GATE FOR BALL FEEDING SYSTEM AS PER SPEC. BA50054 WIH ELECTRICAL ACTUATOR AS PER SPEC. BA54088	BA9750054083

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RECORD OF REVISIONS

REV. NO.	Date	Revision details	Revised	Approved
02	15/06/99	List of item variants & variant sheet added.	TMR	
03	17/1/03	Annexure A – Quality plan added.	Pavan	TMR
04	15.05.03	Electric actuator specification changed to BA54087	T. Mohan Rao	J.G.Kulkarni.
05	29.09.03	In Page 5 item no. column removed. (Var.01 material code changed to BA9750054016)	Pavan	T.Mohan Rao
06	05.02.04	Var.08 corrected. In point 3.4 spec. was BA54087.	Pavan	T.Mohan Rao