



# Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

An ISO 9001  
Company

CAPITAL PURCHASE / MATERIALS MANAGEMENT / MANUFACTURING

<b>ENQUIRY</b>	Phone: +91 431 257 75 75 Fax : +91 431 252 07 19 Email : <a href="mailto:rmanohar@bheltry.co.in">rmanohar@bheltry.co.in</a> Web : <a href="http://www.bhel.com">www.bhel.com</a>
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	<b>Enquiry Number:</b> <b>2620600046</b>	<b>Enquiry Date:</b> <b>10.07.2006</b>	<b>Due date for submission of quotation:</b> <b>10.08.2006</b>
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Your are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order

Item	Description	Quantity	Delivery Schedule
10	Valve Wedge Slitting Machine.  Detailed technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> )	1 No.	10.05.2007

**Note:**

- (1) The detailed Technical Specification along with technical point-by-point confirmation, Commercial Terms & Conditions applicable for this Enquiry, Confirmation of acceptance for BHEL commercial terms & conditions and Price Bid formats have been posted in BHEL Corporate web site [www.bhel.com](http://www.bhel.com) under Enquiry reference "2620600046". Your offer should be based on all the above documents.
- (2) Also, you are requested to fill in the Supplier Registration formats available in [www.bhel.com](http://www.bhel.com) (under Advancement – Supplier Registration) and send it along with your offer.

Tenders should reach us before 14:00 hours on the due date Tenders will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present	Yours faithfully, For BHARAT HEAVY ELECTRICALS LIMITED  Dy. Genl. Manager / Capital Purchase / MM / Manufacturing
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**PART A****QUALIFYING CRITERIA FOR THE SUPPLY OF VALVES WEDGE SLITTING MACHINE****SECTION – I**

The BIDDER / VENDOR has to necessarily provide the following details, for making an assessment of the firm's capability and competency:

[The BIDDER is expected to give complete details against each clause in the table given below and wherever necessary an additional sheet may be attached (giving clear reference number) to cover the required details]

<b>S.No.</b>	<b>PARTICULARS</b>	<b>VENDOR's RESPONSE</b>
<b>1</b>	Experience of the BIDDER/ VENDOR in design, manufacture and supply of heavy duty Abrasive Cut-off machines / <b>'Valve wedge slitting Machine'</b>	
<b>2</b>	How many of Heavy Duty Abrasive cutting machines have been supplied, installed and commissioned till date by the BIDDER/ VENDOR.	
<b>3</b>	Any heavy duty abrasive cut-off machines were supplied for Slitting Valves wedges, to High Pressure Valve manufacturer, by the BIDDER/ VENDOR. Details to be furnished.	
<b>4</b>	Details of Designing background of the PRINCIPAL Equipment manufacturer.	
<b>5</b>	Details of the any International code / Safety norms followed for designing Heavy Duty Abrasive Machine / Valves Wedge Slitting machine shall be furnished.	
<b>6</b>	Details on SERVICE-after-SALES Set-Up in India (for foreign vendors) including the addresses of Agents/Service Centres in India and Asia	
<b>7</b>	Any Additional Data to supplement the manufacturing capability of the BIDDER	

**SECTION – II**

The BIDDER / VENDOR has to compulsorily meet the following requirements to get qualified for submitting an offer for the Valves Wedge Slitting Machine.

<b>S. No.</b>	<b>REQUIREMENTS</b>	<b>VENDOR's COMMENTS</b>
<b>8</b>	The BIDDER / VENDOR shall have a minimum of TEN Years of Continuous Experience in the Design, Manufacture & Supply of Heavy Duty Abrasive Cut-Off machines. Indicate the actual experience.	
<b>9</b>	Reference List of Customers and performance certificates if any.	
<b>10</b>	Reference list of Customers who are High Pressure Valves manufacturers. The contact details may be furnished.	

**SECTION – III**

The BIDDER / VENDOR has to comply with the following, for accepting the Technical Offer for scrutiny by the Purchaser:

<b>S.No.</b>	<b>REQUIREMENTS</b>	<b>VENDOR'S COMPLIANCE</b>
<b>11</b>	The BIDDER / VENDOR shall submit the offer in TWO PARTS - Technical [ <b>with PART A &amp; PART B</b> ] & Commercial and Price Bid. The Technical Offer shall be in line with the BHEL Technical Specifications and the Guidelines or Annexures mentioned, wherever applicable.	
<b>12</b>	The Offer shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each clause. A just 'CONFIRMED' or 'COMPLIES' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer.	
<b>13</b>	The BIDDER / VENDOR shall assure a continuous support for SPARES and SERVICE for TEN Years, from the date of commissioning of the equipment at BHEL Works.	
<b>14</b>	The Technical Offer shall be supported by Product Catalogue and Data Sheets in ORIGINAL and complete technical details of 'Bought-Out-Items' with copies of Product Catalogue and Selection Criteria	
<b>15</b>	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation of Scope of Supply.	
<b>16</b>	The reference List of Customers shall be accompanied with the details (Phone Number / E-Mail ID) of the CONTACT PERSON for cross reference by BHEL	

**PART B TECHNICAL SPECIFICATION FOR VALVES WEDGE SLITTING MACHINE**

<b>S. No</b>	<b>PARTICULARS</b>	<b>BHEL SPECIFICATIONS</b>	<b>BIDDER'S OFFER [with Complete Technical Details]</b>
1	Area of Application	The machine will be used for slitting gate valve wedges of sizes 2 ½ inches to 40 inches.	

**2. Job Description**

2.1	Sizes	For Maximum and Minimum sizes refer <b>Annexure - 1</b>	
2.2	Material	F22, A 105, WCB, WC9, CF 8M, C 12A	
2.3	Job Weight	1500 kg (maximum)	

**3. Functional Requirements:**

<b>3.1</b>	<b>Job setting and clamping (refer Annexure-2)</b>		
3.1.1	A tapered base plate will be used to neutralize the taper in the job.		
3.1.2	The taper base plate will be mounted on the machine table and will be held by the four jaws.		
3.1.3	The job will be placed on the taper base plate using a locator at seat ID		
3.1.4	The job will be held in horizontal position at the center by a hydraulic mechanism.		
3.1.5	The jobs (Gate Valve Wedges) will be slit to various depths leaving a solid mass at the center. (refer annexure 2)		
3.1.6	The clamping / holding mechanism shall be designed to leave the periphery of the job free for slitting.		

S. No	PARTICULARS	BHEL SPECIFICATIONS	BIDDER'S OFFER [with Complete Technical Details]												
<b>3.2</b>	<b>Job requirements</b>														
3.2.1	The solid mass at the center will be cylindrical in shape and co-axial to the job vertical axis (refer annexure 1)														
3.2.2	Slit width required - 5 and 7mm														
<b>4</b>	<b>MACHINE CONFIGURATION:</b>														
4.1	Machine Construction	The machine shall consist of the following basic elements 1. A variable speed horizontal rotary job clamping table with axis of rotation vertical. 2. A job holding hydraulic mechanism. 3. A wheel mounting head with variable RPM motorized drive 4. Variable Feed control													
4.2	GA Drawing	A General Layout drawing of the machine with all the major parts listed shall be furnished by the vendor													
<b>4.3</b>	<b>Abrasive Wheel Head</b>														
4.3.1	Type of cutting	Abrasive wheel cutting shall be used for slitting the wedge disc in the horizontal plane, concentric to the wedge vertical axis.													
4.3.2	Cutting wheel Specification	<table border="0" style="width: 100%;"> <tr> <td></td> <td style="text-align: center;">(1)</td> <td style="text-align: center;">(2)</td> </tr> <tr> <td>Diameter</td> <td style="text-align: center;">585 mm</td> <td style="text-align: center;">760 mm</td> </tr> <tr> <td>Thickness</td> <td style="text-align: center;">5 mm</td> <td style="text-align: center;">7 mm</td> </tr> <tr> <td>Clamping area</td> <td style="text-align: center;">Ø 220 mm</td> <td style="text-align: center;">Ø 220 mm</td> </tr> </table>		(1)	(2)	Diameter	585 mm	760 mm	Thickness	5 mm	7 mm	Clamping area	Ø 220 mm	Ø 220 mm	
	(1)	(2)													
Diameter	585 mm	760 mm													
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Clamping area	Ø 220 mm	Ø 220 mm													
4.3.3	RPM of Abrasive Wheel	200 to 3000 rpm (Steplessly variable)													

S. No	PARTICULARS	BHEL SPECIFICATIONS	BIDDER'S OFFER [with Complete Technical Details]
4.3.4	Lifting range of Abrasive Wheel head	Minimum 500 mm (For adjusting the height of the abrasive wheel head to match the slitting plane of the wedge) A proper reading metric scale to be provided for setting the height.	
4.3.5	Drive Motor of Abrasive Wheel	AC variable speed motor with AC drive Vendor to specify the motor rating.	
4.3.6	Anti friction bearings	Anti-friction bearings shall be used in wheel head drive	
4.3.7	Motor cooling	Suitable ventilation for cooling of motor to be considered. Vendor to specify.	
4.3.8	Cutting depth setting	Necessary controls for setting depth of slitting.	
4.3.9	Wheel head arrangement	Vendor to furnish details of the Abrasive wheel head arrangement with suitable drawings.	
<b>4.4</b>	<b>Feed Mechanism</b>		
4.4.1	Feed arrangement	Vendor to specify the feed arrangement of the machine. Whether the Job clamping table will have the job feed mechanism or the abrasive wheel head will have the cutting feed mechanism.	
4.4.2	Motor for feed control	Vendor to specify	
4.4.3	Feed rate	3 to 120 mm/min (Steplessly variable)	
4.4.4	Rapid feed rate	2000 mm/min	
4.4.5	Cutting pressure	Constant pressure while cutting.	

S. No	PARTICULARS	BHEL SPECIFICATIONS	BIDDER's OFFER [with Complete Technical Details]
<b>4.5</b>	<b>Job Clamping table (refer Annexure 2)</b>		
4.5.1	Job Clamping table size	Vendor to specify the diameter of the Clamping table	
4.5.2	RPM of Job clamping table	0 to 25 rpm (steplessly variable)	
4.5.3	Job Clamping	By Hydraulic mechanism at centre	
4.5.4	Job Clamping table motor	Vendor to specify	
4.5.5	Locating bore	A locating bore of size $\varnothing 160$ H7 to a depth of 15mm (minimum) shall be provided at the centre of the clamping table to seat the ID locators.	
<b>4.6</b>	<b>General</b>		
4.6.1	Retraction	Automatic retraction after slitting the set depth to be provided.	
4.6.2	Foundation	Any foundation for the machine required to be indicated in the Civil foundation layout drawing separately.	
<b>4.7</b>	<b>Operator Control Panel</b>		
4.7.1	Controls	<ul style="list-style-type: none"> <li>a) Abrasive Wheel RPM</li> <li>b) Job Clamping table RPM,</li> <li>c) Feed rate,</li> <li>d) Depth setting</li> <li>e) Other controls to be specified by the vendor</li> </ul>	
4.7.2	Indicators	<ul style="list-style-type: none"> <li>a) Abrasive wheel RPM indicator</li> <li>b) Job Clamping Table RPM indicator</li> <li>c) Spindle load indicator</li> <li>d) Other indicators no the operator control panel to be specified by the vendor.</li> </ul>	

S. No	PARTICULARS	BHEL SPECIFICATIONS	BIDDER'S OFFER [with Complete Technical Details]
4.7.3	Pendant control	Hand held remote pendant control	
4.7.4	Alarm Light	Automatic safety alarm to be provided on top of the control panel to indicate that the machine is under working condition.	
<b>5</b>	<b>ACCESSORIES</b>		
5.1	Dust suction and collection system	Vendor specify details for a dust suction and collection system.	
5.2	Coolant system	Vendor to provided details of Water coolant system offered. The pump, sump details shall be furnished by the vendor. The water coolant system shall have recirculation of water.	
5.3	Standard / Special / Optional Accessories	Any other Standard / Special / Optional accessories which will enhance the features of the machine shall be furnished.	
<b>6</b>	<b>SAFETY</b>		
6.1	Protective Covering	Protective covering for machine elements to prevent damage from the abrasive / metal dust.	
6.2	Room enclosure	Safety features - Exclusive room enclosure for the equipment with controls outside. Vendor to provide the dimensions of the protective room.	
6.3	Inspection door	Sliding safety inspection door fitted with bullet proof transparent glass window for monitoring the job.	
6.4	Safety interlocks	Safety interlocks shall be provided for all critical operation (like overload tripping of motor etc). All safety interlocks to be specified by the vendor.	
6.5	Other features	Other built-in safety features to be specified by the vendor.	

S. No	PARTICULARS	BHEL SPECIFICATIONS	BIDDER'S OFFER [with Complete Technical Details]
<b>7</b>	<b>SPARES</b>		
7.1	Operating and Maintenance Spares	All spare parts item wise shall be quoted by the supplier for two years of trouble free operation.	
7.2	Essential Spares	a. Job clamping table jaws and screw rods - 20 Sets b. PCBs for AC motor drive - 1 Set c. All solenoid valves, control elements and seals used in hydraulic circuit - 1 Set	
<b>8</b>	<b>ELECTRICAL POINTS</b>		
8.1	The electrical input power supply shall be $415 \pm 10\%$ V, $50 \pm 2\%$ Hz, 3 Phase AC supply through a 3 Wire System. No neutral conductor.		
8.2	BHEL will provide input power supply at one point only and the supplier has to take care of all other electrical distribution network required for the machine.		
8.3	All electrical motors, limit switches etc, on the machine shall be wired using PVC sheathed cable, running in conduits with proper protection and converging to common terminal block		
8.4	External wiring from / to control panel, control desk, external motors etc shall be by means of screened multi-core cables.		
8.5	Control Voltage for all Solenoid Valves shall be 24V DC		
8.6	Electrical Control panel shall have built in 230V, 5 amps, 3 pin plug.		
8.7	3 Phase Energy meter shall be provided for monitoring energy consumption.		
8.8	Electrical Control panel shall be adequately illuminated for maintenance purpose.		

S. No	BHEL SPECIFICATIONS	BIDDER'S OFFER [with Complete Technical Details]
8.9	Machine is to be fitted with suitable lighting and provision for 24 V hand lamp	
8.10	All components/devices/terminals are identified with numbered ferrules.	
8.11	IP54 protection for all electrics	
8.12	All Electric Motors shall be of any of the following makes : SIEMENS / ABB / INDRAMAT makes conforming to IEC Standards	
8.13	All electrical devices like contactors, relays, limit switches, push buttons etc are from SEW / Siemens/ Cutler hammer / Telemecanique / ROCKWELL-Allen Bradley / Delta	
8.14	All pumps used shall be of reputed make.	
<b>9</b>	<b>HYDRAULICS</b>	
9.1	Vendor to furnish details of any hydraulic circuits if deployed.	
9.2	Such Hydraulic circuits shall be designed with minimum number of control valves and to suit oil of ISO VG 46 or 68 grade only.	
9.3	Vendor to provide details of Oil cooler used, Hydraulic Tank Capacity, Hydraulic power pack.	
9.4	All hydraulic pipelines to be neatly laid out	
9.5	All Hydraulic elements shall be of Vickers / Rexroth make.	
9.6	All hydraulic hoses shall be preferably of GATES make	
<b>10</b>	<b>LUBRICATION</b> Automatic timer controlled lubrication system is to be provided for sliding surfaces and all mechanical drives.	

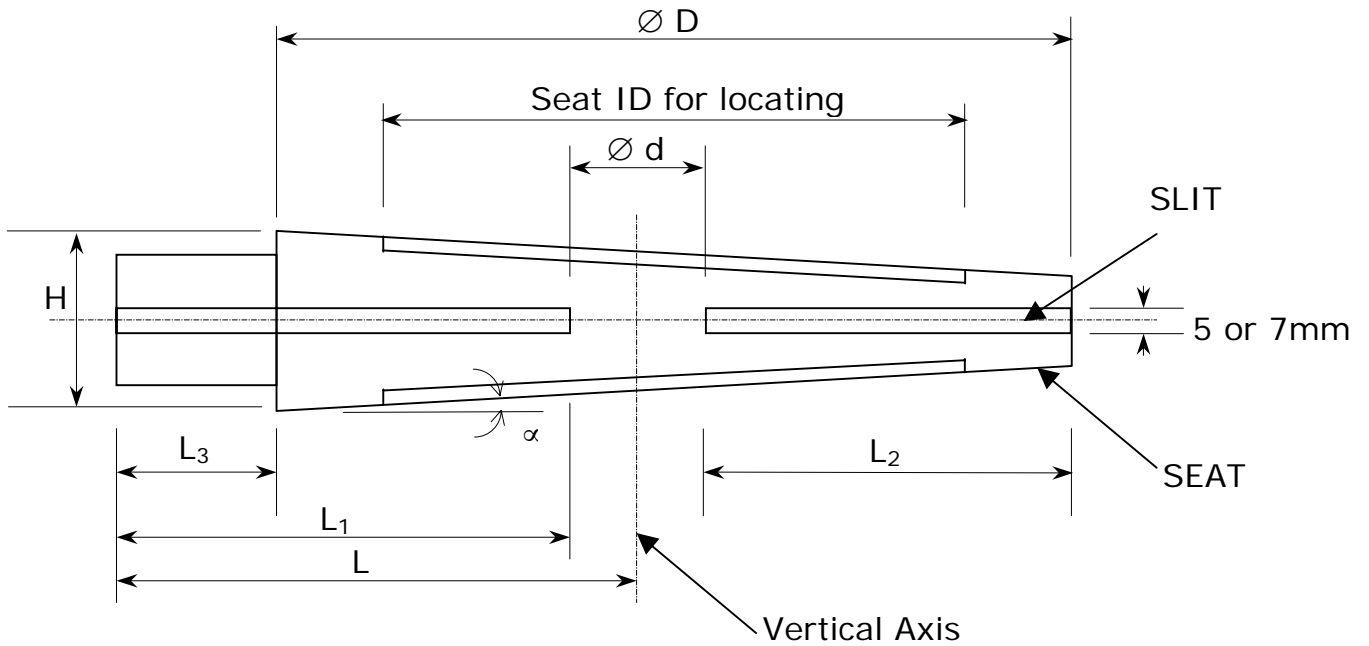
S. No	BHEL SPECIFICATIONS	BIDDER'S OFFER [with Complete Technical Details]
11	<p><b>AMBIENT ATMOSPHERIC CONDITION</b> The machine with all Sub-Systems shall be suitable for operation in an ambient temperature of +50°C and with a Relative Humidity of 90%, both values do not occur simultaneously The entire equipment shall be Tropicalized in Design and construction.</p>	
12	<p><b>PAINTING</b> Painting colour scheme shall be as per BHEL specification to be finalized at the time of placing order.</p>	
13	<p><b>INSPECTION</b> At Supplier's Works: The Machine shall be offered for inspection by BHEL Engineers before dispatch, at Supplier's works.</p>	
14	<p><b>ERECTION &amp; COMMISSIONING</b> The supplier shall depute his engineer(s) for supervising the erection and commissioning of the machine at BHEL and prove-out trials.</p>	
15	<p><b>PERFORMANCE PROVE-OUT</b> Supplier shall Prove-out the performance of the machine for min. and max. sizes mentioned in the specification</p>	
16	<b>TRAINING</b>	
16.1	The Supplier shall train four of BHEL Engineers in the Operation, Trouble Shooting and Maintenance of the machine at the Supplier's Works for a minimum period of 5 working Days, after the inspection of the Equipment.	
16.2	The Supplier's Service Engineer / Application Engineer shall train BHEL Engineers in the Operation, Trouble Shooting and Maintenance of the machine for a minimum period of 5 Working Days, after commissioning of the Equipment at BHEL Works.	

S. No	BHEL SPECIFICATIONS	BIDDER's OFFER [with Complete Technical Details]
16.3	The training shall include the following: <ul style="list-style-type: none"> <li>a) Safety</li> <li>b) Operation of the machine</li> <li>c) Trouble-Shooting</li> <li>d) All special features of the machine</li> <li>e) Electrical / Mechanical / Electronics systems</li> </ul>	
16.4	Vendor shall co-ordinate for a visit of BHEL Personnel to an industry having similar/identical machine & system, in case of order realisation, for system acquaintance & performance feedback.	
<b>17</b>	<b>DOCUMENTS AND MANUALS</b>	
17.1	Operation & Maintenance Manuals: <u>Operation manual</u> shall include all operations of the machines and its accessories with full details and safety instructions. All the features of the machine and how to operate them shall be explained in detail. <u>Maintenance manual</u> shall include all machine construction drawing, Component drawings, assembly drawings, explanation and details about the sequence of operations of Electrical, Electronic & Hydraulic circuits. <div style="text-align: right;">Hard copy : 3 Nos CD Media: 1 No</div>	
17.2	Detailed spare parts specification for the electrical, electronics, mechanical, hydraulics (and pneumatic if any) to be furnished for items made by the supplier and for the items bought out and assembled by the supplier. <div style="text-align: right;">Hard Copy : 3 Nos.</div>	
17.3	Electrical Wiring Drawings – Power & Control Circuits. Pneumatic/Hydraulic Circuit Diagrams. Specifications/Ratings of All Bought-Out-Items. Trouble Shooting Chart for Main and all Sub-Systems. <div style="text-align: right;">Hard copy : 3 Nos.</div>	

<b>S. No</b>	<b>BHEL SPECIFICATIONS</b>	<b>BIDDER's OFFER [with Complete Technical Details]</b>
17.4	d) Equipment data / Commissioning data to be provided	
<b>18</b>	<b>PERFORMANCE GUARANTEE</b> Equipment has to be guaranteed for its performance, for a minimum period of 24 months from the date of commissioning.	

**ENCLOSURES:**

1. ANNEXURE 1 - JOB (VALVE WEDGE) DIMENSIONS
2. ANNEXURE 2 - JOB (VALVE WEDGE) CLAMPING ARRANGEMENT

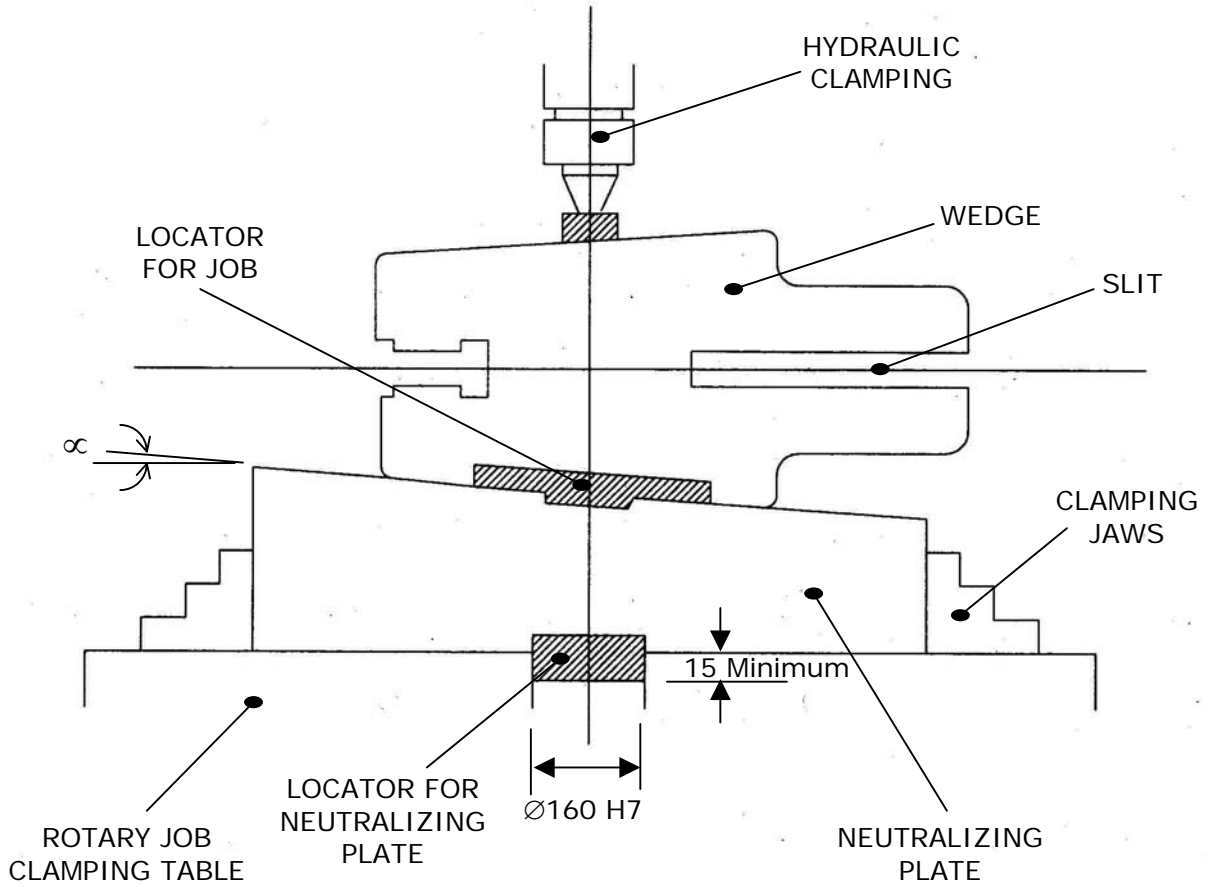
**JOB (VALVE WEDGE) DIMENSIONS**

All dimensions in mm

	$\varnothing D$	$\varnothing d$	L	$L_1$	$L_2$	$L_3$	H	$\alpha$
2½" 2500 CI	70	36	70	52	16	35	50	4.5°
24" 2850 CI	368	185	317	225	92	131	270	4.5°
32" 600 CI	820	412	550	200	150	200	350	1:20
40" 150 CI	1100	550	700	300	250	325	500	1:20

**Drg No. CABS-1-26-01**  
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**JOB (VALVE WEDGE) CLAMPING ARRANGEMENT**



All Dimensions are in mm

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**BHEL, Tiruchirappalli**