



**PRODUCT STANDARD  
OIL FIELD EQUIPMENT  
HYDERABAD**

**OE 51350**

Rev No. 04

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**SPECIFICATION FOR SUPPLY, INSTALLATION AND  
COMMISSIONING OF FRICTION TYPE DISC BRAKE**

1.0 **Purpose:** To mount the Friction type Disc brake in place of eddy current brake on BHEL make E2000 /E1400/E760 Draw works as an auxiliary brake to control the speed of the traveling block with its (full) load during lowering and raising. Disk brake shall be used for controlling the drum speed while raising and lowering. The same shall replace the existing ECB 6032 to bring the operation of the band brake to the bare minimum level ( mostly for parking only)

2.0 **Scope:** The vendor shall supply, install and commission the brake on Draw works. Installation of the brake shall be done under the supervision of vendor's Personnel and commissioning by vendor. Vendor shall fix the Brake capacity and model on the basis of loading condition indicated in table no.1 and 2 of the spec. no. OE51350. Mounting Layout of friction type disk brake shall be foot print of Eddy current brake as per following

- A) E2000 Draw work: ECB model 6032.
- B) E1400 Draw work: ECB model 6032
- c) E760 Draw work: ECB model 5032.


The supply shall include all the items but not limited to the following, sufficient for the installation and commissioning of the equipment.


- 2.1) The Brake shall be Plate style Friction type water cooled disc brake with Pressure actuated and spring released design with dual pressure piston actuation for finer control of operation on both light and heavy loads. Mounting hub will be supplied by BHEL. Vendor shall submit the detail drawing of shaft to ensure that BHEL supplied hub with drawing No. 29663630226 can be mounted correctly.

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**Revisions :01****Prepared :****Approved :****Date :****Refer to record of revisions :**

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<p align="center">COPYRIGHT AND CONFIDENTIAL</p> <p>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.</p>		<p>Disk brake shall be dual piston and cylinder type. While pressurizing the cylinder piston shall move forward and engage with friction disk. Movement of piston shall be controlled by the volume of air supplied through control valve. Once the air supply is stopped brake shall disengage. Gap/ clearance due to wear in friction Lining shall be adjustable without dismantling the brake. The brake shall be designed to absorb and dissipate thermal loads associated with severe brake application for continuous slip services.</p> <p>Pressure plates shall be of metallic and fiberglass plates are not acceptable</p> <p>Actuating member for brake shall be of metallic piston, preferably made out of Aluminum to avoid corrosion. Rubber tube is not acceptable as an actuating member.</p> <p>Brake should have copper plates on both sides of friction disc to facilitate quickest heat transfer. The copper plate shall be mounted with leak proof metallic bolts ideally made with the same material.</p> <p><b><u>Supply shall include but not limited to the following:</u></b></p> <p>2.1.A) Pneumatic Dual piston Brake control system:</p> <ul style="list-style-type: none"> <li>- One specially designed, cam operated air control vale for dual actuator shall be provided</li> <li>- One air control valve with twist knob type handle that hold in set position for vernier type control of brake shall be provided</li> <li>- One selector valve and shuttle valves to allow selection of control of small brake actuator of brake only shall be provided</li> <li>- Brake cradle air control system should be equipped with Pilot operated relay valves, quick release valves and air filter to ensure rapid response of brake shall be provided.</li> <li>- Vendor shall include all the fittings and hoses required for commissioning of Disc Brake at site and detail layout of airline and water line shall be submitted at the time of technical bid submission and prior approval may be taken for the same.</li> </ul> <p>2.2) Vendor shall supply disc brake and its peripheral items which are required for Assembly and commissioning of Disc brake as loose items except main shaft and mounting brackets. Detailed dimensional drawing of shaft and brake mounting brackets/plate shall be provided by vendor on placement of order by M/s BHEL. Shaft and brake mounting bracket/plate shall be manufactured by BHEL.</p>		
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<p align="center">COPYRIGHT AND CONFIDENTIAL</p> <p>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.</p>		<p>2.3) Vendor shall provide the list of items with quantity which are required for Assembly and commissioning of disc brake along with technical offer.</p> <p>2.4) Vendor shall provide detailed Assembly drawing of disc brake along with Maintenance and service manual after receipt of order.</p> <p>2.5) Complete assembly of disc brake will be carried out at BHEL Hyderabad and commissioning of the same will be done at customer designated site .The assembly of brake and commissioning of the same will carried out under the supervision of vendor.</p> <p>2.6) Vendor shall submit certificates against the tests carried at vendor's work.</p> <p>2.7) The disk brake shall be inspected by third party and also by BHEL at vendor's works.</p> <p>2.8) Vendor shall provide free training to two BHEL'S engineers and two end customer of BHEL at site for one week regarding basic design features, manufacturing and trouble shooting of disk brake. Training is essential for commissioning the equipments and providing support after sales in future.</p> <p>2.9) Vendor shall confirm that support will be extended to customer for one week to operate disc brake smoothly.</p> <p>2.10) Vendor shall give point wise confirmation to BHEL spec. no. OE51350.</p> <p>2.11) Vendor shall indicate interface dimensions required from BHEL. The outline of existing arrangement in the E 2000 and E 1400 Draw works is enclosed for reference. It is expected that the Friction type Disc brakes shall be matched without any modification of the Draw works skid.</p> <p>2.12) Vendor shall supply the equipment with the nameplate carrying the following information</p> <ol style="list-style-type: none"> <li>1. OEM name</li> <li>2. Country of origin</li> <li>3. Year of manufacture</li> <li>4. Rated capacity</li> <li>5. Lubrication schedule</li> </ol>		
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2.13) Vendor shall carry their own special tools required if any for installation and commissioning of friction disk brake.

**3.0 General Features of BHEL MAKE Draw works:**

TABLE: 01

SL NO	DRAW WORKS MODEL	MOTOR CAPACITY	T. BLOCK CAPACITY	W.L SIZE	NO. OF LINES	ECB MODEL	AVL AIR PRESSURE
1	E2000	2000 HP	500T	1 3/8"	12	6032	110 PSI
2	E1400	1400 HP	500 T	1 3/8"	12	6032	110 PSI
3	E760	1000 HP	350T	1 1/4"	10	5032	110 PSI

TABLE NO: 02

SL. NO	D.W MODEL	MAX. TORQUE FT.LBS	BARE DRUM DIA.	NO. OF WRAP CONSIDERED FOR CALCULATION.	EMPTY HOOK LOAD IN LBS	MAX. HOOK LOAD IN LBS	HOOK SPEED ON EMPTY	HOOK SPEED ON FULL LOAD
1.	E2000	124150	32"	2	50000	1000000	256 FT/M	40FT/M
2.	E1400	83950	28"	2	50000	770000	247 FT/M	40FT/M
3.	E760	65116	25"	2	32000	550000	356FT/M	37FT/M

**Vendor shall consider maximum hook speed 90 ft/minute while lowering.**

**4.0 General requirements:**

- 4.1) Vendor shall confirm that interface between the Draw works Drum shaft and friction type disk brake are possible with BHEL'S make auxiliary brake coupling and female spline. Disk brake will be connected to drum shaft manually.
- 4.2) Vendor shall inform the volume, temperature and pressure requirement of water for cooling the brake in advance. Vendor shall note that available water will be normal drinking water.
- 4.3) Vendor shall confirm that friction type disk brake can be installed without any major modification in the existing Draw works.
- 4.4) Vendor shall maintain the height of center line of disk brake shaft Similar to be applicable Eddy current brake. Height of center line



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Shall be considered from bottom of cradle assembled with disk brake as shown in the sketches.

- 4.5) Vendor shall submit the general arrangement drawing of disk brake with dimension to BHEL on placement of purchase order for approval. Item shall be supplied conforming to BHEL approved drawing.
- 4.6) Vendor shall provide the dimension of brake control valve and pressure gauge before dispatch , which are to be mounted on driller's control panel.(Outline drawing shall be furnished before dispatch of main equipment)
- 4.7) Any Information required in this regard by the vendor from BHEL shall be duly informed.
- 4.8) Vendor shall carry out interfacing of disk brake with the Twin stop.
- 4.9) Vendor shall confirm that Air supply to the Off Driller-side drum clutch is feasible without any changes in the existing setup. In case of deviation vendor shall supply connecting equipment to facilitate supply of air to the Hi-side clutch.
- 4.10) Vendor shall supply 8 copies of O&M manuals along with two soft copies to BHEL.

<b>VAR NO.</b>	<b>DESCRIPTION</b>	<b>WEIGHT In kg.</b>	<b>MATERIAL CODE</b>
01	FRICITIONDISK RAKE(CYLINDER TYPE) FOR E2000 DRAW WORK	3800.00	OE9751350018
02.	FRICITION DISK BRAKE (Dual piston and cylinder type) FOR E1400 DRAW WORKS	2400.00	OE9751350026
03	INSTALLATION AND COMMISSIONING OF BRAKE.		OE9751350034
04	36AM FRIC DISK HICO(C43681-528)	50	OE9751350042

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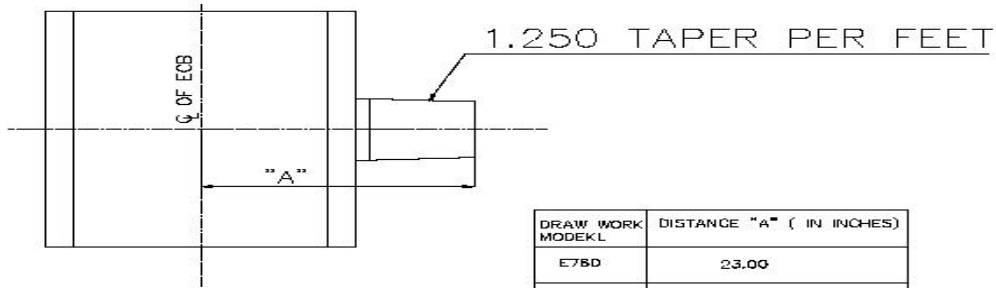
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DISTANCE BETWEEN CENTRE LINE OF ECB AND END OF THE SHAFT.  
 Vendor shall maintain the same distance between the centre line of disk brake and end of the shaft.



DRAW WORK MODEKL	DISTANCE "A" ( IN INCHES)
E78D	23.00
E1400	27.56
E2000	27.56



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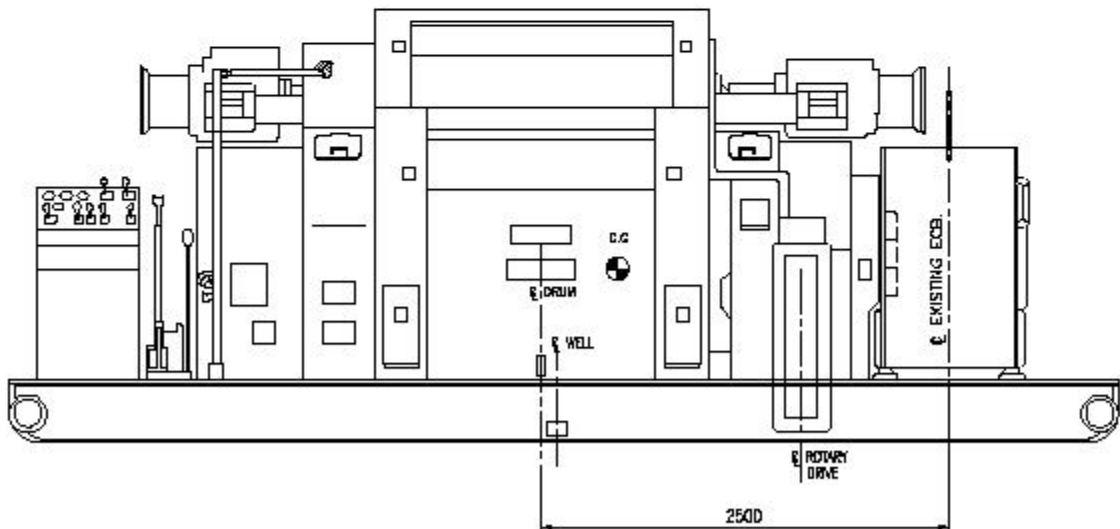
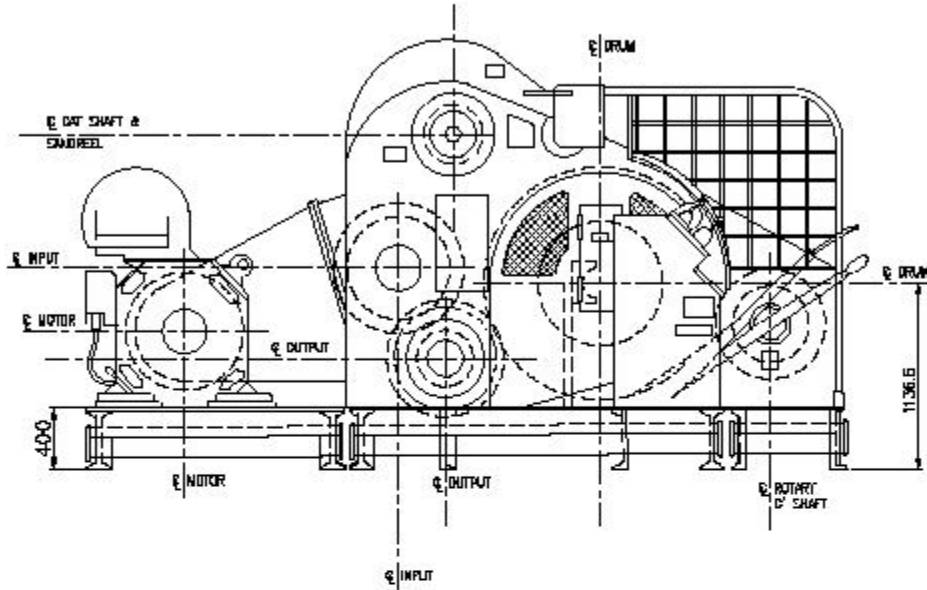
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## GENERAL PARTS & OUTLINE

E-760 D' WKS



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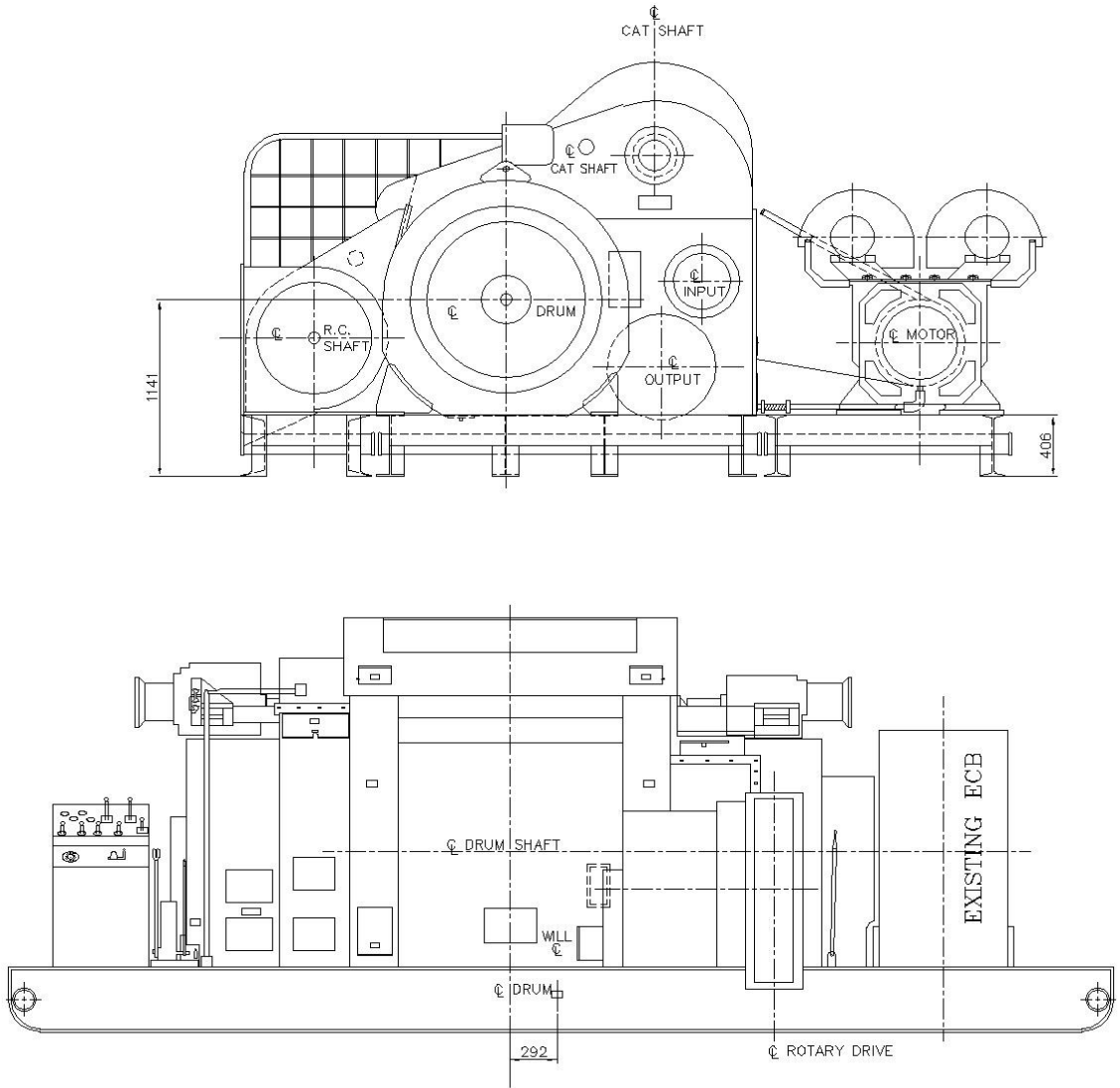
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## E-1400 D' WKS GENERAL PARTS & OUTLINE



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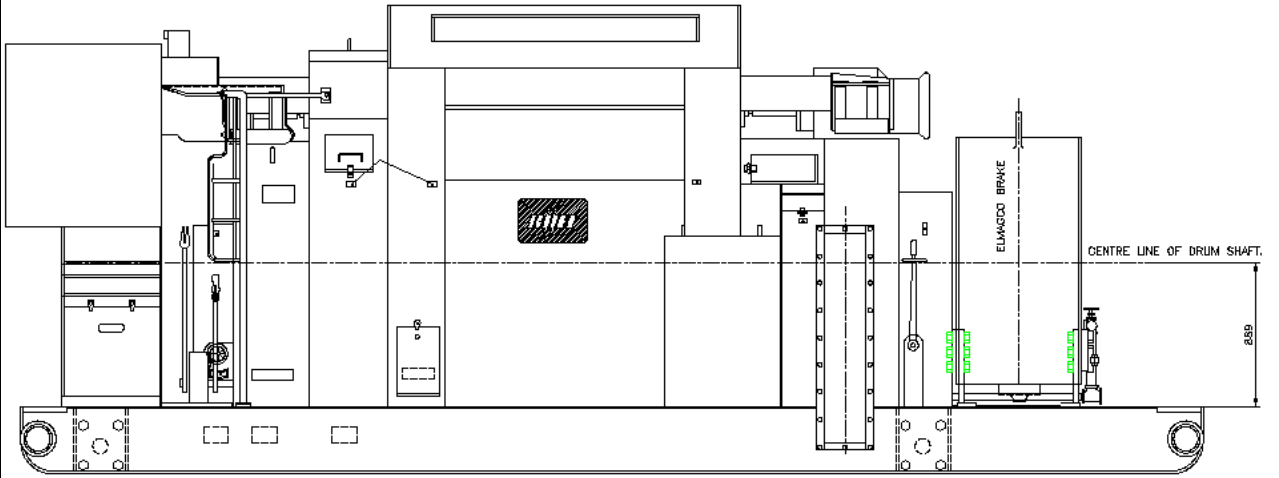
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**E2000 DRAW WORK.**



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Table of compliance:

Vendor to fill in the table for clause wise compliance to specification

Spec. Clause no.	Confirmation Yes/No	Alternate Yes/No	Remarks
1.0			
2.1			
2.1.A			
2.2			
2.3			
2.4			
2.5			
2.6			
2.7			
2.8			
2.9			
2.10			
2.11			
2.12			
2.13			
3.0			
4.1			
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4.9			
4.10			

