



WESTERN COALFIELDS LIMITED

MATERIALS MANAGEMENT WING

COAL ESTATE, CIVIL LINES, NAGPUR-440001

CIN : U10100MH1975GO1018626

Phone : (0712) 2510501, 2510691 [EPBAX, Extn :5587] Fax : 0712 - 2510284

Website : www.westerncoal.gov.in

Ref No.11101114818198

DT : 22.02.2019

SUPPLY ORDER

To.

M/s BLACK DIAMOND EQUIPMENTS PVT.LTD
Plot no. 156-157 ICRC, T P Nager
KORBA
CHHATISGARH 495677

BY REGISTERED POST

Vendor Code : 133035

Vendor Type: MSE

Tel No.-91-7759-245024

Mobile: 9977253555

Sub:- ORDER FOR SUPPLY OF FEEDER BREAKER 400TPH CAPACITY

Ref:- 1. Our Tender No. hq-pur-sp-ra-e-063-2018-19, Technical bid opened on 03/11/2018 (Tender ID : 2018_WCL_117063_1)

2. Your offer No. BDEPL/Q/18-19/218 dated 25.10.2018 under Bid Id : 341475 dated 31.10.2018 and subsequent correspondences on Portal, last being no. BDEPL/L/18-19/211 dated 12.01.2019.

With reference to above, we are pleased to place formal order on you for supply of one set FEEDER BREAKER 400TPH CAPACITY as per Technical specifications , rates, terms and conditions given hereunder and also as per the General Terms & Conditions enclosed at Annexure-B.

NIT SN	Item description	Unit	Quantity	Basic Rate per unit in Rs.	GST @ 18%	Extended Value in Rs.
1	HEAVY DUTY FEEDER BREAKER, 400 TPH, consisting of four main parts viz. hopper, crusher, chain conveyor and rock breaker, Modular construction, skid mounted (Details and Technical specification as per enclosed Annexure-A)	set	1	1,10,90,000.00	19,96,200.00	1,30,86,200.00

(Rs. One Crore Thirty Lakhs Eighty Six Thousand Two Hundred only)

TERMS & CONDITIONS

- PRICE** :The above prices are Firm and on F.O.R. Destination supply basis inclusive of Packing, forwarding, freight & Insurance charges. The materials shall be supplied from your factory at BLACK DIAMOND EQUIPMENTS PVT. LTD. , Plot No. 156-157, I. C. R. C., T. P. Nagar, KORBA(C.G.)-495677. The above prices shall remain firm through out the contractual period till complete execution of the order.
- Goods & Service Tax** : Shall be payable extra as applicable within the stipulated delivery period of the supply order. The present applicable rate of GST is @ 18 %. Input Tax Credit on GST shall be availed by WCL as per GST rules. You shall submit GST complaint invoice enabling WCL to avail Input Tax Credit (ITC) under GST. In case of any failure on your account, the penalty including interest, if any borne by WCL on ITC, shall be recovered from you..
- Other levies** : Nil
- Delivery** : The delivery of the complete equipment shall be completed within Six(06) months. The delivery period shall be reckoned from 7th (Seven) day of the order date. However in view of urgency you may improve upon delivery and expedite the supplies.
- Transportation & e-way Bill**: By road on freight paid basis. As the delivery of goods by you is on F.O.R. Destination basis, the movement of the goods is to be initiated by you and issue e-Way Bill.

Contd.→p/2

6. **FINAL INSPECTION:** Final Inspection of the consignment shall be carried out at the destination stores, which will be arranged by the consignee on receipt of stores.

7. **Consignee :** The Depot Officer, Regional Stores, Western Coalfields Limited, PO: SILEWARA COLLIERY, Dist. Nagpur (M.S.) Pin: 441 109. **Allocation :** Kamptee Deep OCM, Nagpur Area

8. **Payment Terms :** 80% value of the equipment and accessories and 100% taxes and duties and other charges shall be made within 21 days after receipt and acceptance of the complete equipment at the project site and acceptance of performance bank guarantee, whichever is later.

Balance 20% payment shall be made after successful completion of erection, testing, commissioning and final acceptance of the equipment (along with the accessories) upon presentation of certificates from the Area GM/HOD(Tech) of WCL HQ to the effect that the equipment has been erected and commissioned to their entire satisfaction. However, if the equipment is not put to use by the project within 120 days from the date of receipt and acceptance at consignee's end, the balance 20% shall be released.

EFT Details : As confirmed by you in your offer

Name of Bank	ICICI BANK LIMITED
Branch Name & Location	JAIN PLAZA, LINK ROAD, BILASPUR
Account Number	028251000011
Type of Account	CASH CREDIT
IFS Code of the Branch	ICIC0000282

9. **Paying Authority :** General Manager(Finance), Western Coalfields Limited, Coal Estate, Civil Lines, Nagpur - 440 001 (M.S.)

10. **Submission of Bills :**

For 80% Payment.

- (i) GST compliant Invoice enabling WCL to avail ITC on GST paid.
- (ii) Packing list in original giving details of bill of materials, if applicable.
- (iii) Consignment note / RR/ LR in original.
- (iv) Warranty / Guarantee certificate.
- (v) Manufacturer's /DGMS/BIS test certificate, if applicable
- (vi) Pre dispatch inspection certificates
- (viii) Any other document indicated elsewhere in the order.

For 20% payment:

- Pre-receipted and stamped Invoice for 20% value of the equipment and accessories along with the commissioning certificate from the concern Area GM / HOD (tech) of WCL HQ.
- However, if the item is not put to use by the project within 120 days from the date of receipt and acceptance, balance payment of 20% amount will be released on submission of Pre-receipted and stamped Invoice for 20% value of the equipment and accessories.

11. **Guarantee/Warranty :** You shall give a warranty of satisfactory operation and performance of the equipment supplied by you for a period of 12 months from the date of commissioning or 18 months from the date of receipt and acceptance of equipment, at the consignee end by WCL, whichever is earlier. You shall be responsible for any defects that they develop under the conditions provided for by the contract and under proper use, arising from faulty materials, design or workmanship and shall remedy such defects at his own cost when called upon to do so, If it become necessary for you to replace or renew any defective portion of the goods, such replacement or renewal should be made by you without any extra cost to WCL. A certificate to this effect shall be submitted by you alongwith the supplies. Also refer Performance Guarantee in details and availability guarantee and penalty clause at sl.no. 16,17 & 19 of Annexure-A.

12. **Security Deposit :** You shall furnish a security deposit in the form of Demand Draft or Bank Guarantee of any scheduled bank for 10% value of the awarded contract(Landed value, inclusive of Tax, i.e.

Rs. 13,08,620.00 (Rs. Thirteen Lakhs Eight Thousand Six Hundred Twenty Only) within 15 days time from the date of supply order. Security deposit money will be refunded to you within 30 days from the date of satisfactory execution of the contract. Security deposit may be converted into Performance Bank Guarantee (PBG) as per NIT provisions.

The Bank Guarantee issued by the issuing bank on behalf of the supplier in the favour of Western Coalfields Ltd shall be in paper form as well as issued under "Structured financial messaging system". The details of beneficiary for issue of BG under SFMS platform is furnished below:

A
22/02/19

Name of beneficiary and details	
Name	Western Coalfields Ltd
Area	Head Quarter
Bank A/c No: / Cust ID of beneficiary	ICICI Bank Ltd, Vishnu Vaibhav, 222, Palm Road, Civil Lines, Nagpur
IFSC code	ICIC0000059
Bank Manager Name & Ph no:	Hrushikesh Sakalkale Ph n: +91-9923202096

The original bank guarantee issued by the issuing bank shall be sent by the issuing bank to the following address by Registered post /AD.

General Manager (MM) I/c, Materials Management Wing
Western coalfields ltd HQ, Coal Estate, Civil lines
Nagpur – 440001, Maharashtra

Any extension / amendments to the BG shall be done following the same procedure as above.

13. Performance Bank Guarantee : You shall furnish PBG valid for 18 months from the date of receipt and acceptance of the materials to cover the Guarantee / Warranty period for 10% of the order value of the equipment(along with accessories) i.e., FOR destination price of the materials on the order ,i.e., for . Rs. **13,08,620.00 (Rs. Thirteen Lakhs Eight Thousand Six Hundred Twenty Only)** to this office. No payment will be made without submission of the confirmed performance bank Guarantee. Also refer Performance Guaranteee in details and availability guarantee and penalty clause at sl.no. 16,17 & 19 of Annexure-A.

14. Liquidated Damages Clause :

In the event of failure to deliver the stores within the stipulated date / period in accordance with the samples and / or specifications mentioned in the supply order and in the event of breach of any of the terms and conditions mentioned in the supply order, Coal India Limited and / or its subsidiary Companies should have the right :-

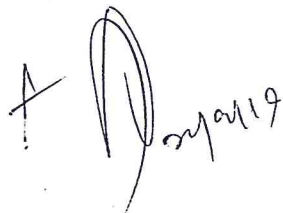
- a. To recover from successful tenderer, as agreed liquidated damages, a sum not less than 0.5% of the price of the store which successful tenderer has not been able to supply (for this purpose part of a unit supplied will not be considered) as aforesaid for each week or part of a week during which the delivery of such stores may be in Arrears limited to 10 %. Where felt necessary the limit of 10% can be increased to 15% at the discretion of Head of the Materials Management Division.
- b. To purchase from elsewhere, after due notice to the successful tenderer, on the account and at the risk of the defaulting supplier the stores not supplied or others of a similar description without canceling the supply order in respect of consignment not yet due for supply or
- c. To cancel the supply order or a portion thereof, and if so desired, to purchase the store at the risk and cost of the defaulting supplier and also-
- d. To extend the delivery period with or without imposition of Liquidated Damages as may be considered fit and proper. The penalty if imposed shall not be more than the agreed liquidated damages referred to clause a above.
- e. To forfeit security deposit in full or part.
- f. Whenever under the contract a sum of money is recoverable from and payable by the supplier, Western Coalfields Limited, shall be entitled to recover such sum by appropriating, in part or in whole by deducting any sum or which at any time thereafter, may become due to the successful tenderer in this or any other contract, with Western Coalfields Limited. Should this sum be not sufficient to cover the full amount recoverable, the successful tenderer shall pay to Western Coalfields Limited, on demand the remaining balance. The supplier shall not be entitled to any gain on any such purchase.

15. Risk Purchase Clause:

In the event of failure of the supplier to deliver or dispatch within the stipulated date/period of the supply order or in the event of breach of any of the terms and conditions mentioned in the supply order, Coal India Ltd. or its Subsidiary Companies have the right to purchase the stores from elsewhere after due notice to the defaulting supplier at the risk and cost of the defaulting supplier. In the event of failure of the supplier as detailed above, the cost as per risk purchase exercise may be recovered from the bills against any other supplies pending in the same Subsidiary Co. and also in any other Subsidiary Companies/CIL.

Risk purchase action may be initiated under any of the following conditions:

- I. When the supplier fails to deliver the materials even after the delivery period is extended on several occasions, on request from the supplier.
- II. When the supplier fails to respond to purchaser's request for supply of the materials and fails to provide any reason which is considered to be genuine, for the delay in supply.



- III. When in the judgment of the purchaser the supplier is unable to execute the order due to various reasons.
- IV. When the materials are urgently required and the supplier fails to deliver the materials within the extended/original delivery schedule.
- V. When the supplier breaches any of the terms and conditions of the supply order and as a result fails to execute the order satisfactorily


16. Price Certificate: As undertaken by you in your offer you have to certify on the supplies bill that "we have not offered the same products at a price lower than that offered in the present bid in respect of any other ministry/ department of the Govt. of India or a PSU. In case we offer the lower prices for same items under similar terms within the validity of this offer to ministry/department of the Govt. of India or a PSU, we undertake to notify such reduction to the buyer and the same will also be applicable against this order."

17. Force Majeure Condition

If the execution of the contract/supply order is delayed beyond the period stipulated in the contract supply order as a result of outbreak of hostilities, declaration of an embargo or blockade or fire, flood, acts of nature or any other contingency beyond the supplier's control due to act of God then Western Coalfields Limited may allow such additional time by extending the delivery period, as it considers to be justified by the circumstances of the case and its decision shall be final. If and when additional time is granted by the Coal India Limited and its subsidiary companies, the contract/supply order shall be read and understood as if it had contained from its inception the delivery date as extended.

18. Installation & Commissioning : The equipment shall be installed & commissioned by WCL. You shall have to provide technical supervision only for carrying out installation & commissioning work.

The supply order is issued with this acceptance. You are requested to acknowledge receipt of this order and arrange immediate supply.


(Sanjay Pawar)
Sr. Manager(MM)



(C.R.Samantray)
Chief Manager (MM)

- Encl : 1. Technical Specification. - Annexure - "A" (total number of sheets -18)
2. General Terms & Conditions – Annexure - "B" (total number of sheets-8)
3. Security Deposit /Performance Bank Guarantee format – Annexure – "C" (total number of sheet-1)

Budget Certification No. FA/WCL/CAP/BC/OPM/398 dtd. 19.02.2019 for Rs. 1,30,86,200.00
Indent Ref: KAMPTEE OC, Indent No.- IND/17-18/3260/00955 dated 14.12.2017

Copy to :


1. GM(E&M)HOD, / GM(Finance)I/C, WCL(HQ), Nagpur.
2. Depot Officer, Regional Stores, Silewara.
3. CGM(P&P), WCL(HQ), Nagpur.
4. SO(E&M) Nagpur Area
5. Sr. Manager (Finance)CB, WCL(HQ), Nagpur.
6. Chief Manager(Finance)Exp. , WCL(HQ), Nagpur
7. Sr. Manager(Cash/CP), WCL(HQ), Nagpur
8. Sr. Manager(MM/Admn.), WCL(HQ), Nagpur – The total value of the order is Rs. 1,30,86,200/- only


(Sanjay Pawar)
Sr. Manager(MM)


(C.R.Samantray)
Chief Manager (MM)

Technical specifications Annexure A

1.0.-Model of Equipment : BD-400F
2.0.-Operation :The equipment to be capable of continuous operation round the clock and robust enough to start in choke feed condition. The machine should be Heavy Duty Electro-Mechanical Feeder Breaker with Secondary crusher and Rock Breaker in an integrated unit to ensure higher performance efficiency and confirmed productivity..
3.0.-DUTY REQUIREMENT :
3.1.-The feeder breaker is to receive run of quarry coal with lumps, running up to size of 1200 mm x 1200 mm x 1200 mm approximately from coal tippers or through rear discharge dumper of 35 tonnes/50 tonnes capacity directly at its maximum discharge rate and break it to (-) 200mm to (-)250 mm size. The equipment should be rated for continuous duty.
3.2.-The Equipment shall be generously designed heavy duty type of rugged construction and suitable for working in tropical climate and dusty conditions in outdoor locations.
4.0.-MACHINE OUTPUT CAPACITY :
The machine shall be capable of giving following outputs :
Peak : 500 TPH at (-)200mm to (-) 250 mm product size.
Average : 400 TPH at (-)200mm to (-) 250 mm product size on four hourly basis
5.0-OPERATIONAL DATA :
5.1-ENVIRONMENTAL CONDITIONS :
i) Altitude (above MSL) : Up to 1000 m
ii) Ambient Temperature : 50° C (Max.)
iii) Humidity (Max.) : 100%
iv) Atmosphere : Dusty (Mostly coal dust)
5.2-MATERIALS SPECIFICATION :
i) Material : Bituminous coking and non-coking coal
ii) Ash content : 35 – 45%
iii) Inherent moisture : 6 – 8%
iv) Impurities : Sand stone upto 2%, shale upto 10%, other impurities in small quantities as associated with opencast coal mining.
v) Maximum size of infeed : 1200 x 1200 x 1200 mm (Upto 2% on average)
vi) Density of materials : 900 – 1100 Kg per Cubic Meter
vii) Comp. Strength : 400 – 800 Kg per Sq.cm.
viii) Abrasiveness : Fairly abrasive
5.3-Power supply :
i) Voltage : 415 Volt ± 6%
ii) Phases : Three
iii) Frequency : 50 Hz
iv) Neutral : Solidly earthed
6.0-CONSTRUCTION OF FEEDER BREAKER :
a-The feeder breaker shall consist of four main parts viz. hopper, crusher, chain conveyor and rock breaker, all preferably mounted as a single unit on a frame fitted with skids.
b-The machine shall, to the extent possible, be of modular construction for easy shifting. The whole machine shall be mounted on generously designed skids so as not to exert more than 1 Kg/Sq.cm. pressure to the ground. The construction shall provide for easy replacement of chains and crusher rolls.
6.1-FRAME :
a-The feeder breaker shall have an all welded steel frame made up from suitable structural sections designed to withstand stresses and strains caused during discharge of coal in the hopper and due to operation of the crusher and the chain conveyors.
b-The frame shall also have provision to mount associated components for driving the crusher rolls and the chain conveyor.
6.2-Hopper :
a-The hopper shall be of low height at the rear (approx. 2 m above the skid bottom). Hopper shall be designed to receive coal directly from the rear discharge dumpers. It shall be of all welded steel construction fitted with Wear resistant liner plates at the bottom, on the side plates and on the rear plates.
b-The hopper capacity shall be 30 Cu.m. to receive coal directly from 50/35 Te dumper. The hopper design should be such that it should take direct impact of lumpy coal falling from the required height. The hopper shall have provision to open the side plates for unloading the material whenever required.



6.3-CRUSHER :

a-The crusher may be of single roll or multi roll design.

b-The crusher roll shall be mounted on shaft capable to withstand high torque and shock loads. The shaft shall run in oversize anti friction roller bearings. The shaft shall be so adjustable as to give product size of 200 mm to 250 mm.

c-The crusher roll/rolls, motor speed reducer and other rotating parts should have enough moment of inertia that even the hardest lumps are broken without stalling the rolls.

d-Crusher roll assembly should have arrangement (like shear pin etc.) to mechanically isolate the roll from the drive in case uncrushable material is encountered by the roll.

e-An arrangement for spraying water on the picks shall be provided to keep them cool.

6.4-Breaker Plate :

a-A replaceable breaker plate of suitable material, thickness and other dimensions shall be provided below the crusher rolls. Similarly wear resistant plates of sufficient thickness shall be provided in the hopper for taking impacts due to fall of material from the dumpers and for breaking of coal by rock breaker and other auxiliary means.

6.5-Chain Conveyor :

a-The conveyor shall be of heavy duty type. Its width and speed shall be sufficient to meet the prescribed duty conditions. The Chain Conveyor should be of variable speed (minimum variation 50 to 100%). The flights shall be made of solid alloy steel of adequate cross section. These shall be connected to the chains by suitably designed links. The conveyor should be strong enough to take impact of lumpy coal falling on it from the rear discharge dumper.

b-The conveyor shall be provided with hydraulic/grease chain tensioning device with tension equalizing arrangement.

c-The chain conveyor should be capable of starting on full load. Breaking load of the conveyor chain should be at least 85 tonnes. The chain shall be guaranteed for a minimum life of 1.5 MT of coal crushed OR 2 (Two) Calendar years from the date of commissioning OR 5000 working hours, whichever of the three that occurs earlier.

6.6-Rock Breaker Attachment :

a-The feeder breaker shall be provided with a rock breaker attachment to break oversize lumps in its hopper. It shall be hydraulically operated either from the same power pack as that of chain conveyor or from a separate power pack.

b-The moil point of the rock breaker shall be so designed as to impart concentrated energy to the material being broken.

c-The moil point shall be made of material, which can give long life of operation.

d-The rock breaker shall be provided with precision controls for its effective operation.

7.0-DRIVE UNITS :

7.1-Drive for Crusher Roll :

a-The crusher roll/rolls shall be driven by a high torque and high slip non-flame proof TEFC squirrel cage induction motor of adequate KW rating (with enough spare power) to meet the specified duty conditions.

b-The crusher roll/rolls shall be driven through a speed reducer. The speed reducer should have sufficient transmitting capacity taking into account 24 hours operation and heavy shock load. Service factor for speed reducer shall not be less than 1.75 over motor KW. The speed reducer shall have cast steel/fabricated steel body.

c-The make of the gear box shall be Elecon/FMG/New Allenbury works/Greaves/Shanti/any other make proven in PSUs/Govt. Departments.

d-Its (motor) speed will be 1500 RPM (Synchronous). Its starting torque, full load torque and pull out torque should be sufficiently high to overcome the arduous duty to which, it will be put. The motor shall be wound with class 'F' insulation.

7.2.0-Drive for Chain Conveyor :

a-A separate mechanical/hydraulic drive using a suitably designed non-flame proof TEFC squirrel cage induction motor of adequate rating (with sufficient spare power) to meet the duty conditions shall be provided to drive the chain conveyor. The motor shall be of 1500 RPM (Syn.) and continuously rated at all speeds and it should be able to develop enough torque to meet the duty requirement at all speeds.

b-The chain conveyor drive shall be reversible type. It shall be complete with all accessories.

c-In case of a mechanical drive the service factor of the speed reducer shall not be less than 1.5 over motor KW. The speed reducer should have cast steel/fabricated steel body. The transmitting capacity of the gear box shall be sufficient enough to meet the duty requirement at all speeds of the conveyor. The make of the gear box shall be Elecon/FMG/New Allenbury works/Greaves/Shanti. Also any other make proven in PSUs/Govt. Departments.

d-In case of hydraulic drive no speed reducer (Gear Box) shall be used between hydraulic motor and chain conveyor.

7.3-Hydraulic Drives :

a-The rock breaker attachment will be operated by hydraulic drives.

b-The oil used shall be of high quality and which is easily available indigenously.

c-All heat exchangers/coolers shall be of substantial size to maintain the oil temperature sufficiently below the maximum limit prescribed by the manufacturer. The heat exchangers/coolers shall be so mounted as to minimize accumulation of coal dust on it.

8.0-STARTERS FOR DRIVES :

a-The starter of each drive shall be adequately rated. All the starters shall be connected to a common bus housed in a separate chamber. An off-load isolator shall be provided on the incoming side. The isolator shall be so interlocked with the starters that the starters trip before the isolator can be switched off. Further, the cover of the starters cannot be opened unless the isolator is in the off-position.

b-Each starter shall be air break type and shall be provided with protections for overload, under voltage, single phasing and earth leakage. Each starter shall also be provided with back-up HRC fuses for protection against short circuit.

c-Crusher roll drive should be provided with Star/Delta starter. The contactors should rating of 1.5 times over AC-3 duty rating. Only CPRI/ERDA/other Govt. Test House tested make contactors shall be used in the starter.

d-For mechanical drive of the chain conveyor the starter shall be reversible type.

e-The enclosures of the starters shall be dust and vermin proof and shall withstand the outdoor environmental conditions.

f-The starter panels shall be provided with incoming and outgoing cable entry boxes suitable for PVC/DWA copper cable conforming to IS:1554 Part-I.

g-The starter panel will be housed in an out-door kiosk.

8.1-Interlocking of starters for sequence operation :

a-The starters shall be provided with arrangement so that the belt conveyor receiving coal from feeder breaker (customers supply) the crusher rolls and the chain conveyor can be operated in sequence.

b-Arrangement for over-riding the interlocking for the sequence operation shall also be provided for operating each component individually for inspection, repair and maintenance.

9.0-DUST SUPPRESSION :

a-Adequately designed dust suppression system shall be provided near the crusher rolls.

b-For dust suppression, a fine mist will be created by means of properly designed nozzles.

10.0-SIGNAL POST FOR GUIDING UNLOADING OF DUMPERS/TIPPERS

a-Each feeder breaker shall be provided with a railway type short height signal post having red and green lights. This is to guide dumping of coal in the feeder breaker to avoid over loading of the machine.

11.0-OPERATOR'S CABIN :

a-A spacious and enclosed operator's cabin shall be provided with each feeder breaker. The cabin should be so located (on the opposite side of the rock breaker) that entire hopper and crusher roll is visible to the operator. The cabin shall be suitably glassed all round, for proper visibility and the glassed portion of the cabin shall be suitably protected (with expanded metal etc.) to avoid damage from the fly particles of material. It shall be provided with a fan and ventilation for comfortable working. The design of the cabin shall be such that ingress of dust is minimum.

b-The cabin shall house all the controls of the drives (electric and hydraulic). The control switches shall be feather touch push button type properly color coded.

c-All push button switches, ammeters for each drive with selector switch voltmeter for incoming supply with selector switch, pressure gauge and temperature gauge for the hydraulics shall be mounted on a control desk installed in the operator's cabin.

d-The operating handles for the hydraulics shall also be feather touch type and mounted inside the operator's cabin.

e-The operator's cabin shall also be provided with a revolving chair conveniently placed for use by the operator while the feeder breaker is operating.

f-Flood light on anti vibration mountings shall be fitted on the roof of the cabin with adjustment to illuminate the crushing zone.

12.0-MAINTENANCE AND LUBRICATION :

a-All the components of the machine shall be easily approachable for inspection, repair and maintenance.

b-The machine shall be provided with centralized and reliable lubrication system.

13.0-QUALITY :

a>All components, materials, drives, control gears shall comply with the highest International Standards.

b-To the extent possible components, materials drives and control gears shall comply with Indian Standard Specifications.
15.0-Installation and Commissioning : The equipment shall be installed & commissioned by WCL. Manufacturer have to provide technical supervision only for carrying out installation & commissioning work.
16.0-PERFORMANCE GUARANTEES :
a-Output size and capacity Guarantee :
b-The feeder breaker shall be capable of giving the guaranteed output size (-) 200 mm to (-) 250mm at 95% (Min.) of its output.
c-The machine shall be guaranteed to give the rated output of 400 TPH (Average) within the parameters of the output size and mix as indicated above.
17.0-Availability Guarantee :
a-The feeder breaker shall have a guaranteed availability of not less than 85%.
b-The availability shall be calculated as follows :-
c- Availability = $\frac{\text{Available Hrs} - \text{Down Time}}{\text{Available Hours}} \times 100$
d-Available hours to be considered is 24 hours per day.
e-Down time is : Maintenance hours + Breakdown hours.
18. Guarantee / Warranty : The equipment should be guaranteed for satisfactory operation and performance for a period of 12 months from the date of installation / commissioning or 18 months from the date of receipt and acceptance of the equipment, whichever is earlier. In event of any defect in material, design, workmanship, operation and performance during aforesaid period, defective materials, spares, sub-assemblies, components shall be replaced and the equipment rectified and brought back to satisfactory performance free of cost.
19.0-Performance Bank Guarantee :
a-The guarantee for equipment availability shall be backed by a bank guarantee of 10% value of the equipment, which shall be valid for a period of 12 months from the date of commissioning of the equipment.
b-You shall ensure that the availability of the equipment over a period of 12 months does not fall below 85%.
c-For every one percent fall in availability below 85%, 1% value of the equipment will be deducted.
d-In case the fall in % availability below 85% exceeds 10%, the equipment will be rejected out-right and the supplier will have to refund full amount.
e-The guarantee for the rated output shall also be backed by a bank guarantee of 10% of the value of the equipment.
f-A penalty of 1% will be deducted for every 20 TPH fall in rated, average output capacity.
g- If the fall in rated capacity is more than 100 TPH, the machine will be rejected and the supplier will have to refund full amount.
h- For the purpose of assessment of rated capacity of the machine, four joint tests shall be carried out over a period of 12 months, i.e. one test at the end of each quarter. Each test shall be of four hours duration, during which time the machine would be run continuously and its output assessed. Average of all the four tests (at the end of the year) shall be calculated and treated as rated capacity of the machine.
20.0-Inspection : Inspection of the consignment shall be carried out at the destination stores, which will be arranged by the consignee on receipt of stores.

21.0 Other Technical Parameters

a-KW,RPM and characteristics of the offered motors.	S.C. Induction Motor, Foot Mounted, T.E.F.C. 3 phase 50 C/s, IP-54 protection, 1470 RPM, 90 KW, 415±10%, Make Bharat Bijlee, Winding Insulation class'F'
b-Recommended Incoming cable size for feeding power to the machine.	400 Sq.mm size Al Conductor Armoured PVC Cable
c-Type of speed controller provided for chain conveyor.	Speed Control is provided by VFD
d-Rating and reduction ratio of speed reducers with transmitting capacity and service factor taken for selection.	For reducer of Crusher Roll : 160 KW Ratio : 20:1 Service Factor 1.75 for Feeder Conveyor KW - 90 service factor 1.75, reduction ration 71:1
e-Breaking strength of conveyor chain.	1410 KN
i-Expected life of liners in hopper.	2 Years
j- Details of Rock Breaker :	
i) Working pressure in Kg/Sq.cm.	120-160 Kg/Sq.cm

ii) Oil flow in litres/min.	35-65 Litres/min
iii) No. of blows per minute.	600-1300 per minute
iv) Blow capacity in Kg.m.	1000-1500 Ft Lbs
v) Diameter of tool shank	52mm
k. List of recommended spare parts for two year trouble free operations of the equipment	To be submitted along with the supply.
m. List of imported component and program of their indinezation	To be submitted along with the supply.
22.0 DOCUMENTS TO BE SUBMITTED ALONG WITH SUPPLIES :	
a-General arrangement drawing of the offered feeder breaker indicating dimensions and weights.	
b-Technical Brochures/leaflets in respect of the offered feeder breaker and bought-out items (if any).	
c-Installation, operation and maintenance manual.	
d-Parts catalog	
e-G.A. drawing showing dimensions and weights along with installation instructions.	

Contd next page→

Basic points for Design of the equipment

A. Coal Characteristics:-

- | | | |
|------------------------------------|---|--------------------------------------|
| 1. Feed Material | - | R.O.M. Coal from open cast mines. |
| 2. Bulk Density | - | 900-1100 kg/cub meter |
| 3. H.G.I. of ROM Coal | - | 52 |
| 4. % of Shale/Stone in R.O.M. Coal | - | Sand stone up to 2%, Shale up to 10% |
| 5. Ash content | - | 35 - 45% |
| 6. Moisture Control | - | 06% - 08% |
| 7. Compressive Strength | - | 400- 800 kg/cm ² |
| 8. Abrasiveness | - | Fairly abrasive |

B. Environmental condition

- | | | |
|-------------------------|---|--------------|
| 1. Altitude(above MSL) | - | up to 1000 M |
| 2. Ambient temperature | - | 50 degree C |
| 3. Humidity(Max) | - | 100 % |
| 4. Atmosphere | - | Dusty |

C. Machine Capacity

- | | | |
|-------------------------|---|---|
| 1. Machine Capacity | - | 400 TPH (rated), 500 TPH(design) |
| 2. Feed Size | - | 1200 x 1200 x 1200 mm (upto2% on average) |
| 3. Output Size | - | (-)250mm |
| 4. Fine Generation | - | Not more than 4% |
| 5. Feed Hopper Capacity | - | 40 cub M. |

D. Power supply

- | | | |
|------------------------|---|------------------|
| 1. Voltage | - | 415Volt \pm 6% |
| 2. Phases | - | 3 |
| 3. Neutral | - | Solidly earth |
| 4. Frequency | - | 50 cycles |
| 5. Total motors rating | - | 450 KW |

E. Total weight of the machine with framework - 48 MT (approx)

Contd next page→

f



Description of the offered equipment model BD-400F

It is a Heavy Duty Feeder Breaker model BD-400F having its construction suitable for easy shifting. It is skid mounted and of modular construction so as to keep the pressure to the ground not more than 1 to 1.25 kg per sq.cm. The complete set of Equipment has following composite units.

- I. Main Frame Assembly
- II. Hopper
- III. Feeder Chain Conveyor with drive.
- IV. Crusher Roll with drive.
- V. Rock Breaker

I. **Main Frame Assembly:-** The entire frame-work which supports the mounting of hopper, chain conveyor, crusher roll is made up of structural sections designed to withstand stress and strain caused during discharge of coal in the hopper directly from 50/60 Te Dumpers and wear & abrasion resistant steel plates.

I. **Hopper:-**The hopper is fabricated, robust constructed and low height at the rear suitable to withstand impact load due to direct discharge of coal round the clock from dumpers. The hopper is of 40 Cu. Meter capacity and made of all welded construction of steel plates with wear resistant liner plates at bottom, on the side plates and rear plates. The hopper has provision for opening side plate for unloading the materials, if required.

I. **Feeder Chain Conveyor :** The heavy duty chain conveyor is designed to start with a dead load of 30 T. The dual chains of alloy steel having 30 mm dia link and 108 mm pitch are made of alloy steel electric resistant welded. The flight bars are 1290 mm. in length, mounting hole C.C. is 1200 mm. and made of wear resistant steel of high tensile strength. There are 210 links and 35 Flight Bars in the Chain Assly. The line pans are of 16 mm plate of manganese steel of superior quality to guard against wear, abrasion and impact. The drive sprocket at head end of the chain conveyor receives drive power from a 90 KW S.C. induction motor through coupling of rated capacity and gearbox of capacity with 1.5 service factor. There are two sets of chain sprocket assemblies, the drive assembly in the front & the idle assembly in the rear. Mechanically operated dual grease chain tensioning device is fitted to the tail sprocket assembly shaft. It maintains uniform and adequate tension to the endless chain of the chain conveyor so that smooth and trouble free transportation of coal can be made. A replicable wear resistant Manganese plate is used as a breaking plate under crusher roll. Speed Control (50 to 100%) of conveyor is provided by VFD.

Contd next page→

IV. Crusher Roll :- The roll is made of thick alloy steel plate mounted on heavy duty cast steel Bearing Blocks. The height of the crusher roll is adjustable. The picks are mounted on the breaker drum through pick box suitably fixed over the periphery of the crusher roll. Orientation of the picks has been done to minimize the actual thrust over the bearings holding the roll assembly. The crusher shaft is made of alloy steel capable of transmitting high torque. An arrangement for dust suppression and cooling the picks by spraying water through nozzles are provided. The drive to the Roll shaft is given by one 160 Kw motor through a reducer of 1.75 service factor. The crusher assembly has shear pin arrangement to isolate the roll from the drive in case uncrushable material is encountered by the roll.

V. Rock Breaker:-

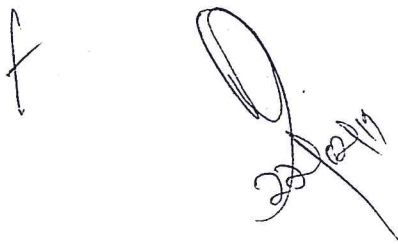
A Hydraulically operated Rock Breaker is attached to break over size lumps in the hopper of the Feeder Breaker. The rock Breaker receives power from an independent Power Pack. It has precision control for its effective operation. The moil point is made of material suitable for long life and designed to impart concentrated energy to the coal/shale lumps.

B) AUXILIARY UNIT

I. Electricals:-

- i) Motors are controlled by control Gears conforming to B.I.S. with AC-3 power Contactors. Rating of the contactors are 1.5 times over AC-3 duty rating.
- ii) Motors for 1st stage Crushing Unit will have Auto control Star Delta Starters. Other Motors will have DOL Starters. The starter for chain conveyor is of reversible type. All the starters are connected to a common bus housed in a separate chamber. An off-load isolator shall be provided on the incoming side. The isolator is so interlocked with the starters that the starters trip before the isolator can be switched off. Further, the cover of the starters cannot be opened unless the isolator is in the off-position.
- iii) Control Gears are provided with thermal overload relays, Earth Fault Relays, Under Voltages Relays, Earth Leakage Sensing Device, Single Phasing Preventor, Ammeter, Volt meter.
- iv) Sequence Control system will be provided for operation of the Feeder conveyor, primary Crusher Roll, Bridge chain conveyor for overriding the sequence operation for repair, maintenance work of individual component of the system is also provided.
- v) Speed monitoring relay & trip switch for Primary Crusher Roll are incorporated for Fail Safe System.
- vi) Power connection to the electric motors of Primary crusher roll and Feeder chain conveyor are to be given by 1100volt grade, PILCDWA/PVC copper conductor cable of 0.2 sq.inch and 0.15 sq. inch sizes respectively.
- vii) The starter panels are provided with incoming and outgoing cable entry boxes suitable for required cable sizes.

Contd next page→

Handwritten signature and initials in black ink, appearing to be 'A' and a stylized signature.

II) Auto Lubrication System :-

Automatic Lubrication of all bearings and points of Lubrication are ensured.

III) Dust Suppression system

An adequate and effective system is provided to suppress dust generated during crushing and arrangement is also provided for spraying water on the picks to keep them cool.

IV) Operator's Cabin :-

A standard cubicle type cabin with comfortable seat ,light fan and controls on a panel for ease of operation is provided. The cabin is suitably placed for easy visibility and operation of rock breaker, crusher and dumper unloading. The cabin is suitably glassed all around and the glassed portion is protected with expanded metal etc. The design of the cabin is such that it is well ventilated and ingress of dust is minimum. The cabin houses all the control of drives. The control switches are feather touch push button type. Selector switches, gauges and meters are mounted on control Desk installed in the cabin.

V) The complete set of equipments an integrated compact unit as per NIT Requirement:-

Fabricated steel Structure erected on Skid is provided for mounting the complete set of equipment comprising Feeder Breaker model BD-400F.

VI) Safety items :-

All couplings Chains and Rotating parts are properly guarded.. Ladders are provided with hand rails and chequered plates are used on the platform. Lock out switches are set on individual machine for maintenance and emergency purposes..


VII) Signal Post;-

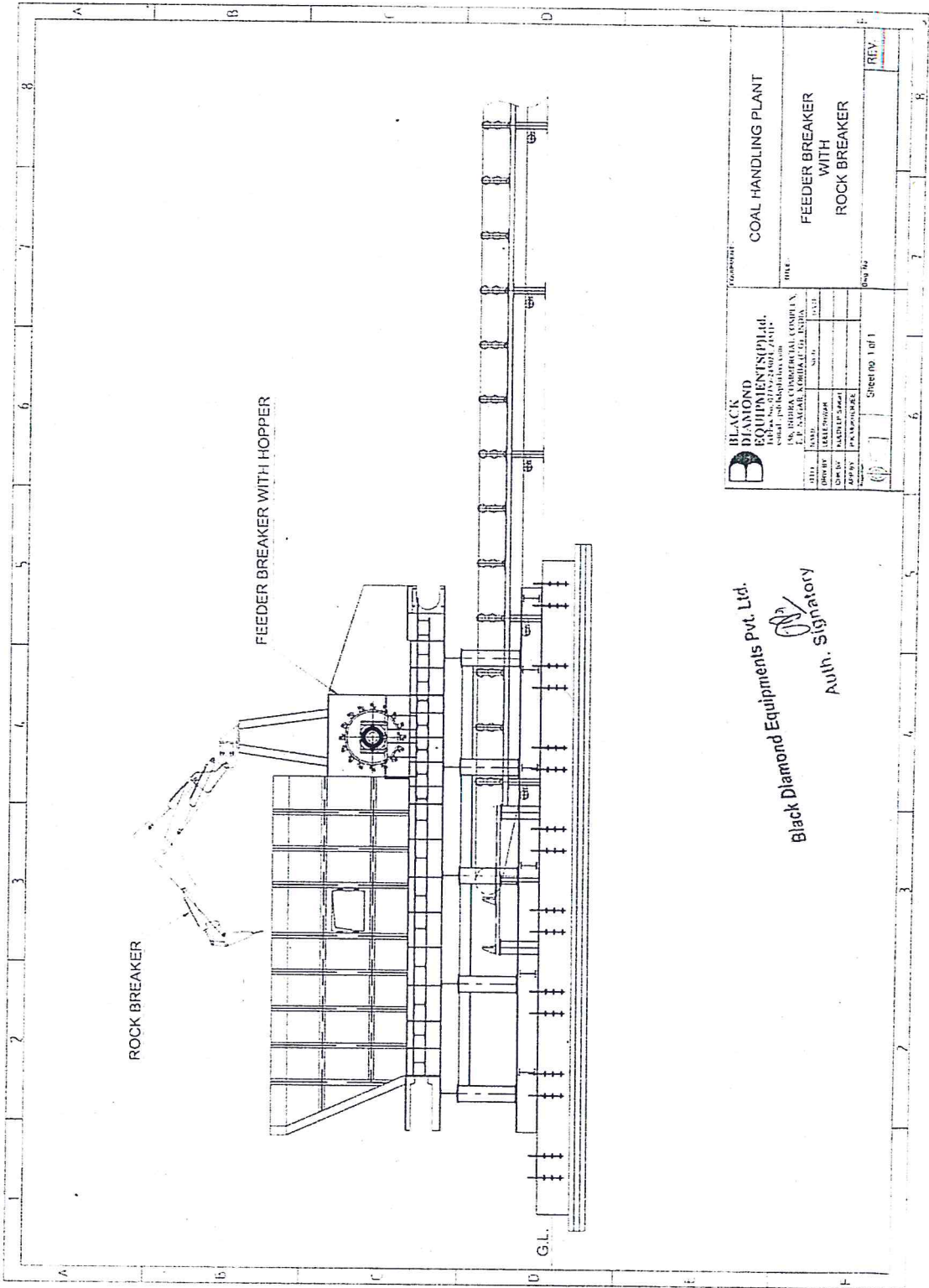
A short height signal post (railway type) having Red & Green lights is provided for guiding unloading of Dumper/ Tipper on Feeder Breaker.

Scope of supply :-

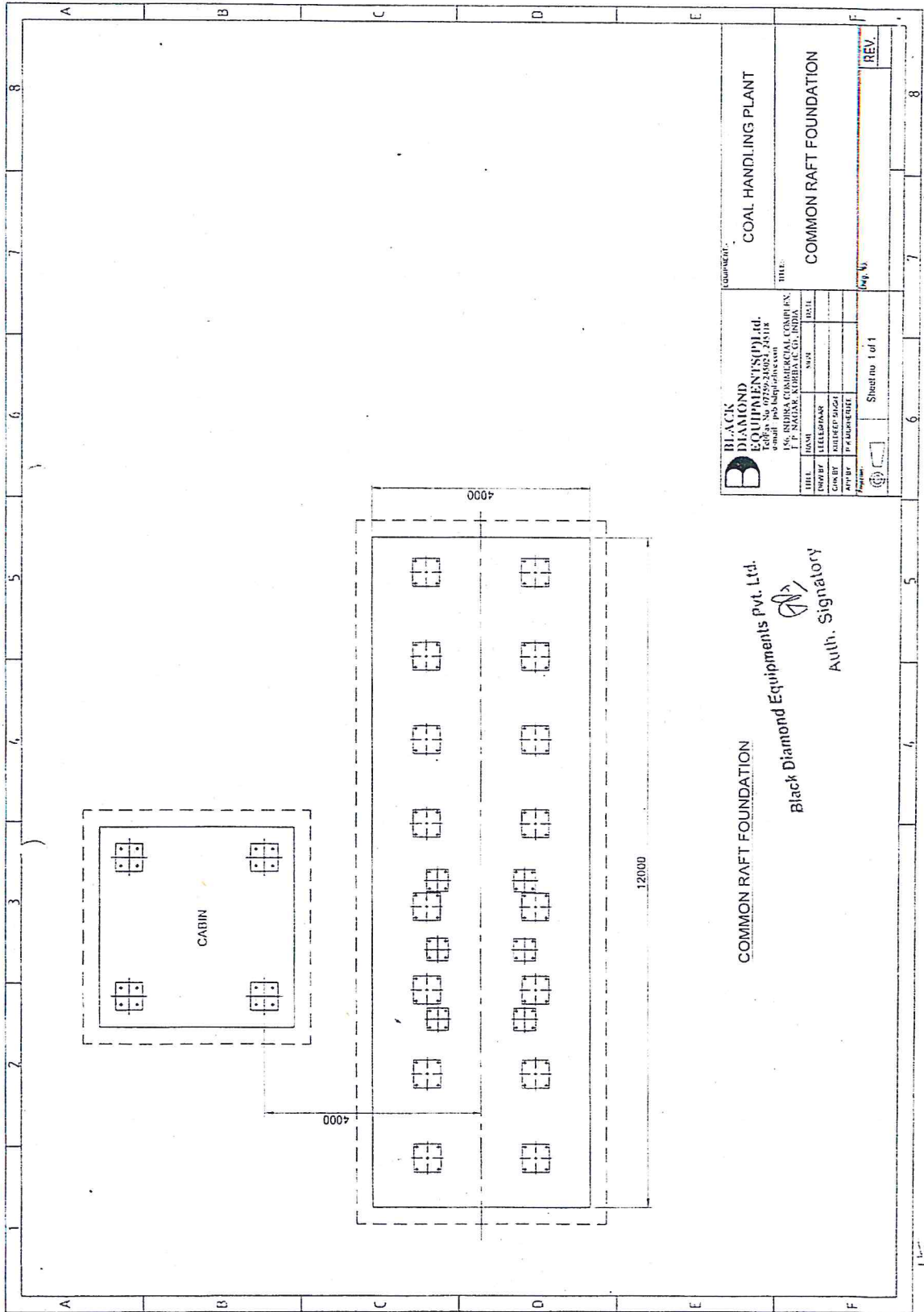
- i) Complete Feeder Breaker in all respects as stated above.*
- ii) Tools and Tackles for installation, repair and maintenance.*
- iii) Operation & Maintenance manual and Spares parts manual.*
- iv) Detail drawing for power supply and control system.*
- vi) First fill of Oil, Grease and Lubricants.*
- vii) Expert service personnel as and when required.*

.....
Contd next page→

f 



Contd next page →



BLACK DIAMOND EQUIPMENTS (P) Ltd.
 156, INDIRA COMMERICAL COMPLEX
 1st FLOOR, 1st CROSSING, 1st STAGE
 P. P. NAGAR, KURBA C.D., INDIA

PROJECT: COAL HANDLING PLANT
 TITLE: COMMON RAFT FOUNDATION

DATE	ISSUED	REV.

Sheet no 1 of 1

COMMON RAFT FOUNDATION
 Black Diamond Equipments Pvt. Ltd.
 Auth. Signatory

Contd next page →

TECHNICAL DATAS OF THE MAJOR COMPONENTS

A) Primary Crushing Unit:-

a) Feeder Chain conveyor :-

i) Type of Drive :- Electro-Mechanical

ii) Length (from Tail end sprocket
center to drum end sprocket center) :- 9000mm(approx.)

iii) Width :- 1320mm (approx.)

iv) Dia of Drive sprocket (PCD) :- 430 mm.

v) Chain

a) Type :- Round link flash Butt chain
conforming to DIN 22252C/ IS 3948

b) No. of Strand :- 2

c) Link dia & pitch :- 30 mm, 108 mm

d) No of links in chain assy :- 210 (approx.)

vi) Flight Bars -

a) Material :- Alloy Steel

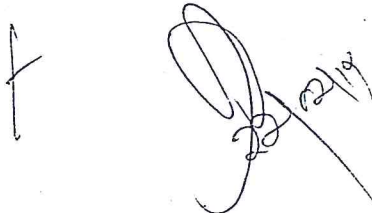
b) Center to Center distance :- 1200 mm

c) No. of Flight Bars :- 35 in chain assly.

vii) Line pan -

a. Material :- Wear resistant steel

b. Thickness of plate :- 16mm



b) Gearbox for Feeder chain conveyor:-

- a. Make :- Elecon/ Shanti/ Equivalent
- b. Type :- Bevel Helical Gearbox
- c. Model :- BTN - 360 or equivalent
- d. Ratio :- 71 :1 (approx.)
- e. Rating :- 90 KW
- f. Service Factor :- ≥ 1.50
- g. Efficiency :- 85 to 90%

C) Elect Motor for Feeder chain conveyor:-

- a. Type :- S.C. Induction Motor, Foot Mounted
T.E.F.C., 3 phase 50 C/ S, IP-54 Protection.
- b. RPM :- 1470
- c. KW :- 90 KW
- d. Voltage :- $415 \pm 10\%$
- e. Make :- Bharat Bijlee
- f. Insulation :- Class 'B'

D) Coupling :-

High speed

- a) Type :- Fluid Coupling
- b) Make :- Fluidomat

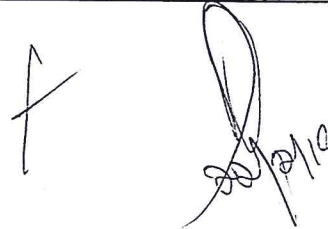
Low Speed

- a) Make :- Own
- b) Type :- GC110

II) Primary Crusher :-

A) Crusher Roll:

- a) Material of shell :- Hadfield Manganese Steel
- b) Dia of Roll (shell with picks) :- 1100mm (approx.)
- c) Width of Roll/ length :- 1200mm
- d) Type of Picks :- Tungsten Carbide tipped
- e) Roll R.P.M. :- 75 (approx)
- f) Peripheral Speed M/ Sec :- 4.3 (approx.)



B) Elect Motor :-

- | | |
|---------------|--|
| i) Type | :- S.C High Torque Induction Motor, 3Phase,
50 Cycles, 415 Volt, TEFC Foot Mounted Moto |
| ii) KW | :- 160 |
| iii) RPM | :- 1470 |
| iv) Make | :- Bharat Bijlee |
| v) Insulation | :- Class F |

C) High Speed Coupling :-

- | | |
|----------|-------------------|
| i) Type | :- Fluid Coupling |
| ii) Make | :- Fluidomat |

D) Low speed Coupling :-

- | | |
|-----------|------------------|
| i) Type | :- Gear Coupling |
| ii) Model | :- GC110 |

E) Gearbox :-

- | | |
|-------------------|-------------------------------------|
| i) Make | :- ELECON/Shanti/equivalent |
| ii) Type | :- Bevel Helical Reduction Gearbox. |
| iii) Model | :- BTN-320 or equivalent |
| iv) Ratio | :- 20:1 |
| v) Service factor | :- ≥ 1.75 |

III) Rock Breaker:-

- | | |
|------------------------------------|---------------|
| i) Working pressure in Kg/Sq. c.m. | :- 120 - 160 |
| ii) Oil flow in liters/min. | :- 35 - 65 |
| iii) No. of blows per minute. | :- 600 - 1300 |
| iv) Rod Diameter | :- 52 mm |

contd. Next page→

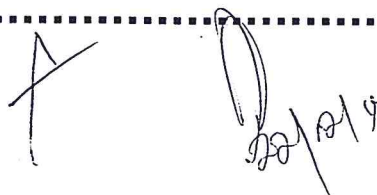
f



Part Catalogue

M/s. BLACK DIAMOND EQUIPMENTS PVT. LTD.			
S.No.	DESCRIPTION	PART NO.	QTY.
1	Feeder Breaker Chassis Complete	BD-400FS - 100	1 Set
1.1	Return Chassis	BD-400FS - 101	1 Set
1.2	Line Chassis	BD-400FS - 102	1 Set
1.3	Breaker Chassis	BD-400FS - 103	1 Set
1.4	Drive Chassis	BD-400FS - 104	1 Set
1.5	Chain Conveyor Drive Base Frame	BD-400FS - 105	1 Set
1.6	Breaker Drive Base Frame	BD-400FS - 106	1 Set
1.7	Crusher Roll Canopy	BD-400FS - 107	1 Set
1.8	Drive Chassis Canopy	BD-400FS - 108	1 Set
1.9	Sliding Plate Assembly	BD-400FS - 109	1 Set
2	Hopper Assembly Complete	BD-400FS - 200	1 Set
2.1	Front Wall	BD-400FS - 201	1 No.
2.2	Rear Wall	BD-400FS - 202	1 No.
2.3	Side Wall (Right)	BD-400FS - 203	1 No.
2.4	Side Wall (Left)	BD-400FS - 204	1 No.
2.5	Liner plate set complete for Hopper Assembly	BD-400FS - 205	1 Set
3	Head Shaft Assembly with Bearing Block	BD-400FS - 300	1 Set
3.1	Head Shaft	BD-400FS - 301	1 No.
3.2	Sprockets	BD-400FS - 302	2 Nos.
3.3	Head Shaft Bearing Block Assembly	BD-400FS - 303	2 Nos.
3.4	Blind Cover	BD-400FS - 304	1 No.
3.5	Cover	BD-400FS - 305	1 No.
3.6	Dust Seal	BD-400FS - 306	2 Nos.
3.7	H. T. Bolts	BD-400FS - 307	12 Nos.
3.8	Spring Washer	BD-400FS - 308	12 Nos.
3.9	Oil Seal	BD-400FS - 309	2 Nos.
3.10	Seal Runner	BD-400FS - 310	2 Nos.

Contd next page →



S.No.	DESCRIPTION	PART NO.	QTY.
3.11	Grease Nipple	BD-400FS - 311	2 Nos.
3.12	Bearing Block Mounting Bolts	BD-400FS - 312	8 Nos.
3.13	Spring Washer	BD-400FS - 313	8 Nos.
3.14	Drive Distance Piece	BD-400FS - 314	1 No.
3.15	Bearing for Head Shaft	BD-400FS - 315	2 Nos.
3.16	Head Shaft Assembly with sprocket	BD-400FS - 316	1 No.
3.17	Key	BD-400FS - 317	4 Nos.
4	Tail Shaft Assembly with Bearing Block	BD-400FS - 400	1 Set
4.1	Tail Shaft	BD-400FS - 401	1 No.
4.2	Sprockets	BD-400FS - 402	2 Nos.
4.3	Tail Shaft Bearing Block Assembly	BD-400FS - 403	2 Nos.
4.4	Cover	BD-400FS - 404	2 Nos.
4.5	Dust Seal	BD-400FS - 405	2 Nos.
4.6	H.T.Bolts	BD-400FS - 406	12Nos.
4.7	Spring Washer	BD-400FS - 407	12Nos.
4.8	Grease Nipple	BD-400FS - 408	4 Nos.
4.9	Bearing Block Mounting Bolts	BD-400FS - 409	4 Nos.
4.10	Spring Washer	BD-400FS - 410	4 Nos.
4.11	Stud Tension Bolts	BD-400FS - 411	2 Nos.
4.12	Nuts	BD-400FS - 412	2 Nos.
4.13	Chain Tension Bolt Assembly with Frame	BD-400FS - 413	2 Nos.
4.14	Tail Distance Piece	BD-400FS - 414	1 No.
4.15	Bearing for Tail End Shaft	BD-400FS - 415	2 Nos.
4.16	Tail Shaft Assembly with Sprocket	BD-400FS - 416	1 No.
4.17	Key	BD-400FS - 417	4 Nos.
5	Primary Crusher Roll Assembly with Bearing Block	BD-400FS - 500	1 Set
5.1	Crusher Roll with Shaft, Pick Holder & Picks	BD-400FS - 501	1 Set
5.2	Crusher Roll without Shaft, Pick Holder & Picks	BD-400FS - 501A	1 Set
5.3	Crusher Roll with Shaft without Pick Holder & Picks	BD-400FS - 501B	1 Set
5.4	Crusher Roll with Pick & Pick Holder without Shaft	BD-400FS - 501C	1 Set
5.5	Crusher Roll Bearing Block Assembly	BD-400FS - 502	2 Nos.

Contd next page →

A

[Handwritten signature]



M/s. BLACK DIAMOND EQUIPMENTS PVT. LTD.

S.No.	DESCRIPTION	PART NO.	QTY.
5.6	Blind Cover	BD-400FS - 503	1 No.
5.7	Cover	BD-400FS - 504	1 No.
5.8	Dust Seal	BD-400FS - 505	2 Nos.
5.9	H. T. Bolts	BD-400FS - 506	16 Nos.
5.10	Spring Washer	BD-400FS - 507	16 Nos.
5.11	Grease Nipple	BD-400FS - 508	2 Nos.
5.12	Seal Runner	BD-400FS - 509	1 No.
5.13	Oil Seal	BD-400FS - 510	2 Nos.
5.14	Bearing Block Mounting Bolts	BD-400FS - 511	8 Nos.
5.15	H. T. Nuts	BD-400FS - 512	8 Nos.
5.16	Check Nuts	BD-400FS - 513	8 Nos.
5.17	Picks	BD-400FS - 514	88Nos.
5.18	Pick holder	BD-400FS - 515	88Nos.
5.19	Bearing for crusher Roll	BD-400FS - 516	2 Nos.
5.20	Allen Bolt	BD-400FS - 517	8 Nos.
5.21	Spring Washer	BD-400FS - 518	8 Nos.
5.22	Pick Holder Washer	BD-400FS - 519	88Nos.
5.23	Pick and Holder Assembly	BD-400FS - 520	88Nos.
5.24	Shaft for Crusher Roll	BD-400FS - 521	1 No.
5.25	Clamping Set	BD-400FS - 522	2 No.
6	Scraper Assembly	BD-400FS - 600 A	1 Set
6.1	Flight Bar	BD-400FS - 601	35Nos.
6.2	T-Head Bolts	BD-400FS - 602	70Nos.
6.3	Nylock Nut	BD-400FS - 603	70Nos.
6.4	Scraper Chain	BD-400FS - 604A	2 Nos.
6.5	Joining Link	BD-400FS - 605	2 Nos.
7	Complete Primary Crusher Roll Drive Unit Assembly with Base Frame	BD-400FS - 700	1 Set
7.1	Primary Crusher Roll Drive Unit Assembly with Base Frame without Prime Mover & Coupling arrangement	BD-400FS - 700A	1 Set
7.2	Primary Crusher Roll Drive Unit Assembly with Base Frame & Coupling arrangement without Prime Mover	BD-400FS - 700B	1 Set
8	Complete Scraper Drive Unit Assembly with Base Frame	BD-400FS - 800	1 Set
8.1	Scraper Drive Unit Assembly with Base Frame without Prime Mover and Coupling arrangement	BD-400FS - 800A	1 Set
8.2	Scraper Drive Unit Assembly with Base Frame and Coupling arrangement without Prime Mover	BD-400FS - 800B	1 Set

Contd next page →

[Handwritten signature]
22/2/19

M/s. BLACK DIAMOND EQUIPMENTS PVT. LTD.

S.No.	DESCRIPTION	PART NO.	QTY.
9	Automatic centralized lubrication system for complete system	BD-400FS - 900	1 Set
9.1	Automatic centralized lubrication system for Feeder Breaker	BD-400F - 901	1 Set
10	Fluid Coupling	BD-400FS - 1100	1 Set
10.1	Flexible element for model	BD-400FS - 1101	1 Set
10.2	Flexible Hub internal for model	BD-400FS - 1102	1 No.
10.3	Flexible Flange for model	BD-400FS - 1103	1 No.
10.4	Fusible plug with O ring	BD-400FS - 1104	1 No.
11	Fluid Coupling	BD-400FS - 1200	1 Set
11.1	Flexible element for model	BD-400FS - 1201	1 Set
11.2	Flexible Hub internal for model	BD-400FS - 1202	1 No.
11.3	Flexible Flange for model	BD-400FS - 1203	1 No.
11.4	Fusible plug with O ring	BD-400FS - 1204	1 No.
12	GEAR COUPLING	BD-400FS - 1300	2 Nos.
13	Control Panel Complete	BD-400FS-1000	1 Set
13.1	MCCB 3Polw 35KA with Spader Link	BD-400FS-1001	1 No.
13.2	MCCB 3Pole 35KA with Spader Link	BD-400FS-1002	1 No.
13.3	Control Transformer 3KVA	BD-400FS-1004	1 No.
13.4	Earth Leackage Relay	BD-400FS-1005	1 No.
13.5	Over, Under Voltage Relay	BD-400FS-1006	1 No.
13.6	Contactoer Vaccum 240V	BD-400FS-1009	1 No.
13.7	Contactoer Vaccum 240V	BD-400FS-1010	2 Nos.
13.8	Current Transformer	BD-400FS-1012	1 No.
13.9	Current Transformer	BD-400FS-1013	1 No.
13.10	Ampere Meter Digital with S.SW	BD-400FS-1015	1 No.
13.11	Ampere Meter Digital with S.SW	BD-400FS-1016	1 No.
13.12	Over Load Relay	BD-400FS-1017	1 No.
13.13	Over Load Relay	BD-400FS-1018	1 No.
13.14	Control MCB DP	BD-400FS-1020	2 Nos.
13.15	Control MCB SP	BD-400FS-1021	3 Nos.
13.16	Phase Indicating Lamp	BD-400FS-1022	9 Nos.
13.17	Push Button 22.5MM	BD-400FS-1023	6 Nos.
13.18	Mashroom Head Push Button 22.5MM	BD-400FS-1024	6 Nos.
13.19	Volt Meter Digital with S.SW	BD-400FS-1025	1 No.
13.20	Volt Selector Switch	BD-400FS-1026	1 No.
13.21	ACB 3Pole, 440V	BD-400FS-1027	1 No.
13.22	AMPER METER DIGITAL WITH S.SW	BD-400FS-1028	1 No.
13.23	Auxiliary Contactor 4NO+4NC	BD-400FS-1031	6 Nos.
13.24	Ampere Selector Swith	BD-400FS-1034	4 Nos.
13.25	Variable Frequency Drive for Chain Conveyor	BD-400FS-1042	1 No.

Handwritten signature and date: 22/2/19