



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

PHONE :2577629
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail: srchandran@bheltry.co.in
Web:

429-002/A

	Enquiry No	Enquiry Date	Due Date for Quotation
	2661400403 - 55	18.06.2014	30.07.2014
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order			

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	7502F2700200 Pinch Roll Assembly with Gear Motor Drive as per the Drg No. 1-M-02F-27 0804-Z SUB ASSEMBLY DRGS. AS FOLLOWS: (01) 2M 02F 14 02494 (02) 3M 02F 14 4839 (03) 4M 02F 14 12815 (04) 4M 02F 14 12816 (05) 4M 02F 14 12817 (06) 3M 02F 14 3868 (07) 3M 02F 14 03869 (08) 4M 02F 14 09872 (09) 4M 02F 14 16929 (10) 4M 02F 14 12819 (11) 4M 02F 14 9876 (12) 4M 02F 14 17665-01 (13) 3M 02F 14 10498 (14) 4M 02F 14 09880 (15) 4M 02F 14 9881 (16) 4M 02F 14 9882 (17) 4M 02F 14 9883 (18) 4M 02F 14 12820 (19) 4M 02F 14 12821 (20) 3M 02F 27 6504 (21) 4M 02F 27 16836 (22) 4M 02F 27 16837 (23) 4M 02F 27 16838 (24) 4M 02F 27 16839 (25) 4M 02F 27 16925 SPECIFICATION: (1) The pinch rollers are to transport tubes of 24 mm dia. to 88.1 of 2.4 to 12 mm thickness of length 12 meters to transfer the tube load to the next pinch roller. (2) The pinch rollers are to be driven by geared motor with logical operations as follows:- # Open position to accommodate maximum diameter. # Close position to grip the tubes. # Ensure rotation by geared motor such that the tube will draw the drive force and move forward. # Reverse rotation of the pinch roller to ensure the tube travel in the reverse linear direction (to and fro). # The pinch roller open and close for clamping and de-clamping the tube can be through pneumatic cylinder. (3) The pinch rollers are driven by one geared motor and controlled by DC Solenoid valves and limit switch. (4) The pinch rollers assembly are two roller	NO	6.000	6.00	16.10.14

The offers should reach us 30 minutes before the time of opening of tenders. The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**

MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,



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type as per the part drawing 4-M-02F-27 17665-01 and the critical dimensions, speed, power rating, etc., are specified in the drawing of geared motor. Minor variations are acceptable.

(5) The pinch roller drawing enclosed is for reference and guidance. The existing pinch roller in the machine should be studied by the vendor

(6) The general arrangement can be followed as per the drawing for easy operational feature and maintenance.

(7) The pinch rollers and the materials are to be followed as per machine tool manufacturing norms and the standard norms.

(8) The two rotating pinch rollers are to be moulded with proper non-metallic material such as metalon or heavy duty compounds to take care the shock, impact, abrasive loads during tube bending.

(9) The clamping and un-clamping, sliding, dimensions, diameters, thickness of the rollers connecting components are nearly as per drawing.

(10) All the pneumatic cylinders and valves are to be SMC/ Festo make only.

(11) Gearedmotor: PBL / BHARAT BIJLI / HINDUSTAN / BONFIGLIOLI / BAUER / ROTOMOTIVE / ROTO FLEX / NEW ALLENBERRY / SEW / HABASIT ROSSI.

(12) Sensors to be provided for terminating the tube travel and stopping the pinch roller during appropriate operational requirement as per site condition.

(13) After placement of order the final drawing are to be submitted for BHELs approvals before manufacturing the pinch roll assembly.

(14) Pinch roller assembly will be inspected for its function and reliability at vendor's site before dispatch (Pre-dispatch inspection)

Note:

(a) All items as per sl. no 1 (sub assemblies as per part drawings mentioned in BHEL Drawing No. 1-M-02F-27 0804-Z) are to be manufactured as per the drawing details

(b) Fabrication has to be done at supplier's works.

(c) All the raw materials are to be as per BHEL drawing specification.

(d) All raw materials, welding consumables paints etc are under the

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scope of the vendor.

(e) Welding electrode E7018 only has to be used for fabrication.

(f) Wherever machining, welding and fitting are required due consideration shall be maintained for fit and tolerance.

(g) Sample to be offered by the supplier at supplier's works for inspection and acceptance by BHEL. Balance quantity has to be manufactured and supplied.

(h) All materials has to be transported and delivered to BHEL / Trichy by the supplier.

(i) One coat of red oxide paint as per the industrial practice has to be applied by the supplier.

(j) The supplier may visit BHEL for familiarisation and for any clarification required on the above system.

(k) The offerer shall submit the offer in two part bid.

VENDOR QUALIFYING CRITERIA:

ONLY THOSE VENDORS WHO SATISFY THE FOLLOWING CONDITIONS WILL GET QUALIFIED TO PARTICIPATE IN THE TENDER:

(1) VENDOR SHOULD HAVE MINIMUM 3 YEAR EXPERIENCE IN THIS FIELD.

(2) PREVIOUS PO DETAILS FOR SUPPLYING SIMILAR KIND OF ITEMS SHOULD BE SUBMITTED ALONG WITH OFFER. OTHERWISE OFFER WILL BE REJECTED.

(3) COMPANY PROFILE DETAILS HAS TO BE PROVIDED ALONG WITH OFFER.

(4) BHEL RESERVES THE RIGHT TO VISIT THE VENDOR'S WORKS FOR VERIFYING THE MANUFACTURING FACILITIES AND ANY OTHER CREDENTIAL FURNISHED BY THE VENDOR IN CASE THE INFORMATION FURNISHED WITH THE OFFERS FOUND TO BE FALSE /INCORRECT, THE OFFER SHALL BE REJECTED.

General Note:

GENERAL NOTE:

PLEASE SUBMIT YOUR OFFER IN "TWO PART BID SYSTEM" AS PER ANNEXURE ENCLOSED.

ENCLOSURES:

ANNEXURE II,III,IV,V,VI,VII & DRAWINGS

Enclosures:

"LD clause has to be confirmed without fail."

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"Payment to vendors will be made only thro E-Payment mode"

The offers should reach us 30 minutes before the time of opening of tenders.
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For **BHARAT HEAVY ELECTRICALS LIMITED**

MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

CAPITAL PURCHASE
COMMERCIAL TERMS AND CONDITIONS

1.0 QUOTATIONS

The Bidders shall submit the offer in **TWO INNER ENVELOPES** as indicated below which shall be sealed in one outer envelope.

Envelope I This sealed envelope should contain all the copies of technical bid together with un-priced commercial bid & annexure III. This envelope should be clearly marked **'Part I - Technical and commercial bid'**,

Indicating Enquiry No., Due Date and Address & Reference of the Bidder.

Envelope II This sealed envelope should contain **price as per Annexure-IV format**. This envelope should be clearly marked **"Part II - Price bid"**, indicating **Enquiry No., Due Date and Address & Reference of the Bidder**.

Both the envelopes (Part I & II) shall be put in one cover (**Envelope III**), duly sealed, superscribing as Part I and Part II of Enquiry No., due date of opening and the address and reference of the Bidder

The above offer should reach this office on or before the due date by 14.00 hours (IST). Late offers will not be considered.

Tender should not be addressed to any individual's name but only by designation to

**SENIOR MANAGER /PURCHASE/ CP & SP/ MM / MFG
BHARAT HEAVY ELECTRICALS LIMITED
HIGH PRESSURE BOILER PLANT
TIRUCHIRAPALLI - 620 014
TAMIL NADU**

Tenders should be free from **CORRECTION AND ERASURES**, Corrections if any, must be attested. All Amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall prevail.

Offers should be in **ENGLISH** and accompanied by detailed technical literature, catalogue and detailed dimensional drawings in **ENGLISH** or otherwise, the offers will not be considered.

2.0 OPENING OF TENDERS

The Part I - Technical & commercial bid alone would be opened on the Tender opening date.

The Part II - Price bid of technically suitable Bidders alone would be opened. The Technically Suitable Bidders would be informed about the tender opening date through e-mail.

Clarifications if any required by BHEL for Technical evaluation **would be** sought from Bidders before opening of Part II - price bid

For any queries clarifications the bidders may contact us through our FAX NO. +91 431 2520719 or through e-mail < mmcpmfg1@bheltry.co.in > & < chells@bheltry.co.in>

Bharat Heavy Electricals Limited, Tiruchirappalli -620 014
MM: CP & SP
Annexure For Techno Commercial Bid
Check List - to be filled and submitted along with Technical Bid

Annexure-III

BHEL Commercial Terms and Conditions for Indigenous Supplies	Vendor's Confirmation / Comments
Technical confirmation to BHEL's Specification as called for in BHEL Format shall be furnished. If needed additional sheets shall be used.	
Prices shall be quoted item wise only as per the model format enclosed	
Prices shall be quoted on " FIRM PRICE " basis only The prices should be only on F.O.R / Despatching station basis with Packing & Forwarding charges if any. Applicable % of ED & Sales Tax, Freight & Insurance, Installation & Commissioning Charges should be clearly Indicated	
Validity of offer shall be for a minimum period of 120 days from the date of Tender opening	
Delivery period from the date of Letter of Intent / Purchase order shall be clearly mentioned in the offer	
Liquidated damages @ '0.5% per week subject to a maximum of 10% of the order value shall be applicable for delay in deliveries For Details Refer Annexure- v	
Following Risk Purchase clause shall be applicable The purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated or if the same were not available, the best and the nearest available substitute therefore The supplier shall be liable for any loss which the Purchaser may sustain by reason of such risk purchases	
Payment term for supply portion: Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials For details Refer Annexure- v	
Erection / commissioning: (if applicable only) Erection / commissioning charges if any has been mentioned in the offer or else confirmation that Erection / commissioning shall be done at free of cost is available in the offer,	
The equipment shall be guaranteed for a period of 12 months from the date of commissioning	
Final inspection and acceptance of equipment will be after installation at BHEL, Trichy	
The vendor shall provide necessary drawings, Test Certificates and Operating Maintenance Manuals etc., as called for in the Technical Specification, in the required number of copies at no extra cost	
Any warranty replacement during warranty period shall be supplied free of charge on FOR BHEL, Trichy basis.	
Offers should be submitted only in sealed cover super-scribing clearly the Enquiry reference and due date.	
% of Excise Duty with cess	
% of TAX (CST/VAT)-(INGST with FORM-17 or CST with C-FORM)	
Packing & Forwarding Charges (if any in % only)	
Percentage of Freight& transit insurance charges, if any Freight charges from Dispatching station to BHEL, Tiruchirappalli • Supplier should quote for F.O.R-BHEL Trichy Stores.	
As per Commercial terms and conditions, acceptance for participation in Reverse auction (RA).Yes/No to be indicated	
Name of the person for participating reverse auction	
Land Line Number	
Fax Number	
Mobile Number	
E-mail ID	

NOTE:-

- a) It is confirmed that all the terms and conditions stipulated in the Enquiry have been fully understood by us and all clarifications & details have been obtained.
- b) Your offer should be indicating applicable If any P&F Charges, % of ED, Sales Tax -CST or VAT, Service Tax), Freight, Insurance and Installation and Commissioning Charges etc., as per our Price Format
- c) Your specific acceptance to our Payment terms, LD & Risk Purchase Clause are essential for consideration of your offer. Other wise your offer is liable for rejection.
- d) No row shall be left blank. Please indicate NA, in case the item is "not applicable"

Annexure For Price Bid

**Bharat Heavy Electricals Limited TIRUCHIRAPPALLI
MODEL PRICE BID FORMAT FOR INDIAN BIDDERS**

CAPITAL PURCHASE
Annexure-IV

Enquiry No. & Date:
Bidder's Offer No. & Date:

SI No	Description of item	Unit	Quantity	Rate in Rs.	Value in Rs.
	TOTAL VALUE IN RS.				
	Packing & Forwarding charges in % if any				
	Freight & Insurance Charges In % if freight charges are not mentioned it will be considered as FOR-BHEL TRICHY.				
	Excise Duty (indicate in %)				
	A) TNGST — VAT (%)				
	B) CST with C-FORM — (%)				
	C) CST without C-Form — (%)				
	Approximate Net weight of the total consignment				
	Approximate Gross weight of the total consignment				
	Approximate Dimensions of the Consignment				
	The price indicated shall be inclusive of all accessories, spares etc. as given in the scope of supply. Individual item-wise break-up price shall be attached as an annexure to this price bid format.				

Signature & Seal of Vendor

NOTE:

1. The price bid should be submitted only as per the above format. No row shall be left blank. Please indicate NA, in case the item is "not applicable"
2. Prices shall be quoted item-wise only as per the above format.
3. If Price quoted is Inclusive of ED, the included ED Value and Base Value shall be indicated item-wise.

Payment Term (Indigenous)	
If materials are receivable at Stores/Trichy without PBG	Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials.
If materials are receivable at Stores/Trichy with PBG	Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials and against 10% PBG valid for the warranty period.
Any deviation in the above payment term will attract loading as mentioned below. “Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.	

Payment through Bank is not preferred. In case of Payment through Bank is opted by Supplier, BHEL prefers documents submission through bank with copy of LR and door delivery of Goods to Site/Stores with Consignee copy attached. In this case Loading will be 3% on the offered value.
Offers of indigenous Suppliers with payment terms as LC/Advance Payment are liable for rejection.

Liquidated Damages / Penalty -
Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.
For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.
Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).

Guarantee / Warranty Period – (if applicable)
Normally No deviation permitted and the deviated offers are liable for rejection.

Ranking-
BHEL will consider the ranking after the loading is applied as referred above wherever deviations are observed.

Performance Bank Guarantee – (if applicable)
Normally No deviation permitted and the deviated offers are liable for rejection.

NOTE:-

1. If the due date of tender opening happens to be a holiday, the tenders will be opened on the next working day.
2. BHEL reserves the right to go for a reverse auction (RA) instead of opening the submitted sealed bid which will be decided after technical evaluation. Information and general terms and conditions covering RA are given in commercial terms and conditions.
3. Corrigendum if any, with respect to this tender will be hosted only in the website <http://www.bhel.com> or <http://tenders.gov.in>. You are requested to visit the website regularly for updates.

Special Provisions for Micro and Small Enterprises (MSE)

1. 20% of the tendered quantity is earmarked for MSE suppliers in this tender.
2. Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC/ST entrepreneurs.
3. In case MSE vendor participating in the tender quotes within the price band of L1+15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.
4. "MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue of acknowledgement in EM-II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed at Annexure -VII where deemed validity of EM II certificate of five Years has expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer."

Certificate by Chartered Accountant on letter head

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

Further verified from the Books of Accounts that the investment of the company
as per the latest audited financial year as per MSMED Act 2006 is as follows:

For Manufacturing enterprises: Investment in plant and machinery (i,e original cost
excluding land and building and the items specified by the Ministry of Small Scale Industries vide its
notification No.S.O,1722(E) dated October 6. 2006:

Rs... ..Lacs

2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and
furniture, fittings and other items not directly related to the service rendered Or as may be notified under the
MSMED Act, 2006.

Rs..... Lacs

(Strike off whichever is not applicable)

The above investment of RsLacs is within permissible limit of
RS..... Lacs for Micro I Small (Strike off which is not applicable)
Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not
applicable) and the date of graduation of such enterprise from its original category is
(dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such
enterprise from its original category as notified vide S.D. No. 3322(E) dated 01.11.2013
published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant

MEMBER: **ASSEMBLY OF WHEELS** - IN 1/16" INCHES TO DIMS.

HYDRAULIC CYLINDER

CLASOR 4-2

STROKE - 2"

WORKING PRESSURE: 600 PSI

ADJUSTABLE FRONT FLANGE MOUNTED

SEERED JACOBS

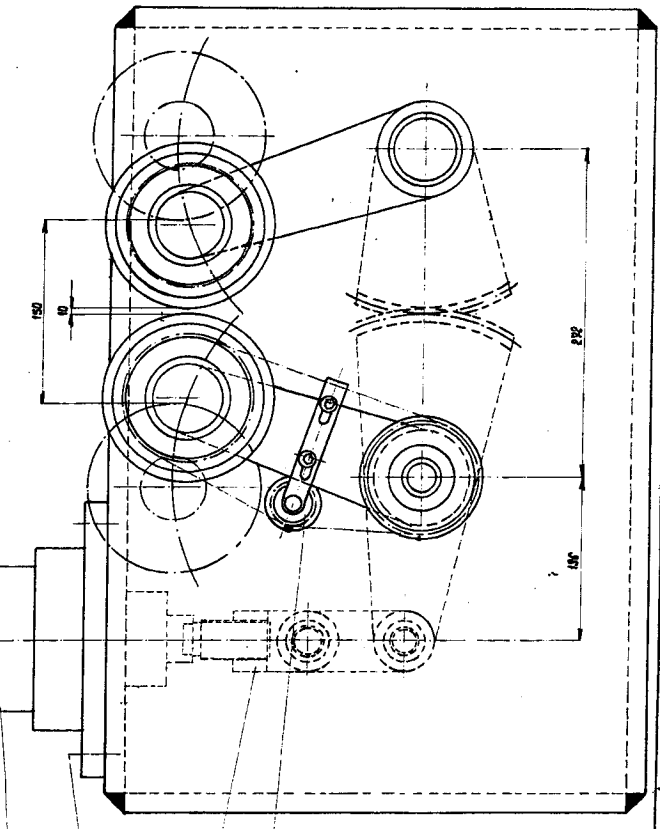
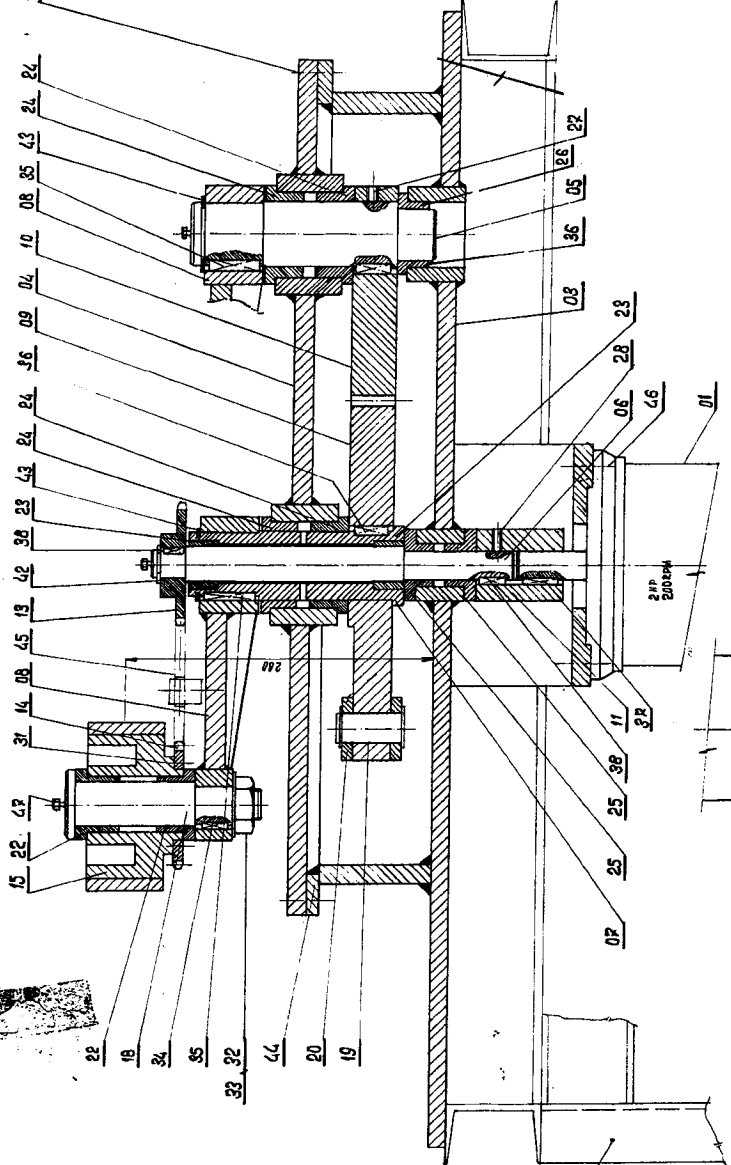
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NOTE:



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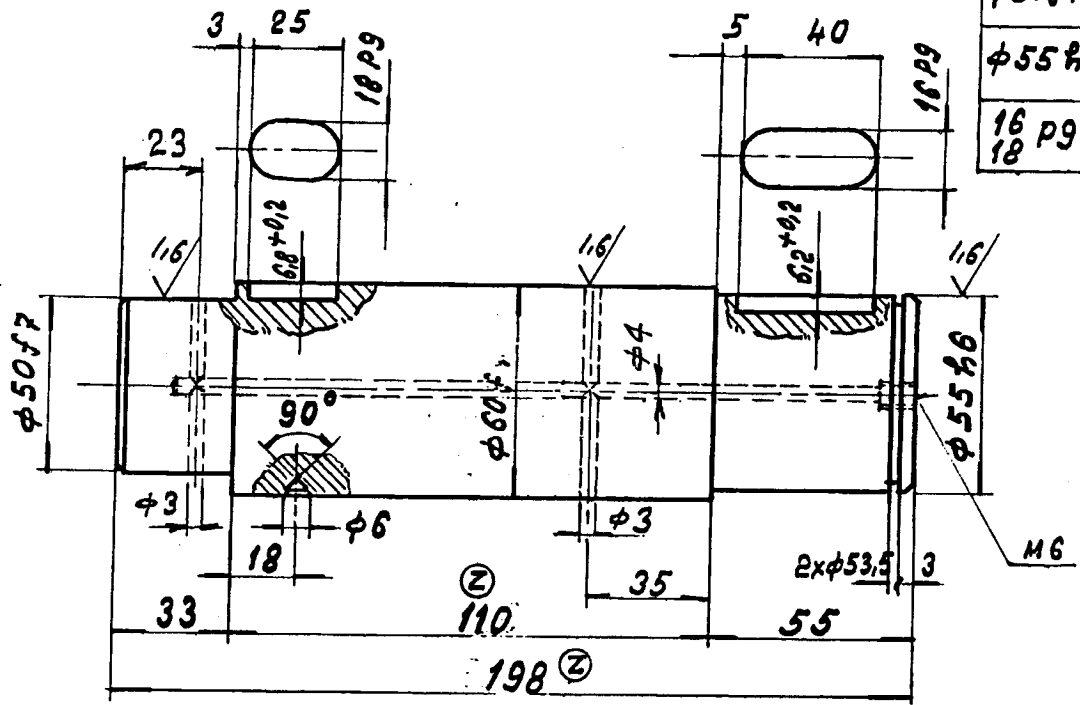
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INDEX NO. 39 - 607

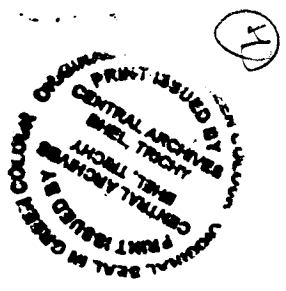
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BHARAT HEAVY ELECTRICALS LTD.,
 TIRUCHIRAPALLI-14

32/1.6/1

$\phi 60 f 7$	-0.030
	-0.060
$\phi 50 f 7$	-0.025
	-0.050
$\phi 55 h 6$	-0.000
	-0.019
16 p9	-0.018
18 p9	-0.061



CHAMFER SHARP CORNERS TO 1/45°



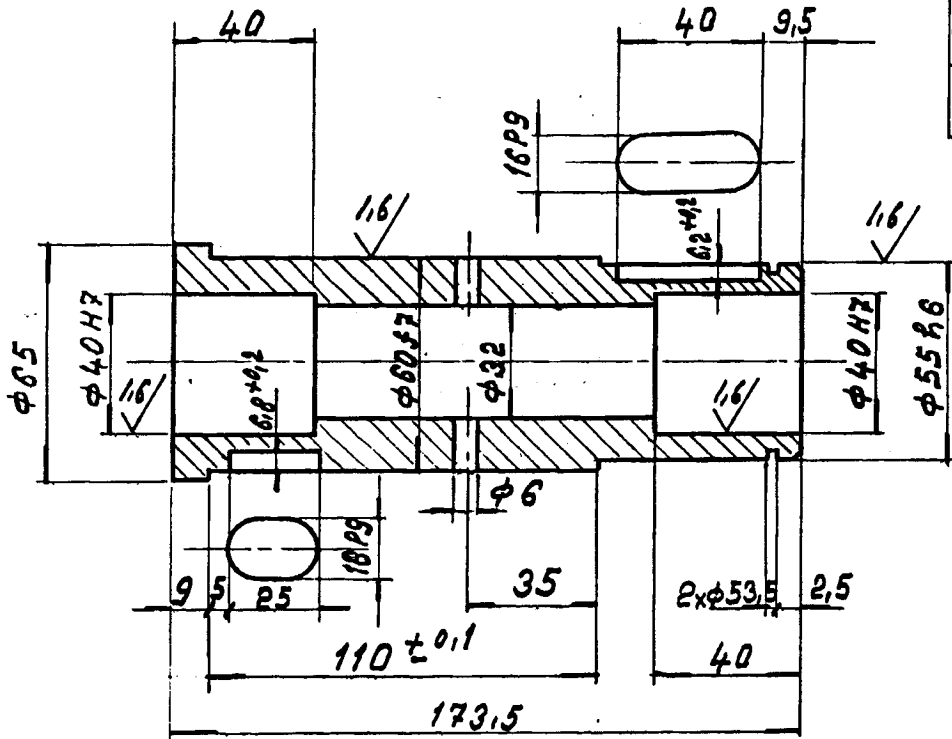
NO. OF PIECES		DESCRIPTION		SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET WT (KG)	GROSS WT (KG)	DRAWING NO.	ITEM NO.
					BH-CQ45	45CB				4.M-02f-0804	5
						IS: 7287					
REMARKS						TOTAL NET WT (kg) CC:01/ EC 14					
SCALE 1:2	DRAWN	K. H. Basamy		REFERENCE	ALTERATIONS			DATE	SIGNATURE	INDEX	
	CHECKED				DIMENSION ALTERED			12-6-75		②	
	APPROVED	[Signature]									
	STDS. OFFICER										
DATE		19-11-1974									
MACHINE		PINCH ROLL				TYPE: PRG		INV. NO.			
TITLE:		SHAFT				DRAWING NO.		4-M-02f-12815			
NO. OF SHEETS						SHEET NO.					



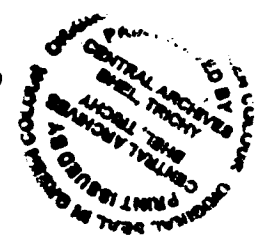
CAUTION
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BHARAT HEAVY ELECTRICALS LTD.,
 TIRUCHIRAPALLI-14

3,2 / 1,5 /

φ60f7	-0,030
	-0,060
φ55R6	-0,000
	-0,019
φ40H7	+0,025
	+0,000
16 p9	-0,018
18	-0,061



CHAMFER SHARP CORNERS TO 1/45°



10

1			BM-C30	45CB				1.M.02f.0804	7
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET W (KG)	GROSS W (KG)	DRAWING NO.	ITEM NO.
				TS:7283					
REMARKS					TOTAL NET W (KG)		CC:30	EC:14	
SCALE	DRAWN	REFERENCE	ALTERATIONS		DATE	SIGNATURE	INDEX		
1:2	K. U. B. Sanyal								
	CHECKED								
	APPROVED								
	STDS. OFFICER								
	DATE	19.11.1974							
MACHINE			TYPE		INV. NO.				
PINCH ROLL			PRB						
TITLE			DRAWING NO.						
SLEEVE			4.M.02f.12817 ¹⁴						
			NO. OF SHEETS		SHEET NO.				

8

9



SEGMENTAL GEAR

Sheet No	
No of Sheets	

DRAWING NO.	4M02F1409872
-------------	--------------

MACHINE	PINCH ROLL
DATE	27/05/08
APPROVED	
CHECKED	
DRAWN/TCD	G.G.R
SCALE	1:2
DESCRIPTION	45C8
MATERIAL	IS: 7283
STANDARD	
NET WT IN KGS.	-
DRAWING NO.	IM-02F14-00593
ITEM NO.	10

DESCRIPTION	IM-02F14-00804	ITEM NO.	10
-------------	----------------	----------	----

ALL CORNERS TO BE CHAMFERED 1/45.

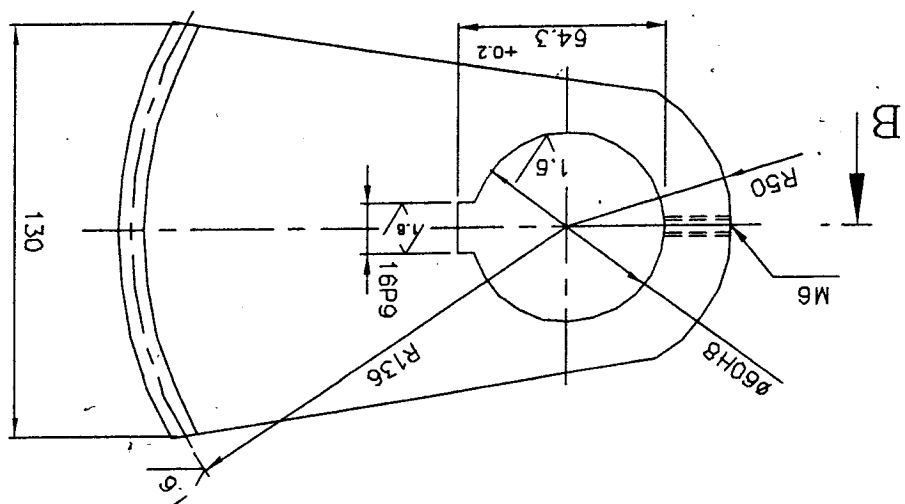
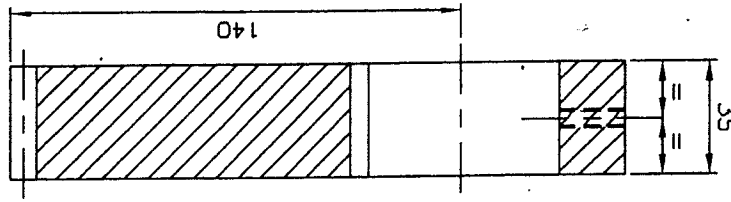
NOTE:

NO. OF TEETH	68T OVER 360°
MODULE	4
PRESSURE ANGLE	20°
WIDTH ACROSS 8 TEETH	92.3728 -0.063
CORRECTION FACTOR	-
ADDENDUM	9c DIN 3967
MATING GEAR NO. OF TEETH	68T OVER 360°
MATING GEAR DRAWING NO.	3-M-02F14-03869
CENTRE DISTANCE	272

M.S. GUGAN
Maintenance & Repair
Stamp / Incharge
Approved



SEC-BB



3.2/1.6

16P9	-0.018	±0.046
±0.000		
±0.061	±0.000	
±0.018		
±0.046		

ALL DIMENSIONS ARE IN MM

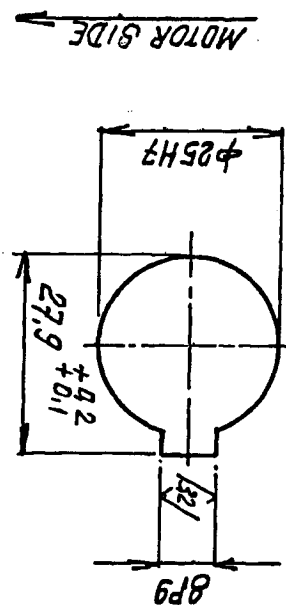
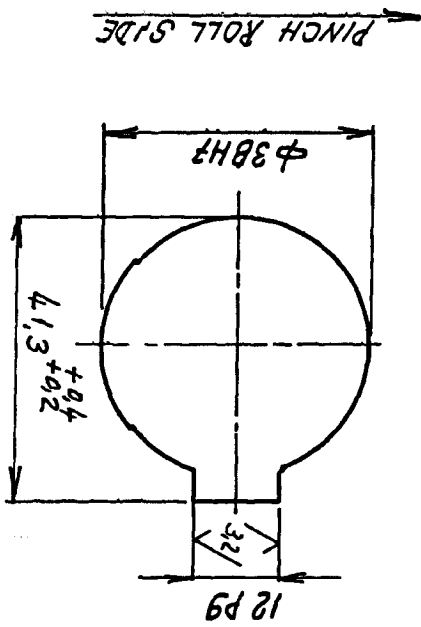
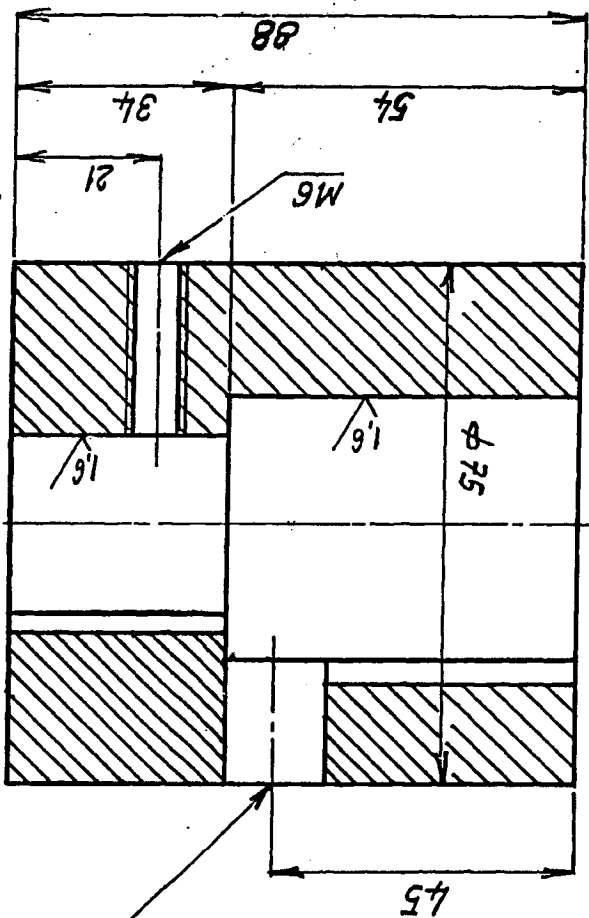
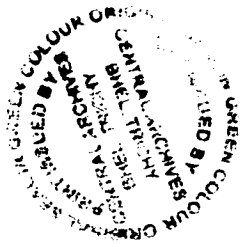
CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED
 TRICHYAPALLI - 620 014.



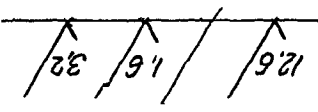
COUPLING

4-M. 02f. 16929
27

NO. OF SHEETS		SHEET NO.	
DRAWING NO.		TYPE: PRG	
MACHINE PINCH ROLL		DATE: 10-3-80	
STDS. OFFICER		APPROVED	
CHECKED		SCALE DRAWN	
REMARKS		TOTAL NET WT (KG)	
DESCRIPTION		FINAL MATERIAL	
SEMI-PRODUCT		INITIAL MATERIAL	
NO. OF PIECES		SCRAP WT (KG)	
1		75:7283	
ROD ϕ 50x100		B.M. 030 4508	
DRAWING NO.		DRAWING NO.	
1.M.02f.0604 11		1.M.02f.0604 11	



ϕ 38H7	+0.025
ϕ 25H7	+0.021
12P9	+0.000
12P9	-0.018
8P9	-0.061
8P9	-0.015
8P9	-0.051



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SPROCKET

16T/3/4" P

DRAWING NO. **4.M.025-12819**
 SHEET NO. **14**

TITLE:

MACHINE **PINCH ROLLER**

TYPE: **P.R.G.**

INV. NO.

DATE

19.11.1974

STDS. OFFICER

APPROVED

[Signature]

CHECKED

DRAWN

REFERENCE

ALTERATIONS

DATE

SIGNATURE INDEX

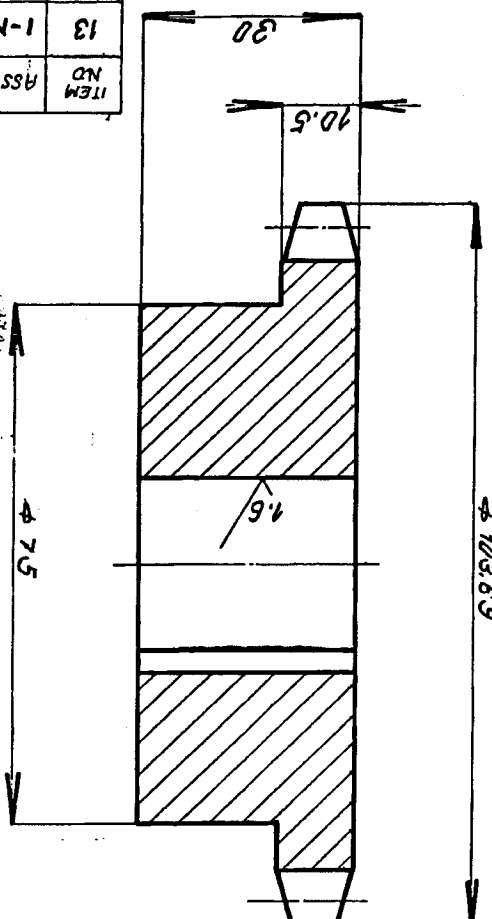
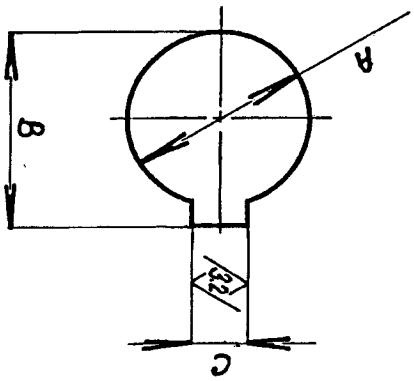
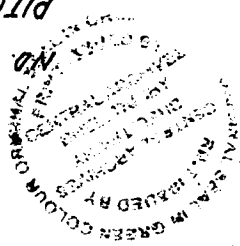
REMARKS

TOTAL NET WT (KG) **CC:122/ EC:114**

NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL INITIAL MATERIAL	SCRAFF SORT	NET WT (KG)	GROSS WT (KG)	ITEM NO.
			BM-745				
							4-M-025-12819

ITEM NO	ASSTY DRG. NO	'A'	'B'	'C'	Qty.
19	2-M-025-3485	φ25 H7	27.9 ± 0.1	8 P9	1
11	1-M-025-2049	φ32 H7	35.3 ± 0.2	10 P9	3
13	1-M-025-0804	φ25 H7	27.9 ± 0.1	8 P9	1

ROLLER DIA 12.07
 PITCH (3/4") 19.05
 NO. OF TEETH 16



φ32 H7	+0.000
8 P9	+0.025
10 P9	-0.051
φ25 H7	+0.000
	+0.021

63 / 32 / 16

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SPROCKET

167/3/4" p

4-M-02f-9876

NO. OF SHEETS: SHEET NO. 14

TITLE:

MACHINE: 10.5.73
DINCH ROLL

TYPE: PRG

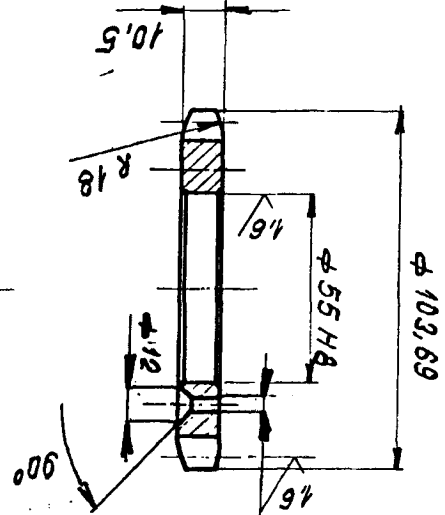
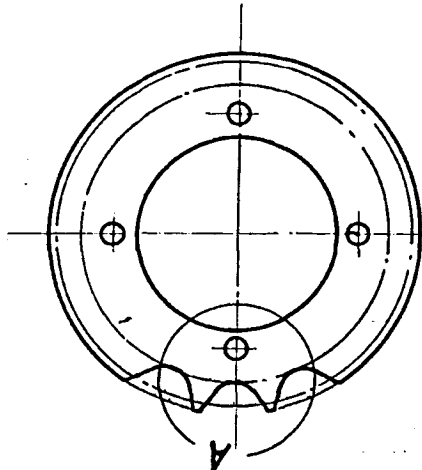
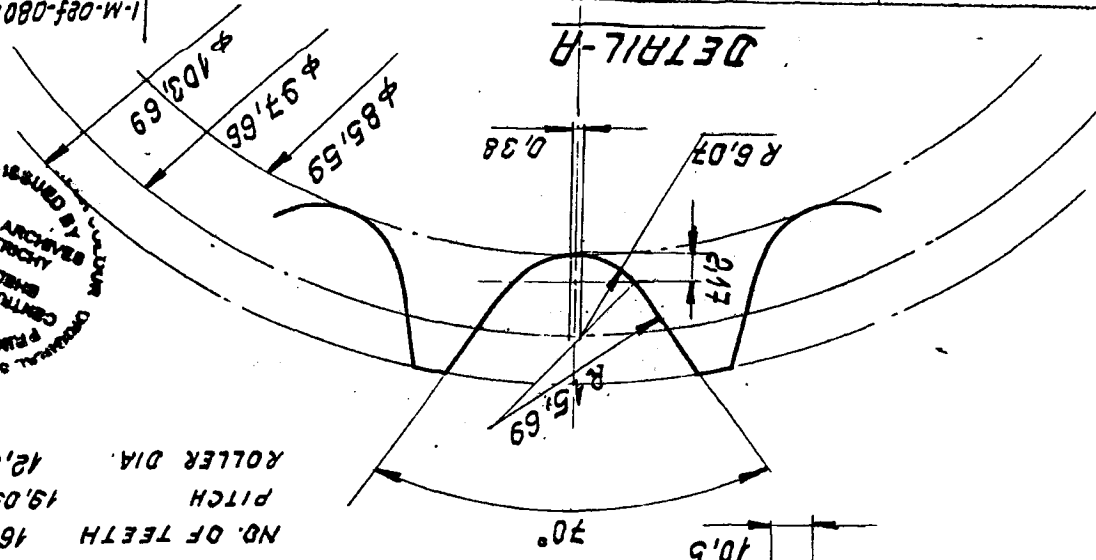
SCALE: 1:2

NO OF PIECES: 2

DATE	10.5.73
SYDS. OFFICER	
APPROVED BY	<i>[Signature]</i>
CHECKED BY	
DRAWN BY	S. N. M. S.

NO OF	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP NET WT (KG)	GROSS WT (KG)	DRAWING NO.	ITEM NO.
2	CL IV	IS 1875	IS 1283	45C8			1-M-02f-0804	14
							1-M-02f-0804	14

DETAIL-A



NO. OF TEETH 16
PITCH 19.05 [3/4]
ROLLER DIA. 12.07

PRINT ISSUED BY
CENTRAL ARCHIVE
SHEL, TIRUCHY

$\phi 55 H 8$	$+0.048$
	$+0.000$

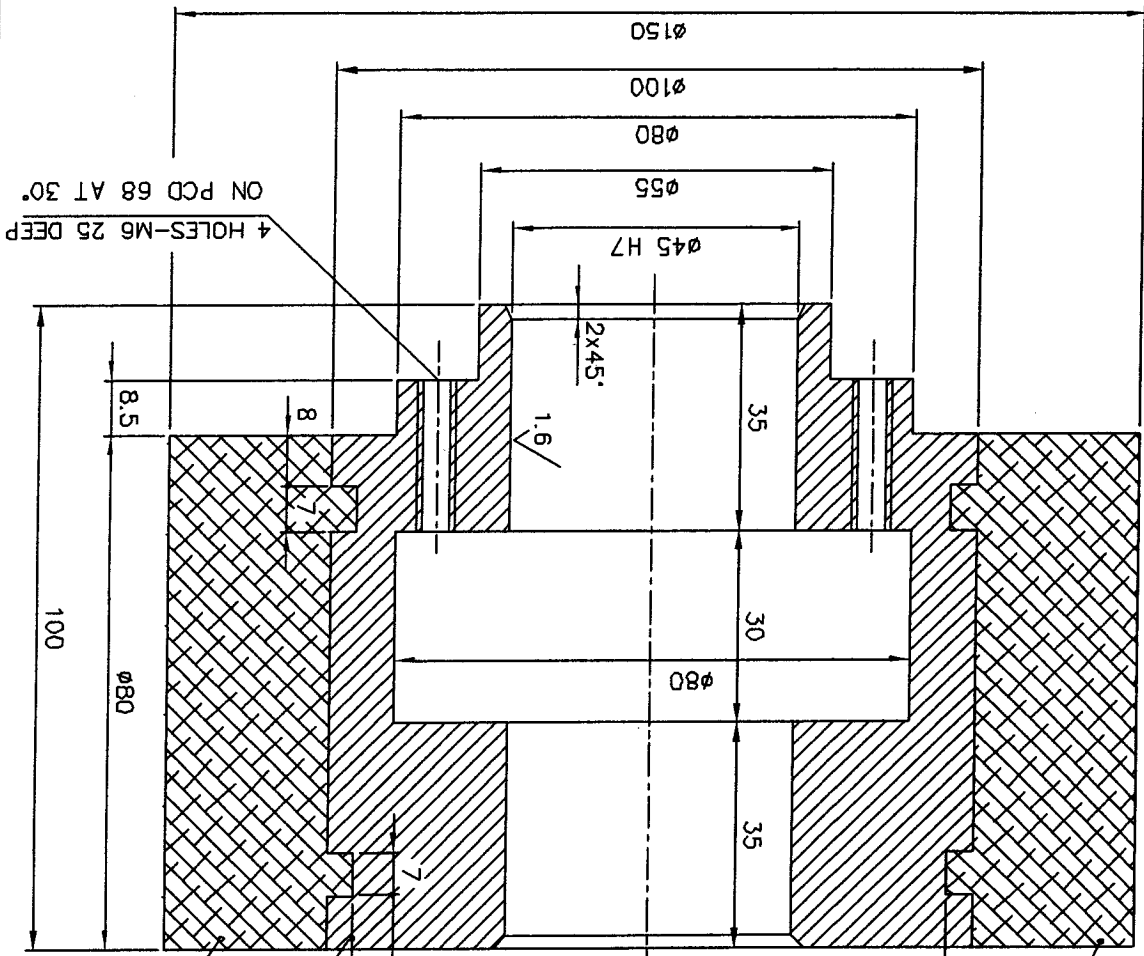
3.2 / 1.6

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ROLLER

MACHINE FINCH ROLL		DATE: 26-06-06	
TYPE: PRG		APPROVED	
DRAWING No: 4M02F1417665		CHECKED	
Sheet No: 4M02F1417665		SCALE: DRAWN P.A.ROSS	
No. of Sheets: 01		GRIPING GROOVE ADDED	
No. of Pieces		REFERENCE:	
ITEM NO.		ALTERNATIONS: DCN REF. DATE SIGN. INDEX	
DESCRIPTION		MATERIAL	
1	ROLLER	POLYURETHANE	
1	ROD Ø100x100	45 C8	IS: 7283
2	ASSY	1-M-02F14-0804	2.7
15			2.7



ALL DIMENSIONS ARE IN MM

ITEM NO: 02

SHORE HARDNESS 85

± 3

POLYURETHANE TO BE MOULDED ON THE WHEEL, ITEM NO.1 Ø92

ON THE WHEEL, ITEM NO.1

3.2/1.6

3

7

8

8

8.5

100

Ø80

Ø80

30

35

35

Ø45 H7

2x45°

1.6

4 HOLES-M6 25 DEEP ON PCD 68 AT 30°

01

02

NO. OF GROOVES-4

EQUALLY SPACED

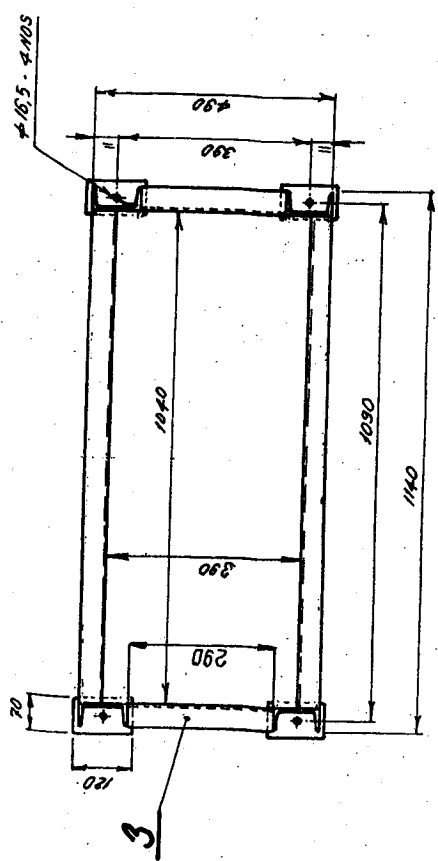
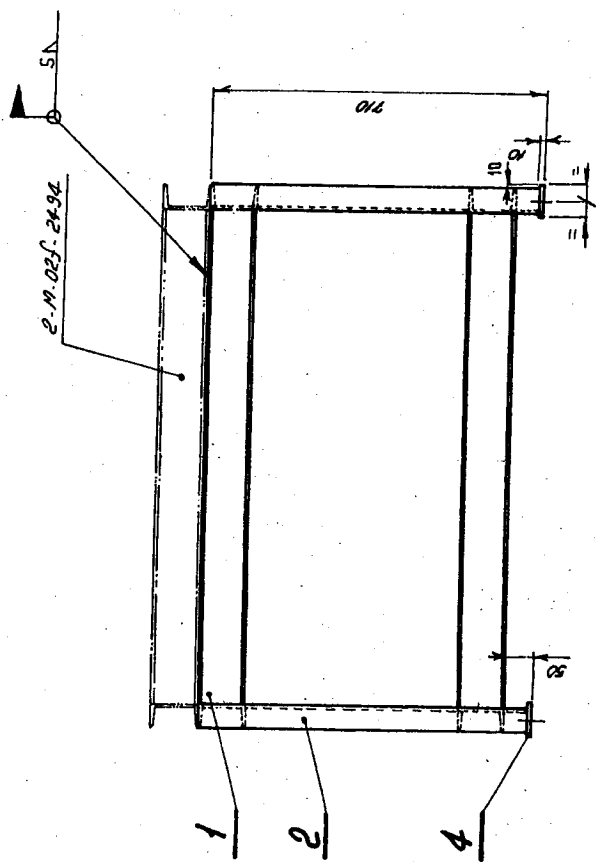
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12

13

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 GENERAL ELECTRIC COMPANY OR GENERAL ELECTRIC
 TELECOMMUNICATIONS COMPANY.

39 - 609



NOTE: ALL WELDS ARE OF 5MM FILLET.

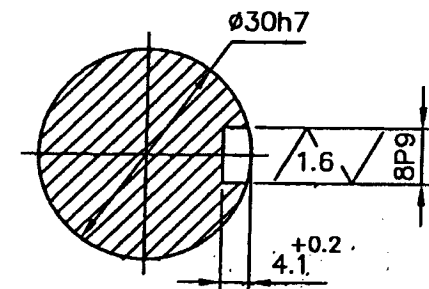
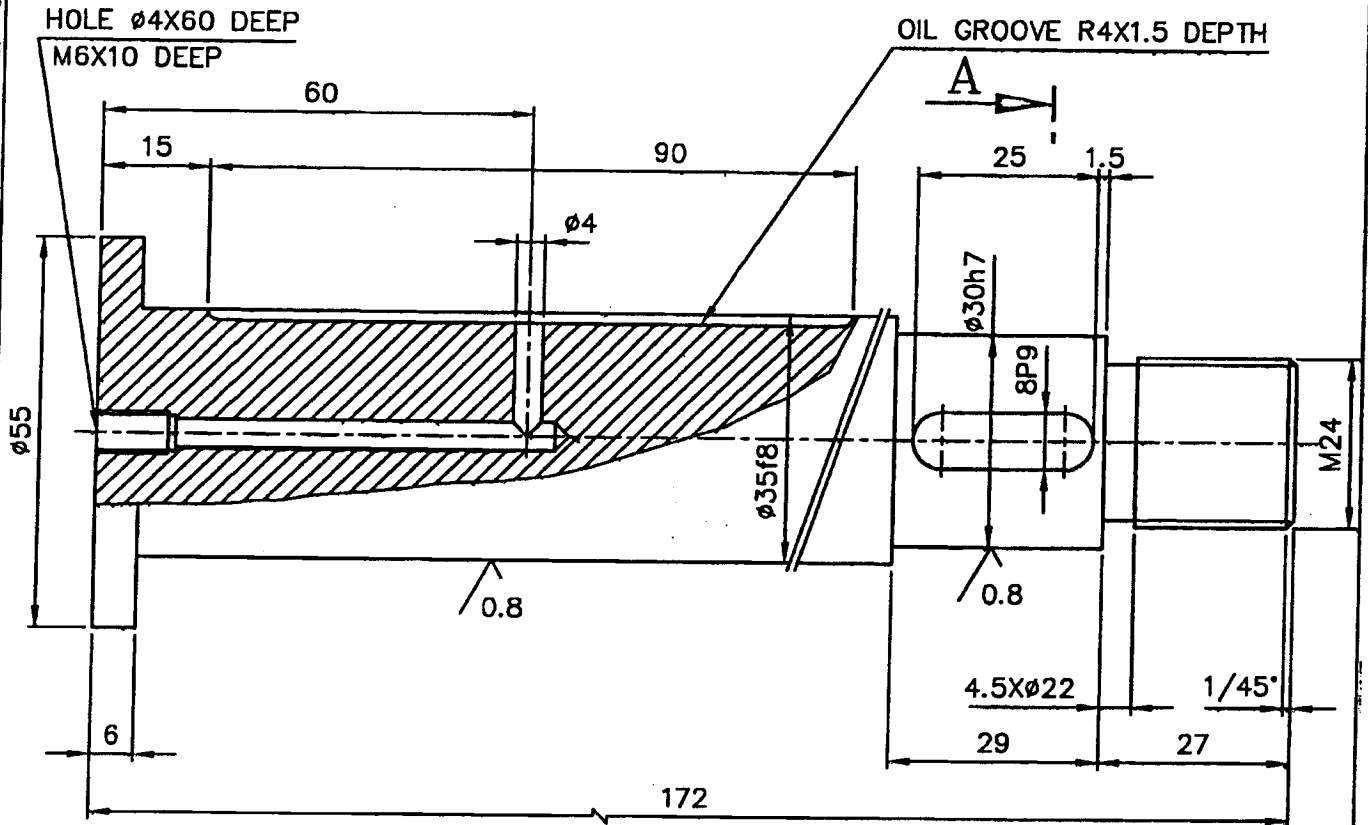
NO. OF WELDS	DESCRIPTION	SIZE - PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	NO. OF SHEETS	WEIGHT	DATE	SIGNATURE	LINE
4	PLATE - 101 x 70 x 10		15.226 Fe 410 S		1	10.80			
4	157MC - 100 x 50 x 280				3	2.10			
4	157MC - 100 x 50 x 700				2	2.80			
4	157MC - 100 x 50 x 1040		15.226 Fe 410 S		1	5.80			
1	ASSY.				1	80.4	1-11-02/0804		
REMARKS									
SCALE									
DRAWN									
CHECKED									
APPROVED									
SITE OFFICER									
DATE		04.12.89							
TITLE		STAND							
DRAWING NO.		3-M-023 f. 10498							
TYPE		PR 6							
NO. OF SHEETS		14							

14

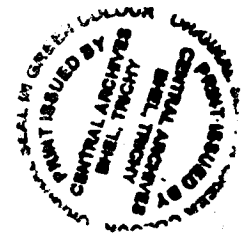
CAUTION: THIS DRAWING IS OUR SOLE PROPERTY AND SHOULD NOT BE USED IN ANY FORM FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED TRICHIRAPPALLI - 620 014.

ALL DIMENSIONS ARE IN MM

φ35f8	-0.025	φ30h7	-0.000	3.2 // 1.6 // 0.8 /
	-0.084		-0.021	
8P9	-0.015			
	-0.051			



SECTION-AA

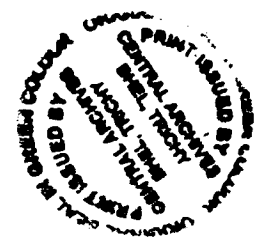
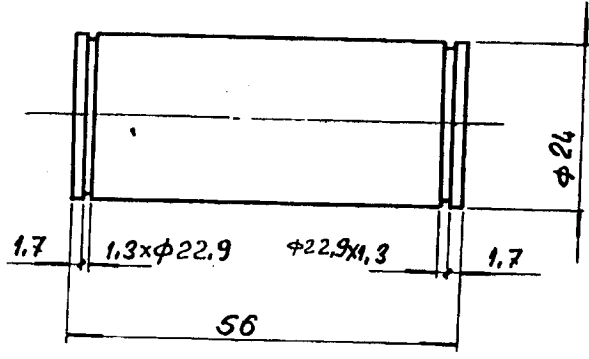


					1-M-02F-00804	18
02	ROD φ55X172	45c8	IS: 7283	1.30	1-M-02F-00593	18
X						
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
REFERENCE:			COMPONENT CODE: 31	EQUIPMENT CODE: 14		
SCALE	DRAWN/TCD	ALTERATIONS:		DCN REF	DATE	SIGN.
1:1	CHECKED					
	APPROVED					
	DATE	08.05.73/28.06.03				
MACHINE PRODUCTION FACILITY			TYPE: STWD-PRG			
TITLE: PIN φ55X172L			DRAWING No: 14		REV.	
			4-M-02F-09880			
			No. of Sheets:		Sheet No:	

INDEX NO 39-807

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 BHARAT HEAVY ELECTRICALS LTD.,
 TIRUCHIRAPPALLI.

32/

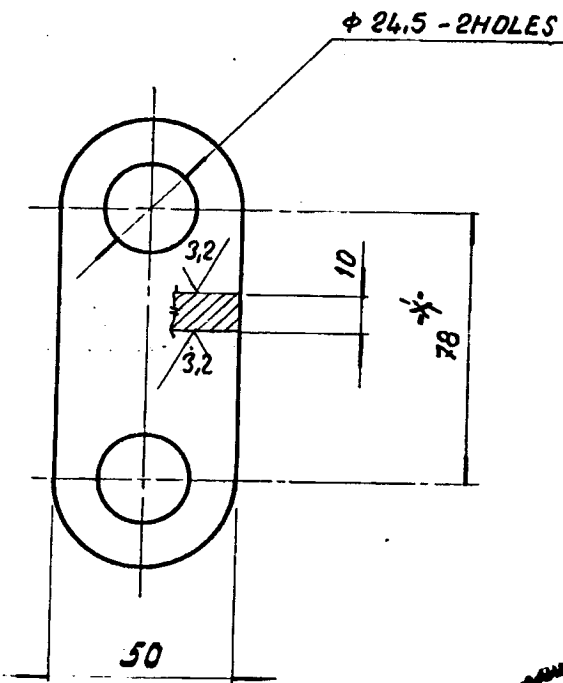


2				BM-CQ45		45 LB IS:7283		1-M-02f-0804		19	
NO OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET wt(kg)	GROSS wt(kg)	DRAWING NO.	ITEM NO.		
REMARKS				TOTAL NET wt (kg)		CC: 31/EC: 14					
SCALE	DRAWN BY	REFERENCE		ALTERATIONS		DATE	SIGNA- TURE	INDEX			
1:1	<i>S. Lyle</i>										
	CHECKED BY										
	APPROVED BY										
	STDS. OFFICER										
	DATE	10.5.73									
MACHINE		PINCH ROLL		TYPE:		PRG					
TITLE:		PIN		DRAWING NO.		4-M-02f-9881 ¹⁴					
TIRUCHY				NO. OF SHEETS:		SHEET NO:					

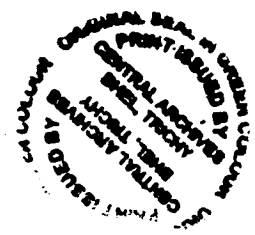
INDEX NO 39-607

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TIRUCHIRAPALLI-14.

6.3 / 3.2



* NOTE:
TO CONFIRM AFTER RECEIPT
OF AIR CYLINDER.



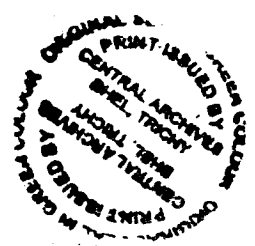
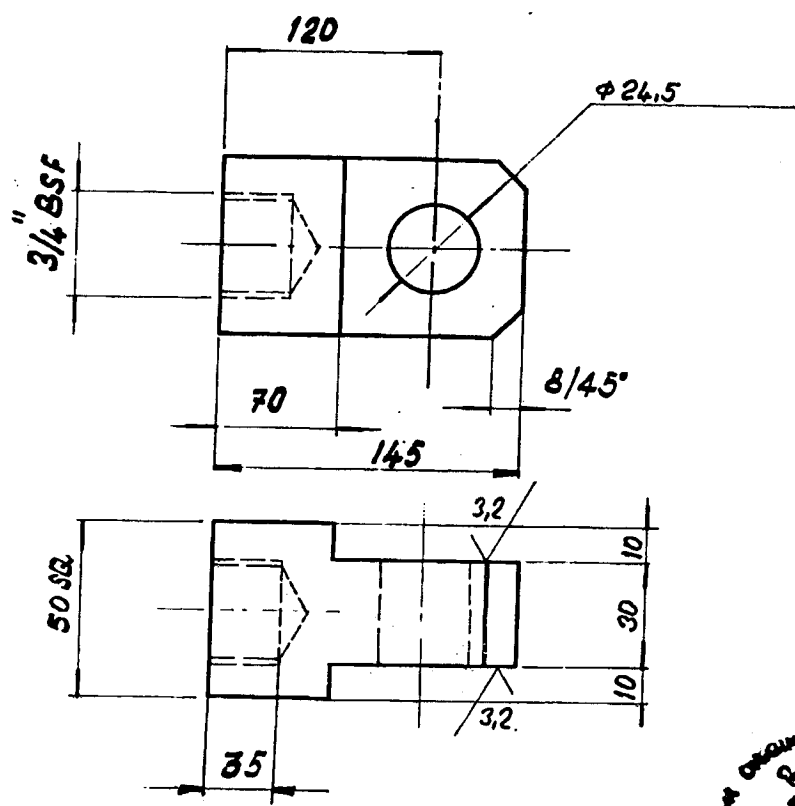
2				BM-C45	4508				1-M-02f-0804	20
NO OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET wt(kg)	GROSS wt(kg)	DRAWING NO.	ITEM NO.	
				IS:7283				1-M-02f-0593	21	
REMARKS				TOTAL NET wt (kg) CC: 00 / EC: 14						
SCALE	DRAWN BY	REFERENCE		ALTERATIONS			DATE	SIGNATURE	INDEX	
1:2	<i>S. Rajan</i>									
	CHECKED BY									
	APPROVED BY									
	STDS. OFFICER									
	DATE	10-5-73								
MACHINE PINCH ROLL		TYPE: PRG		DRAWING NO. 4-M-02f-9882						
TITLE: LINK				NO. OF SHEETS: SHEET NO:						
TIRUCHY										

17

INDEX NO 39-607

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BHARAT HEAVY ELECTRICALS LTD.,
TIRUCHIRAPALLI-14.

6.3 / 3.2



1-M-02f-0804 21
 1-M-02f-0593 22

1			45 C 8	15:7283							
NO OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET wt(kg)	GROSS wt(kg)	DRAWING NO.	ITEM NO.		

REMARKS				TOTAL NET wt (kg) CC:00 / EG:14			
SCALE	DRAWN BY	REFERENCE	ALTERATIONS	DATE	SIGNATURE	INDEX	
1:2	<i>S. Ramesh</i>						
	CHECKED BY						
	APPROVED BY						
	STDS. OFFICER						
	DATE	10-5-73					



MACHINE PINCH ROLL
 TITLE: **CONNECTOR**

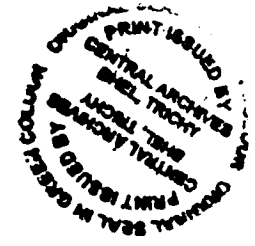
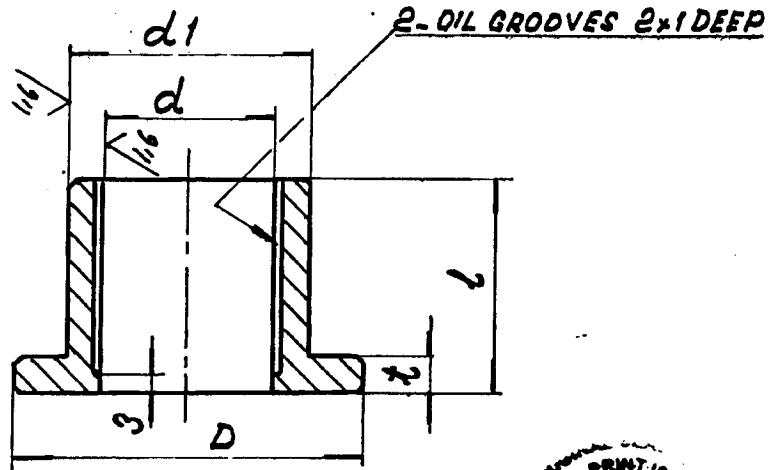
TYPE: PRG
 DRAWING NO. **4-M-02f-9883**
 NO. OF SHEETS: SHEET NO: 1

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 TIRUCHIRAPALLI-14

3/2 / 1/3 /

INDEX NO. 39 - 607



D	dH7	d1P6	l	t	NOS.	RED	ITEM NO.	Wt.
70	50	60	30	5	1		26	0,26
50	25	35	20	5	2		25	0,114
80	60	70	30	5	4		24	0,075
55	35	45	40	5	4		22	0,26

CHAMFER SHARP CORNERS TO $1/45^\circ$

26
25
24
22

		BN-CA3		PCU S77				J.M.02F.0804	
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET Wt (kg)	GROSS Wt (kg)	DRAWING NO.	ITEM NO.
REMARKS				TOTAL NET Wt (kg) 6077.6604					
SCALE	DRAWN	REFERENCE		ALTERATIONS	DCN	DATE	SIGNATURE	INDEX	
1:1	CHECKED								
	APPROVED								
	SYDS. OFFICER								
	DATE								
MACHINE PINCH ROLL		TYPE: PRG		INV. NO.					
TITLE: BUSH		DRAWING NO. 4A		4.M.02F.12820					
NO. OF SHEETS		SHEET NO.							



19

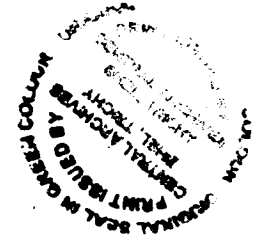
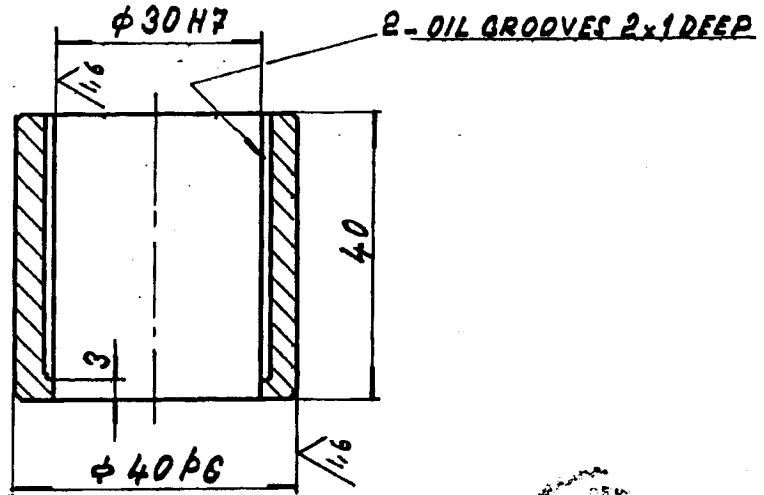
INDEX NO. 39 - 607

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DHARAT HEAVY ELECTRICALS LTD.,
TIRUCHIRAPALLI-14

3.2 / 1.5 /

φ30H7	+0,021
	+0,000
40p6	+0,042
	+0,026



CHAMFER SHARP CORNERS TO 1/45°

2			BN-CA3	PCUSn7				1.M.02f-0804	23
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET Wt(kg)	GROSS Wt(kg)	DRAWING I.O.	ITEM NO.
REMARKS				TOTAL NET Wt (kg) CC:17/ EC:14					
SCALE	DRAWN	REFERENCE	ALTERATIONS						
1:1	Fe. U. B. Samy.		DATE	SIGNATURE	INDEX				
	CHECKED								
	APPROVED								
	STDS. OFFICER								
	DATE	19.11.1974							
MACHINE PINCH ROLL		TYPE: PRG			INV. NO.				
TITLE: BUSH		DRAWING NO. 4.M.02f-12821							
NO. OF SHEETS		SHEET NO.							

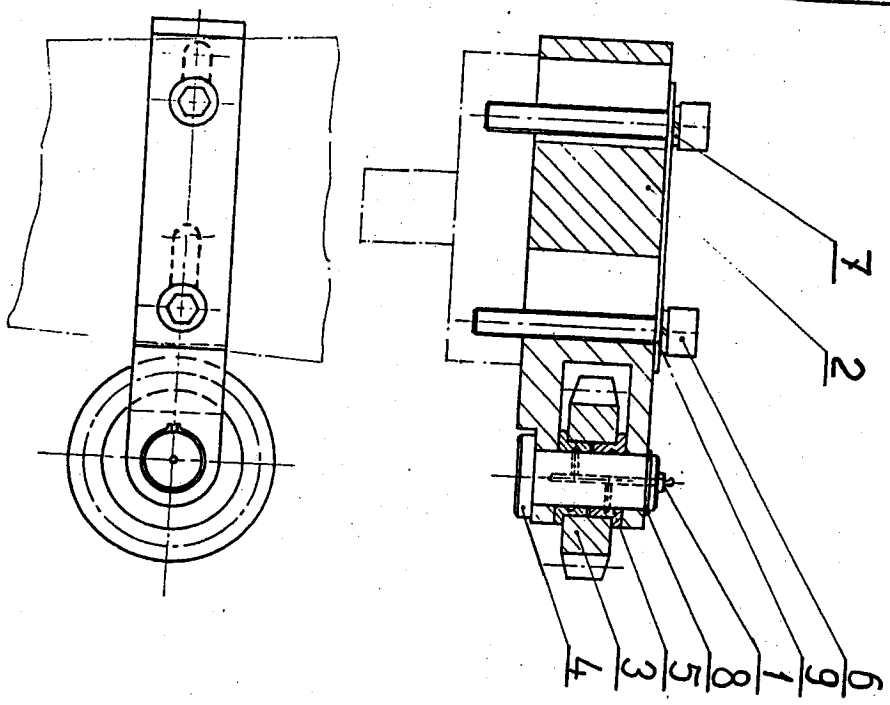


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INDEX No. 37-668

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 MOUNTAIN ELECTRICALS LIMITED
 THROUGH MAIL-288814



QTY	DESCRIPTION	REF. PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	GROUP	MTG. QTY	REVISION NO.	DATE	BY	CHKD.
1	WASHER		BM-C20							
1	EX. CIRCLIP A12	BPS: 419-02								
2	SPRING WASHER 6 BPS: 414-05									
2	HEX. SOCKET HEAD CAP. SCREW M6x10 L BPS: 412-02									
2	BUSH		BN-C43							
1	PIN		BM-C45							
1	SPROCKET 6T/19.05P		BN-C45							
1	HOLDER		BM-C30							
1	GREASE NIPPLE 1/8" BS WITH 100% STRAIGHT									
1	ASSY									

SCALE	DATE	APPROVED	DATE
1:1	29.6.72	<i>Robert</i>	
CHECKED	DATE	APPROVED	DATE

TYPE	PRG.	NO. OF SHEETS
	21	3-M-02f-6504

CONTROLLED BY
 ENGINEERING
 CONTROLLED BY
 CONTROLLED BY
 CONTROLLED BY

MOUNTAIN ELECTRICALS
 TITLE: TENSIONING ARRANGEMENT
 MACHINE: PINCH ROLL

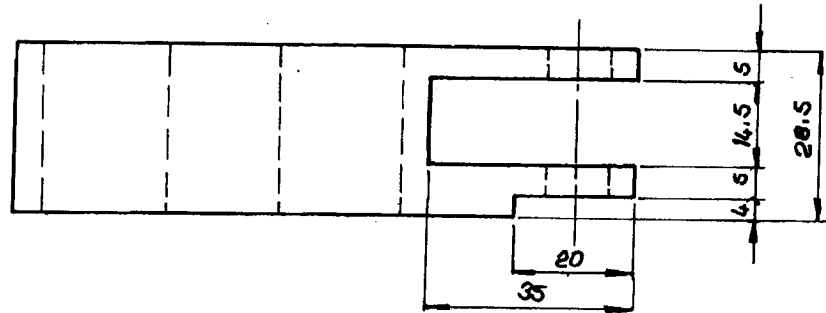
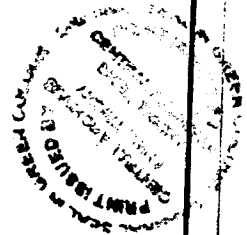
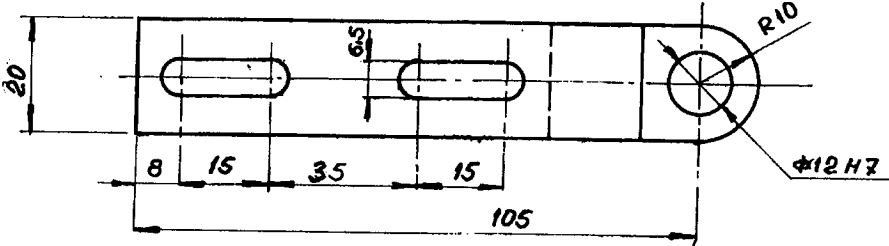
2

INDEX NO. 39-607

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 TIRUCHIRAPALLI-14

3.2

Φ12H7	+0.018
	+0.000



1	PL. 125x35x25t		BM-C30					3M-02f-6506	2
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET Wt(kg)	GROSS Wt(kg)	DRAWING NO.	ITEM NO.
REMARKS				TOTAL NET Wt (kg) EC: 27					
SCALE	DRAWN	REFERENCE		ALTERATIONS		DATE	SIGNATURE	INDEX	
1:1	<i>M. Jayaraman</i>								
	CHECKED								
	APPROVED								
	STDS. OFFICER								
	DATE	20.6.77							
MACHINE PINCH ROLL		TYPE: PR6		INV. NO.					
TITLE: HOLDER		DRAWING NO. 4-M-02f-16836							
NO. OF SHEETS		SHEET NO.							

22

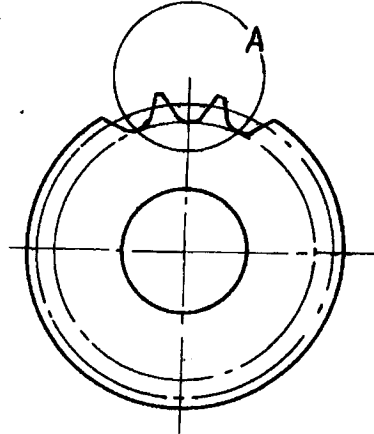
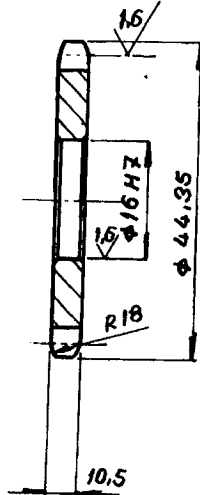
21

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3,2 / 1,6

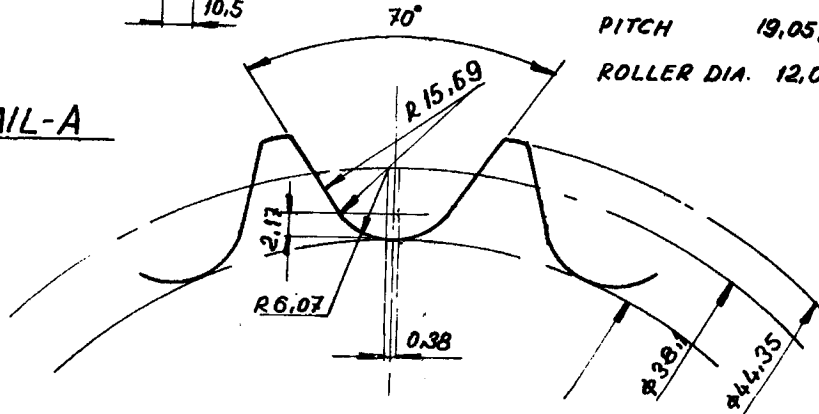
$\phi 16 H7$	$+0.018$
	$+0.000$



REPRODUCED IN GREEN LITHOGRAPHY
 DRAWING ISSUED BY
 CENTRAL ARCHIVES
 BRANCH, TIRUCHIRAPALLI
 INDIA
 1987

NO. OF TEETH 6
 PITCH $19.05 [3/4"]$
 ROLLER DIA. 12.07

DETAIL-A



		BM-C65				3M-02f-6506		3	
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET Wt (kg)	GROSS Wt (kg)	DRAWING NO.	ITEM NO.
REMARKS				TOTAL NET WT (kg) 60:27					
SCALE	DRAWN	REFERENCE		ALTERATIONS		DATE	SIGNATURE	INDEX	
1	<i>M. Jayaram</i>								
	CHECKED								
	APPROVED								
	SYDS. OFFICER								
	DATE	28.6.77							
MACHINE PINCH ROLL		TYPE: PRG		INV. NO.					
TITLE: SPROCKET 6T/3/4 P		DRAWING NO. 4-M-02f-16837							
		NO. OF SHEETS		SHEET NO.					

22

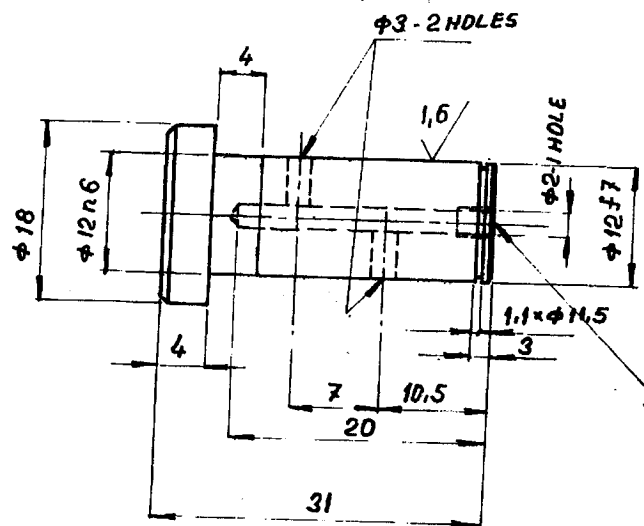
23

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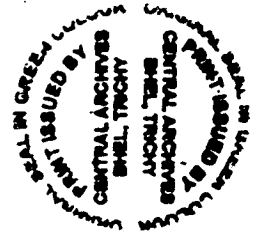
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3,2 / 1,6

$\phi 12f7$	-0,016
	-0,036
$\phi 12n6$	+0,023
	+0,012



THD. HOLE FOR 1/8" B.S.W
 STRAIGHT GREASE NIPPLE
 x 10 DEEP.



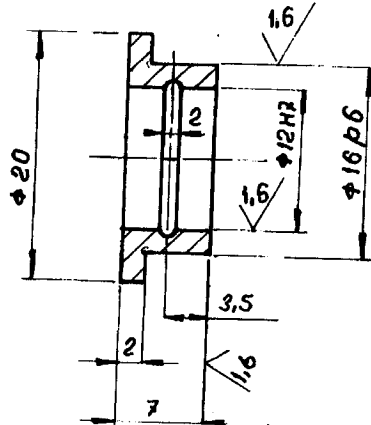
1	ROD $\phi 20 \times 40$		BM-C45						3-M-02f-6506	4	
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET Wt (kg)	GROSS Wt (kg)	DRAWING NO.			ITEM NO.
REMARKS				TOTAL NET wt (kg)		EC: 27					
SCALE	DRAWN	CHECKED	APPROVED	STDS. OFFICER	DATE	REFERENCE	ALTERATIONS	DATE	SIGNATURE	INDEX	
2:1					28.6.77						
MACHINE		TITLE		TYPE		INV. NO.					
RD PINCH ROLL		PIN		PRG		4-M-02f-16838 ²⁷					
NO. OF SHEETS				SHEET NO.							

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3.2 / 1.6

φ 12 H7	+0.018
	+0.000
φ 16 p6	+0.029
	+0.018

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2	RDD φ 30 x 15		BN-CA3					3-M-02f-6504	5
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET W (kg)	GROSS W (kg)	DRAWING NO.	ITER NO.
REMARKS						TOTAL NET W (kg) EC: 27			
SCALE	DRAWN	REFERENCE		ALTERATIONS		DATE	SIGNATURE	INDEX	
2:1	CHECKED								
	APPROVED								
	SYDS. OFFICER								
	DATE	28.6.77							
MACHINE		PINCH ROLL		TYPE: PRG		INV. NO.			
TITLE:		BUSH		DRAWING NO.		4-M-02f-16839 ²⁴			
NO. OF SHEETS				SHEET NO.					

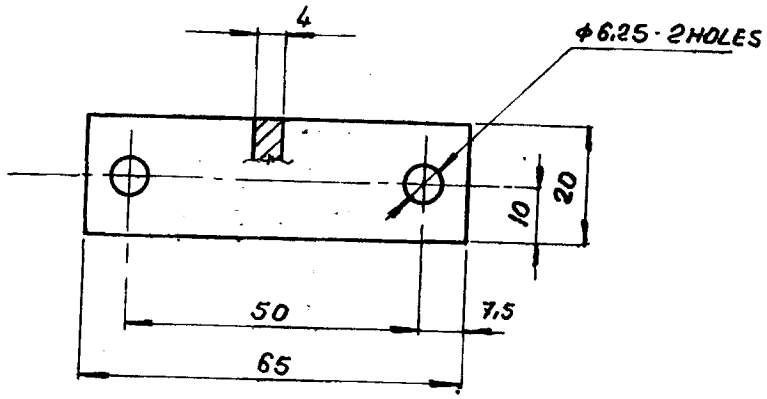
24

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3/2 ✓

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1	Pl. 4 ^t x 65 x 20		BM-C30					3-M-02f-6504	9
NO. OF PIECES	DESCRIPTION	SEMI-PRODUCT	FINAL MATERIAL	INITIAL MATERIAL	SCRAP SORT	NET Wt (kg)	GROSS Wt (kg)	DRAWING NO.	ITEM NO.
REMARKS				TOTAL NET WT (kg) EQ: 27					
SCALE	DRAWN	REFERENCE		ALTERATIONS		DATE	SIGNATURE	INDEX	
1:1	CHECKED								
	APPROVED								
	BYDS. OFFICER								
	DATE	16.7.77							
MACHINE PINCH ROLL			TYPE: PRG		INV. NO.				
TITLE: WASHER			DRAWING NO. 4-M-02f-16925 ²⁷						
			NO. OF SHEETS		SHEET NO.				