



BHARAT HEAVY ELECTRICALS LIMITED

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

Page
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PHONE :2577331
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail: srchandran@bheltry.co.in
Web:

	Enquiry No	Enquiry Date	Due Date for Quotation
	2661500138 - 55	29.04.2015	30.05.2015
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	D1VALUE: INDUCTOR AND COOLING RING ASSEMBLY FOR PIPE OD 508 X THICKNESS RANGE 85-100 MM, FOR PB 1200R AS PER DRG. No: 2M-12A-18-04602. THE ASSEMBLY INCLUDES: INDUCTOR: 2M-12A18-05288 (AS PER SL. No.01), AIR RING: 2M-12A23-05269 (AS PER SL. No. 01), QUENCH RING: 2M-12A23-05271 (AS PER SL. No.01), SUB DRG. No: Bend Tube :3M-12A18-14417 (AS PER SL. No. 03), Flange :3M-12A23-14038, Strips and Blocks:2M-12A18-04364, Strips:4M-12A-18-26664.	SET	2.000	2.00	20.07.15
20	D1VALUE: INDUCTOR AND COOLING RING ASSEMBLY FOR PIPE OD 660 X THICKNESS RANGE 85-100 MM, FOR PB 1200R AS PER DRG. No: 2M-12A-18-04602. THE ASSEMBLY INCLUDES: INDUCTOR: 2M-12A18-05288 (AS PER SL. No.02), AIR RING: 2M-12A23-05269 (AS PER SL. No. 06), QUENCH RING: 2M-12A23-05271 (AS PER SL. No.06), SUB DRG. No: Bend Tube :3M-12A18-14417 (AS PER SL. No. 06) Flange :3M-12A23-14038, Strips and Blocks:2M-12A18-04364, Strips:4M-12A-18-26664.	SET	2.000	2.00	20.07.15
30	D1VALUE: INDUCTOR FOR PIPE OD 762 X THICKNESS RANGE 45-65 MM, ACC. TO DWG.NO. 2M-12A18-05289 (AS PER SR. NO. 05)	NO	2.000	2.00	20.07.15
40	D1VALUE:	SET	2.000	2.00	20.07.15

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**

M. S. CHELLIAH
Sub Manager, Purchase
(MM/ RM/ CP & SP)
BHEL, TRICHY. - 620 014.



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2661500138 / 29.04.2015

(05) For all weld joints edge preparation to be carried out before welding.

(06) For all the inductors, post heating at 380 deg. C shall be carried out, to relieve the residual stresses developed during welding.

(07) All weldments (100%) should be tested for liquid penetrant test.

(08) All the manufactured inductors and cooling rings should be ovality free, and permissible limit of ovality is +5 mm only on diameter.

(09) Inductor size should be punched on copper flanges for easy identification (example: 762 X 25-45). Number size should be min. 8mm.

(10) For each inductor, 12 months performance guarantee should be given.

Vendor/s shall submit a performance bank guarantee (PBG) only from any one of the 'Consortium Banks' of the BHEL for 10 % of the purchase order

value in the prescribed format for a period of agreed guarantee period with additional 2 months as claim period. All bank charges on account of

issuance of PBG will be borne by the vendor/s. (11) All inductor assembly should be offered for inspection for dimensional check and leak testing at supplier's works before despatch.

Leak test for inductor should be carried out with water at 10 bar pressure.

(12) For pre evaluation the supplier shall manufacture and supply one number of inductor of the P.O item as per the requirement of BHEL and will be subjected to actual performance test on the machine at BHEL,

subsequently clearance will be given for manufacturing and supply of balance quantity, subjected to the satisfactory performance of the

inductor on the machine. However all the inductors will be subjected to pre-dispatch inspection at vendor works.

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VENDOR QUALIFYING CRITERIA


Only those vendors who satisfy the following conditions will get

qualified to participate in the tender:

(A) The vendor should have minimum three years experience in manufacturing of copper inductors. The vendor should submit earlier

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


V. CHELLIAH
MANAGER / PURCHASE
(FOSSIL BOILERS)
Sr Manager / Purchase
MM / RM / CP & SP



BHARAT HEAVY ELECTRICALS LIMITED

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TAMILNADU (INDIA)

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2661500138 / 29.04.2015

purchase order copies with details of contact person of customer for previous orders executed.
(B) Vendor must have supplied inductors for pipe bending operations. The vendor should submit earlier purchase order copies with details of contact person of customer for previous orders executed.

General Note:

GENERAL NOTE:PLEASE SUBMIT YOUR OFFER IN "TWO PART BID SYSTEM" AS PER THE ANNEXURES ENCLOSED.

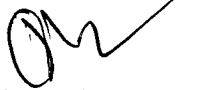
ENCLOSURES:ANNEXURE II,III,IV,V,VI,VII.

Enclosures:

"LD clause has to be confirmed without fail."

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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,
V. CHELLIAH
Sr. Manager / Purchase
MM / RM / CP & SP
BHEL, TRICHY - 620 014.

VENDOR QUALIFICATION CRITERIA

Only those vendors who satisfy the following conditions will get qualified to participate in this tender:

Sl. No.	PARAMETER	VENDOR'S RESPONSE
1	The vendor should have minimum three years of experience in manufacturing of copper inductors for pipe bending application.	
2	The vendor should submit relevant documents like purchase order copies and performance certificate for trouble free working of minimum one year with details of contact person of customer for previous orders executed.	

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 <ashokanand@bheltry.co.in >&< chells@bheltry.co.in>

Annexure For Techno Commercial Bid

Check List - to be filled and submitted along with Technical Bid

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 , Tirumayam • Supplier should quote for F.O.R-BHEL , Tirumayam 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:-

- 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.
- 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
- 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.
- No row shall be left blank. Please indicate NA, in case the item is "not applicable"

Payment Term (Indigenous)	
If materials are receivable at Stores/Tirumayam 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/Tirumayam 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 M/S
(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 on
date..... as per MSMED Act 2006 is as follows:

1. **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 5, 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

The above investment of Rs.....Lacs is within permissible limit of
Rs.....Lacs forMicro / Small (Strike off which is not applicable)
Category under MSMED Act 2006.

Date:

(Signature)

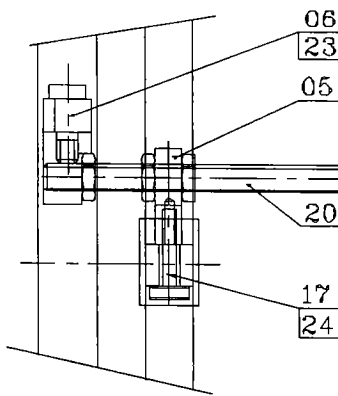
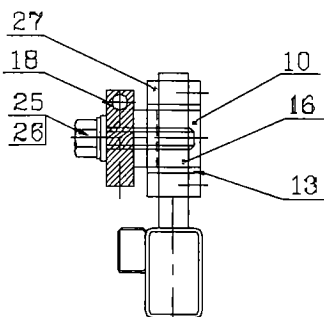
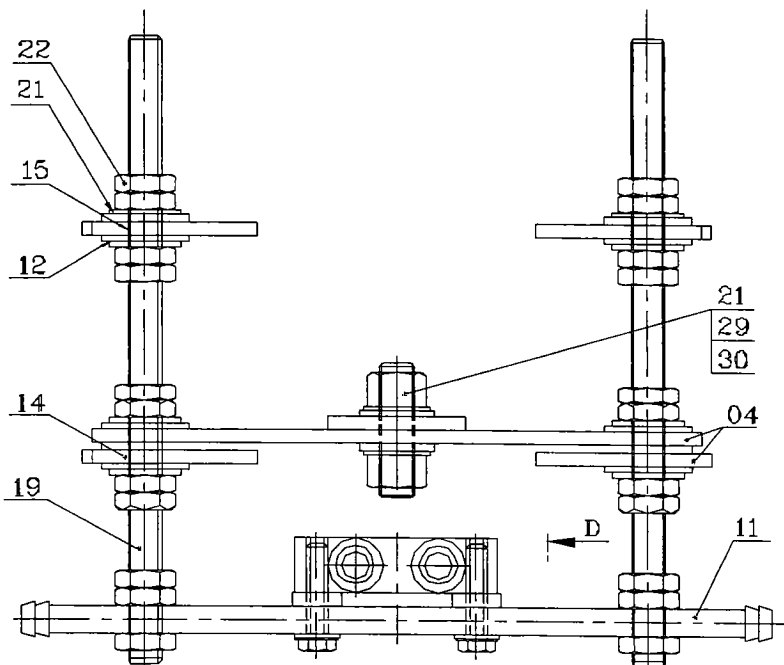
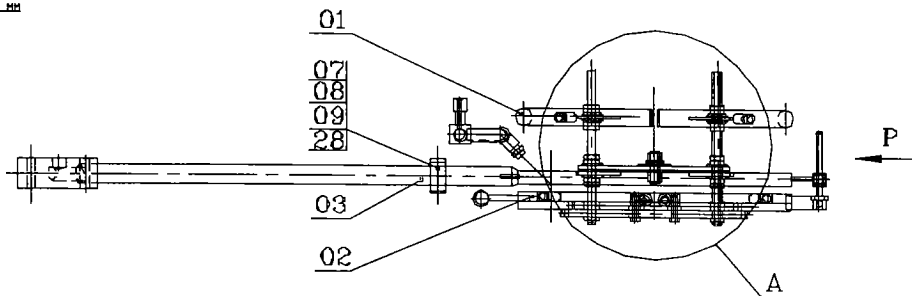
Name -

Membership number -

Seal of Chartered Accountant

THIS DRAWING IS OUR SOLE PROPERTY AND NOT BE LOANED, REPRODUCED, COPIED, EITHER WHOLLY OR IN PART, WITHOUT THE WRITTEN PERMISSION OF BHARAT HEAVY ELECTRICALS LIMITED, CHENNAI - 600 068.

ALL DIMENSIONS ARE IN MM

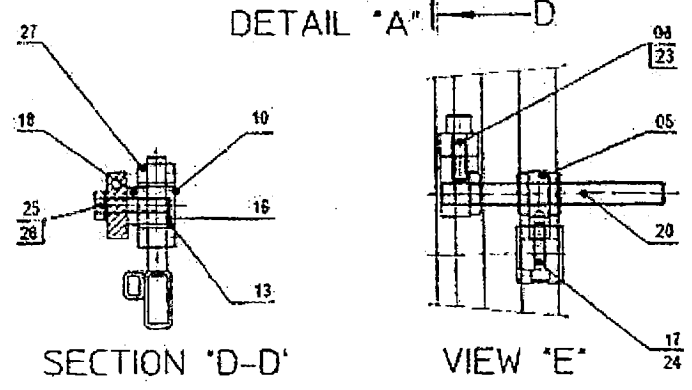
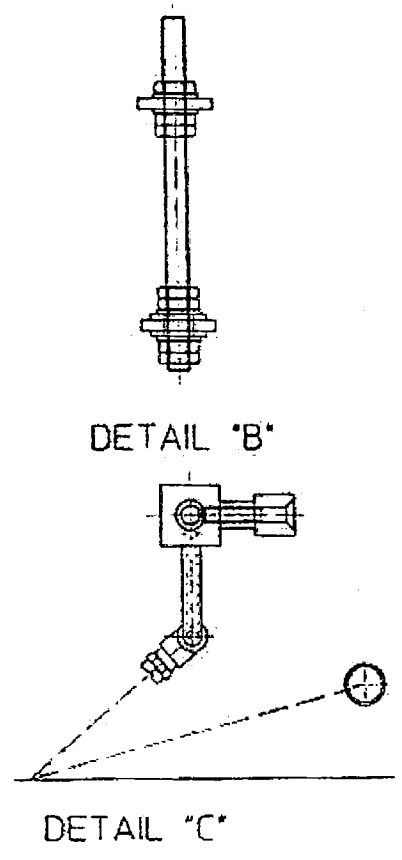
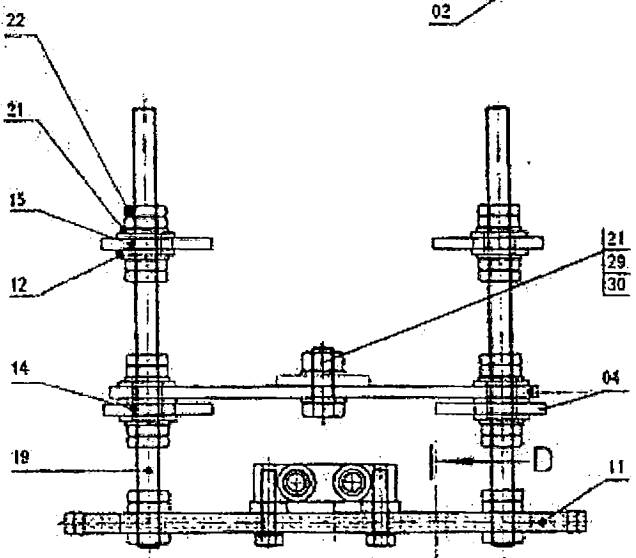
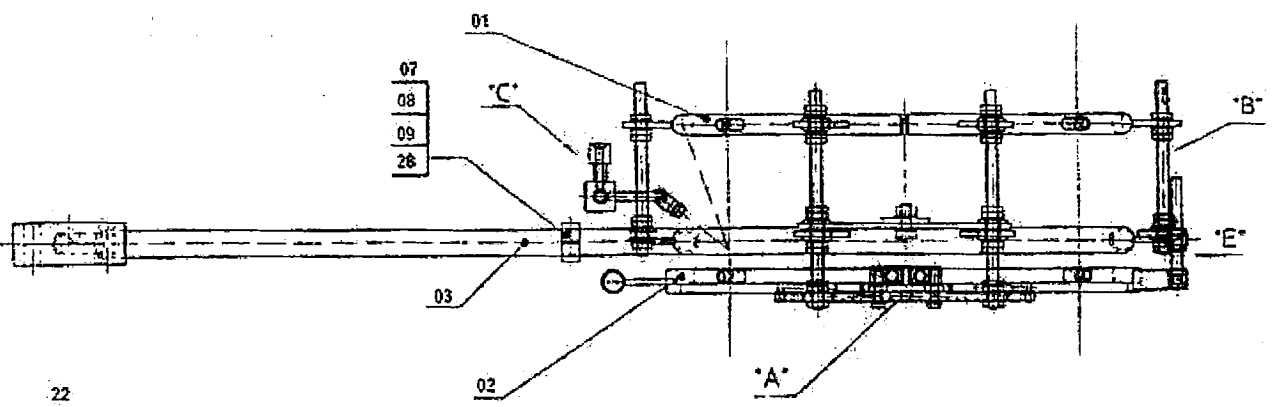


1	NUT M12		AISI 310				30
2	HEX. CAP SCREW M12x25L		AISI 310				29
2	CSK. HEAD SCREW M6x80L		AISI 310				28
8	ADJUSTING RING A10		AISI 316				27
4	WASHER A8,4		AISI 316				26
4	HEX. CAP SCREW M8x35L		AISI 310				25
1	SOCKET HEAD SCREW M8x16L		AISI 310				24
1	SOCKET HEAD SCREW M8x12L		AISI 310				23
44	NUT M12		AISI 310				22
19	WASHER A13		AISI 316				21
1	THREADED ROD - M12x120L		AISI 310				20
4	THREADED ROD - M12x235L		AISI 310				19
4	WASHER - #20x6		CuZn39Pb3				18
1	INSULATING BUSH ID9xOD21x18t		SILLIMANITE 60% AL2O3		CERAMIC		17
4	INSULATING BUSH ID11xOD14x20t		SILLIMANITE 60% AL2O3		CERAMIC		16
4	INSULATING BUSH ID13xOD16x11t		MICANITE				15
4	INSULATING BUSH ID15xOD18x20t		MICANITE				14
4	INSULATING RING ID11xOD20x2t		MICANITE				13
20	INSULATING RING ID17xOD30x3t		MICANITE				12
2	STRIP		CuZn40Pb3	IS 3486	1-N-12A-26604		11
2	PIVOT BLOCK - SQ20x76L		CuZn39Pb3		2-N-12A-04364		10
1	CLAMP - PL20x83x40		HYLUM		2-N-12A-04364		09
1	STRIP - PL20x6x93L		AISI 316		2-N-12A-04364		08
1	STRIP - PL20x6x93L		AISI 316		2-N-12A-04364		07
1	BLOCK - SQ20x32L		CuZn39Pb3		2-N-12A-04364		06
1	BLOCK - PL25x12x36L		CuZn39Pb3		2-N-12A-04364		05
2	STRIP - PL35x6x23D		AISI 316		2-N-12A-04364		04
1	INDUCTOR				3-N.12A18.12646		03
1	QUENCH RING				2-N.12A18.D4801		02
1	AIR RING				3-N.12A18.12645		01

REV. No.	DESCRIPTION	MATERIAL	STANDARD	INVTN IN KGZ	DRAWING No.	JOB No.
1	COJAFEX BV - 48.55.0001/3					
SCALE	DRAWN	T.T.BALAKRISHNAN	ALTERATIONS	CHK REF	DATE	SIGN.
	CHECKED	R.RAMAMOORTHY				
	APPROVED	C.S.JAYASHEELAN				
	DATE	22.10.2005				
MACHINE: INCREMENTAL PIPE BENDER			TYPG: PB 1200R			
TITLE: INDUCTOR AND COOLING RING ASSY			DRAWING No.		REV.	
(Dp=660,P720,4884,8965)(GAP-SDMM)			2M12A1804602			
Sheet No.			Total Sheets			

CAUTION: THE WEIGHT OF THE HEAVY COMPONENTS OF THIS ASSEMBLY SHOULD NOT BE LIFTED BY ANY PERSON FOR ANY REASON WITHOUT THE LIMITED PERMISSION OF THE QUALITY ASSURANCE DEPARTMENT. TECHNICAL STAFF ONLY.

ALL DIMENSIONS ARE IN IN.



PIPE Ø	INDUCTOR DRG No:	QUENCH RING DRG No:	AIR RING DRG No:
Ø 219-Ø 457 (6-25)	3M12A2314041	2M12A2304807	3M12A2314037
Ø 219-Ø 457 (25-45)	3M12A2314040	2M12A2304807	3M12A2314037
Ø 508-Ø 720 (25-45)	3M12A2314570	2M12A2304807	3M12A2314036
Ø 323-457 (45-65)	3M12A2314192	2M12A2304807	3M12A2314037

1	NUT M12		AISI 310				30
2	HEX.CAP. SCREW M12x25L		AISI 310				29
2	CSK.HEAD SCREW M6x50L		AISI 310				28
8	ADJUSTING RING -A10		AISI 316				27
4	WASHER A6.4		AISI 316				26
4	HEX. CAP SCREW M6x35L		AISI 310				25
1	SOCKET HEAD SCREW M6x16L		AISI 310				24
1	SOCKET HEAD SCREW M6x12L		AISI 310				23
44	NUT M12		AISI 310				22
19	WASHER A13		AISI 316				21
1	THREADED ROD-M12x120L		AISI 310				20
4	THREADED ROD-M12x235L		AISI 310				19
4	WASHER-#20x6	CuZn30Pb3	ASTM A55 C 38500				18
1	INSULATING BUSH (CERAMIC) Ø12xØ21x16	SILLIMANITE ROZ AL 03					17
4	INSULATING BUSH (CERAMIC) Ø11xØ20x14x20	SILLIMANITE ROZ AL 03					16
4	INSULATING BUSH Ø13xØ18x11	MICANITE					15
4	INSULATING BUSH Ø13xØ18x20	MICANITE					14
8	INSULATING RING Ø17xØ20x24	MICANITE					13
20	INSULATING RING Ø17xØ20x30x31	MICANITE	IS: 3488				12
2	STRIP	CuZn30Pb3	ASTM A55 C 38500	4M12A182664			11
2	PIVOT BLOCK-SQ20x76L	CuZn30Pb3	ASTM A55 C 38500	2M12A1804364			10
1	CLAMP-PL20x93x40		HYLUM	2M12A1804364			09
1	STRIP-PL20x6x93L		AISI 316	2M12A1804364			08
1	STRIP-PL20x6x93L		AISI 316	2M12A1804364			07
1	BLOCK-SQ20x32L	CuZn30Pb3	ASTM A55 C 38500	2M12A1804364			06
1	BLOCK-PL25x12x36L	CuZn30Pb3	ASTM A55 C 38500	2M12A1804364			05
2	STRIP-PL35x12x230		AISI 316	2M12A1804364			04
1	INDUCTOR						03
1	QUENCH RING						02
1	AIR RING						01

DESCRIPTION	MATERIAL	STANDARD	NET WT IN KGS	DRAWING No.	REV.
INDUCTOR					03
QUENCH RING					02
AIR RING					01

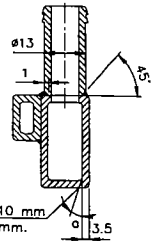
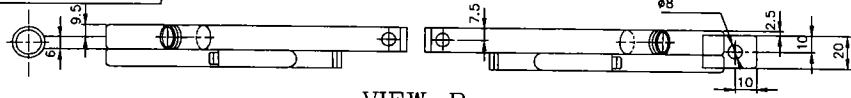
SCALE	DRAWN/TCR	DATE	APPROVED	DATE
		01.10.2000		

MACHINE INCREMENTAL PIPE BENDER	TYPE: PBE00R(NEW)
TITLE	DRAWING No.
INDUCTOR AND COOLING RING ASSY	2M12A2304808
Sheet No.	Sheet Total

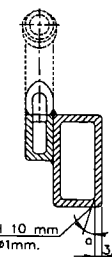
2-M-12A18-05271
DRAWING NO.

ALL DIMENSIONS ARE IN MILLIMETERS

SL. No.	PIPE Ø	ØA	ØB	ØC	D	E
08	Ø720	830	860	890	42	62
07	Ø670	780	810	840	44	62
D6	Ø660	770	800	830	44	62
05	Ø610	720	750	780	46	63
04	Ø559	670	700	730	47	63
03	Ø543	643	673	703	47	63
02	Ø526	626	656	686	48	61
01	Ø508	608	638	668	48	61

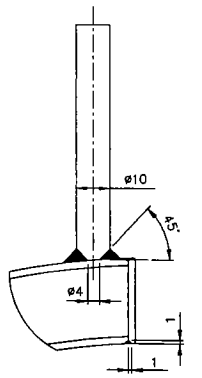
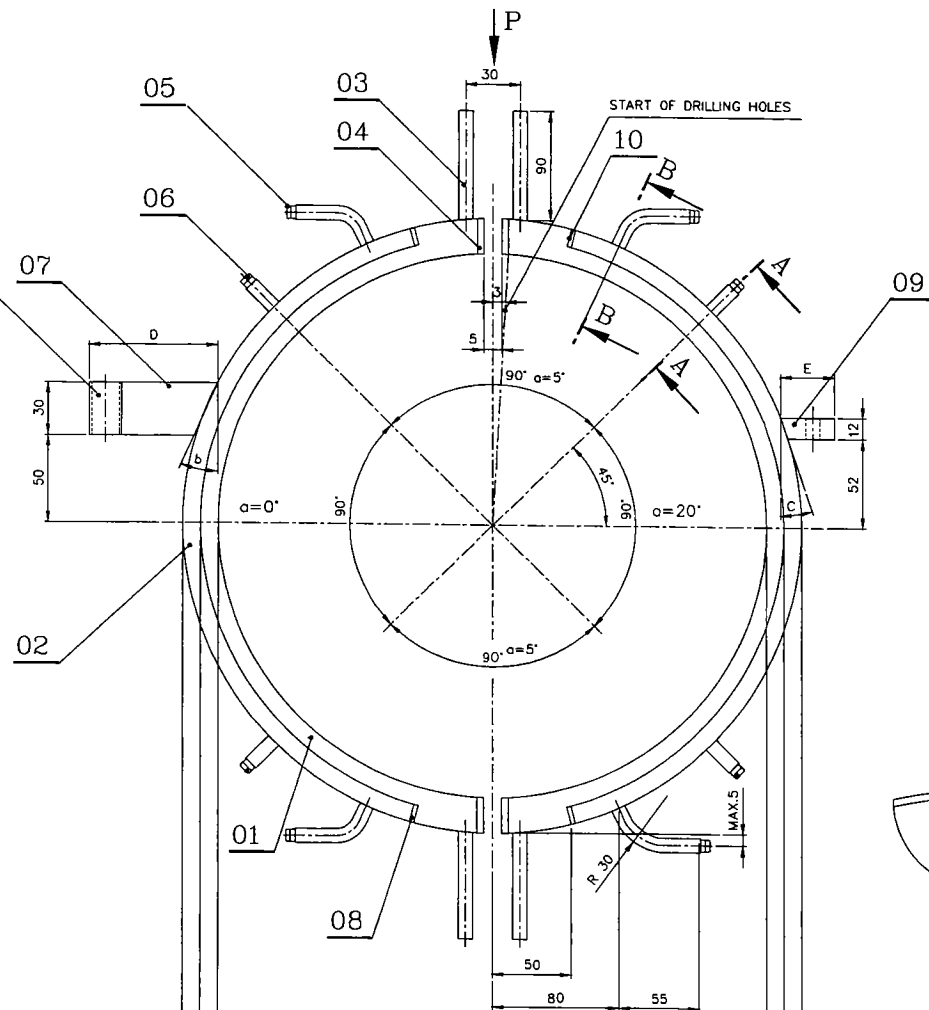


SECTION-AA



SECTION-BB

- NOTE:**
01. ALL JOINTS BY TIG WELDING.
 02. OVALITY SHOULD BE +5
 03. FOR ALL WELD JOINTS SUITABLE EDGE PREPARATION TO BE CARRIED OUT BEFORE WELDING
 04. ALL TUBES ARE EXTRUDED AND MADE UP OF SINGLE PIECE WITHOUT ANY JOINTS



DETAIL-D

ITEM NO	DESCRIPTION	DRAWING NO	MATL SPEC	MATL CODE	UNIT WT	QTY
10	PL. 2tx15x10		E-Cu57	IS: 41D	-	4
09	FLAT BAR 20x12E,C=24		CuZn39Pb3	ASTM 455 C 38500	-	1
08	TUBE Ø25x2X30 L		CuZn37	IS: 410	-	1
07	FLAT BAR 30x6 b=28		E-Cu57	IS: 410	-	1
06	HDSE CONNECTION FOR HOSE 13 I.D		BRASS	IS: 6912	-	4
05	HOSE CONNECTION FOR HOSE 10 I.D		BRASS	IS: 6912	-	4
04	PL. 2tx15x30		E-Cu57	IS: 410	-	4
03	ROD Ø10x90 L		CuZn39Pb3	ASTM 455 C 38500	-	4
02	REC. TUBE 15x10X2XL		Sf. Cu	ASTM B75 C 12200	-	1
01	REC. TUBE 30x15X2XL		Sf. Cu	ASTM B75 C 12200	-	1

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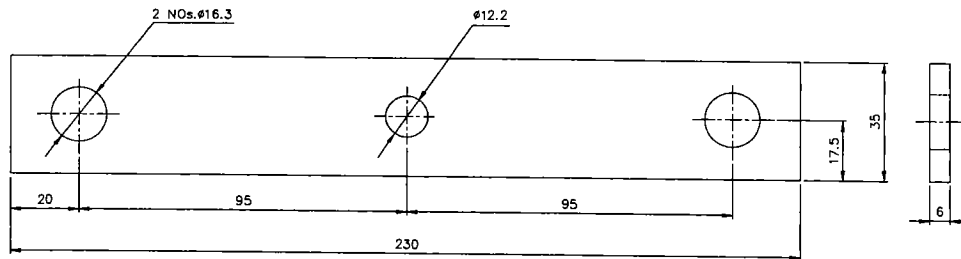
EQPT: INCREMENTAL PIPE BENDER / PB 600R/1200R/1400HE

DRN	C.PONNUSAMY	NAME	C.PONNUSAMY	SIGNATURE	20/01/15
CHD	R.RAMAMOORTHY	NAME	R.RAMAMOORTHY	SIGNATURE	20/01/15
APPD	G.THAGARAJAN	NAME	G.THAGARAJAN	SIGNATURE	21/01/15

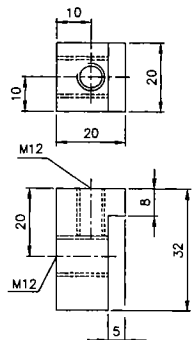
DEPT	M&S	GRADE OF UNITOL. DIM	SCALE	WEIGHT (Kg)	REF TO ASSY DWG NO	ITEM
2587	Ø/1/1	IS 2102	1:1		REF TO OLD DWG NO	02
TITLE	QUENCH RING (Ø508-Ø720)			CARD CODE	DRAWING NO :	REV
				U 01	3M12A2414416-02	00

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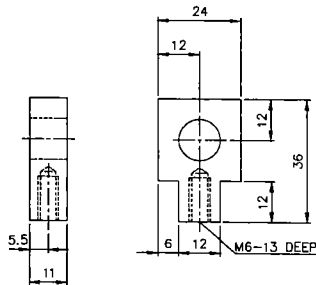
ALL DIMENSIONS ARE IN MM



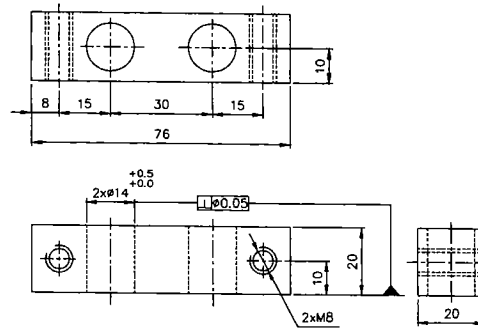
ITEM-04 REF: -48,55,0351/4



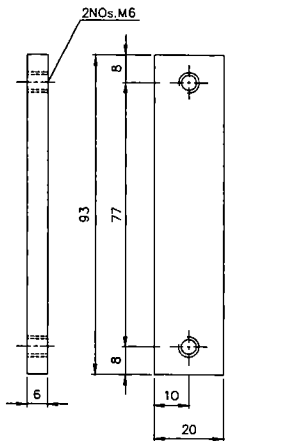
ITEM-06 REF: -48,55,0353/4



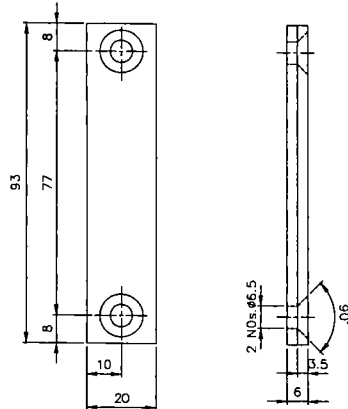
ITEM-05 REF: -48,55,0354/4



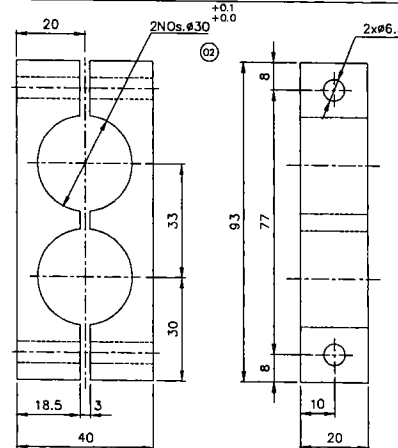
ITEM-10 REF: -48,55,0360/4



ITEM-07 REF: -48,55,0358/4



ITEM-08 REF: -48,55,0357/4



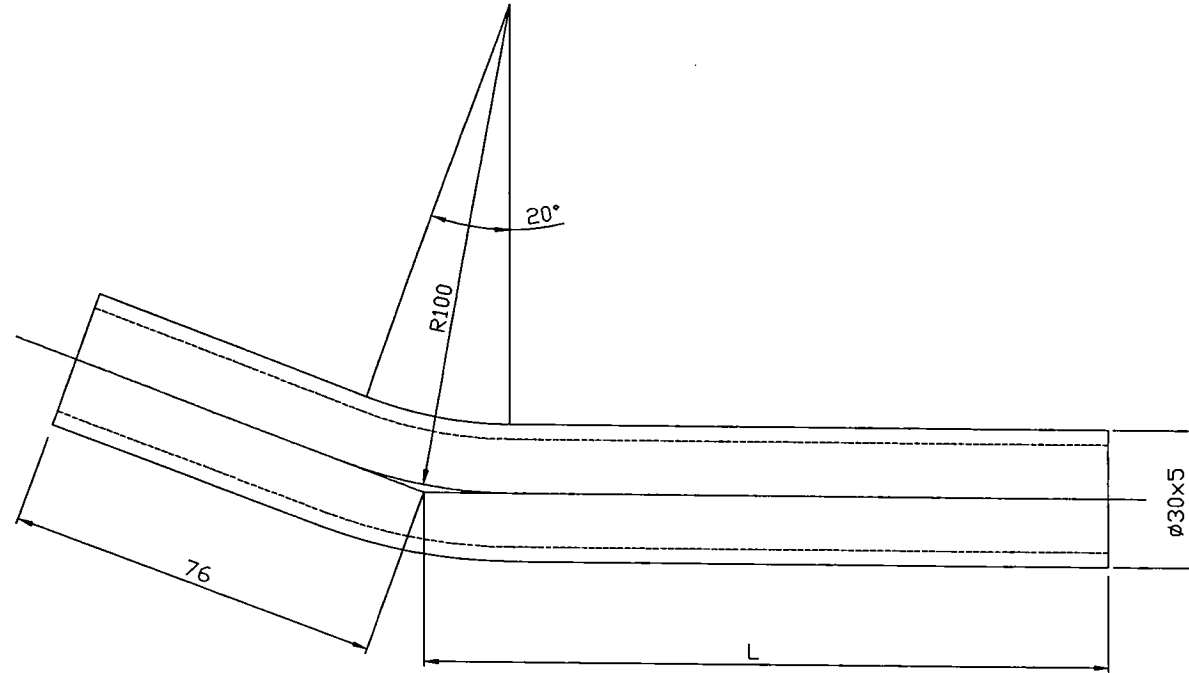
ITEM-09 REF: -48,55,0207/4

NOTE: -
CHAMFER SHARP CORNERS TO 1/45°

NO. OF PIECES	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS	ORGAN/MATL CODE	ITEM No.
	PIVOT BLOCK SQ.20x76	Cu.Zn.39Pb3	ASTM 455 C 38500			10
	CLAMP 20x40x93	HYLUM				09
	STRIP 6x20x93		AISI 316			08
	STRIP 6x20x93		AISI 316			07
	BLOCK SQ.20x32	Cu.Zn.39Pb3	ASTM 455 C 38500			06
	BLOCK 11x24x36	Cu.Zn.39Pb3	ASTM 455 C 38500			05
	STRIP 6x35x230		AISI 316			04
					2M12A2404810 2M12A2304808 2M12A1804914 2M12A1804365	
	REFERENCE:	ALTERATIONS:	DCN REF	DATE	SGN	INDEX
SCALE	DRAWN P.A.ROSS	ORG. MODIFIED TO DATE		15.03.12	CSJ	(0)
1:1	CHECKED R.RAMAMOORTHY	DRG. MODIFIED TO DATE		31.01.15	GGR	(2)
	APPROVED C.S.JAYASHEELAN					
	DATE 25-10-2000/28-12-10					
MACHINE: INCREMENTAL PIPE BENDER			TYPE: PB 1400HE, PB 1200R, PB 600R			
TITLE: STRIPS & BLOCKS			DRAWING No: 2M12A1804364		REV. 02	
Sheet No:			No. of Sheets:			

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ALL DIMENSIONS ARE IN MM



SL No.	PIPE THICK	PIPEØ	LENGTH	WT.IN KGS.
04	27	(65-85)	524	314
04	26	(45-65)	564	294
02	25	(25-45)	454	360
03	24	(6-25)	711	306
	23	(45-65)	480	350
	22	(45-65)	457	360
	21	(45-65)	406	391
	20	(45-65)	368	405
	19	(45-65)	559	301
	18	(25-45)	508	327
	17	(25-45)	355	402
	16	(25-45)	245	454
	15	(6-25)	406	356

SL No.	PIPE THICK	PIPEØ	LENGTH	WT.IN KGS.
03	14	(6-25)	720	280
	13	(25-45)	660	249
	12	(6-25)	610	287
	11	(6-25)	558	313
	10	(6-25)	508	343
	09	(6-25)	457	365
	08	(25-45)	368	400
	07	(6-25)	368	406
	06	(6-25)	355	414
	05	(6-25)	323	427
	04	(25-45)	273	437
	03	(6-25)	273	451
	02	(25-45)	219	468
	01	(6-25)	219	478

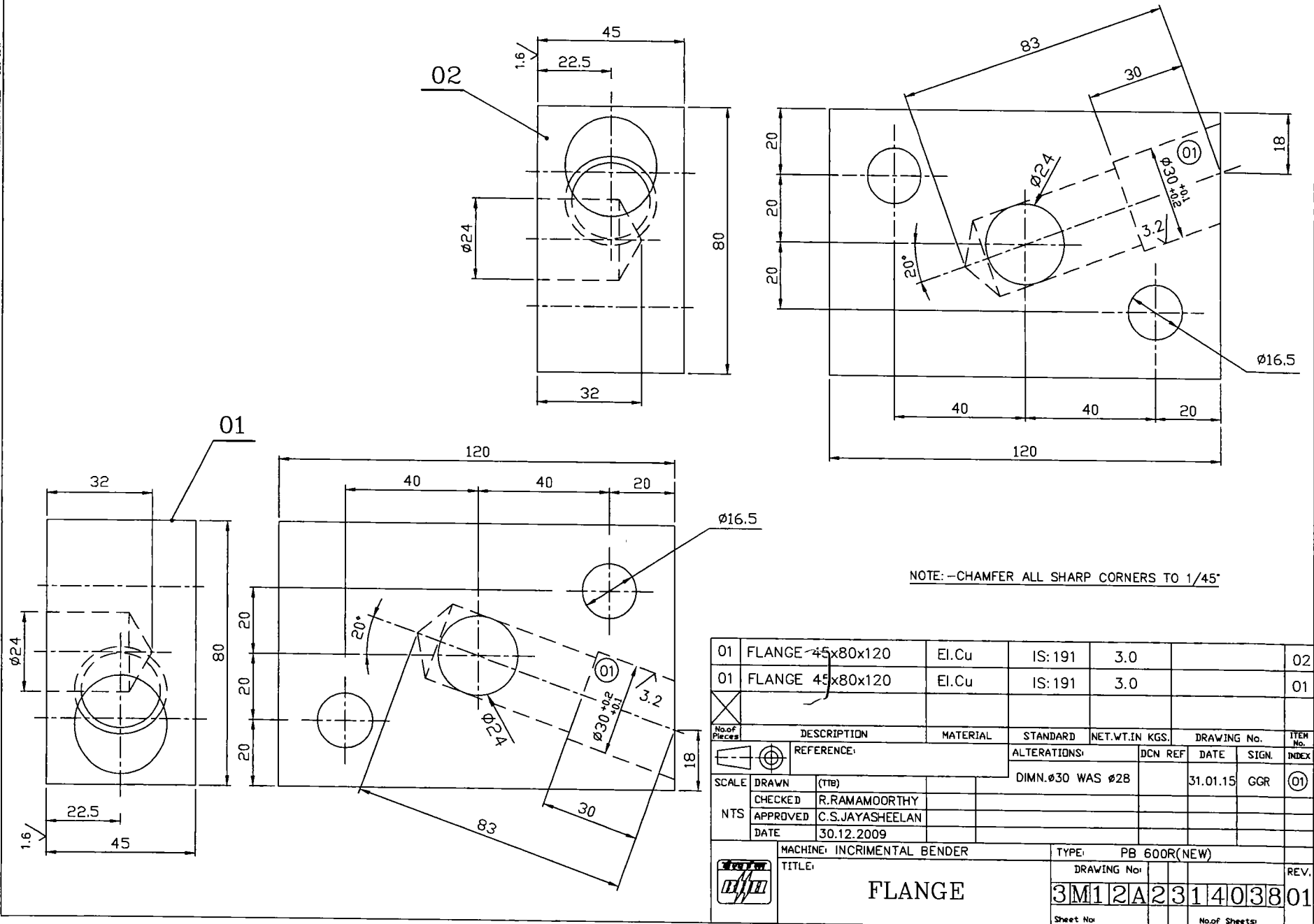
NOTE:

01. ALL TUBES ARE EXTRUDED AND MADE UP OF SINGLE PIECE WITHOUT ANY JOINTS

<input checked="" type="checkbox"/>	TUBE Ø30x5xL	Sf.Cu	ASTM B75 C 12200			03
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
<input type="checkbox"/>	REFERENCE		ALTERATIONS:	DCN REF	DATE	SIGN.
SCALE	DRAWN (TTS)		TABULATION ADDED			
NTS	CHECKED R.RAMAMOORTHY		SL.No. 25 WAS ADDED		01.04.13	K.R (01)
	APPROVED C.S.JAYASHEELAN		SL.No.14&24 ALTERED		31.07.13	K.R (03)
	DATE 30.12.2009		SL.No. 26 & 27 WAS ADDED		08.04.15	GGR (04)
	MACHINE: INCRIMENTAL BENDER		TYPE: PB 600R(NEW)			
	TITLE: BENDTUBE		DRAWING No:			REV.
			3M12A231403904			
			Sheet No:		No. of Sheets	

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ALL DIMENSIONS ARE IN MM

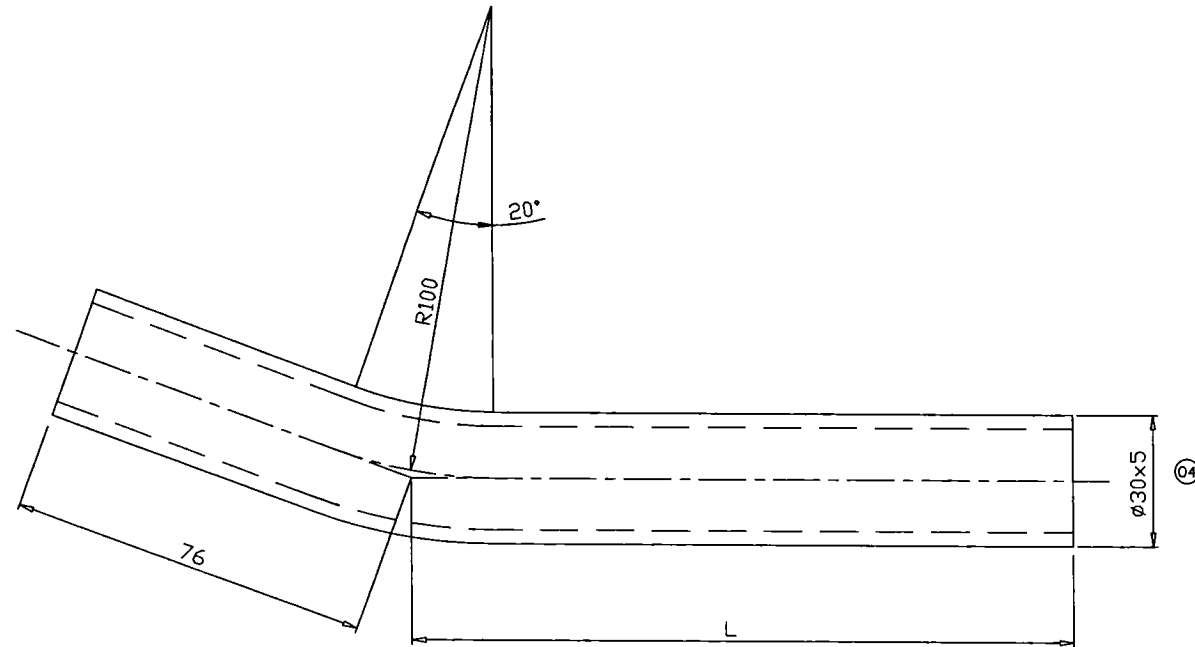


NOTE: -CHAMFER ALL SHARP CORNERS TO 1/45°

01	FLANGE 45x80x120	EI.Cu	IS: 191	3.0		02	
01	FLANGE 45x80x120	EI.Cu	IS: 191	3.0		01	
No. of Pieces		DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
		REFERENCE:	ALTERATIONS:	DCN REF	DATE	SIGN.	INDEX
SCALE: DRAWN (TTB)		DIMN.Ø30 WAS Ø28			31.01.15	GGR	01
CHECKED R.RAMAMOORTHY							
APPROVED C.S.JAYASHEELAN							
DATE 30.12.2009							
MACHINE: INCREMENTAL BENDER				TYPE: PB 600R(NEW)			
TITLE: FLANGE				DRAWING No:		REV.	
				3M12A231403801			
Sheet No:				No. of Sheets:			

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ALL DIMENSIONS ARE IN MM



Sl No.	PIPE THICK	PIPEØ	LENGTH	WT.IN KGS.
03	24	(85-100)	646	497
03	23	(65-85)	524	558
03	22	(65-85)	480	580
03	21	(25-45)	965	343
03	20	(25-45)	914	368
03	19	(25-45)	864	393
03	18	(45-65)	813	424
03	17	(25-45)	711	470
03	16	(06-25)	711	470
03	15	(06-25)	660	500
03	14	(25-45)	610	520
03	13	(06-25)	610	520
	12	(45-65)	969	343
	11	(45-65)	914	370
	10	(45-65)	864	397
	09	(25-45)	813	418
	08	(06-25)	762	360
	07	(45-65)	720	470
	06	(45-65)	660	500
	05	(45-65)	564	551
	04	(25-45)	558	549
	03	(65-85)	508	568
	02	(45-65)	457	607
	01	(25-45)	323	669

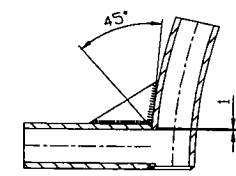
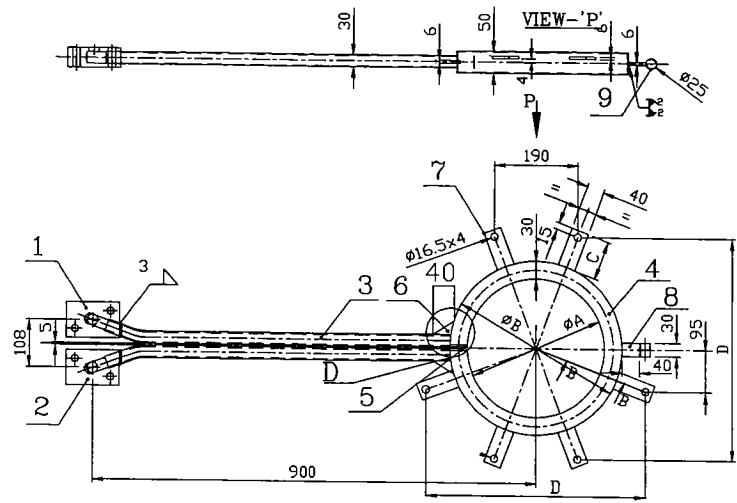
NOTE:

ALL TUBES ARE EXTRUDED AND MADE UP OF SINGLE PIECE WITHOUT ANY JOINTS

TUBE Ø28x3.5xL		Sf.Cu	ASTM B75 C 12200			03
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT.IN KGS.	DRAWING No.	ITEM No.
	REFERENCE		ALTERATIONS	DCN REF	DATE	SIGN
SCALE	DRAWN (TTB)		TABULATION ADDED			(01)
NTS	CHECKED R.RAMAMOORTHY		SL.No. 08 ADDED (762)		20.06.11	(02)
	APPROVED C.S.JAYASHEELAN		SL.No. 13 TO 24 ADDED		18.06.13	K.R (03)
	DATE 30.12.2009		DIMN.Ø30x5 WAS Ø28x3.5		31.01.15	G.G.R (04)
	MACHINE: INCREMENTAL BENDER		TYPE: PB 1200R			
	TITLE: BEND TUBE		DRAWING No.			REV.
			3M12A181441704			
			Sheet No.		No. of Sheets	

2-M-12A18-05289 DRAWING NO.

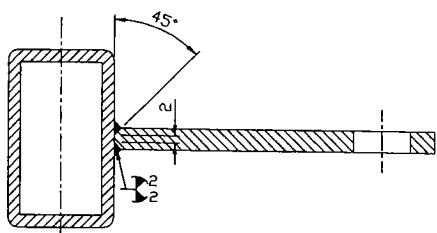
ALL DIMENSIONS ARE IN MILLIMETERS



DETAIL-D

NOTE:

- 01. ALL JOINTS BY TIG WELDING
- 02. OVALITY SHOULD BE +5mm
- 03. FDR ALL WELD JOINTS, SUITABLE EDGE PREPARATION TO BE CARRIED OUT BEFORE WELDING
- 04. ALL TUBES ARE EXTRUDED AND MADE UP OF SINGLE PIECE WITHOUT ANY JOINTS



SECTION-BB

10	1016	1104	1164	69	1250
09	965	1051	1111	70	1200
08	914	1000	1060	72	1150
07	864	946	1006	74	1100
06	813	894	954	75	1050
05	762	841	901	77	1000
04	720	800	860	74	950
03	610	684	744	82	850
02	564	640	700	75	800
01	559	632	692	84	800
SL No:	PIPE Ø	ØA	ØB	C	D

09	TUBE Ø25x2x30L		IS: 410	
			Cu, Zn. 37	1
08	PL. 6tx30x40		ASTM 455 C 38500	--
			Cu, Zn. 39 Pb. 3	1
07	PL. 4tx40xC		ASTM 455 C 38500	--
			Cu, Zn. 39 Pb. 3	6
06	PL. 6x30x40		ASTM B75 C 12200	--
			Sf. Cu	2
05	PL. 2x50X30		IS: 410	--
			E-Cu 57	2
04	RECT. TUBE 50x30x4xL		ASTM B75 C 12200	--
			Sf. Cu	1
03	BENDTUBE Ø30x5xL	3M12A1814417	ASTM B75 C 12200	--
			Sf. Cu	2
02	FLANGE 45x80x120	3M12A2314038	IS: 191	--
			El. Cu	1
01	FLANGE 45x80x120	3M12A2314038	IS: 191	--
			El. Cu	1
ITEM NO	DESCRIPTION	DRAWING NO	MATL CODE	UNIT WT
			MATL SPEC	QTY

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EOPIT: INCREMENTAL PIPE BENDER / PB 1200R

Bharat Heavy Electricals Ltd
 HIGH PRESSURE BOILER PLANT
 TIRUCHIRAPALLI - 620014

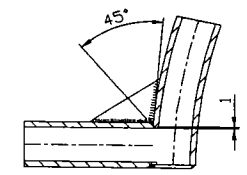
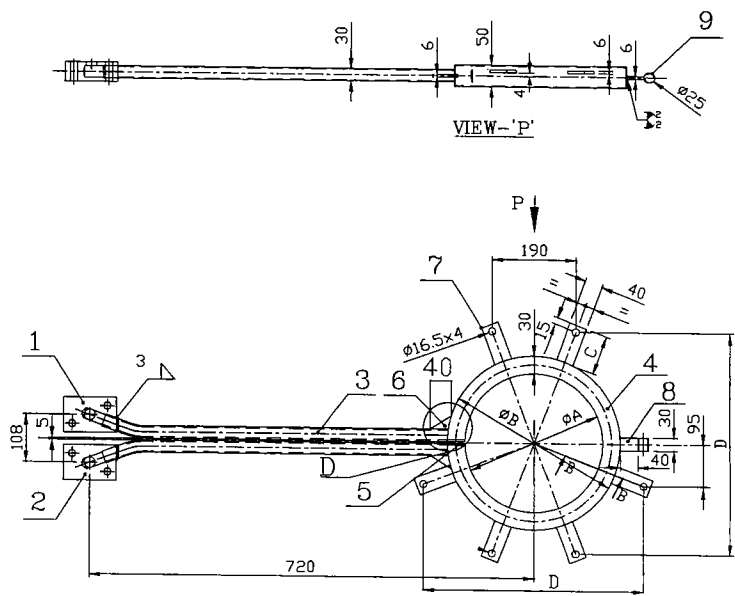
DRW	G. GOVINDARAJ	SIGNATURE	DATE
CHD	R. RAMAMOORTHY	<i>R. Ramamoorthy</i>	08/04/15
APPD	G. THIAGARAJAN	<i>G. Thiagarajan</i>	08/04/15

DEPT: M.B.S. GRADE OF UNTOL. DIM: SCALE: WEIGHT (Kg): REF TO ASSY DWG NO: REF TO OLD DWG NO: ITEM D2

TITLE: INDUCTOR Ø559-1016 (THK45-65) CARD CODE: DRAWING NO: 2-M-12A18-05289 REV: 00

DRAWING NO. 2-M-12A23-05290

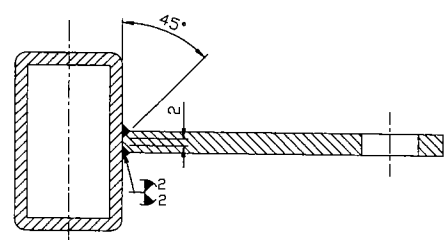
ALL DIMENSIONS ARE IN MILLIMETERS



DETAIL-D

NOTE:

- D1. ALL JOINTS BY TIG WELDING
- D2. OVALITY SHOULD BE +5mm
- D3. FOR ALL WELD JOINTS, SUITABLE EDGE PREPARATION TO BE CARRIED OUT BEFORE WELDING
- D4. ALL TUBES ARE EXTRUDED AND MADE UP OF SINGLE PIECE WITHOUT ANY JOINTS



SECTION-BB

04	720	800	860	74	950
03	610	684	744	82	850
02	564	640	700	75	800
01	559	632	692	84	800
SL No:	PIPE Ø	ØA	ØB	C	D

ITEM NO	DESCRIPTION	DRAWING NO	MATL SPEC	MATL CODE	UNIT WT
09	TUBE Ø25x2x30L		IS: 410		
			Cu, Zn, 37		1
08	PL. 6t x 30 x 40		ASTM 455 C 38500		--
			Cu, Zn, 39 Pb, 3		1
07	PL. 4t x 40 x C		ASTM 455 C 38500		--
			Cu, Zn, 39 Pb, 3		6
06	PL. 6 x 30 x 40		ASTM B75 C 12200		--
			Sf, Cu		2
05	PL. 2 x 50 x 30		IS: 410		--
			E-Cu 57		2
04	RECT. TUBE 50x30x4xL		ASTM B75 C 12200		--
			Sf, Cu		1
03	BEND TUBE Ø30x5xL	3M12A2314039	ASTM B75 C 12200		--
			Sf, Cu		2
02	FLANGE 45x80x120	3M12A2314038	IS: 191		--
			El, Cu		1
01	FLANGE 45x80x120	3M12A2314038	IS: 191		--
			El, Cu		1

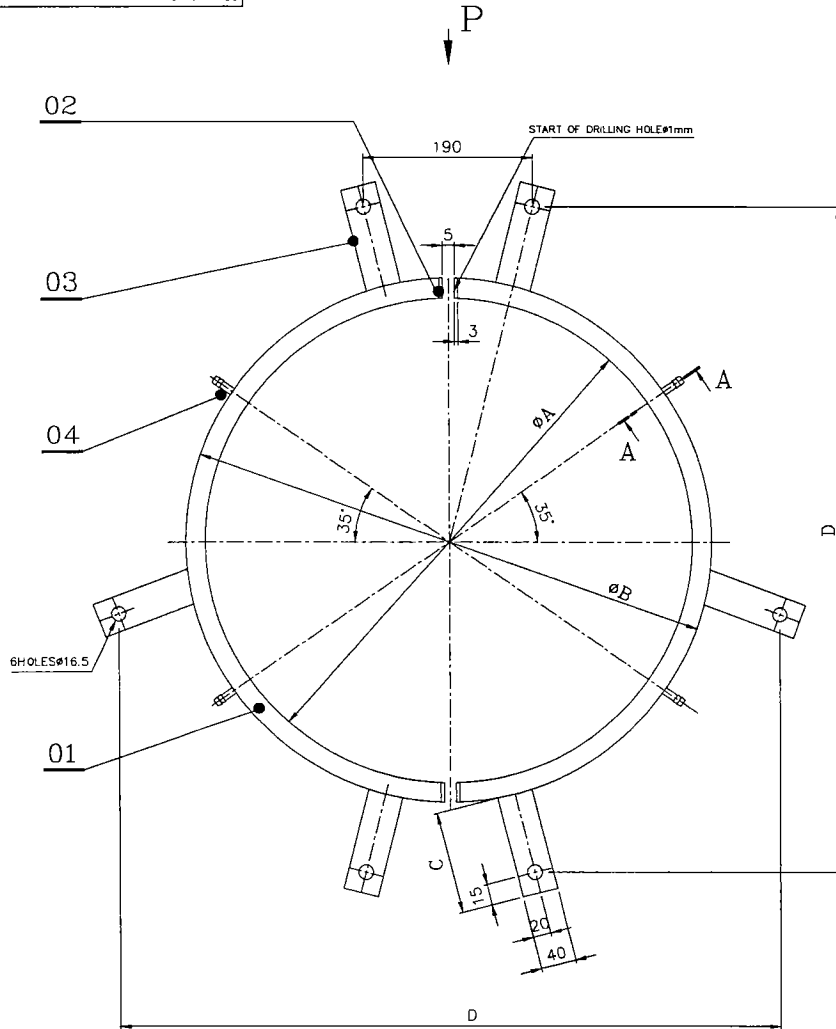
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EQPT: INCREMENTAL PIPE BENDER / PB 600R

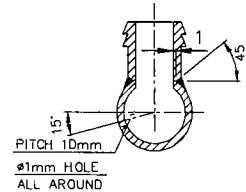
		DRN	G. GOVINDARAJ	SIGNATURE	DATE
Bharat Heavy Electricals Ltd HIGH PRESSURE BOILER PLANT TRUCHIRAPALLI - 620014		CHD	R. RAMAMOORTHY	<i>R. Ramamoorthy</i>	08/04/15
DEPT	GRADE OF UNTOOL D/W	APPD	G. THIAGARAJAN	<i>G. Thiagarajan</i>	08/04/15
M&S CODE	2597	SCALE	NTS	WEIGHT (Kg)	REF TO ASSY DWG NO
	IS 2102				REF TO OLD DWG NO
TITLE		CARD CODE	DRAWING NO :		REV
INDUCTOR Ø559-720 (THK45-65)		U 01	2-M-12A1B-05289		00
			2-M-12A23-05290		

DRAWING NO. 2-M-12A23-05269

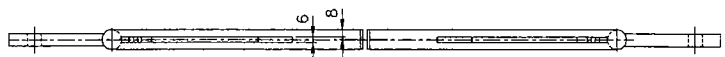
ALL DIMENSIONS ARE IN MILLIMETERS



6HOLES#16.5



SECTION-AA



VIEW-'P'

SL.NO.	PIPE Ø	ØA	ØB	C	D
01	508	610	654	99	800
02	526	630	674	95	800
03	543	650	694	94	850
04	559	670	714	94	850
05	610	720	764	92	900
06	660	770	814	92	950
07	670	780	824	90	950
08	720	830	840	88	1000

- NOTE:**
01. ALL JOINTS BY TIG WELDING.
 02. OVALITY SHOULD BE +5mm
 03. FOR ALL WELD JOINTS, SUITABLE EDGE PREPARATION TO BE CARRIED OUT BEFORE WELDING
 04. ALL TUBES ARE EXTRUDED AND MADE UP OF SINGLE PIECE WITHOUT ANY JOINTS

ITEM NO	DESCRIPTION	DRAWING NO	MATL CODE	UNIT WT
04	HOSE CONNECTION FOR HOSE OD13		BRASS	4
03	PLATE 8x40x C		ASTM 455 C 38500	-
02	PLATE 2x#22		CuZn39Pb3	6
01	RING TUBE Ø22x1.5x L		ASTM 455 C 38500	4
			CuZn37	1

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EQPT: INCREMENTAL PIPE BENDER / PB 600R(NEW)

Bharat Heavy Electricals Ltd
HIGH PRESSURE BOILER PLANT
TRUCHIRAPALLI - 620014

DRN	G.GOVINDARAJ	SIGNATURE	20/01/15
CHD	R.RAMAMOORTHY	SIGNATURE	20/01/15
APPD	G.THADARAJAN	SIGNATURE	21/01/15

DEPT: M/S
CODE: 2997

GRADE OF UNITS: DW
C/M/F
05-2102

SCALE: NTS

WEIGHT (Kg):

REF TO ASSY DWG NO: -
REF TO OLD DWG NO: -

TITLE: AIR RING (PIPE Ø508-Ø720)

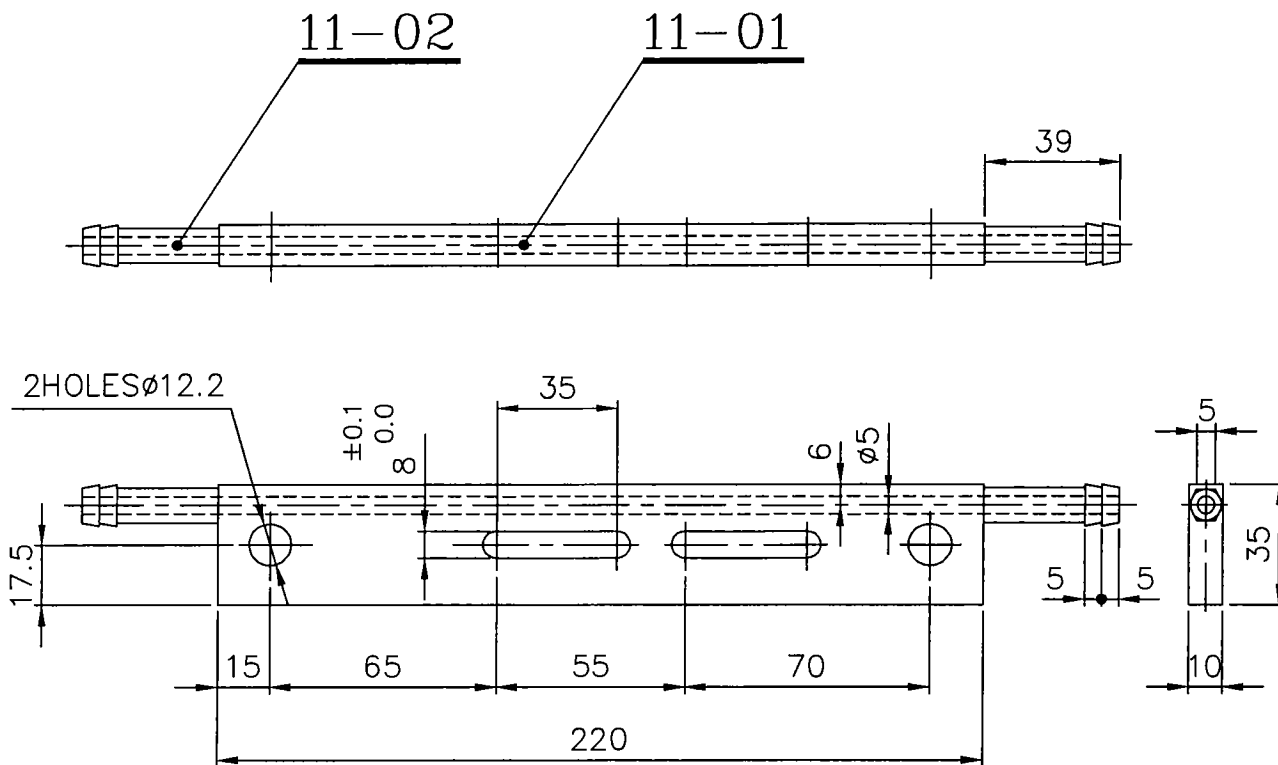
CARD CODE: U 01

DRAWING NO: 2-M-12A23-05269

REV: 00

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ALL DIMENSIONS ARE IN MM



NOTE: -

- REMOVE ALL SHARP CORNERS
- TO BE SOLDERED WITH SILFOS

02	ø12x39	CuZn39Pb3	ASTM 455 C 38500			02
01	10x35x220	CuZn39Pb3	ASTM 455 C 38500			01
X					2M12A1804365 2M12A2404810 2M12A2304808 2M12A1804914	11
No. of Pieces	DESCRIPTION	MATERIAL	STANDARD	NET.WT. IN KGS.	DRAWING No.	ITEM No.

SCALE	DRAWN/TC'D	S.selvamanickam	MATERIAL CHANGED	ALTERATIONS:	DCN REF	DATE	SIGN.	INDEX
	CHECKED	R.RAMAMOORTHY						
1:2	APPROVED	C.S.JAYASHEELAN						
	DATE	24.10.2000/17.02.10'						

	MACHINE: INCREMENTAL PIPE BENDER	TYPE: PB 1200R
	TITLE: STRIP	DRAWING No:
		4M12A182666401
	Sheet No:	No. of Sheets:

REV. 01