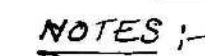


(ALL DIMENSIONS ARE IN mm)

DIMNL.TOL:

AS PER CORPT. STD. AA 023 02 08 COARSE GRADE UNLESS OTHERWISE STATED.



- [illegible]

NOM. SIZE IN M.M. EQ-O.D.	IN. INCH B.S.P. SIZE	s	t	u	v	w	x	y	z	a1	b1	c1	e1	f 1	g1	R	R1	i1	j1	k1	l1	m1	D' WHIT D/R TRI	p1	q1	r2	
8-13	1 1/4	18	8	2.5	2.5	3	11	30±1.5	6.01	6.5	2	3	7	19 ^{+0.0} _{-0.6}	1	11	1.5	16	24 ^{+0.2} _{-0.0}	35 ^{+0.0} _{-0.8}	—	9	30	12	31	16 ^{+0.15} _{-0.0}	1.5
12-17	3 7/8	19	9	3	2.5	3	13	33±1.5	6.35	6.5	2.5	3	9	21 ^{+0.0} _{-0.6}	1	14	2.5	18	26 ^{+0.2} _{-0.0}	38 ^{+0.0} _{-0.8}	—	10	32	12	33	19 ^{+0.2} _{-0.0}	1.5
15-21	1 1/2	24	11	3	2.5	3.5	16	39±1.5	8.16	7	2.5	3	13	26 ^{+0.0} _{-0.6}	1.5	16	2.5	18	32 ^{+0.2} _{-0.0}	46 ^{+0.0} _{-1.0}	—	10	38	12	40	23 ^{+0.2} _{-0.0}	1.5
21-27	3 3/4	29	12	3	2.5	4	19	44±1.5	9.53	7.5	3	3	18	29 ^{+0.0} _{-0.8}	1.5	20	3	19	37 ^{+0.2} _{-0.0}	50 ^{+0.0} _{-1.0}	—	11	44	12	45	29 ^{+0.2} _{-0.0}	1.5
26-34	1"	35	15	3.5	3	4	22	51±1.5	10.37	8.5	3	5	24	35 ^{+0.0} _{-0.8}	2	24	3	21	47 ^{+0.2} _{-0.0}	—	63 ^{+0.0} _{-1.2}	12	55	12	56	36 ^{+0.2} _{-0.0}	1.5
33-42	1 1/4	46	20	4	3.5	4	25	60±2	12.70	9	3.5	5	32	46 ^{+0.0} _{-1.0}	2	28	3	23	55 ^{+0.3} _{-0.0}	—	71 ^{+0.0} _{-1.5}	13	62	12	63	44 ^{+0.2} _{-0.0}	1.5
40-49	1 1/2	50	22	4	3.5	4.5	25	62±2	12.70	9.5	3.5	5	37	50 ^{+0.0} _{-1.0}	2	32	3	24	62 ^{+0.3} _{-0.0}	—	80 ^{+0.0} _{-1.5}	14	70	12	72	50 ^{+0.2} _{-0.0}	1.5
50-60	2"	63	30	4.5	4	5	28	75±2.5	15.88	11	4	5	48	63 ^{+0.0} _{-1.2}	2	38	3.5	27	74 ^{+0.3} _{-0.0}	—	95 ^{+0.0} _{-1.5}	16	82	12	86	62 ^{+0.3} _{-0.0}	1.5

28 CARD TYPE-3			28 CARD TYPE-1			28 CARD TYPE-2		
ADDITIONAL INFORMATION STATUS OF DRAWING U DISTRIBUTION OF PRINTS LME LMP LMM 1 2 3			TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT 25 K.V.A.C. / WCAM-2 / WCAM-3 LOCOMOTIVE M/S-INDIAN RAILWAY			DRN. NAME M/S-R.E.S. SIGN [Signature] DATE 13-10-96 73 74 CHD. M.L. [Signature] 77-10-96 NO. OF APPD. M.D. [Signature] 19.10 VAR 01		
REV 01 DATE 17-5-98 ALTERED [Signature] CHECKED PPPD [Signature] ZONE STYLE NO ADDED FOR WAG-7 LOCO.			DEPT. LME GRADE OF UNIT [Symbol] SCALE NTS. WEIGHT (Kg) — REF. TO ASSY. DRG. — ITEM NO. — 75 77 CODE 404 DIM. [Symbol] NO. OF ITEMS 004			TITLE UNION ELBOW (MALE AND FEMALE)		
			CARD CODE 3			7 DRAWING NO. 2 719 65 01 020 23 24 REV. 01		
			SHEET NO. 01 NO. OF SHEETS 01					

R.E.S. JHS.

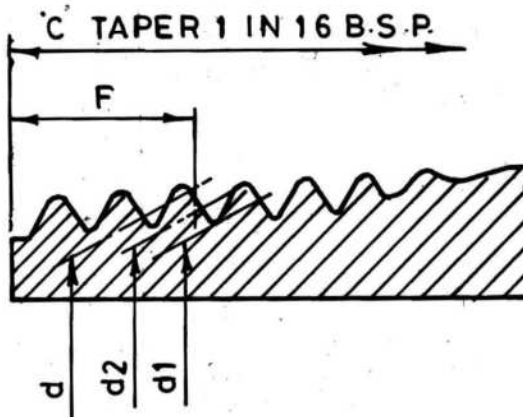
SIZE A 2

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED.

INVENTORY NO.	SIGN. & DATE	CLW- 0/3/65/11
		REF. DRG. NO. ALT. NO.5

(ALL DIMENSIONS ARE IN mm)

AS PER CORPT. STD. AA 0230208 COARSE GRADE :
UNLESS OTHERWISE STATED.



1. ALL SHARP EDGES AND CORNERS TO BE ROUNDED OFF.
2. THREADED END PIECES SHALL BE TESTED AT AN INTERNAL HYDRAULIC PRESSURE OF 21 Kg / cm² & AT AN INTERNAL AIR PRESSURE OF 8.5 Kg / cm².
3. THE MANUFACTURES SHALL ENGRAVE / EMBOSS / IMPRINT / STENCIL PERMANENT IDENTIFICATION MARK INDICATING THEIR NAME / MONOGRAM BRAND NAME. ALSO THE MONTH AND YEAR OF MANUFACTURE AT A CONSPICUOUS PLACE.
4. THE CASTING TO BE CLEANED PROPERLY & TO BE PHOSPHATED (IS:3618-91) AFTER MACHING TO RESIST COROSSION.
5. PLASTIC CAP TO BE PROVIDED AFTER INSPECTION AND TESTING. CAP SHOULD BEAR THE SIZE OF BSP / NPT THREADS MARKED ON THEM.

STYLE NO.	NOM SIZE IN MM ID-O.D	IN INCH B.S.P SIZE	A		B	C	D		E	d	d2	d1	n)TPI	F	STYLE N FOR WAG-7
			MAX.	MIN.			MAX.	MIN.							
706036	8 - 13	1" / 4	14	13.2	31	11	8.2	7.4	1.5	13.157	12.301	11.445	19	6.01	642001
706037	12 - 17	3" / 8	17.5	16.7	32	12	11.7	10.9	1.5	16.662	15.806	14.950	19	6.35	642002
706038 955140	15 - 21	1" / 2	21.8	21	35	15	15.3	14.5	1.5	20.958	19.793	18.631	14	8.16	642003
706039 955141	21 - 27	3" / 4	27.3	26.5	37	17	20.9	20.1	2	26.441	25.279	24.117	14	9.53	642004
706040 955142	26 - 34	1"	34.2	33.3	39	19	26.2	25.3	2	33.249	31.770	30.291	11	10.39	642005
706041 955143	33 - 42	1 1/4"	42.9	42	42	22	34.8	33.9	2	41.910	40.431	38.952	11	12.70	642006
706042	40 - 49	1 1/2"	48.8	47.9	42	22	40.7	39.8	2	47.803	40.324	44.815	11	12.70	
706043	50 - 60	2"	60.8	59.7	46	26	51.8	50.7	2.5	59.614	58.135	56.686	11	15.88	642007
	80 - 90	3"	89.5	88	54	34	79.87	78.3	2.5	87.884	86.405	84.928	11	20.64	

001						001						THREADED END PIECE												IS : 1239																		B																																																																																																																																																					
VAR OO						REMARKS						VAR NO.						ITEM NO.						DESCRIPTION						STD						DRAWING NO.						MATL. CODE						UNIT WT. Kg.						ZONE																																																																																																																																									
28						CARD TYPE-3						28						CARD TYPE-1						28						CARD TYPE-2																																																																																																																																																																	
ADDITIONAL INFORMATION																								TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT																								<u>25K.V.A.C. / WCAM-2 / WCAM-3 LOCOMOTIVE</u> <u>M/S - INDIAN RAILWAY</u>																																																																																																																																															
STATUS OF DRAWING U																								BHARAT HEAVY ELECTRICALS LIMITED JHANSI																								DRN. M/S-R.E.S. CHD. M.L. APPD. M.D.																								SIGNATURE DATE 13-10-96 17-10-96 19.10.96																								73 74 NO. OF VAR																																																																																															
DISTRIBUTION OF PRINTS																								DEPT LME																								GRADE OF UN TOC DIM. C/M/D																								SCALE NTS.																								WEIGHT (Kg)																								REF. TO ASSY. DRG.																								ITEM NO.																								75 77 NO. OF ITEMS																							
LME LMP LMM																								CODE 404																								TITLE <u>THREADED END PIECE</u> (TAPER)																								1 3 CARD CODE																								7 DRAWING NO. 2 719 65 01 021																								22 23 24 REV. 04																																																																							
1 1 3																								REV. DATE 01 12/5/00																								ALTERED P.K.Khatui CHECKED APPD. H.M.																								ZONE STYLE NO. UPDATED																								SHEET NO. 01																								NO. OF SHEETS 01																																																																							

SIZE A 2

(ALL DIMENSIONS ARE IN mm)

Technical drawing of an Equal Tee Body. The drawing shows a cross-section of the tee joint. Key dimensions and components are labeled:

- Dimensions:**
 - L_4 : Length of the horizontal pipe section on either side of the tee body.
 - L_2 : Length of the vertical pipe section.
 - D_1 : Diameter of the pipe.
- Components:**
 - EQUAL TEE BODY**: The central component connecting the three pipe sections.
 - FERRULE**: A component used to secure the coupling nut.
 - COUPLING NUT**: A nut used to join the pipe sections.

EQUAL TEE BODY

Technical drawing of a stepped shaft. The drawing shows a shaft with a step. The diameter of the larger section is labeled $D1$. The length of the larger section is labeled $L6$. The drawing is a cross-section view.

FERRULE

COUPLING NUT

TABLE OF DIMENSIONS

VAR.	TUBE O.D. D1	D2	L1	L2	L3	L4~	L5	L6	S1	S2	STYLE NO
00	6	M12 x 1.5	7	12	19	27	15.0	9.5	12	14	955116
01	10	M16 x 1.5	8	15	22	30	15.5	10	17	19	955117
02	12	M18 x 1.5	9	17	24	32	16.0	10	19	22	955118
03	15	M22 x 1.5	10	21	28	36	17.0	10	22	27	

NOTES:-

- 1.-DIMENSION L4 IS APPROXIMATE AND IS IN TIGHTENED CONDITION.
- 2(a).-EQUAL TEE BODY SHALL BE MANUFACTURED TO IS:9389(PART II)-1979 AND ITS MATERIAL TO IS:1875 CLASS II.
- (b).-UNION NUT SHALL BE MANUFACTURED TO IS:8803-1978 AND ITS MATERIAL TO IS:1875 CLASS II.
- (C).-FERRULE SHALL BE MANUFACTURED TO IS:8802-1978 AND ITS MATERIAL TO IS:1875 CLASS I.
- 3.-THE ASSY. SHALL BE MADE AS PER TYPE-C OF IS:9767-1981 AND SHALL WITHSTAND A TEST PRESSURE OF 35 kg./cm²
- 4.-EQUAL TEE BODY, NUT AND FERRULE SHALL BE CYANIDE HARDENED TO A DEPTH OF 25 TO 30 MICRONS, AND SHALL BE CADMIUM PLATED TO A THICKNESS OF 5 MICRONS MINIMUM.

[illegible]

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FIRST ANGLE PROJECTION

NUT
MAT: STEE
CLASS - 2

MAT:STEEL,IS:1875

FERRULE
MAT: STEE
CLASS-1

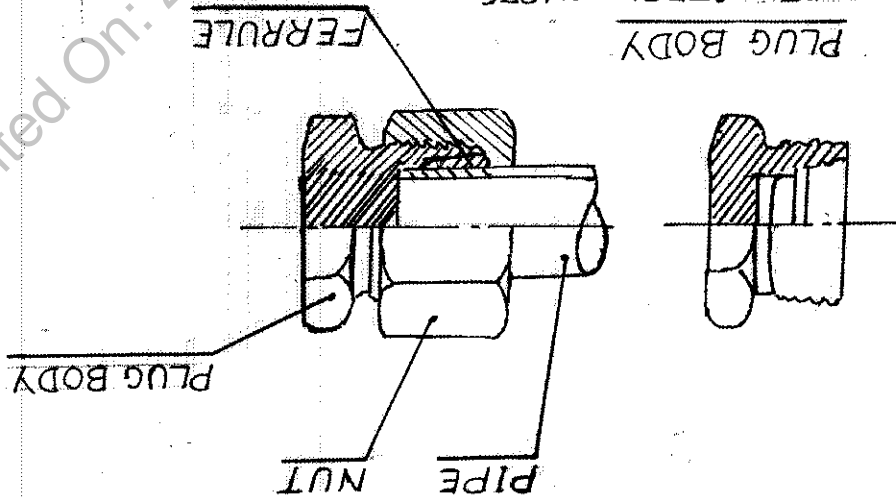
MAT:STEEL,IS:1875

PLUG BODY
MAT: STEEL,
CLASS-2

MAT: STEEL, 15:1875

VAR-00 (6.0/D PIPE)
VAR-01 (10.0/D PIPE)

VAR-00 (6.0/D PIPE)



NOTES:-

1. SUPPLIER IS REQUIRED TO SUBMIT DETAIL DIMENSION DRAWING/STANDARD FOR APPROVAL.
2. NUT, FERRULE & PIPE END PIECE SHALL BE CYANIDE HARDENED TO A DEPTH OF 25 TO 30 MICRONS, AND SHALL BE CADMIUM PLATED TO A THICKNESS OF 5 MICRONS MINIMUM.
3. THE LINE PLUG ASSY SHALL WITH STAND A TEST PRESSURE OF 35 kg./cm².
4. FOR MANUFACTURING REFER FOLLOW
(i) LINE PLUG BODY : IS : 9746 (PART-1)
(ii) UNION NUT : 8803-1978
(iii) FERRULE : 8802-1978

STATUS OF DRAWING

BHARAT HEAVY ELECTRICALS LIMITED
JHANSI

NAME OF CUSTOMER/PROJECT

TYPE OF PRODUCT OR

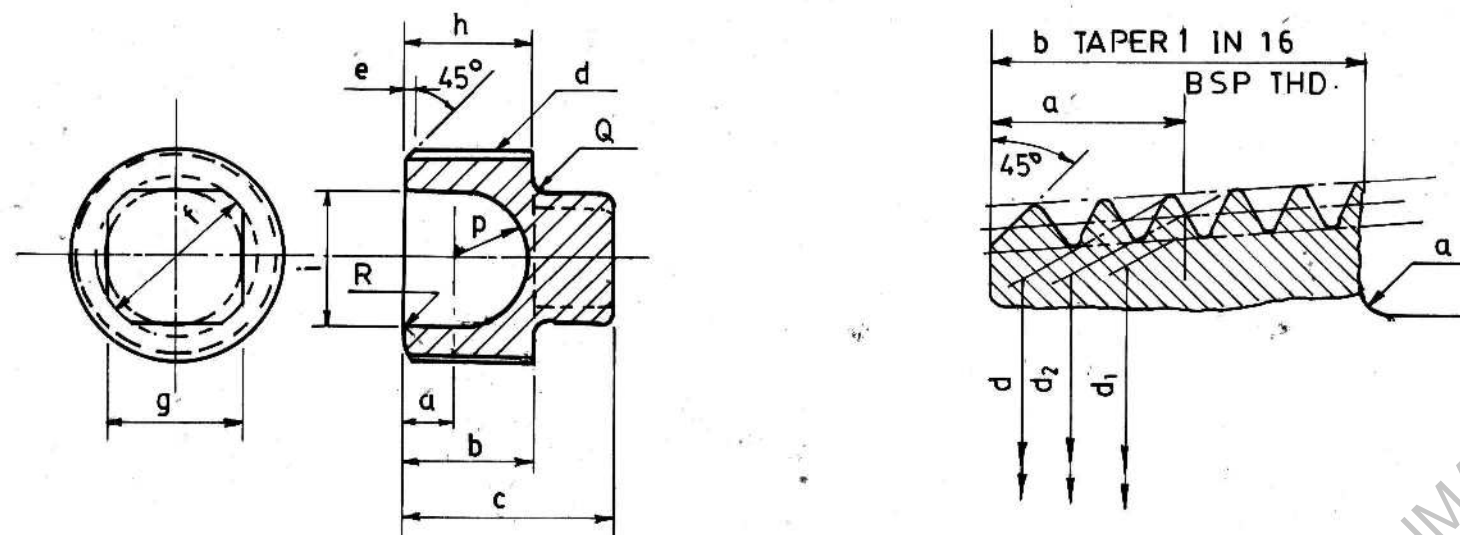
TYPE OF PRODUCT		OR		NAME OF CUSTOMER/PROJECT	
350/700HP DESL					
 BHARAT HEAVY ELECTRICALS LIMITED JHANSI					
DRN.	NAME	P. K. Khatun	SIGN	DATE	73 74
CHD.	A. K. S.			10-9-05	NO OF
APPD.	A. J.			10-9-05	VAR 02
WEIGHT (kg)		REF. TO ASSY. DRG.		ITEM	75 77
				NO. OF ITEMS	002
				SCALE	
				GRADE OF UNIT	
				DIM. C/M/F	
				DEPT	
				GRADE OF UNIT	
				SCALE	
				WEIGHT (kg)	
				REF. TO ASSY. DRG.	
				ITEM	
				NO. OF ITEMS	002
				SCALE	
				GRADE OF UNIT	
				DIM. C/M/F	
				DEPT	
				GRADE OF UNIT	
				SCALE	
				WEIGHT (kg)	
				REF. TO ASSY. DRG.	
				ITEM	
				NO. OF ITEMS	002
				SCALE	
				GRADE OF UNIT	
				DIM. C/M/F	
				DEPT	
				GRADE OF UNIT	
				SCALE	
				WEIGHT (kg)	
				REF. TO ASSY. DRG.	
				ITEM	
				NO. OF ITEMS	002
				SCALE	
				GRADE OF UNIT	
				DIM. C/M/F	
				DEPT	
				GRADE OF UNIT	
				SCALE	
				WEIGHT (kg)	
				REF. TO ASSY. DRG.	
				ITEM	
				NO. OF ITEMS	002
				SCALE	
				GRADE OF UNIT	
				DIM. C/M/F	
				DEPT	
				GRADE OF UNIT	
				SCALE	
				WEIGHT (kg)	
				REF. TO ASSY. DRG.	
				ITEM	
				NO. OF ITEMS	002
				SCALE	
				GRADE OF UNIT	
				DIM. C/M/F	
				DEPT	
				GRADE OF UNIT	
				SCALE	
				WEIGHT (kg)	
				REF. TO ASSY. DRG.	
				ITEM	
				NO. OF ITEMS	002
				SCALE	
				GRADE OF UNIT	
				DIM. C/M/F	
				DEPT	
				GRADE OF UNIT	
				SCALE	
				WEIGHT (kg)	
				REF. TO ASSY. DRG.	
				ITEM	
				NO. OF ITEMS	002
				SCALE	
				GRADE OF UNIT	
				DIM. C/M/F	
				DEPT	
				GRADE OF UNIT	
				SCALE	
				WEIGHT (kg)	
				REF. TO ASSY. DRG.	
				ITEM	
				NO. OF ITEMS	002
				SCALE	
				GRADE OF UNIT	
				DIM. C/M/F	
				DEPT	
				GRADE OF UNIT	
				SCALE	
				WEIGHT (kg)	
				REF. TO ASSY. DRG.	
				ITEM	
				NO. OF ITEMS	002
				SCALE	
				GRADE OF UNIT	
				DIM. C/M/F	
				DEPT	
				GRADE OF UNIT	
				SCALE	
				WEIGHT (kg)	
				REF. TO ASSY. DRG.	

CARD TYPE-1						CARD TYPE-2					
DESCRIPTION		STD.	DRAWING NO.	77		MATL CODE	C	UNIT	QTY	GS	
58	59	60		32	33	34	35	36	37	38	
LINE PLUG ASSY 10 0/0				[]	ST-955122						
LINE PLUG ASSY 6 0/0				[]	ST-955121						

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

DRG. No. 3 719 65 01 003

DIMNL. TOL. AS PER CORP. STD. AA 023 02 08 MEDIUM
GRADE UNLESS OTHERWISE STATED.

NOTES :-

- MATL. SPECN:- MALLEABLE CAST IRON TO IS: 2107 (1979) GR. WM-340 (WHITE HEART)
OR IS: 2108 (1979) GR. M-290 (BLACK HEART).
AS AN ALTERNATIVE TO M.C.I., FORGING STEEL TO IS: 1875 CL-2 IS ALSO ACCEPTABLE.
- ALL THE FINISH PIPE FITTINGS SHALL BE TESTED AS PER THE CLW'S TEST SPECN
NO M/EL/57/TS.68 Dt. 8-5-85

TABLE OF DIMENSIONS (CONTD.)

003	26-34	1"	33'249	31'770	30'291
002	21-27	3/4"	26'441	25'297	24'117
001	15-21	1/2"	20'955	19'793	18'631
ITEM NO	NOM SIZE IN MM I/D-O/D	IN INCH BSP SIZE	MAJOR DIA d	EFFECTIVE DIA d ₂	MINOR DIA d ₁

	10-39 ⁺²⁻³¹	19	31 ⁺²	2	25	19 ⁺⁰ _{-0.6}	20	24	11	1	1	NOT IN USE	003	PLUG M.C.I. 26-34	955169	SEE NOTE 1															
	9-53 ⁺¹⁻⁸¹	17	28 ⁺¹⁻⁵	1.5	22	17 ⁺⁰ _{-0.5}	18	18	8	1	1		002	PLUG M.C.I. 21-27	955168	SEE NOTE 1															
642063	8-16 ⁺¹⁻⁸¹	15	25 ⁺¹⁻⁵	1.5	18	14 ⁺⁰ _{-0.5}	15	13	6	1	1		001	PLUG M.C.I. 15-21	706239 955167	SEE NOTE 1															
STYLE NO FOR WAG-7 LOCO	a	b	c	e	f	g	h	i	p	59	64 65	REMARKS	75 78 79	25 27	29	DESCRIPTION	58 59 60	STYLE NO.	77 29 31 34	IT. No.	32 33 46	VAR.	35 54	MATL. SPECN.	55 A 56 C	UNIT	58	UNIT WT.	65 72	QTY.	71 72

CARD TYPE-3

CARD TYPE-1

CARD TYPE-2

ADDITIONAL INFORMATION

STATUS OF DRAWING U

DISTRIBUTION OF PRINTS

LME (DV) - 1

LMP (DV) - 1

LMM (DV) - 3

TYPE OF PRODUCT

OR

NAME OF CUSTOMER/PROJECT INDIAN RAILWAY BOARD NEW DELHI



BHARAT HEAVY ELECTRICALS LIMITED

JHANSI

DRN.	NAME	SIGN.	DATE	73 74
CHD.	A. SAKENA		4.5.00	No. OF VAR.
APPD.	G. S. JALLY		4.5.00	

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
03	17-5-8	CHECKED	02	3-11-05	CHECKED	01	1-6-00	CHECKED

STYLE NO ADDED FOR WAG-7 LOCO.

ST NO. 955169 UPDATED.

STYLE NO. UPDATED.

DEPT	CE	GRADE OF UN. TOL.	DIM. C/M/F	SCALE	WEIGHT (Kg.)	REF. TO ASSY. DRG.	ITEM No.	75 77
CODE	404						No. OF ITEMS	003

TITLE	1	3	7	22	23	24
PLUG TYPE B	CARD CODE		DRAWING No.	REV.		
			3 719 65 01 003	03		

SHEET No. 01 No. OF SHEETS 01

SIZE A3

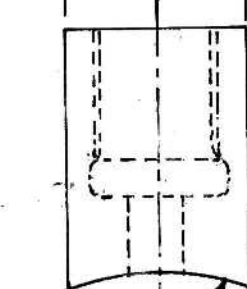
(ALL DIMENSIONS ARE IN mm)

FIRST ANGLE PROJECTION

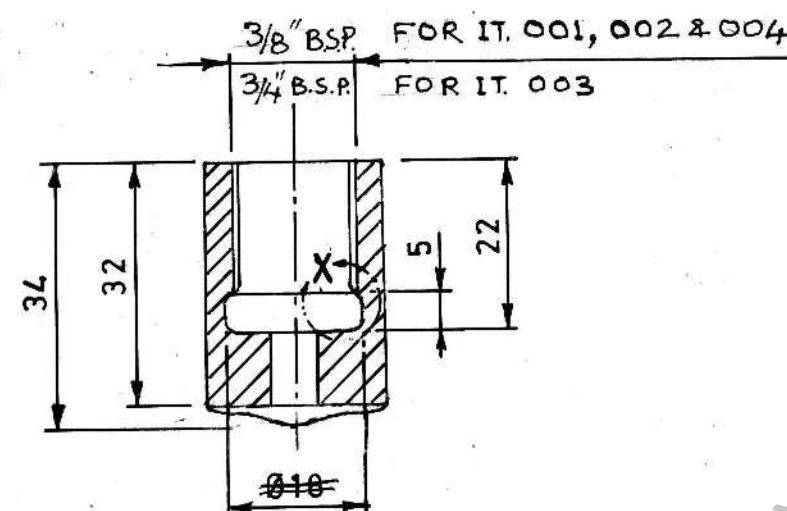
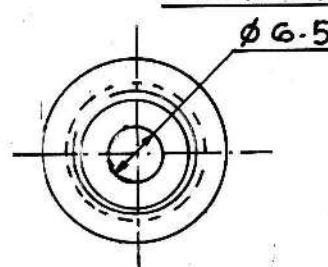
DIMNL. TOL. — AS PER CORP STD. AA023 02 08 COARSE GRADE
UNLESS OTHERWISE STATED.

DRG. No. 3 719 65 01 011

Ø 24 FOR IT. 001, 002 & 004
Ø 30 FOR IT. 003

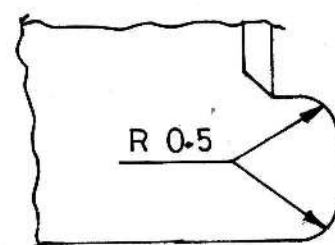


R 11 FOR ITEM 001, 003
R 13.5 FOR ITEM 002
R 30.2 FOR ITEM 004



— A A —

- NOTES** — 1. ALL SHARP EDGES AND CORNERS TO BE ROUNDED OFF.
2. **FINISH** — APPLY TWO COATS OF RED-OXIDE PRIMER TO AA56101 AFTER SAND/SHOT BLASTING/PICKLING.



— X —

001	ST-713007	004	3/8" WELDOLET 50 N.B. Ø 24 BRT STL. ROD		AA1010212117	mm	34
001	ST-713006	003	3/4" WELDOLET 15 N.B. Ø 30 BRT STL. ROD		AA1010212150	mm	34
001	ST-713005	002	3/8" WELD LET (20 NB) Ø 24 BRT ST. ROD	4	AA1010212117	mm	0.129
001	ST-713004	001	3/8" WELD LET (15 NB) Ø 24 BRT ST. ROD	4	AA1010212117	mm	0.129
VAR 00	REMARKS	IVAR INO.	ITEM NO	DESCRIPTION	DRAWING NO.	MATL. CODE	UNIT WT (KG)
28	CARD TYPE-3	28	CARD TYPE-1	28	CARD TYPE-2	28	CARD TYPE-2

ADDITIONAL INFORMATION

STATUS OF DRAWING U

DISTRIBUTION OF PRINTS
LME-1, LMP-2, LMM-3,
BAY1&2-3, BAY3-1

TYPE OF PRODUCT OR
NAME OF CUSTOMER/PROJECT

AC/DC LOCOMOTIVE WCAM-3

F.S.D. BHEL SIRIFORT NEW DELHI



BHARAT HEAVY ELECTRICALS LIMITED
JHANSI

DRN.	C.B.S.K.	SIGN	-Sd-	DATE	17-4-89	73	74
CHD.	V.S.	SIGN	-Sd-	DATE	17-4-89	NO. OF	VAR
APPD.	P.G.K.	SIGN	-Sd-	DATE	17-4-89	00	

DEPT.	LME	GRADE OF UN TOL	1:1	WEIGHT (Kg)	0.258	REF. TO ASSY. DRG.	ITEM NO.	75	77
CODE	404	DIM. C/M/P						NO. OF	ITEMS

TITLE	WELDOLET	CARD CODE	3	DRAWING NO.	3 719 65 01 011	22	23	24
				SHEET NO. 01	NO. OF SHEETS 01	REV.	05	

SIZE A 3