TENDER SPECIFICATION FOR SET OF GASKET FOR WAG-9HC, WAP-7 & WAP-5 3-PHASE ELECTRIC LOCOMOTIVE OF INDIAN RAILWAYS

SPECIFICATION No.
CLW/ES/3/0142 ALT- H

ENCLOSURES:

1. ANNEXURE:
2. DRG.NOS.
CLW/ES/3/SK-1/0142
TO
CLW/ES/3/SK-9/0142

ISSUED BY:

DY. CHIEF ELECTRICAL ENGINEER/D-III
CHITTARANJAN LOCOMOTIVE WORKS
P.O. CHITTARANJAN – 713331
DIST. BARDHAMAN (WEST), WEST BENGAL (INDIA)

PREPARED BY	CHECKED BY	APPROVED BY
Achyut Kumar Digitally signed by Achyut Kumar Date: 2024.07.08 12:15:24 +05'30'	BHARAT CHANDRA BAL Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:29:10 +05'30'	AMIT AGGARWAL Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:00:46 +05'30'
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ALTERATION RECORD SHEET

Amendment No.	ALT. No.	DATE	REASON	AUTHORITY
01	A	18.11.1998	Dimensions of Fig. No. 2,3,4,5 have been changed. New item is included. Drg. for Sl.no.11 & 12 of scope of supply have been included.	-Sd-/18.11.98
02	B	03.05.1999	In scope of supply individual type nos. given as applicable.	-Sd-/03.05.99
03	C	24.03.2001	New item is included in Fig. no-19 , sh. No- 16 Dimensions have been changed for the items for fig. 3, 5, 2 & 4.	-Sd-/24.03.01
04	D	03.03.2003	All the non-metallic gaskets should have fire retardant properties /self extinguish as per note of page-3. Qty./Loco for some items have been changed as per shop requirement.	-Sd-/03.03.03
05	E	08.07.2016	Qty/Loco has been revised as per approval of C.A vide this office note no- ELDD/3254/Part dt- 09.06.2016	-Sd-/08.07.2016
06	F	14.11.2018	5% Mfg. spare introduced as per approval of CEE/D&D on 03.11.2018	-Sd-/14.11.2018
07	G	01.07.2024	Dimension 92 was 94 at Fig no. 2 of page 8 of 15.	
08	H	AS SIGNED	NOTE (I) & (II) OF PARA-9 IS REVISED	-Sd

Specifications have been digitized and all alterations have been incorporated.

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Achyut Kumar Digitally signed by Achyut Kumar Date: 2024.07.08 12:15:50 +05'30'	BHARAT CHANDRA BAL Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:29:51 +05'30'	AMIT AGGARWAL Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:03:41 +05'30'
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SPECIFICATION FOR SET OF GASKET

INDEX

1. SCOPE
2. CLIMATIC AND ENVIRONMENTAL CONDITION
3. STANDARD
4. SCOPE OF SUPPLY
5. DRAWINGS
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7. SUBMISSION OF TENDER QUOTATION
8. TECHNICAL DOCUMENTS TO BE SUPPLIED BY THE SUPPLIER
9. QUALITY ASSURANCE

Note: " The material must be of inflammability class FH2-5mm. as defined in the IS: 11731 (Part-I):1986- Horizontal specimen method of test for solid insulating materials and class FVO as per IS: 11731 (Part-2):1986- Vertical test method. The test shall be carried out as a prototype test on samples prepared out of the same batch supplied."

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Achyut Kumar Digitally signed by Achyut Kumar Date: 2024.07.08 12:17:01 +05'30'	BHARAT CHANDRA BAL Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:30:14 +05'30'	AMIT AGGARWAL Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:04:53 +05'30'
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1. SCOPE:

This technical Specification covers the manufacture and supply of SET OF GASKET for WAG-9 (Co-Co),6000H 3-phase,25 kv, 50Hz, AC Locomotive.

2. CLIMATIC AND ENVIRONMENTAL CONDITION:

Maximum atmospheric temperature: +70°C (in Sun) &

: 50°C (in Shade)

Humidity : 100% saturation during rainy season.

Reference site condition :

i) Ambient Temperature : max. : 55°C, min. : 0°C

ii) Humidity : 60%

iii) Altitude : 160 m above mean sea level.

Rain fall : Very heavy in certain areas. The locomotive will be designed in Such a way as to permit in flood water Level of 102 mm above rail level.

Atmosphere during hot weather : Extremely dusty and desert terrain in certain areas

Coastal Area : Locomotive and equipment will be designed to work in Coastal areas in humid and salt laden atmosphere.

Vibration : The equipment, sub-system and their mounting arrangement will be designed to withstand vibrations and shocks encountered in service as specified in corresponding IEC publication unless otherwise prescribed.

3. STANDARD: As per relevant IS/IEC

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Achyut Kumar Digitally signed by Achyut Kumar Date: 2024.07.08 12:17:18 +05'30'	BHARAT CHANDRA BAL Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:30:38 +05'30'	AMIT AGGARWAL Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:05:44 +05'30'
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4. SCOPE OF SUPPLY :

SL. No	Description	Ident. No.	Qty./Loco.	Fig. No.	Matl.
Annexure-1	**Gasket: Non-Metallic.**				
01.	Gasket 38x27x2 (Type-1)	3EHN 410155 P0007	4 Nos.	1	Durlon
02.	ORM (Type-13)	3EHN 424150 P0945	12 Nos.	2	Floor Silicon rubber MFQ.
03.	ORM (Type-14)	3EHN 424150 P1005	6 Nos.	3	Floor Silicon rubber MFQ.
04.	ORM (Type-15)	3EHN 424150 P1205	1 Nos.	4	Floor Silicon rubber MFQ.
05.	ORM (Type-16)	3EHN 424150 P1405	NIL.	5	Floor Silicon rubber MFQ.
06.	Gasket (Type-2)	3EHP 430893 P0001	NIL	6	Durlon-8500
07.	Gasket (Type-3)	3EHP 431033 P0001	1 Nos	17	Rubber Elastomer G55-002
08.	Gasket (Type-4)	3EHP 470207 P0001	NIL	8	Neoprene 70CR/65A
09.	Gasket (Type-5)	3EHP 470207 P0002	NIL	9	Neoprene 70CR/65A
10.	Union Gasket	HBTB 416087 P0001	NIL	10	Frenelit-300
11.	Gasket 2MM(Type-6)	HBTB 416353 P0004	See drg.	11	Neoprene 70CR/65A
12.	Gasket 3MM(Type-7)	HBTB 416353 P0005	See drg.	12	Neoprene 70CR/65A
13.	O-Ring 28x1.5	3EHN 424203 P0300	1 Nos.	18	Flour silicon Rubber.

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Achyut Kumar Digitally signed by Achyut Kumar Date: 2024.07.08 12:18:10 +05'30'	BHARAT CHANDRA BAL Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:31:02 +05'30'	AMIT AGGARWAL Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:06:33 +05'30'
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Annexure-II **Metallic Gaskets.**

14. Disc. Gasket 8.7/14	HBTB 416187 P0213	6 Nos.	11	Steel Zinc plated, ACRYL- NITR-DE BUTADINE RUBBER
15. Gasket (Type-8) 20/13.3x2	NBT 400289 P0024	4 Nos.	12	Touch Pitched anealed electrolytic copper
16. Gasket (Type-9) 33/26.6x2	NBT 400289 P0041	6 Nos.	13	Touch Pitched anealed electrolytic copper
17. Gasket (Type-10) 17.9x14.2x1.5	NBT 401500 P0057	NIL	14	Touch Pitched anealed electrolytic copper
18. Gasket (Type-11) 25x9x21.2x5	NBT 401500 P0064	NIL	15	Touch Pitched anealed electrolytic copper
19. Gasket (Type-12) 28.9/24.3x2	NBT 401500 P0115	2 Nos.	16	Touch Pitched anealed electrolytic copper
20. O-Ring 34x2	3EHP 431622 P0015	NIL	7	10CRM0910
21. Gasket 3MM	3EHP 431231 P0001	4 Nos. (WAP-5 only)	19	Neoprene 70 CR/65A

Tenders can quote for Gaskets in Annexure-I or Annexure-II or both. If they are quoting for both they should separately quote for Annexure-I and Annexure-II.

5. **DRAWINGS:** The following drawings are attached with the specification:
Drg. No: CLW/ES/3/SK-1/0142 TO CLW/ES/3/SK-9/0142

5.1 Technical documents and drawings to be furnished by the supplier as part of the contract.

6. **TEST** : Type and routine test shall be carried out according to the relevant IS/IEC standard.

7. **SUBMISSION OF TENDER QUOTATION :**

7.1 All tender documents including the quotation shall be submitted in triplicate including any correspondence till a contract is finalized.

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Achyut Kumar Digitally signed by Achyut Kumar Date: 2024.07.08 12:20:51 +05'30'	BHARAT CHANDRA BAL Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:31:26 +05'30'	AMIT AGGARWAL Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:07:22 +05'30'
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7.2 The tenderer shall give sufficient information to prove that his factory has adequate facilities and capacity to manufacture the above materials to meet fully the technical requirements of the specification, quality of materials and workmanship.

7.3 Quotation shall not be considered complete unless all information is furnished and are therefore liable to be rejected.

7.4 Detailed drawings of the above materials should be submitted for approval of purchaser.

7.5 Past report (if any)

8. TECHNICAL DOCUMENTS TO BE SUPPLIED BY THE SUPPLIER:

i) Type test reports : 10 copies.

ii) Routine test report along with each set : 4 copies.

iii) Detailed drawings : 6 copies.

9. QUALITY ASSURANCE:

Quality assurance should be as per ISO 9000.

Note: i) ~~Type No. of each item is required to be engraved.~~ MARKED WITH INDELIBLE INK ON ITEM/LABELLED - ON THE PACKING OF ITEMS (i.e ITEM - WHERE MARKING IS NOT POSSIBLE)

~~ii) Name & year of manufacture of the firm also to be engraved.~~

(ii) NAME OF THE MANUFACTURER & MONTH AND YEAR OF MANUFACTURING SHOULD BE ENGRAVED/MARKED WITH INDELIBLE INK ON THE ITEMS/*

10. PACKING OF MATERIALS :- Packing of Rubber items to be done in **"Hard Packing Box i.e.-Wooded Box with thermocol"**

* LABELLED ON THE PACKING OF ITEMS (i.e, ITEM WHERE MARKING IS NOT POSSIBLE)

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Achyut Kumar — Digitally signed by Achyut Kumar Date: 2024.07.08 12:21:06 +05'30'	BHARAT CHANDRA BAL — Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:32:05 +05'30'	AMIT AGGARWAL — Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:08:25 +05'30'
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Fig.1
Material: DURLON
(Free of Asbestos)

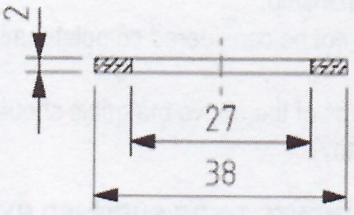


Fig.2
Material: Fluor-silicon rubber MFQ
Hardness: 60±5 Shore (A)
COLOUR: BLUE

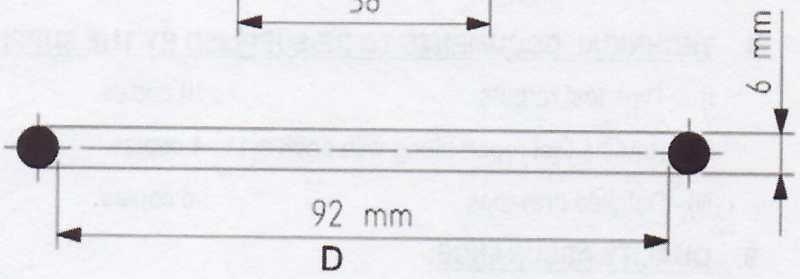


Fig.3
Material: Fluor-silicon rubber MFQ
Hardness: 60±5 Shore (A)
COLOUR: BLUE

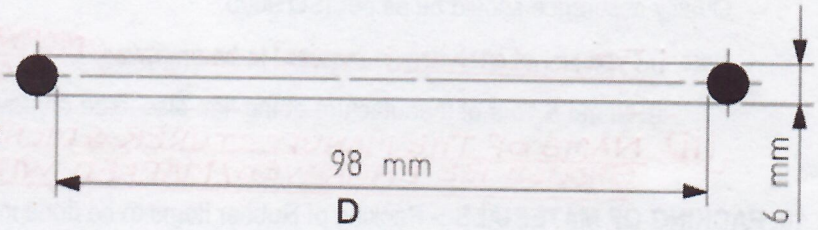
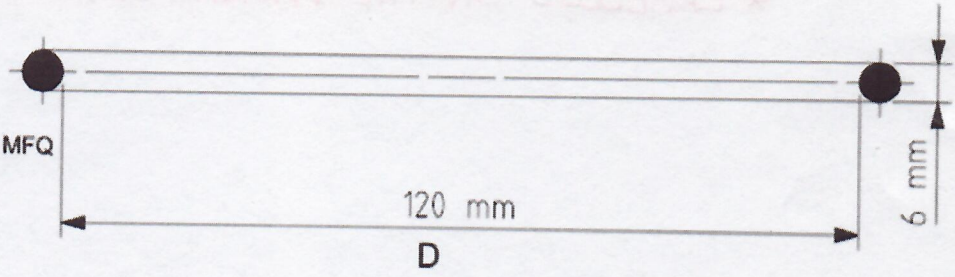


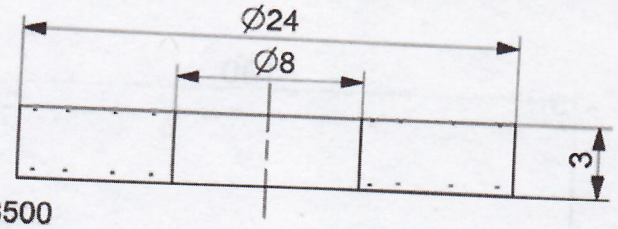
Fig.4
Material: Fluor-silicon rubber MFQ
Hardness: 60±5 Shore (A)
COLOUR: BLUE



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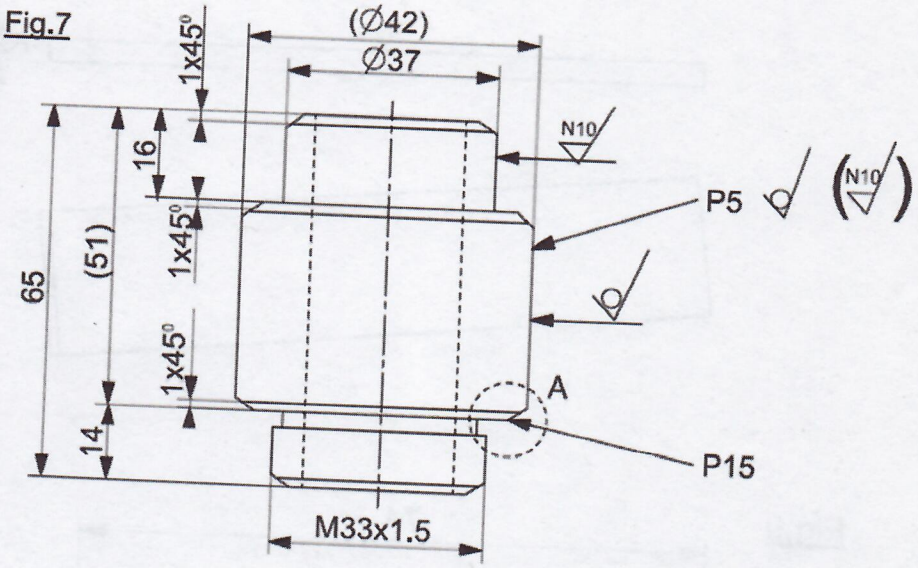
143

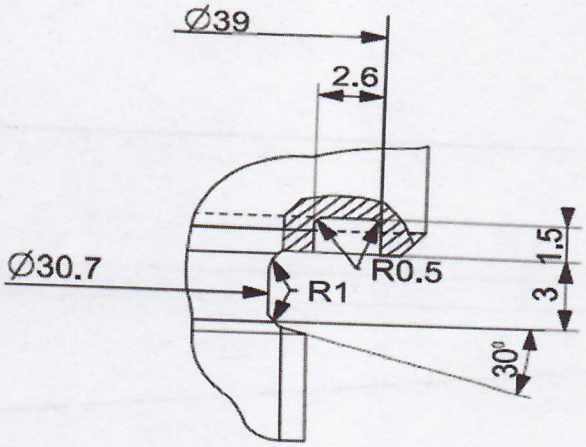
Fig.6



(Material: DURLON 8500

Fig.7





Detail A (M5:1)

Material: 10 CRMO910

DIN 17175
ASTM A213 Grade T22

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Achyut Kumar — Digitally signed by Achyut Kumar Date: 2024.07.08 12:21:37 +05'30'	BHARAT CHANDRA BAL — Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:32:51 +05'30'	AMIT AGGARWAL — Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:11:28 +05'30'
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Fig.8

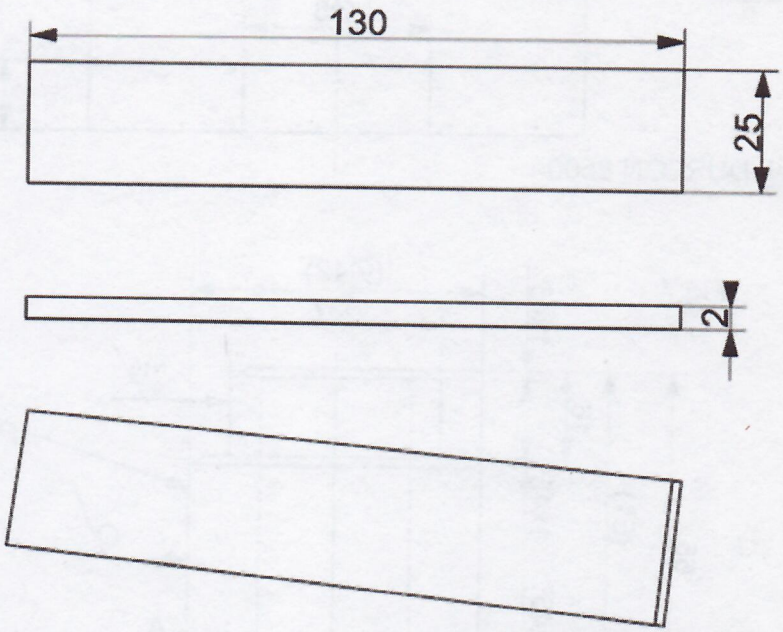
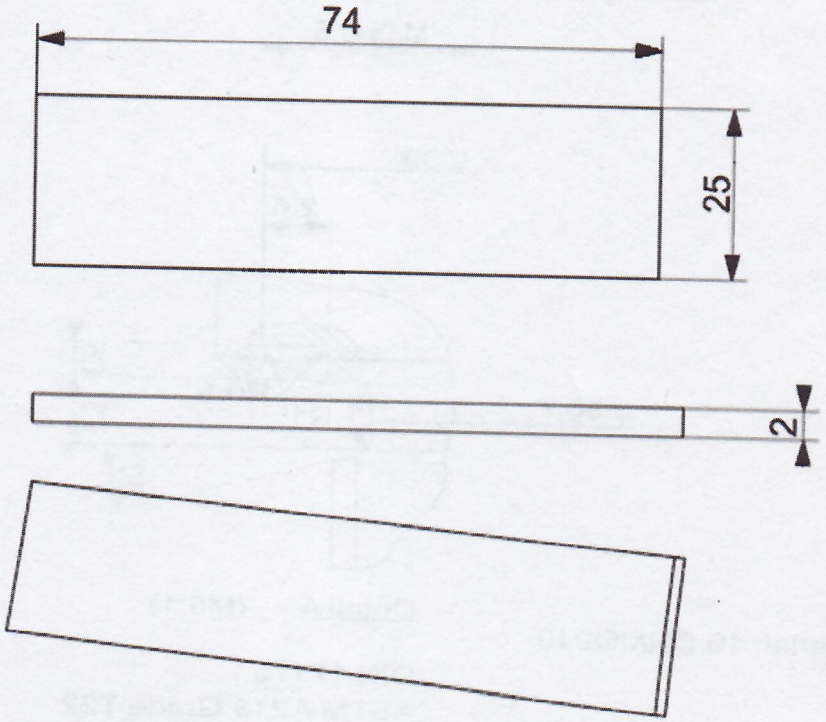


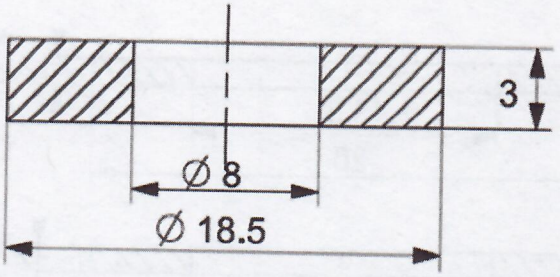
Fig.9



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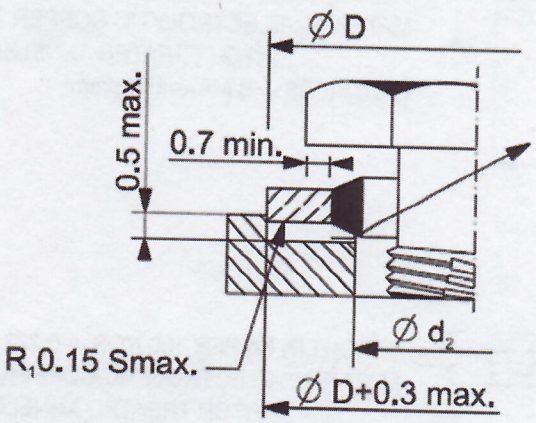
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Achyut Kumar Digitally signed by Achyut Kumar Date: 2024.07.08 12:21:54 +05'30'	BHARAT CHANDRA BAL Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:33:20 +05'30'	AMIT AGGARWAL Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:12:25 +05'30'
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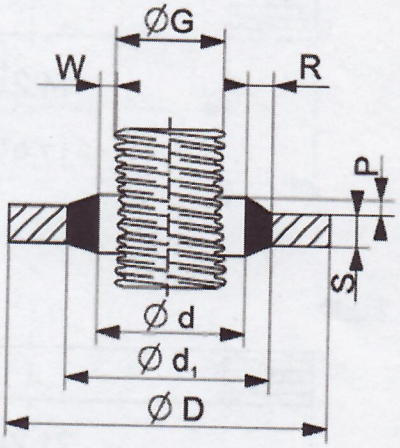
Fig.10



Material: FRENELIT 300

Fig. 11





Dia Thread: ØG=8

ØD=14 $^{+0.13}_{-0.00}$

Ød=8.7±0.1

Ød$_1$=10.4±0.1

Ød$_2$=8.9

S=1±0.1

R=0.85±0.1

P=0.3 $^{+0.25}_{-0.00}$

Radial Play: W=0.35±0.05

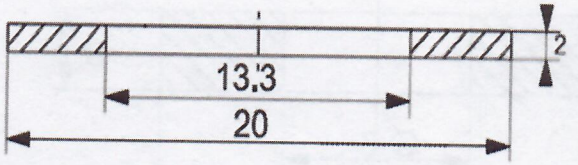
Brusting Pressure : 1510 bar(min.)

Material: Steel zinc plated,
Acryl-Nitride-Butadine Rubber

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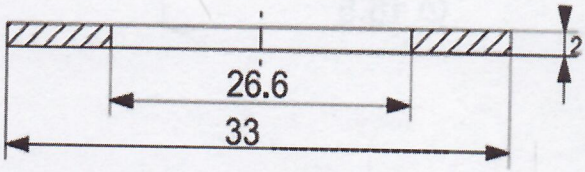
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Fig-12



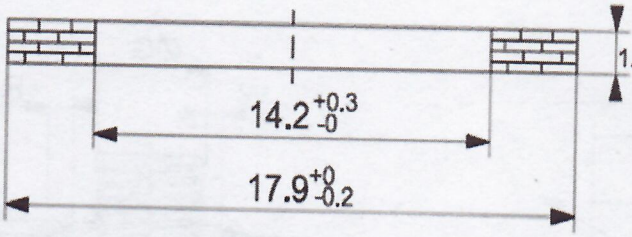
WEIGHT IN Kg PER 100 NOS = 0.310
MATERIAL:-ELECTROLYTIC COPPER TOUGH PITCH TREATED ANNELED.
HARDNESS:-HB MAX- 45Kg/mm²

Fig-13



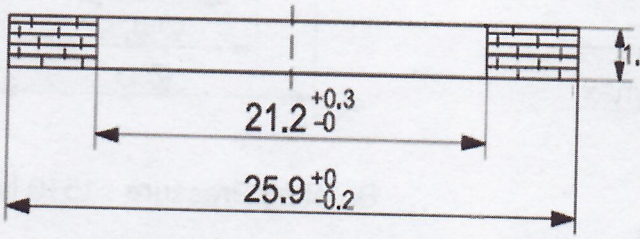
WEIGHT IN Kg PER 100 NOS = 0.530
MATERIAL:-ELECTROLYTIC COPPER TOUGH PITCH TREATED ANNELED.
HARDNESS:-HB MAX- 45Kg/mm²

Fig-14



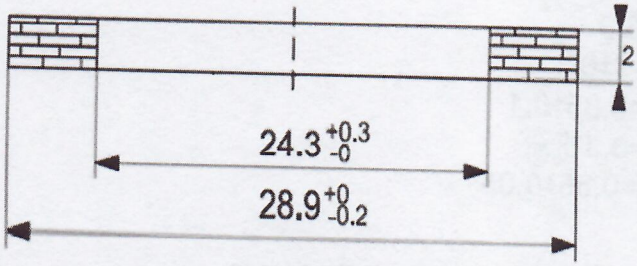
WEIGHT IN Kg PER 100 NOS = 0.117
MATERIAL:-ELECTROLYTIC COPPER TOUGH PITCH TREATED ANNELED.
HARDNESS:-HB MAX- 45Kg/mm²

Fig-15



WEIGHT IN Kg PER 100 NOS = 0.222
MATERIAL:-ELECTROLYTIC COPPER TOUGH PITCH TREATED ANNELED.
HARDNESS:-HB MAX- 45Kg/mm²

Fig-16

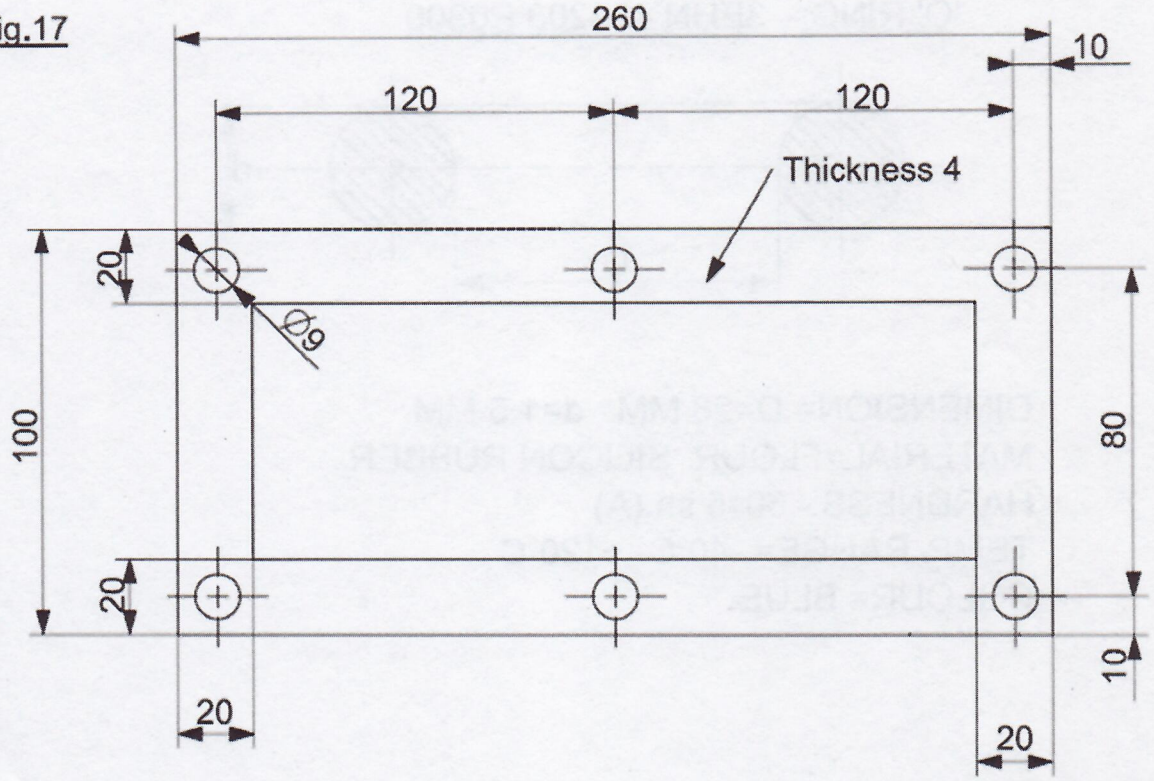


WEIGHT IN Kg PER 100 NOS = 0.326
MATERIAL:-ELECTROLYTIC COPPER TOUGH PITCH TREATED ANNELED.
HARDNESS:-HB MAX- 45Kg/mm²

DRG NO-CLW/ES/3/SK-5/0142

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Achyut Kumar — Digitally signed by Achyut Kumar Date: 2024.07.08 12:22:33 +05'30'	BHARAT CHANDRA BAL — Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:34:38 +05'30'	AMIT AGGARWAL — Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:14:09 +05'30'
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Fig.17



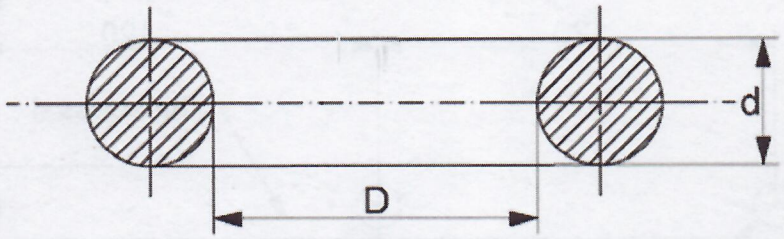
Material: Rubber Elastomer G55-002

DRG NO-CLW/ES/3/SK-4/0142

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SSE/DRG	AEE/D/Conv.	DY. CEE/D-III

FIG.18

'O' RING:- 3EHN 424203 P0300



DIMENSION= D=28 MM, d=1.5 MM
MATERIAL=FLOUR SILICON RUBBER
HARDNESS:- 60±5 sh (A)
TEMP. RANGE= -40°C- +120°C
COLOUR= BLUE.

DRG NO-CLW/ES/3/SK-6/0142

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Achyut Kumar Digitally signed by Achyut Kumar Date: 2024.07.08 12:23:05 +05'30'	BHARAT CHANDRA BAL Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:35:51 +05'30'	AMIT AGGARWAL Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:16:21 +05'30'
SSE/DRG	AEE/D/Conv.	DY. CEE/D-III

ITEM:- GASKET
IDEN. NO:-3EHP 431231P0001

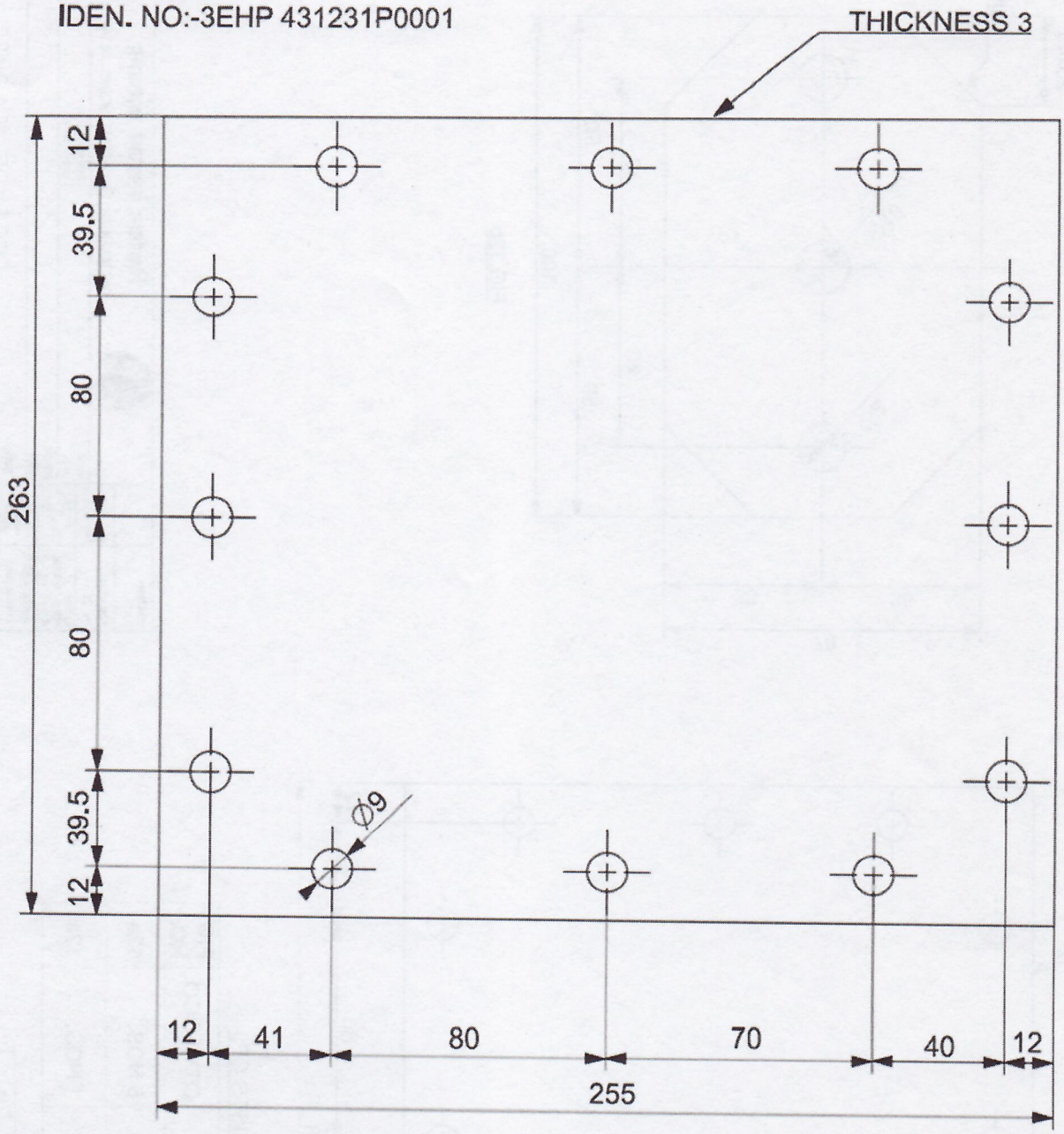


FIG: 19

MATRIAL-NEOPRENE

DRG NO-CLW/ES/3/SK-9/0142

PREPARED BY	CHECKED BY	APPROVED BY
Achyut Kumar — Digitally signed by Achyut Kumar Date: 2024.07.08 12:23:22 +05'30'	BHARAT CHANDRA BAL — Digitally signed by BHARAT CHANDRA BAL Date: 2024.07.08 12:36:20 +05'30'	AMIT AGGARWAL — Digitally signed by AMIT AGGARWAL Date: 2024.07.08 13:19:12 +05'30'
SSE/DRG	AEE/D/Conv.	DY. CEE/D-III

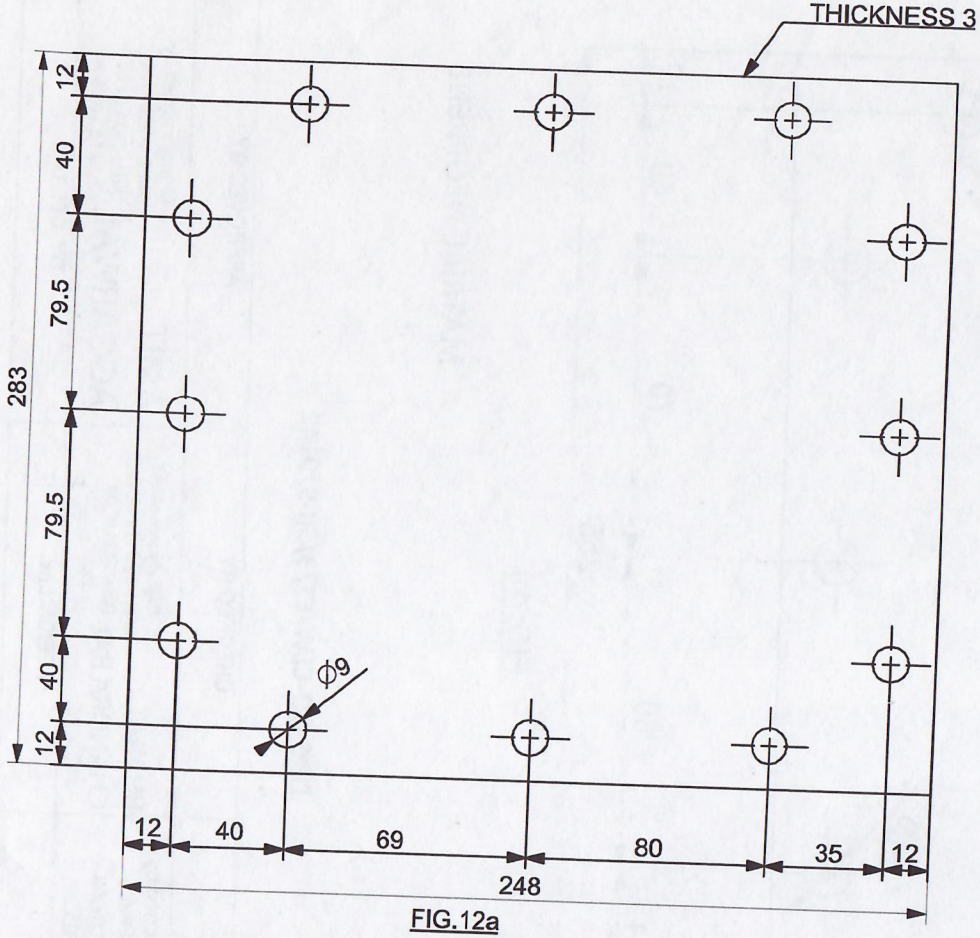


FIG.12a

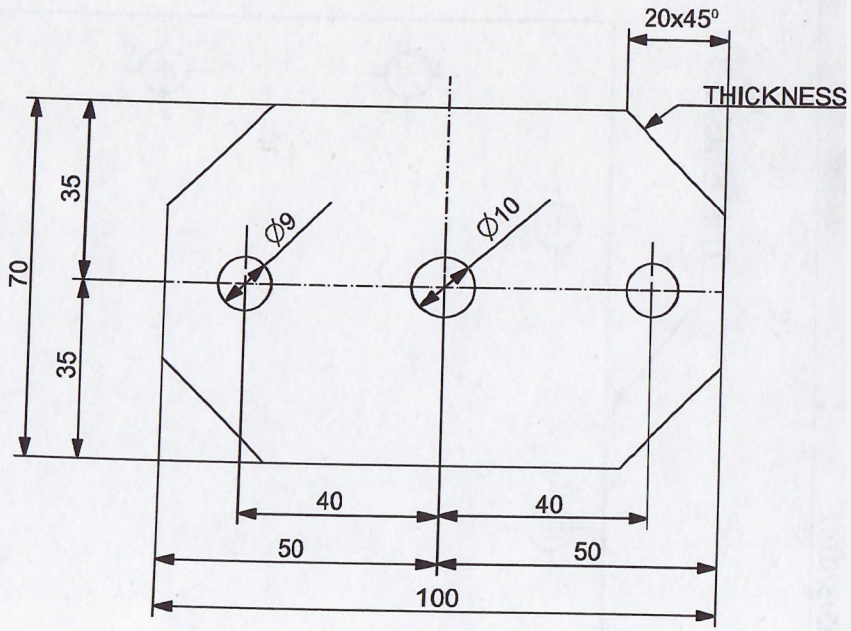


FIG.12b

GASKET 3 MM(HBTB 416353 P0005) CONSISTS OF:-

SL. NO.	ITEM	IDEN. NO.	QTY/LOCO.	FIG. NO.
1.	GASKET 3 MM TYPE:-7A	3EHP431592P0001	6 NOS.	12a
2.	GASKET 3 MM TYPE:-7B	3EHP431244P0001	1 NOS.	12b

धातु–वेल्डन चिन्ह
भा. मा. : 813 / अ. मा. सं. :2553
WELDING SYMBOLS TO IS:813 / ISO:2553

सतह – रूक्षता का मान
भा. मा. 3073 / अ. मा. सं. 1302
SURFACE ROUGHNESS VALUE TO IS:3073 / ISO:1302

अनिर्दिष्ट सह्य – सीमा भा. मा. : 2102 / अ. मा. सं. : 2768
UNSPECIFIED TOLEARANCE TO IS : 2102 / ISO : 2768

पदांक GRADE NO.	सं1 N1	सं2 N2	सं3 N3	सं4 N4	सं5 N5	सं6 N6	सं7 N7	सं8 N8	सं9 N9	सं10 N10	सं11 N11	सं12 N12
Rz	0.16-0.3	0.5-0.7	0.9-1.1	1.5-2.0	2.5-3.0	5.0-6.3	9.0-12	16-25	30-40	50-63	75-100	160-250
Ra μm	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50
चिन्ह SYMBOL												

TOL. CLS.

परिवर्तन संख्या ALT. NO.	प्राधिकार AUTHY	वर्णन DESCRIPTION	दिनांकित आद्याक्षर DATED INITIAL

अभिकल्पित DGN		
जाँचा र.अ.अ. CHD SSE	Achyut Kumar	
समीक्षित र.वि.अ. / र.वि.अ. REVIEWED AEE / SEE		
अनुमोदित उ.मु.वि.अ. APPROVED DYCEE	AMIT AGGA RWAL	
दिनांक DATE	18/11/88	
रेखिक अनुपात SCALE	1:1	
संदर्भ / REF.		
ALT:-		

चित्तरंजन रेलइंजन कारखाना
CHITTARANJAN LOCOMOTIVE WORKS, INDIA

पदार्थ MATL	प्रति भार कि. ग्रा. WT. EACH IN KG
विशिष्टि SPECN	
वर्णन DESCRIPTION	SET OF GASKET
आरेखण संख्या DRAWING NO.	CLW/ES/3/SK-7/0142
परिवर्तन संख्या ALTERATION NO.	पृष्ठ SHEET 1 OF 1
	A3

REDRAWN BY C

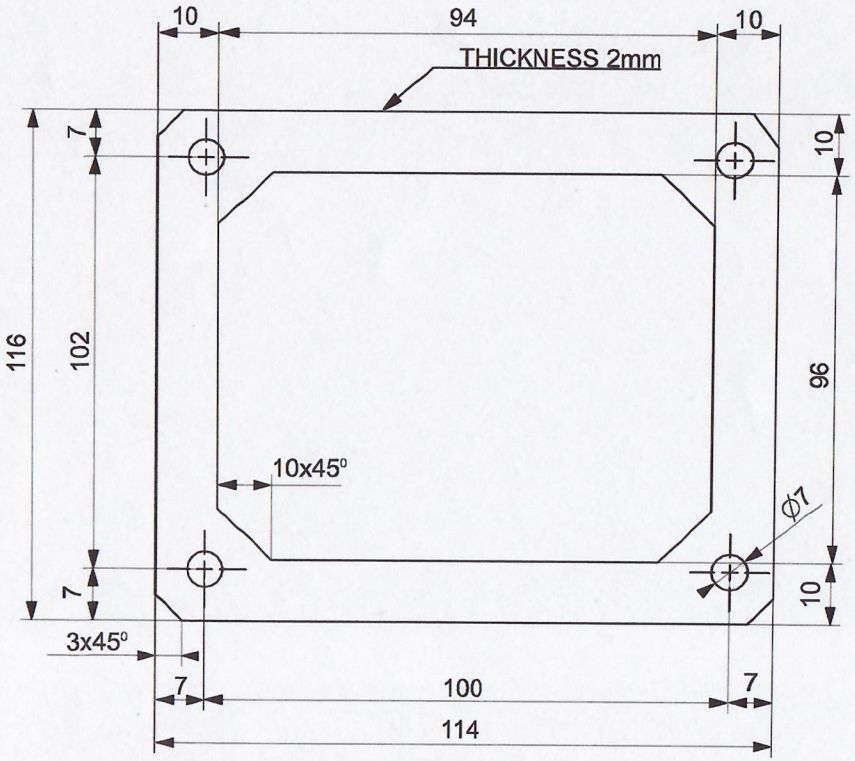


FIG.11(a)

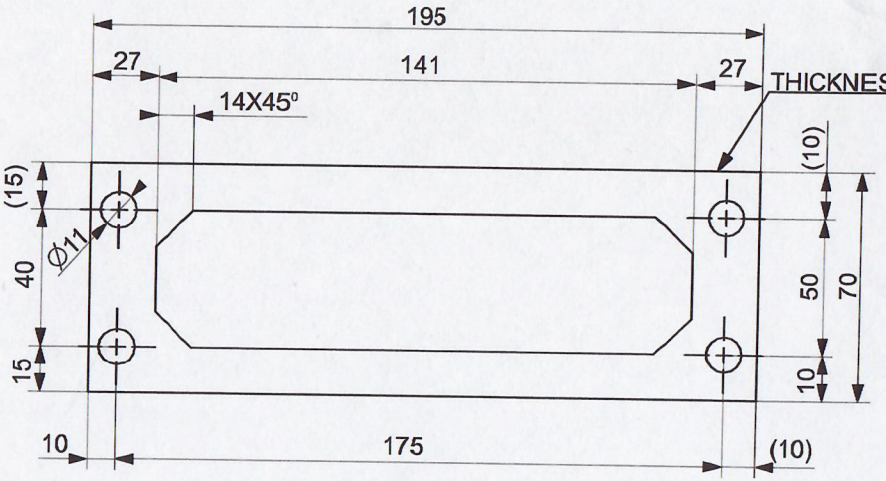


FIG.11(b)

GASKET 2 MM(HBTB 416353 P0004) CONSISTS OF:-

SL. NO.	ITEM	IDEN. NO.	QTY/LOCO.	FIG. NO.
1.	GASKET 2 MM TYPE:-6A	3EHP431279P0001	6 NOS.	11a
2.	GASKET 2 MM TYPE:-6B	3EHP431230P0001	6 NOS.	11b

धातु–वेल्डन चिन्ह भा. मा. : 813 / अ. मा. सं. :2553 WELDING SYMBOLS TO IS:813 / ISO:2553	अनिर्दिष्ट सख – सीमा भा. मा. : 2102 / अ. मा. सं. : 2768 UNSPECIFIED TOLEARANCE TO IS : 2102 / ISO : 2768											TOL. CLS.	
	पदांक GRADE NO.	सं1 N1	सं2 N2	सं3 N3	सं4 N4	सं5 N5	सं6 N6	सं7 N7	सं8 N8	सं9 N9	सं10 N10	सं11 N11	सं12 N12
सतह – रुक्षता का मान भा. मा. 3073 / अ. सं. मा. 1302 SURFACE ROUGHNESS VALUE TO IS:3073 / ISO:1302	Rz	0.16-0.3	0.5-0.7	0.9-1.1	1.5-2.0	2.5-3.8	5.0-6.3	9.0-12	16-25	30-40	50-63	75-100	160-250
	Ra μm	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50
	चिन्ह SYMBOL												

परिवर्तन संख्या ALT. NO.	प्राधिकार AUTHY	वर्णन DESCRIPTION	दिनांकित आद्याक्षर DATED INITIAL

अभिकल्पित DGN		चित्तरंजन रेलइंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS, INDIA
जाँचा व.अ.अ. CHD SSE	Achyut Kumar	
समीक्षित व.डि.अ. / व.वि.अ. REVIEWED AEE / SEE	BHARAT CHAND RA BAL	पदार्थ MATL / प्रति भार कि. ग्रा. WT. EACH IN KG
अनुमोदित उ.मु.वि.अ. APPROVED DYEE	AMIT AGGA RWAL	विशिष्ट SPECN
दिनांक DATE	18/11/98	वर्णन DESCRIPTION: SET OF GASKET
पैमाना अनुपात SCALE	1:1	आरेखण संख्या DRAWING NO.: CLW/ES/3/SK-8/0142
संदर्भ / REF.	ALT.-	परिवर्तन संख्या ALTERATION NO. / पर्ण SHEET 1 OF 1 / A3

REDRAWN