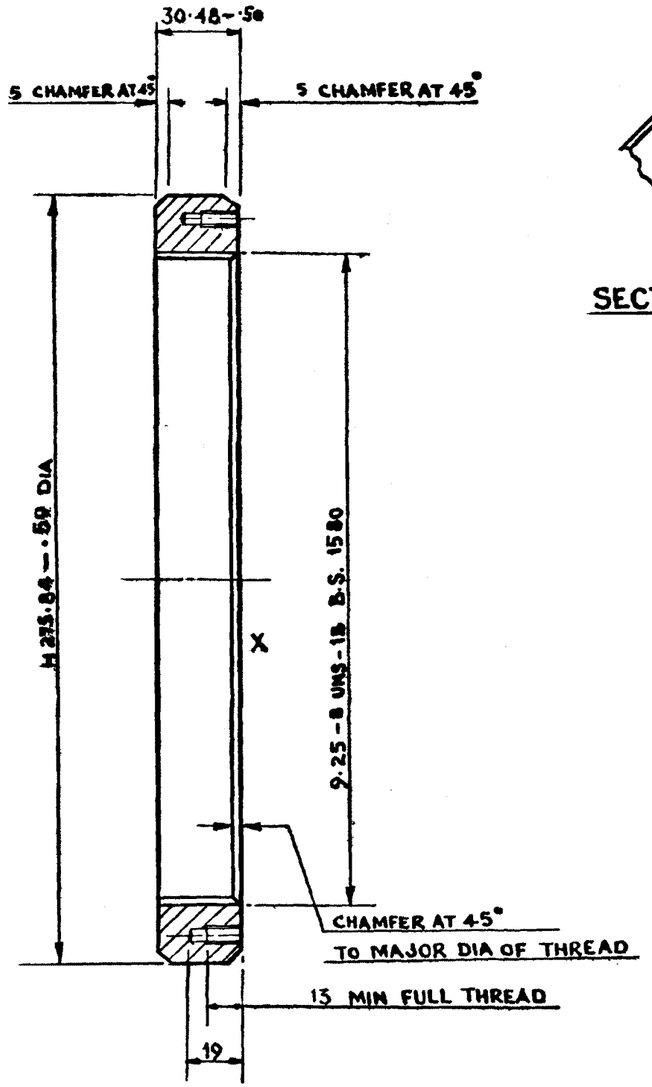
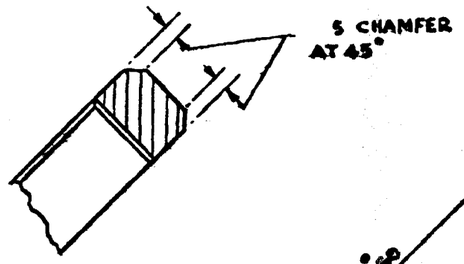
DRG. NO ARM 1172 B4

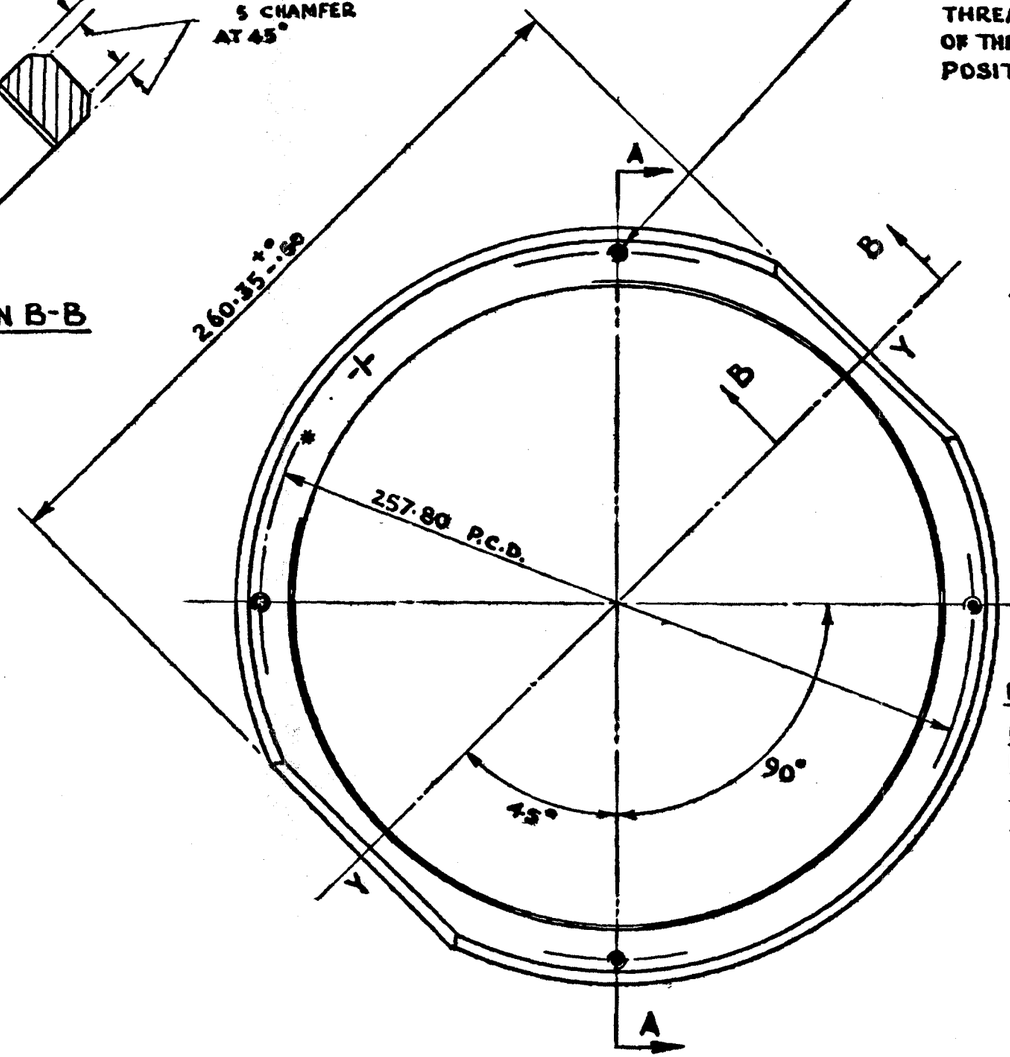
FOR EXPLANATION OF DIMENSIONING ETC., SEE IS: 696



SECTION A-A



SECTION B-B



4 HOLES SPACED AS SHOWN., TAP ¼ - 20 UNC - 1B B.S. 1580 THREADS TO BE WITHIN ·127 OF THEIR TRUE GEOMETRICAL POSITION RELATIVE TO THE H 275·84 DIA

TO BE STAMPED IN 6 TYPE

* MANUFACTURER'S INITIALS
-|- DATE OF MANUFACTURE, MONTH & YEAR (E.G. 11/60)

Issued after Khamaria

उत्पादन तथा निरीक्षण के योग्य प्रमाणित
Certified Suitable to quick Meaufacture
Inspected
दिनांक 28/6/12 Date
हस्ताक्षर Signature
पद Rank
अंक S No
वायु वैज्ञानिक गुणता महानिदेशालय
Directorate General of Aeronautical Quality Assurance.

FINISHES

MACHINE ALL OVER.
PHOSPHATE TREATED TO AN APPROVED PROCESS TO SPEC. IS: 3618 CLASS B
COAT ALL SURFACES EXCEPT SCREW THREADS WITH VARNISH, STOVING AMMUNITION TO SPEC. IND/ME/674 (b) METRIC (2 COATS)
COAT THREADS WITH LUTING (THIN) MK. 8 (APC-10) TO SPEC JSS 1-65-09

CONCENTRICITY

THE H 275·84 DIA MUST BE CONCENTRIC WITH THE 9·25 – 8 UNS – 1B BS:1580 THREAD WITHIN ·25

SQUARENESS

THE L 9·25 – 8 UNS – 1B B:S 1580 THREAD MUST BE SQ WITH FACE 'X' WITHIN ·05 MEASURED AT EXTREME DIA.

R.NO	DATE	ZONE	BRIEF RECORD	INITIAL
3	24-11-79	–	AMENDED VIDE AL. 367	
2	19-1-73	–	RETRACED & AMENDED VIDE AL NO 186	RAW
1	11-9-63	–	ORIGINAL	

	DATE	INITIAL
DGN		
DRN		
CHD		
TCD		
COMP		

SCALE 1:2

TOL. TOL. EXCEPT WHERE OTHERWISE STATED ±·25

DIMNS. IN mm OR AS STATED

MATL. SPEC. STEEL IS:1570 C 20

I.A.F. SEC. REF. NO

ASSY. DRG. NO ARM 1172 E2 / ARM 1302 D2

DRG. SCHD. NO ARM 1172 / ARM 1302

TITLE

RING NUT

D.T.D. & P. (AIR)
MINISTRY OF DEFENCE

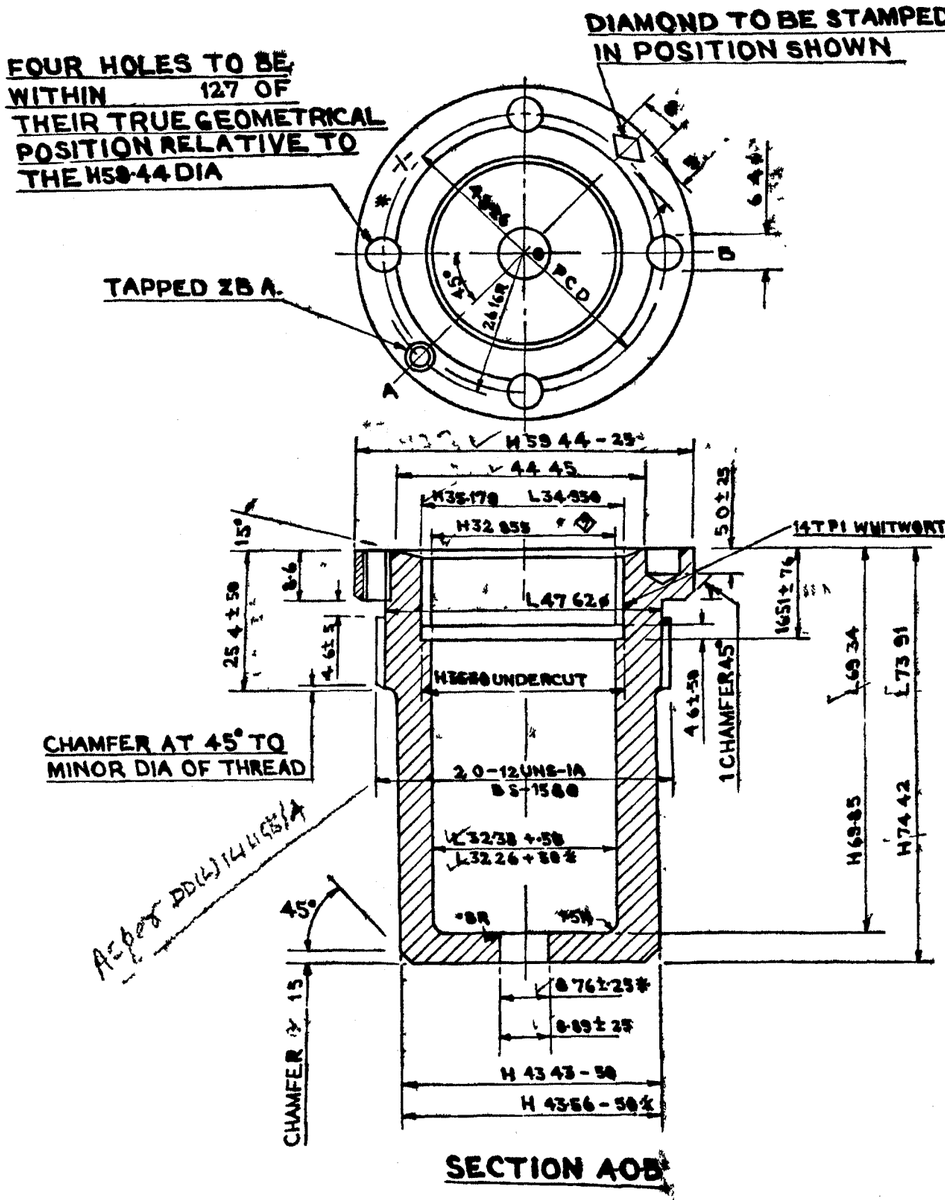
APPROVED R.B. Varshney

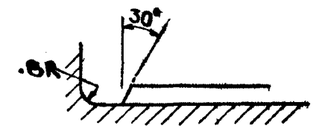
DRG. NO.

ARM 1172 B4

DRAWING NO. ARM1172B14

FOR EXPLANATION OF DIMENSIONING ETC SEE I.S 696





DETAILS OF RECESS AT REAR OF THREADS

NOTES :-

THE FOLLOWING DIAMETERS MUST BE CONCENTRIC WITHIN ·25
(a) EXTERNAL & INTERNAL THREADS (b) EXTERNAL THREADS & EXTERNAL SURFACES (c) INTERNAL THREADS & INTERNAL SURFACES
◈ INDICATES AN ADDITIONAL ALLOWANCE FOR FLATTENING ON CREST OF THREADS AS ·07 mm ON DIA.
* DIMENSIONS AFTER VARNISHING

FINISH :-

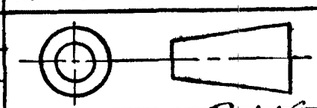
MACHINE ALL OVER
TO BE PHOSPHATE TREATED TO IS:3618 Gde B EXTERNAL & INTERNAL SURFACES TO BE COATED WITH VARNISH & STOVING AMMUNITION TO SPEC IND/ME/674 (b) METRIC (2 COATS). THREADS TO BE FREE FROM VARNISH & COAT WITH LUTING THINNER (APC-10) TO SPEC JSS 1-65-09
TO BE STAMPED ON FLANGE IN 3 TYPE
* MANUFACTURER'S INITIALS
-/- DATE OF MANUFACTURE, MONTH & YEAR (Eg. 11/60)

R.NO	DATE	ZONE	BRIEF RECORD	INITIAL
3	24-11-75	-	AMENDED VIDE AL. 367	
2	19 1 73	-	RETRACED & AMENDED VIDE AL NO 186	RBV
1	11-9-63	-	ORIGINAL ISSUE	

	DATE	INITIAL	DIMENSIONS ARE IN MM
DGN.		-	MATL. SPEC. STEEL IS: 1570 C 20
DRN	11-9-63	G.LAL	
CHD		P N C	IAF SEC REF NO.
TCD		K.	ASSY DRG No ARM 1172 E 21 / ARM 1362 DE
COMP			DRG SCHD. NO ARM 1173 / ARM 1362
SCALE - 1 1			TITLE - DETONATOR HOLDER

TOL. TOLERANCE EXCEPT WHERE OTHERWISE STATED ± ·13

D.T.D.&P.(AIR)
MINISTRY OF DEFENCE



APPROVED

DRAWING NO. ARM1172B14

4	3	2	1

DRG. NO. ARM 1172 A21

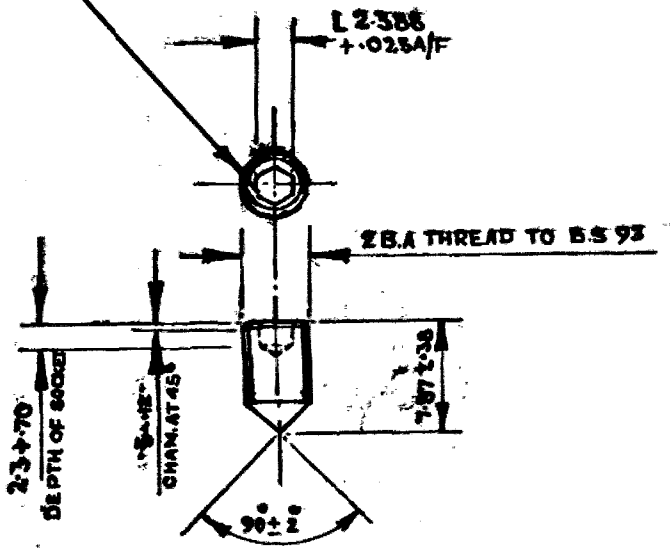
FOR EXPLANATION OF DIMENSIONING ETC. SEE BS 308

FOR ALTERNATE DESIGN SEE ARM 1172 A31

D

THE MINIMUM SIZE HEXAGON SOCKET MUST BE OF REGULAR FORM

C



B

FINISH: CADMIUM PLATED TO IS:1572 Gde A, TYPE 2

NOTE:- AFTER HEAT TREATMENT THE MATERIAL MUST GIVE THE FOLLOWING MINIMUM PROPERTIES:-
U.T.S. – 110 KG/mm²
ELONGATION – 16%
IZOD – 4·84 Kgm.

A

R.NO	DATE	ZONE	BRIEF RECORD	INITIAL
3	24-11-79	–	AMENDED VIDE AL 367	
2	19-1-73	–	RETRACED & AMENDED VIDE AL. NO. 186	RW
1	11/9/63	–	ORIGINAL ISSUE	

R.NO.	DATE	ZONE	BRIEF RECORD	INITIAL

	DATE	INITIAL
DGN		
DRN		
CHD		
TCD		MJH
COMP		

DIMNS. IN MM.

MATL. SPEC. STEEL IS: 1570-40 Ni 2 Cr 1 Mo 28

I.A.F. SEC. REF. NO.

ASSY. DRG. NO. ARM 1172 E1 / ARM 1302 D1

DRG. SCHD. NO. ARM 1172 / ARM 1302

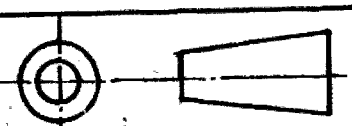
SCALE:- 2:1

TOL:- TOL. EXCEPT WHERE OTHERWISE STATED ± ·13

TITLE:-

LOCKING SCREW

D.T.D.&P.(AIR)
MINISTRY OF DEFENCE



APPROVED R.S. Thorn

DRG. NO. ARM 1172 A21

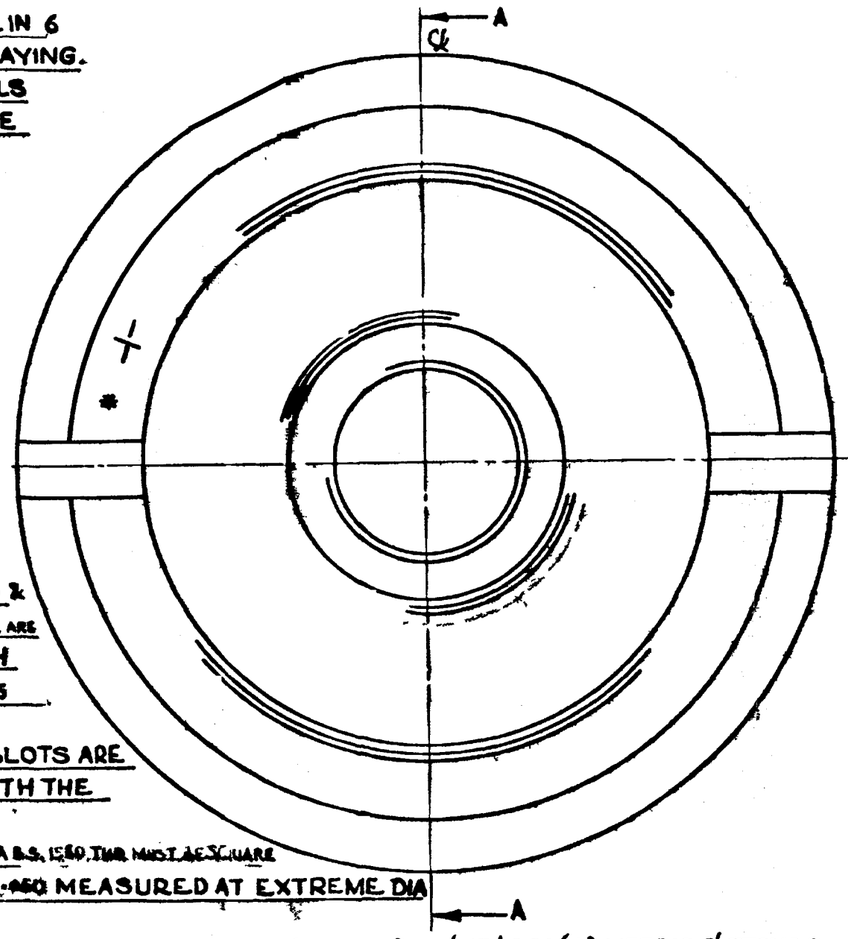
8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

DRAWING NO.
ARM 1172 B5

FOR EXPLANATION OF DIMENSIONING ETC. SEE IS: 696

TO BE STAMPED ON FLANGE IN 6 TYPE BEFORE METAL SPRAYING.
*MANUFACTURER'S INITIALS
-/-DATE OF MANUFACTURE
(MONTH & YEAR ie. 11/60)

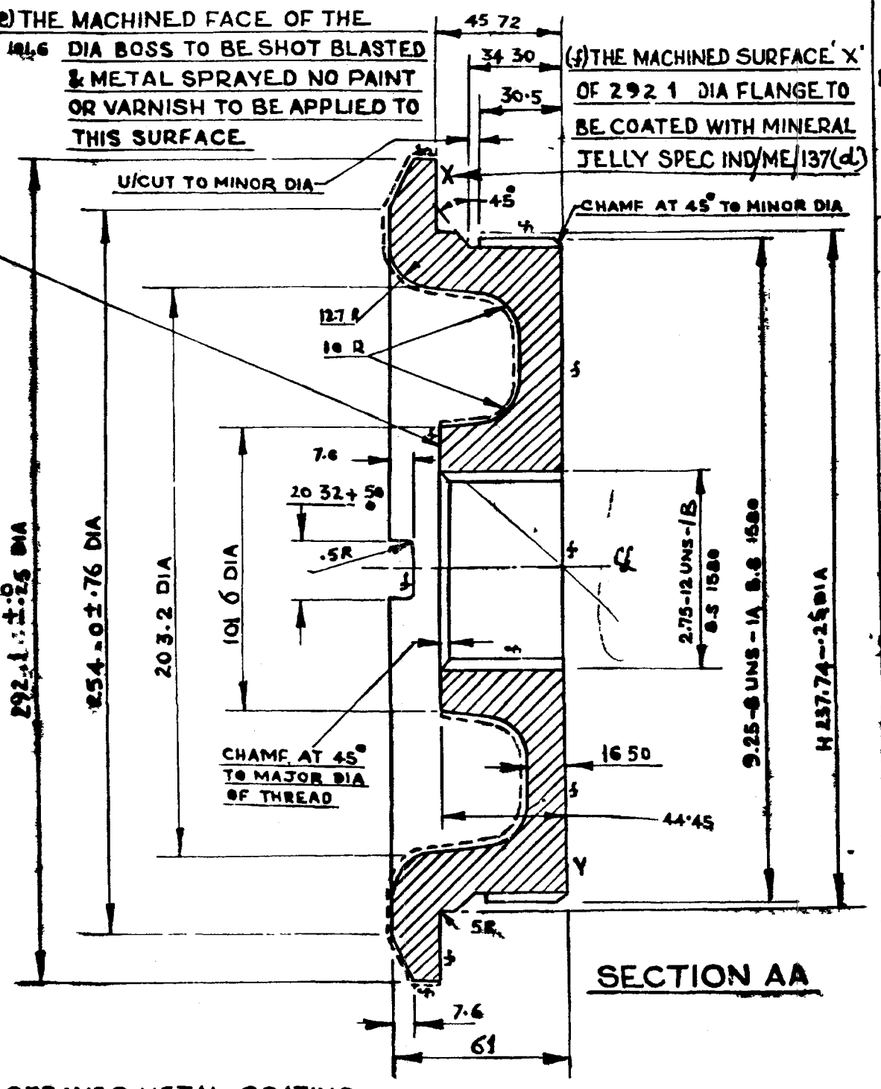
MATL:- ARM-94



ECCENTRICITY
THE 9·25-8 UNS-1A B.S. 1580 THD & 2·75-12 UNS-1B B.S. 1580 THD. ARE TO BE CONCENTRIC WITH THE Ø 232·74 DIA. WITHIN ·25
SYMMETRY
THE TWO 20·32 WIDE SLOTS ARE TO BE SYMMETRICAL WITH THE 292·1 DIA WITHIN ·38
SQUARENESS: THE 9·25-8 UNS-1A B.S. 1580 THD MUST BE SQUARE WITH FACE X WITHIN ·050 MEASURED AT EXTREME DIA
FINISH
THE SURFACE 'Y' TO BE COATED WITH VARNISH (2 COATS) IND/ME/674(b) METRIC & STOVED
(a) THE SURFACES INDICATED THUS - - - ARE TO BE SHOT BLASTED FOLLOWED IMMEDIATELY BY A SPRAYED METAL COATING.
(b) ALL SCREW THREADS ARE TO BE PROTECTED DURING SHOT BLASTING AND METAL SPRAYING
(c) APPLY ONE COAT OF PAINT, FINISHING AMMN. (AIR DRYING) TO SPEC IS: 168 TO THESE SURFACES.
(d) SHOT BLASTING & METAL SPRAYING TO BE IN ACCORDANCE WITH SPEC D.T.D&P(AIR)/32/ARM FOR NOTES (e) AND (f) SEE ABOVE
FINISHING COAT TO BE DEEP BRONZE GREEN TINT No 224, TINT TO CONFORM TO IS:5 OF 1961.
THREADS TO BE FREE FROM PAINT & VARNISH & COATED WITH LUTING (THIN) MK.8 (APC-10) TO SPEC. JSS 1-65-09

(e) THE MACHINED FACE OF THE 101·6 DIA BOSS TO BE SHOT BLASTED & METAL SPRAYED NO PAINT OR VARNISH TO BE APPLIED TO THIS SURFACE

(f) THE MACHINED SURFACE 'X' OF 292·1 DIA FLANGE TO BE COATED WITH MINERAL JELLY SPEC IND/ME/137(d)



R NO	DATE	ZONE	BRIEF RECORD	INITIAL
4	25-4-89	—	AMENDED VIDE AL. No 620	
3	24-11-75	—	AMENDED VIDE AL 367	
2	19·1·73	—	RETRACED & AMENDED VIDE AL No 186	
1	11·9·63	—	ORIGINAL	

	DATE	INITIAL
DGN		
DRN		
CHD		
TCD		MJH
COMP		

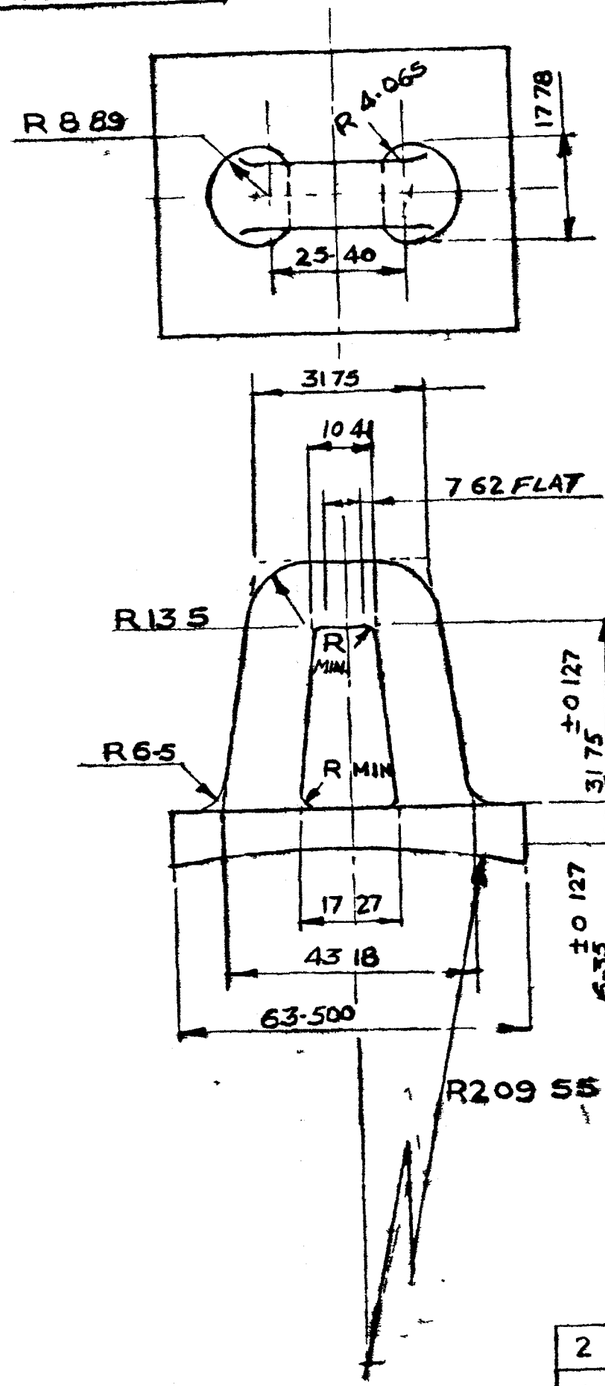
DIMNS IN mm OR AS STATED
MATL SPEC AS STATED
I A F SEC REF NO
ASSY. DRG No ARM 1172 E2 / ARM 1302 D2
DRG SCHD NO ARM 1172 / ARM 1302
SCALE:- 1·2
TOL:- TOL EXCEPT WHERE OTHERWISE STATED {MACH DIMN ±·5 / UNMACH DIMN ±1} DRAW ANGLE ±1°
TITLE:- FILLING PLUG

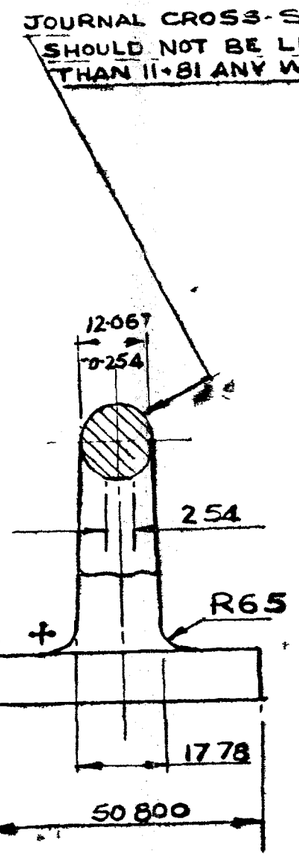
D.T.D.& P.(AIR)
MINISTRY OF DEFENCE

APPROVED R.B. Chaney
DRAWING NO.
ARM 1172 B5

DRG. NO ARM 1302 B5

DRAWING CONVENTION ARE BASED ON IS.696





NOTES

1. ITEM TO BE FORGED.
2. LUGS TO BE HARDENED & TEMPERED TO GIVE A HARDNESS OF 180 TO 250 VPN
3. CRACK DETECTION – ALL LUGS SHALL BE FINALLY INSPECTED FOR CRACKS WITH AN APPROVED CRACK DETECTION PROCESS
4. LOAD TEST – (a) 2% LUGS SHALL BE LOADED TO DESTRUCTION AND THAT THE MINIMUM FAILING LOAD SHALL BE NOT LESS THEN 6 2 TONNES APPLIED CENTRAL TO THE JOURNAL AND SPREAD OVER 10 41 OF ITS LENGTH IN A DIRECTION PERPENDICULAR TO ITS AXIS AFTER SUITABLY WELDING THE LUG ON TO A BOMB BODY.

MARKING TO BE STAMPED ON

+ CONTRACTOR'S INITIAL OR RECOGNISED TRADE MARK

– DATE OF MANUFACTURE, MONTH AND YEAR (e g. 11/71)

RNO	DATE	ZONE	BRIEF RECORD	INITIAL
2	27/4/87	-	RETRACED	
1	6 1-76	-	AMENDED VIDE AL NO 263	
			SEALED	

	DATE	INITIAL	
DGN	—	—	DIMN ARE IN mm
DRN	-	—	MATL SPEC STEEL IS 1570-20 Mn 2
CHD		—	SEC REF NO
TCD	16/4/87	N K Matts	GAUGE SCHD NO
COMP	30/4/87		DRG LIST NO ARM 1302
SCALE 1:1			TITLE - LUG SUSPENSION NO 318
TOL- TOL EXCEPT WHERE OTHERWISE STATED ±0 25			

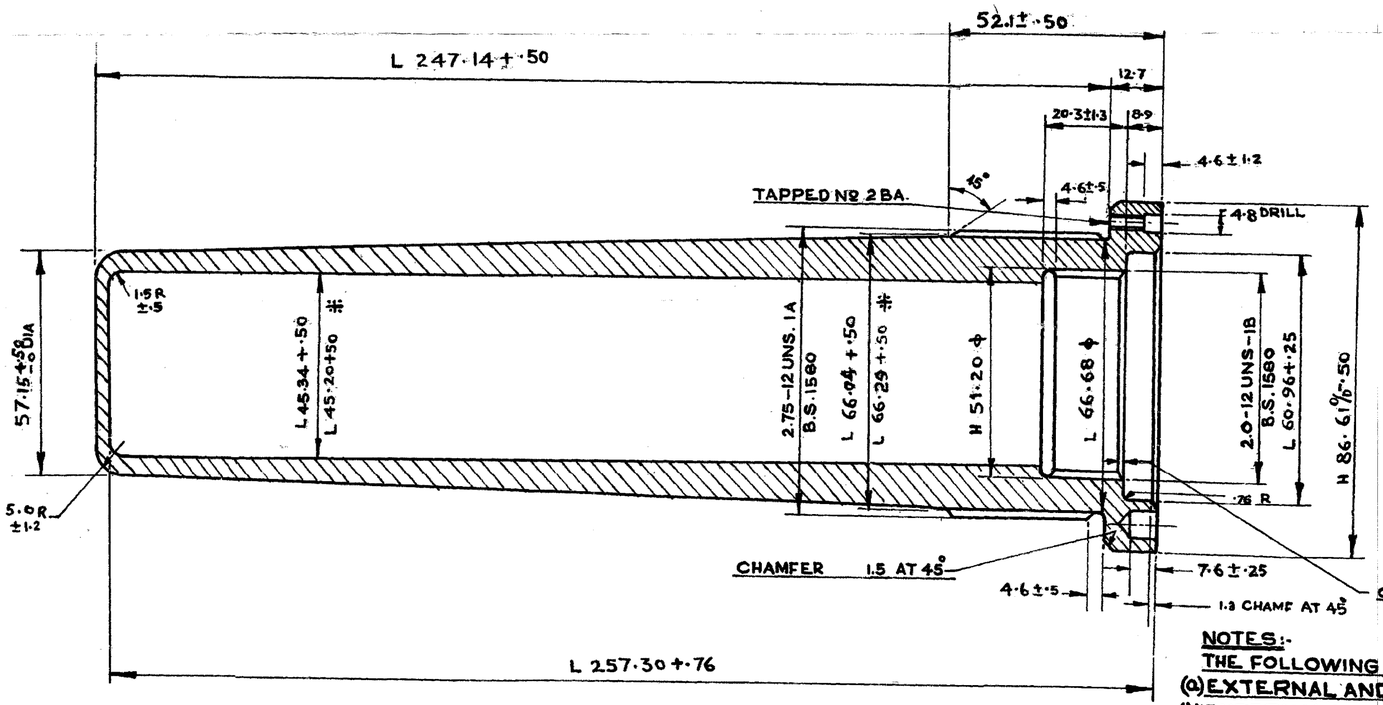
D.T D & P(AIR)
MIN OF DEF.

APPROVED

DRG NO ARM 1302 B5

DRG.NO. ARM 1172C6

FOR EXPLANATION OF DIMENSIONING ETC. SEE IS: 696

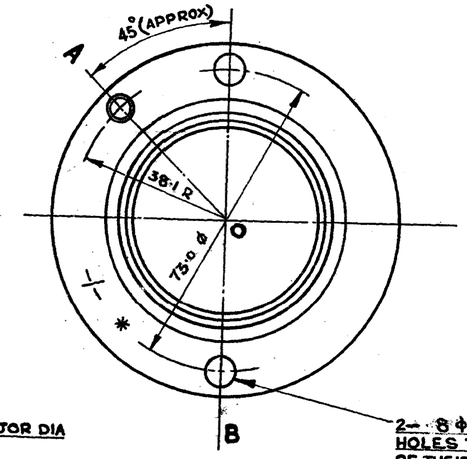


SECTION A-O-B

TO BE STAMPED ON FLANGE IN 6 TYPE.

* MANUFACTURER'S INITIALS OR RECOGNISED TRADE MARK

-/- DATE OF MANUFACTURE, MONTH & YEAR (E.G. 11/60)



2 - 8 Ø HOLES TO BE WITHIN .127 OF THEIR TRUE GEOMETRICAL POSITION RELATIVE TO THE H 86.61 DIA.

NOTES:-

THE FOLLOWING DIAMETERS MUST BE CONCENTRIC WITHIN .25

(a) EXTERNAL AND INTERNAL THREADS

(b) EXTERNAL THREAD AND EXTERNAL SURFACES

(c) INTERNAL THREAD AND INTERNAL SURFACES

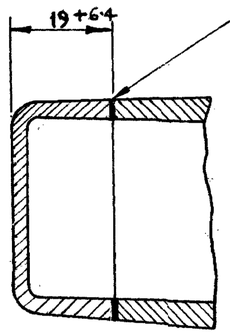
* DIMENSION AFTER VARNISHING

MATERIAL SPECIFICATION :- STEEL TO SPEC. IS. 1570, C-20 FOR IZOD TEST SEE SPEN. D.T.D.&P.(AIR)/32/ARM

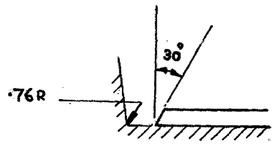
FINISH :- MACHINE ALL OVER. TO BE PHOSPHATE TREATED TO IS: 3618 CLASS B

EXTERNAL & INTERNAL SURFACES TO BE COATED (2 COATS) WITH VARNISH STOVING AMMUNITION TO SPEC. IND/ME/674(b) METRIC SCREW THREADS TO BE FREE FROM VARNISH, & COAT WITH LUTING THIN MK. 8 (APC-10) TO SPEC. JSS 1-65-09

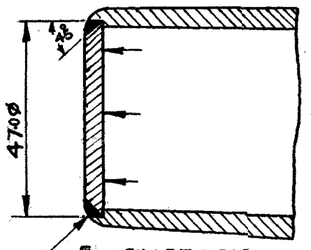
TESTS:- THE CONTAINER MUST BE CAPABLE OF WITHSTANDING AN INTERNAL AIR PRESSURE OF 7 KILOGRAM/ CM^2 WITHOUT LEAKAGE. TEST BEFORE VARNISHING



ALTERNATIVE CONSTRUCTION 'A'



DETAIL OF RECESS AT REAR OF THREADS SCALE:- 2:1



ALTERNATIVE CONSTRUCTION 'B'

PROOF LOAD IN DIRECTION OF ARROWS 3 TONNES

WELDING ELECTRODES TO CONFORM TO IS: 814 PREPARATION AND WORKMANSHIP TO BE IN ACCORDANCE WITH I.S. 823.

R.NO	DATE	ZONE	BRIEF RECORD	INITIAL
4	24/8/92	-	AMENDED VIDE AL-685	QR
3	24/11/79	-	AMENDED VIDE AL No 367	
2	19-1-73	-	RETRACED & AMENDED VIDE AL No 186	RBV
1	11-9-63	-	ORIGINAL ISSUE	

	DATE	INITIAL	DIMNS. IN mm OR AS STATED
DGN			MATL. SPEC. AS STATED ABOVE
DRN			I.A.F. SEC. REF. NO.
CHD			ASSY. DRG. No ARM 1172S2/ ARM 1302DS
TCD			DRG. SCHD. NO ARM 1172/ ARM 1302
COMP			

SCALE:- 1:1 & 2:1

TOL. TOL. EXCEPT WHERE OTHERWISE STATED ± .13

TITLE:- CONTAINER EXPLODER

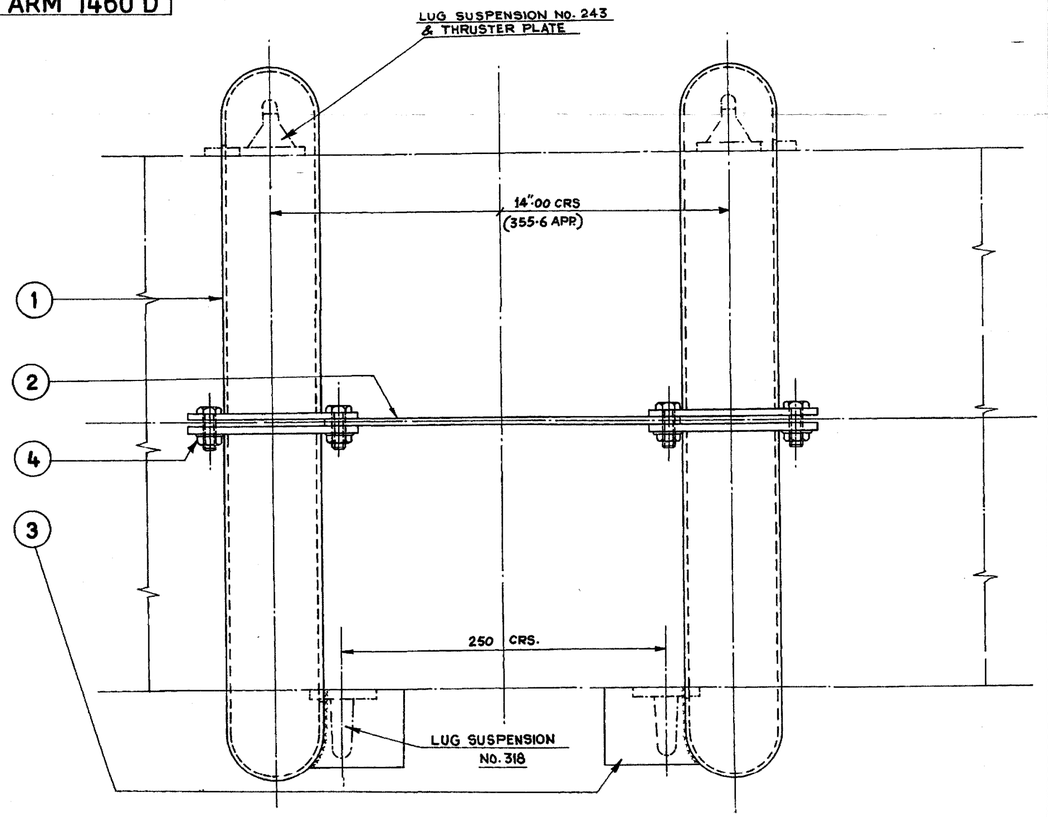
D.T.D.&P.(AIR) MINISTRY OF DEFENCE

APPROVED R.S. Clark

DRG. NO. ARM 1172C6

DRG. NO. ARM 1460 D

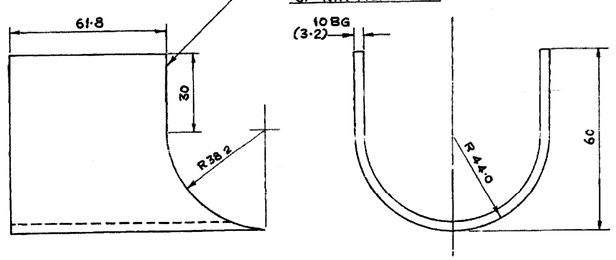
DRAWING CONVENTIONS ARE BASED ON IS:696.



GENERAL ARRANGEMENT

SCALE-1:2

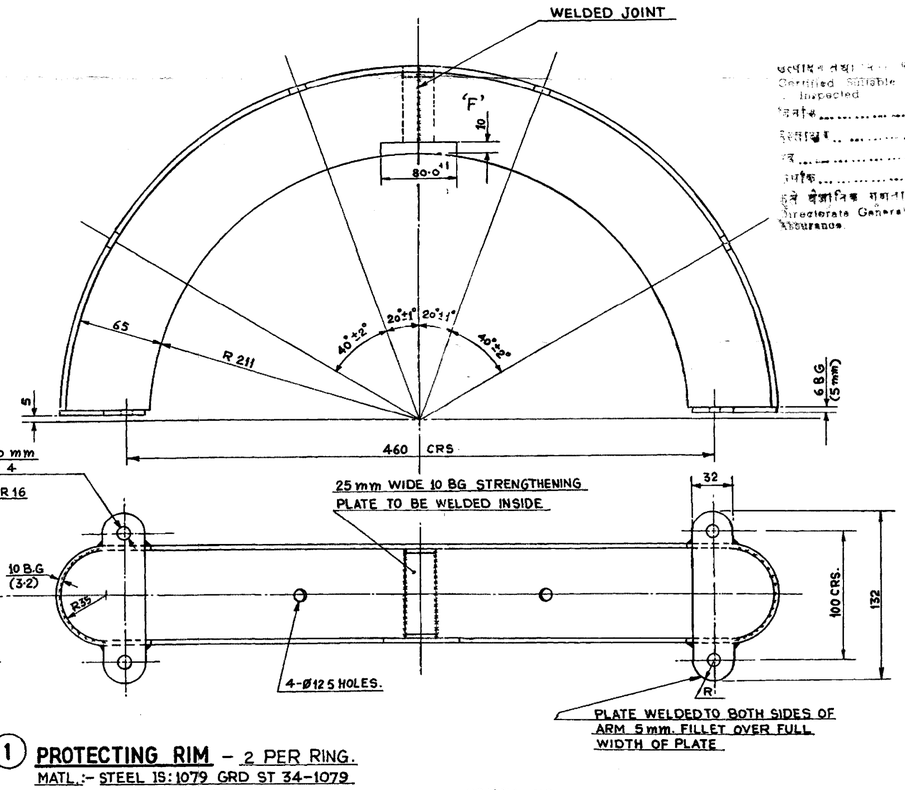
NOTE:-
(I) CAP TO BE WELDED WITH ITEM NO 1 AS SHOWN IN GENERAL ARRANGEMENT
(II) CAP TO BE FORMED TO SUIT THE SIDE OF RIM ITEM NO. 1



(3) **CAP** NO. OFF-2

MATL :- STEEL IS 1079 GRD. ST 34-1079
HOT ROLLED & ANNEALED.

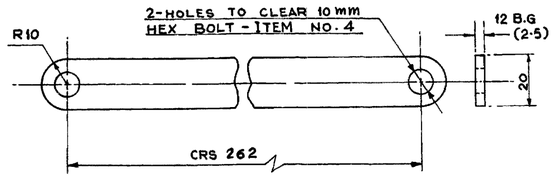
SCALE :- 1:1



(1) **PROTECTING RIM** - 2 PER RING.

MATL.:- STEEL IS:1079 GRD ST 34-1079
HOT ROLLED & ANNEALED NO. OFF-4

SCALE :- 1:2



(2) **CLAMPING PLATE**

MATL.:- IS:226.
NO OFF - 2
SCALE - 1:1

NOTES:—

- EACH HALF OF THE RIM PROTECTING TO BE MARKED AS FOLLOWS ON THE FACE MARKED 'F'.
- STAMPING:- CONTRACTORS INITIALS OR RECOGNISED TRADE MARK DATE OF MANUFACTURE, MONTH & YEAR E.G. 2/72.
- STENCILLING:- PROTECTING RING BOMB 1000 Lb. (450 Kg.) MK-11 N TO BE STENCILLED IN YELLOW PAINT TO SPEC. IND/ME/439 TINT No. 356 IS 5/55 ITEM Nos. 1, 2 & 3 TO BE PHOSPHATE TREATED BY AN APPROVED PROCESS & TO BE PAINTED ONE COAT OF PAINT P.F.U. AMMUNITION (AIR DRYING) TO SPEC. IND/ME/437 DARK GREEN TINT No. 224 IS 5/55.

(4) **BOLT, NUT & SPRING WASHER** - NO. OFF-8 EACH

HEX. BOLT M10 X1·5 X 35 PROPERTY CLASS 5·6 TO IS: 1364 Pt-1 AND HEX NUT M10 X1·5 PROPERTY CLASS 6·0 TO IS: 1364 Pt-3.

SPRING WASHER 10 TO IS: 6735

FINISH:- BLACKENED CONDITION

R NO.	DATE	ZONE	BRIEF RECORD	INITIAL
8	13 OC 2006	DE-L7	AMENDED VIDE AL NO 5/2006	
7	10 FEB 2004	A-4-1	AMENDED VIDE AL. NO 20/2004	
6	22 SEP 2003	C-6	AMENDED VIDE AL. NO. 6/2003	
5	17 AUG 2001	-	RETRACED WITHOUT CHANGE	
4	28 FEB 98	A-5	AMENDED VIDE AL NO 691	Sd
3	5 JUL 96	F-6 C-3	AMENDED VIDE AL NO 602	Sd
2	2 DEC 96		AMENDED VIDE AL NO 563	Sd
1	12 JUL 96	B-9	AMENDED VIDE AL NO 559	Sd
—	2 FEB 96	—	PROVISIONAL SEALED	

	DATE	INITIAL
DGN		
DRN		
CHD		
TCD	17-10-01	
COMP.		

SCALE:- AS STATED
TOL:- TOLERANCE EXCEPT WHERE OTHERWISE STATED ±0·25

DIMENSIONS ARE IN mm
MATL. SPECN :- AS ABOVE
SEC. REF. NO.
GAUGE SCHD NO
DRG LIST NO. —

TITLE:- **PROTECTING RING FOR BOMB 1000 LB. MK-11 N.**

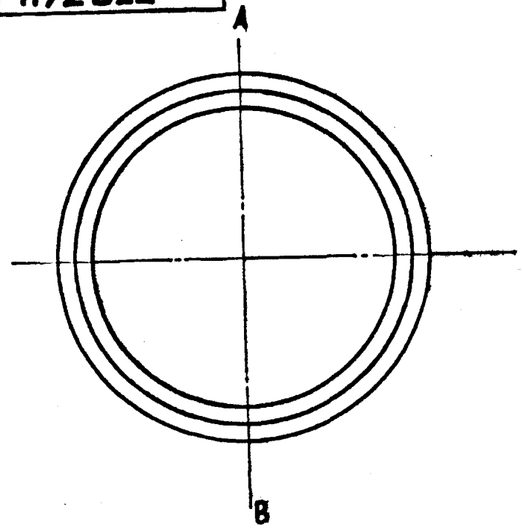
D G A Q A
MINISTRY OF DEFENCE

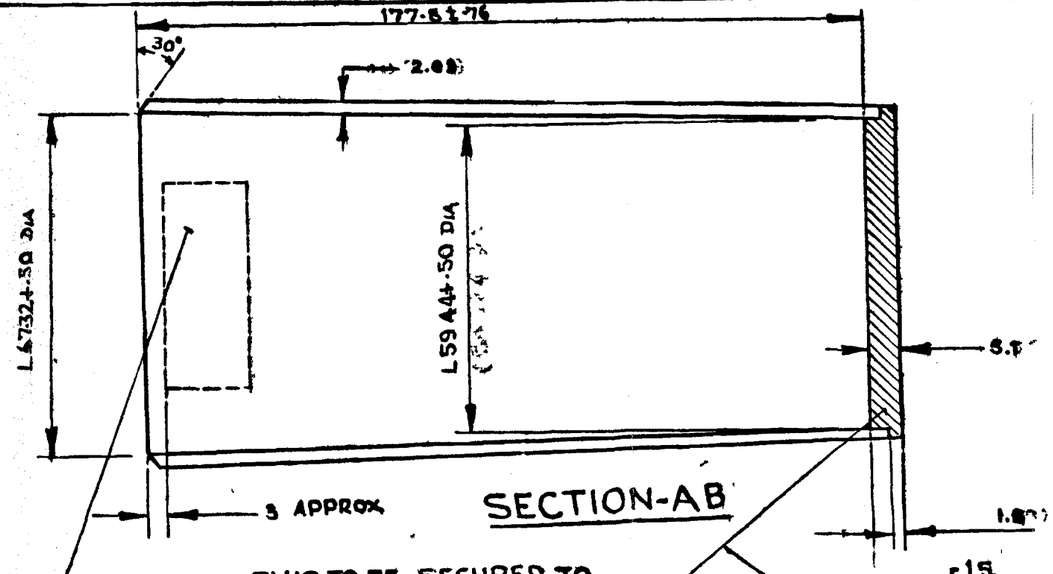
APPROVED Sd/-

DRG. NO. ARM 1460 D

DRG. NO
ARM 1172 B22

FOR EXPLANATION OF DIMENSIONING ETC. SEE [illegible]

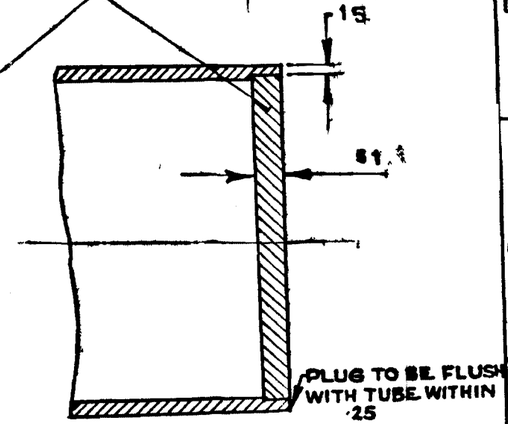




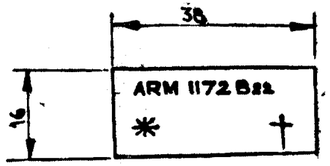
SECTION-AB

LABEL TO BE SECURED TO TUBE AND COATED WITH POLYSTYRENE CEMENT APC 230 TO SPEC IND/ME/706 WITH SPIRIT, RED, NO. 3 OMMITED. ALTERNATIVELY MARKING MAY BE PRINTED ON TUBE.

PLUG TO BE SECURED TO TUBE WITH VARNISH SEE SPECIFICATION



ALTERNATIVE CONSTRUCTION



MARKING TO BE PRINTED IN 3 BOLD BLACK TYPE
* CONTRACTORS INITIALS, RECOGNISED TRADE MARK OR APPROVED INSPECTION STAMP
† YEAR OF MANUFACTURE

THIS DRAWING TO BE READ IN CONJUNCTION WITH SPEC. ARM. 107 (LATEST ISSUE)

DETAIL OF LABEL - MATERIAL :- PAPER WHITE FINE AMM 36 LB. TO SPEC. JSS 1221.

MATERIAL FOR TUBE :-
SYNTHETIC RESIN BONDED PAPER

R NO	DATE	ZONE	BRIEF RECORD	INITIAL
3	24-11-79	—	AMENDED VIDE AL. 367	
2	19 1 73	—	RETRACED & AMENDED VIDE AL NO 186	RW
1	11 9 63	—	ORIGINAL ISSUE	

	DATE	INITIAL	DIMNS. IN MM.
DGN			MATL SPEC. AS STATED
DRN		G LAL	
CHD		S K GULATI	I A F SEC REF. NO.
TCD		[illegible]	ASSY. DRG. NO. ARM 1172 B1 / ARM 1302 D1
COMP			DRG SCHD. NO. ARM 1172 / ARM 1302

SCALE :- 1:1

TOL :- TOL EXCEPT WHERE OTHERWISE STATED ± ·25

TITLE :-
TUBE EXPLODER NOSE

D.T.D & P. (AIR)
MINISTRY OF DEFENCE

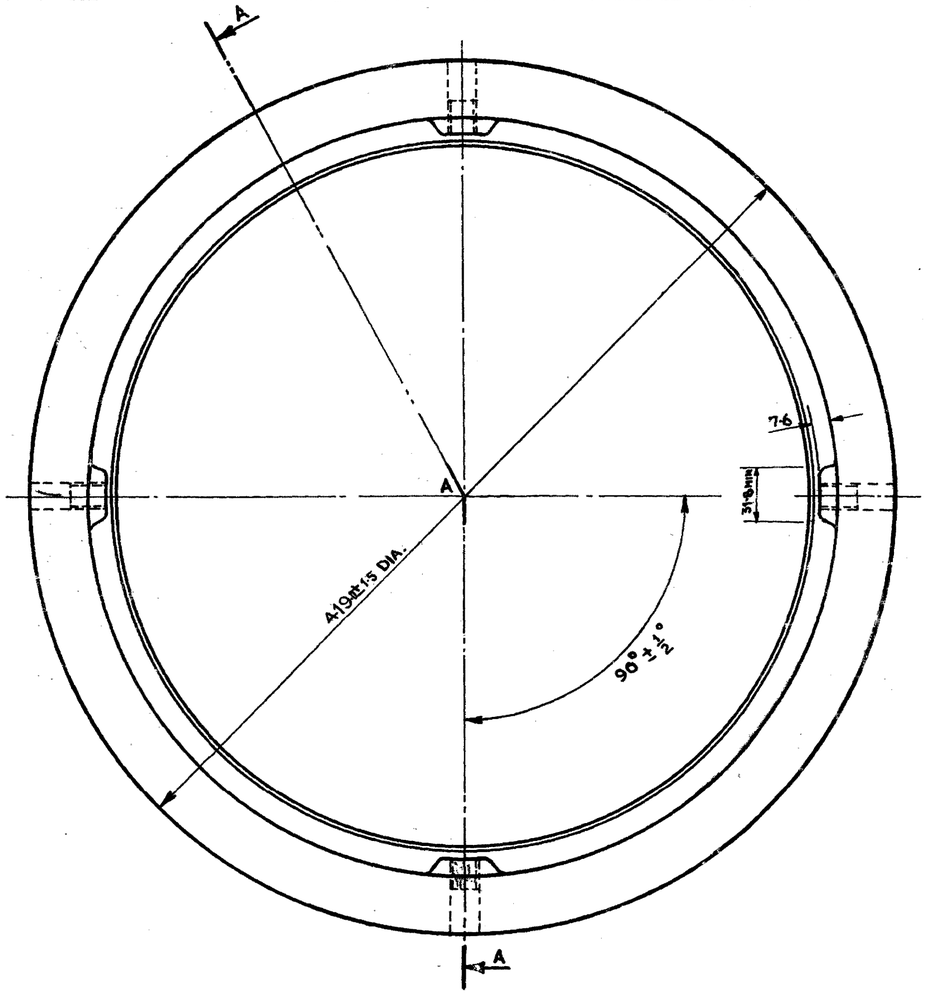
APPROVED R.S. Hardy

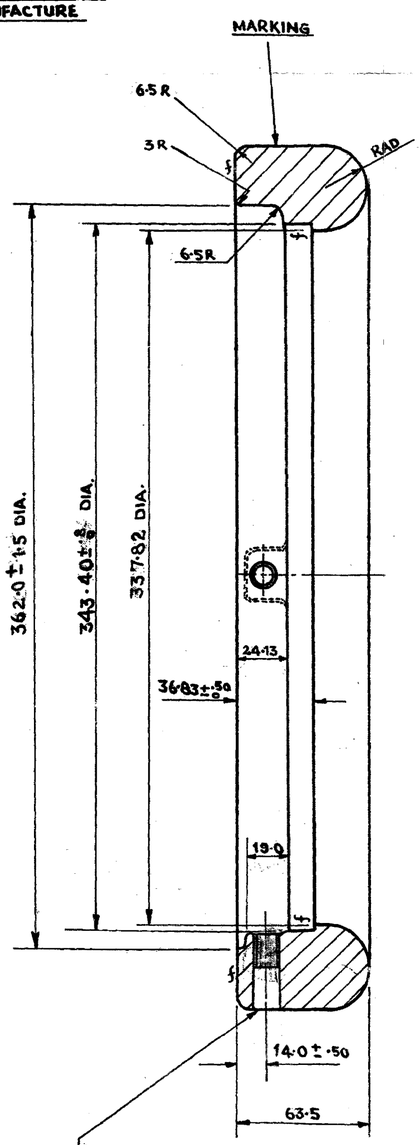
DRG. NO.
ARM 1172 B22

DRG. Nº ARM 1172 C20

FOR EXPLANATION OF DIMENSIONING ETC. SEE IS: 69

MARKING TO BE STAMPED OR RELIEF MOULDED ON OUT SIDE AS INDICATED Nº 53 MK.1 – (25 CHARACTERS)REF. Nº 12 S/1017 – (6 CHARACTERS)FOLLOWED BY DIAMOND THUS ◇ CONTRACTORS INITIALS OR RECOGNISED TRADE MARK. (6 CHARACTERS)DATE OF MANUFACTURE MONTH & YEAR (e.g. 1/50). 6 CHARACTERS.

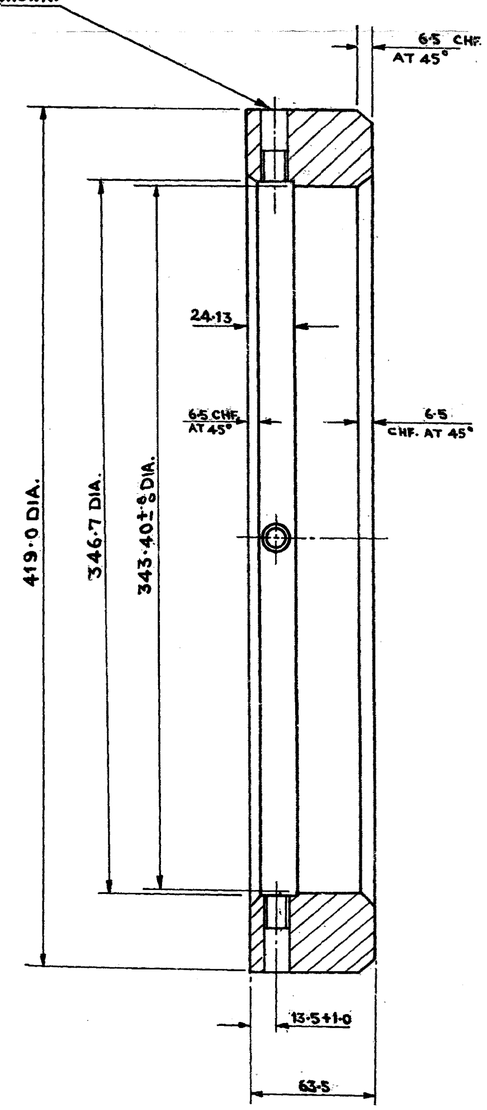




SECTION A-A-A

4 HOLES DRILL & TAP ½ - 13 UNC - 2B & C'BORE 13·5 DIA × 20·5 DEEP SPACED AS SHOWN TO BE WITHIN ·76 OF TRUE GEOMETRICAL POSITION.

4 HOLES DRILL & TAP ½ - 13 UNC - 2B & C'BORE 13·5 DIA × 20·5 DEEP SPACED AS SHOWN.



ALTERNATIVE METHOD OF MANUFACTURE

FINISH

ALL SURFACES ARE TO BE SHOT BLASTED FOLLOWED IMMEDIATELY BY A SPRAYED METAL COATING
ALL SCREW THREADS ARE TO BE PROTECTED DURING SHOT BLASTING & METAL SPRAYING. APPLY ONE COAT OF PAINT FINISHING AMMN ——— (AIR DRYING) TO IS: 168 TO THESE SURFACES

SHOT BLASTING AND METAL SPRAYING TO BE IN ACCORDANCE WITH SPEC. D.T.D.&P.(AIR)/32/ARM

FINISING COAT TO BE DEEP BRONZE GREEN TINT Nº 224
TINT TO CONFORM TO IS: 5 OF 1961
THREADS TO BE FREE FROM PAINT & COATED WITH GREASE ZX-13 (D.S. CAT Nº 9150-000009) TO SPEC. DTD 392A

RADII UNLESS STATED OTHER WISE 1·5
MACHINE AT ⌿

NOTE

4 SECURING SCREWS DRG. ARM 1172 A 29 REQD. PER BASE TO BE COATED WITH GREASE ZX-13 (D.S. CAT Nº 9150-000009) TO SPEC. DTD 392 A

USED ON: ARM. 1185 SCHD. ARM. 1172 DRG. LIST

REVISION Nº	DATE	ZONE	BRIEF RECORD	INITIAL
3	24/11/73	–	AMENDED VIDE AL. No. 367	
2	19·1·73	–	RE-TRACED & AMENDED VIDE AL No. 186	GDT
1	11·9·63	–	ORIGINAL ISSUE	

	DATE	INITIAL	DIMNS. IN mm OR AS STATED
DGN			MATL. SPEC. STEEL IS: 1570 C 20
DRN			
CHD			I.A.F. SEC. REF. Nº
TCD			ASSY. DRG Nº ARM 1172 E21 / ARM/302/02
COMP			DRG SCHD Nº ARM 1172 / ARM 1302

SCALE 1:2
TOL.
TOL. EXCEPT WHERE OTHERWISE STATED ± ·76

TITLE
BASE TRANSIT BOMB A/C Nº 53 MK I WITH SECURING SCREWS

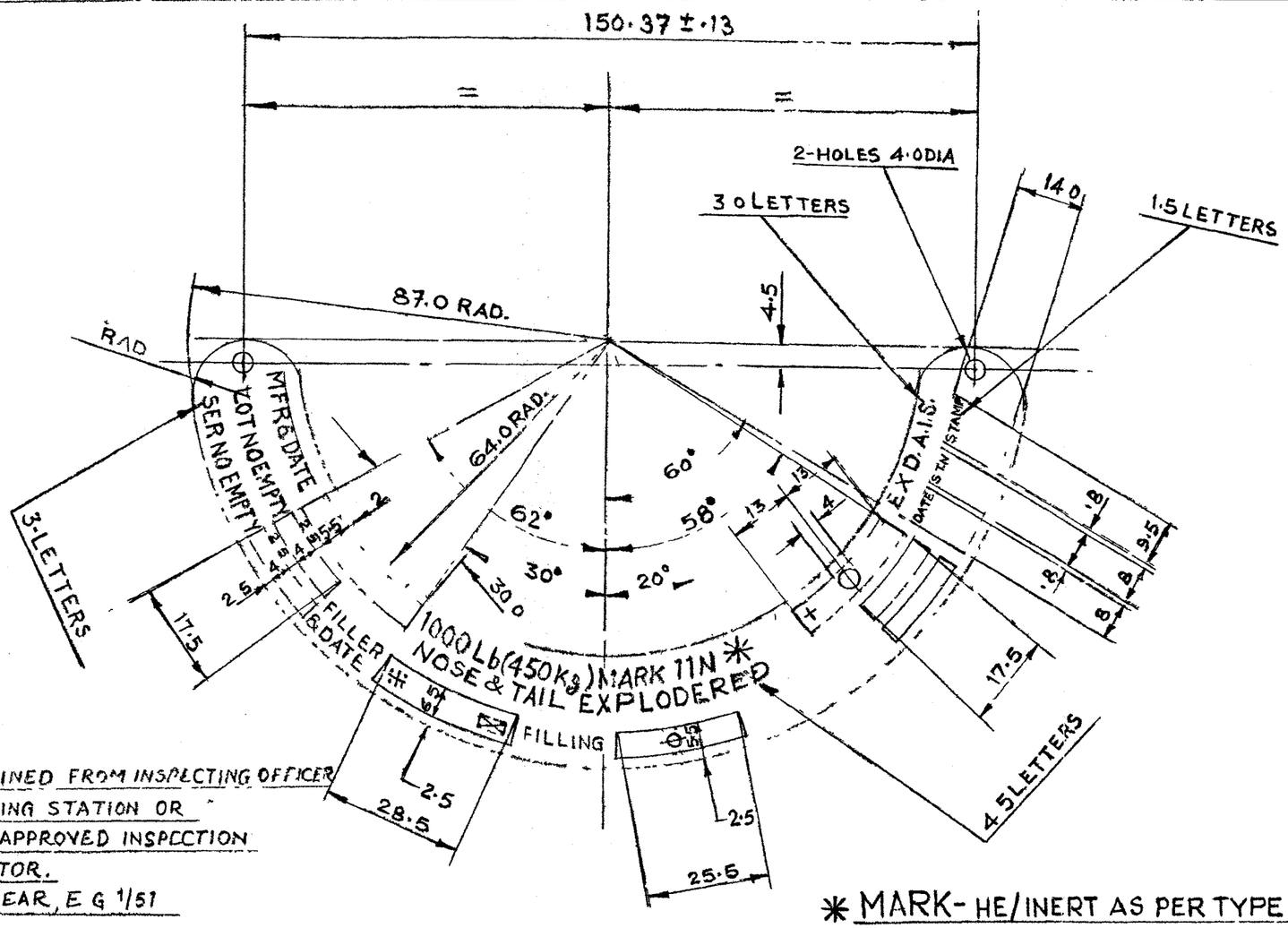
D.T.D. & P. (AIR)
MINISTRY OF DEFENCE

APPROVED

DRG. Nº
ARM 1172 C20

DRG. NO.
ARM 1482 B3

FOR EXPLANATION OF DIMENSIONING E.T.C; SEE IS: 666



* MARK- HE/INERT AS PER TYPE OF BOMB

\+ STORES REF NO TO BE OBTAINED FROM INSPECTING OFFICER

\+ MONOGRAM OR INITIALS OF FILLING STATION OR RECOGNISED TRADE MARK OR APPROVED INSPECTION STAMP OF FILLING CONTRACTOR.

DATE OF FILLING - MONTH & YEAR, E G 1/51

△ LOT NO OF FILLED BOMB

▽ SERIAL NO OF FILLED BOMB.

NATURE OF FILLING (SEE TABLE)

LABEL TO BE CHEMICALLY ENGRAVED WITH LETTERING & TABLETS IN RELIEF

MARKING TO BE IN 3 TYPE STAMPED ON

AFTER MARKING - LABEL TO BE COATED WITH APC - 221 TO SPEC - J.S.S 8010 - 28

	DATE	INITIAL	DIMNS. IN mm
DGN			MATL - SPEC. 1·25 THK BRASS SHEET TO IS 1410 Cu Zn 37 CONDITION ½H
DRN	15/2/66		
CHD.			I.A.F. SEC REF NO.
TCD			ASSY DRG NO ARM 1482 D1
COMP			DRG. SCHD NO ARM 1482
SCALE:- 1:1			TITLE:- LABEL HE/INERT
TOL. TOL. EXCEPT WHERE OTHERWISE STATED ± ·70			

DGAQA
MIN OF DEFENCE

APPROVED.

DRG. NO.
ARM 1482 B3

R NO	DATE	ZONE	BRIEF RECORD	INITIAL
1	22·6·05		AMENDED VIDE AL No 17/05	
-	-	-	PROV. SEALED	

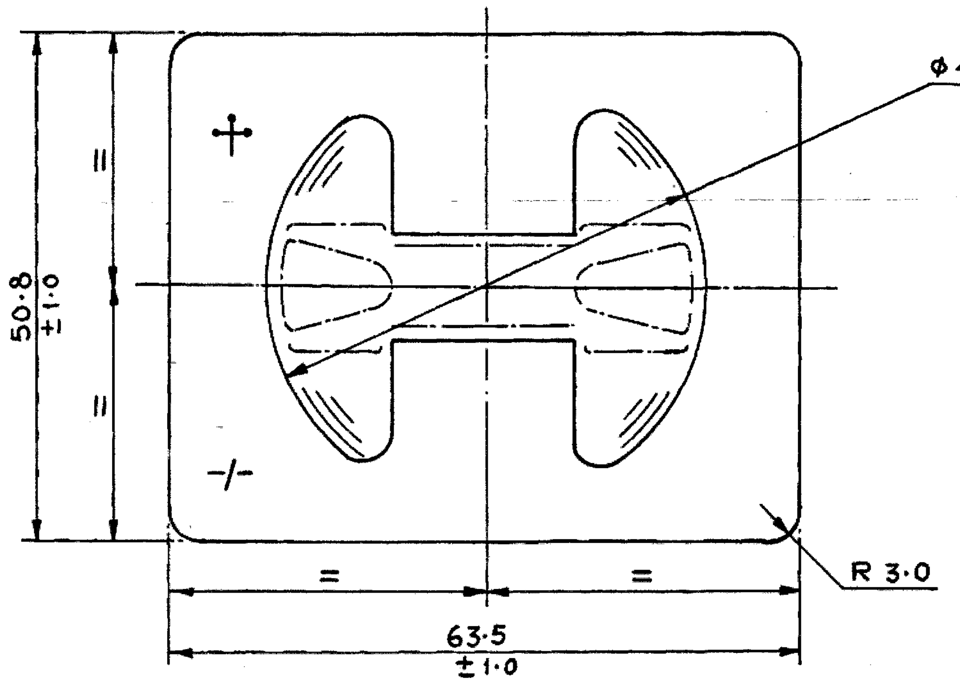
DRG NO. ARM 1461 D	DRG CONVENTIONS CONFORM TO IS:696.
PART NO.	DIM ARE IN mm
DET NO. SHTS SHT NO.	GEN. TOL MEDIUM CLASS TO IS:2102

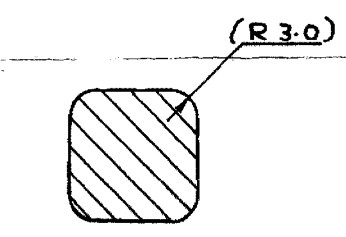
MARKING TO BE STAMPED ON :-

+ CONTRACTOR'S INITIALS OR RECOGNISED TRADE MARK.

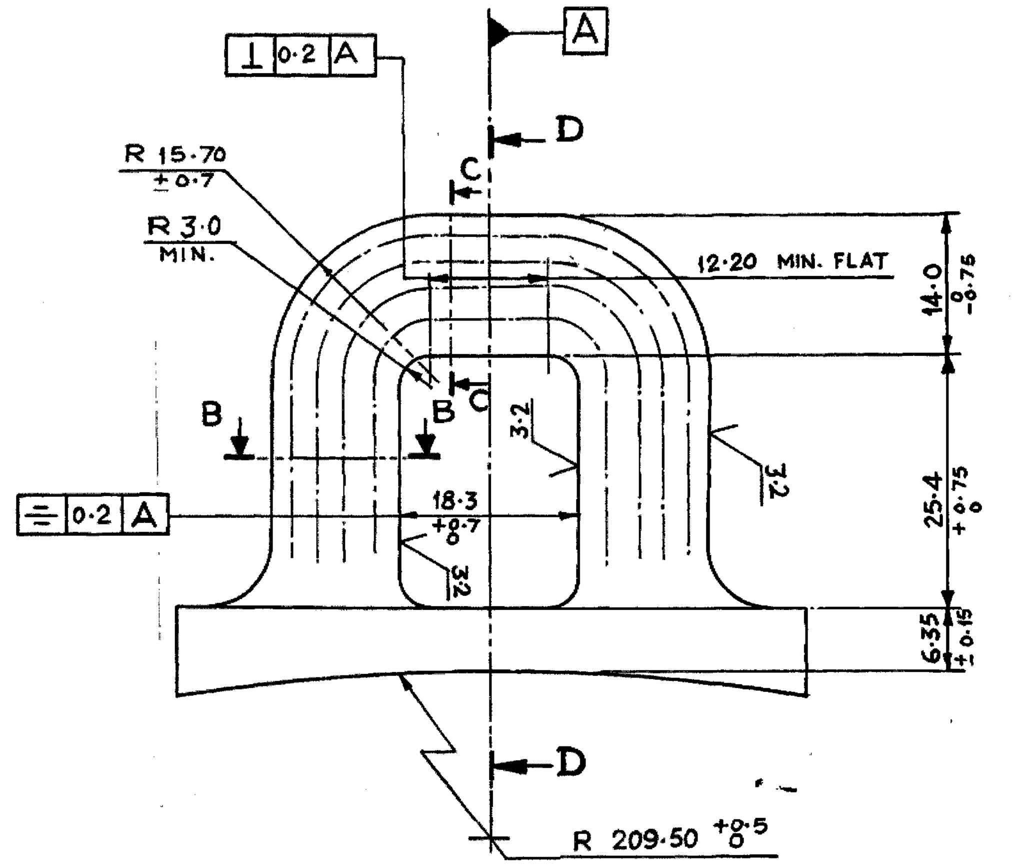
-/- DATE OF MANUFACTURE (MONTH AND YEAR)

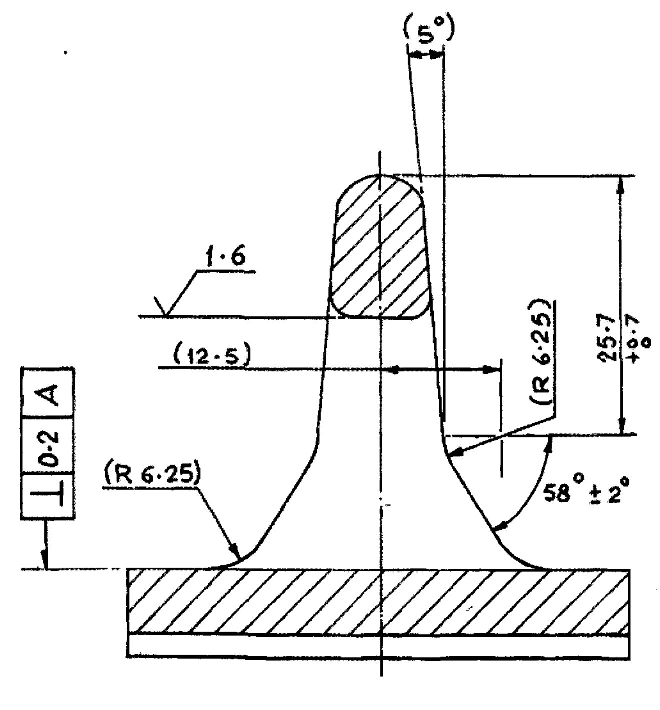
ROUND OFF SHARP EDGES BY R 0.5.





SECTION - BB





SECTION 'DD'

NOTES:-

1. AFTER HEAT-TREATMENT, ALL LUGS ARE TO BE TESTED FOR HARDNESS TO MATERIAL SPECIFICATION BY DIAMOND IMPRESSION ON THE BOTTOM SURFACE.
2. FLAW DETECTION :- ALL LUGS SHALL BE INSPECTED FOR FLAWS BY AN APPROVED MAGNETIC FLAW DETECTION PROCESS.
3. PROTECTIVE FINISH :- THE LUGS ARE TO BE PROVIDED WITH PROTECTIVE FINISH Zn-SPRAYING TO SPECN. NO IS. 5905 FOLLOWED BY PAINTING IN THE SAME WAY AS GIVEN TO THE BOMB BODY.
4. TESTING :- THIS SHALL BE CARRIED OUT IN THE SEQUENCE DETAILED BELOW IN PARAGRAPHS (a),(b) AND (C) AFTER 100% CRITICAL INSPECTION. EACH LUG SHALL BE WELDED TO BODY OF 1000 lb MK 11N BOMB OR TO RECTANGULAR SPECIMEN MADE OUT OF 14 mm THICK MATERIAL HAVING COMPOSITION AND MECHANICAL/PHYSICAL PROPERTIES OF BOMB MATERIAL FOR TESTING PURPOSE. WELD SPECIFICATION/INSPECTION SHALL BE GOVERNED BY SPEC. IS:815, 822 AND 823

(a) FATIGUE TESTING :- FROM ANY NEW CONTRACT OR NEW CONTRACTOR OR AFTER ANY CHANGE OF MATERIAL SPECIFICATION, DIMENSION, OF MANUFACTURING TECHNIQUE, THE FOLLOWING QUANTITIES OF LUG SHALL BE SUBJECTED TO THIS TEST. THIS FIRST LUG PRODUCED PLUS 2% FROM EACH HEAT TREATMENT (HT) BATCH (MINIMUM 5 FOR EACH OF INITIAL 4 HT BATCHES AND 4 CONSECUTIVE HT BATCHES AFTER ANY REJECTION) SHALL BE SUBJECTED TO A MEAN LOAD OF 2,000 da N WITH AN ALTERNATING LOAD OF ± 1000 da N (MAX. 3000 da N, MIN 1000 da N) AT A FREQUENCY OF 15 TO 25 Hz. RUPTURE MUST NOT OCCUR. MAXIMUM NUMBER OF REVERSALS 50000. THE LOAD SHALL BE APPLIED TO THE JOURNAL FLAT IN A PERPENDICULAR DIRECTION BY SUITABLE ADAPTOR.

(b) ALL LUGS THAT HAVE BEEN SUBJECTED TO FATIGUE TESTING SHALL BE RE-INSPECTED FOR FLAWS BY THE PROCESS DEFINED IN NOTE 2 PRIOR TO SUBMISSION TO DESTRUCTIVE TESTING.

(C) DESTRUCTIVE TESTING :- ALL LUGS THAT HAVE BEEN SUBJECTED TO THE REQUIREMENTS OF 4(a) & 4(b) SHALL BE TESTED TO DESTRUCTION. EACH LUG SHALL WITH STAND A MINIMUM FAILING LOAD OF 9500 da N APPLIED PERPENDICULAR TO THE JOURNAL FLAT.

Issued to OPA Khamaria

Certified Suitable to quick Manufacture. Inspected

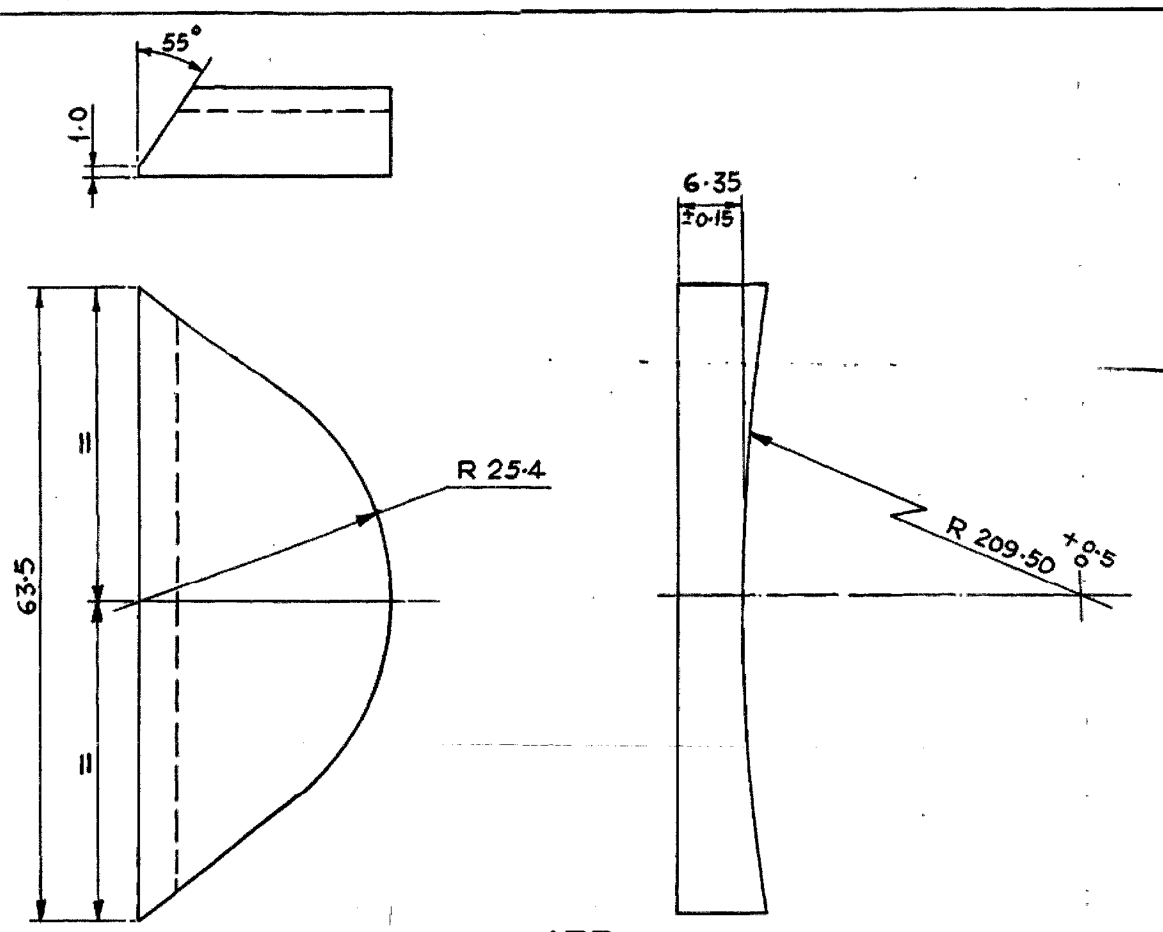
दिनांक 28/6/17 Date

हस्ताक्षर Signature

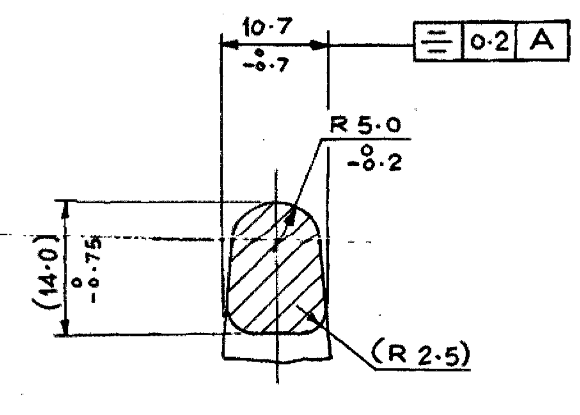
पद Rank

S No.

Directorate General of Aeronautical Quality Assurance



THRUSTER PLATE



SECTION 'CC'

DESIGN IS BASED ON FIG. 2 OF US SPEC MIL A 8591 G.

R. NO.	DATE	AUTHORITY	BRIEF RECORD	ZONE	CD	GO		
2	5-10-01		RETRACED WITHOUT CHANGE				DRN - SKK	CHD
1	3-10-86		AMENDED VIDE AL. NO. 562				CD	PASSED
					SIGN		APPROVED Sd. 2/12/85	
DRG SEALED		PROVISIONAL	Sd.		CRE AM 30 NOV 85			

TRD	COMP
SCALE	2 : 1
EST. WEIGHT	
GAUGE SCHD	
DATE	

MATL - STEEL TO SPEC B.S. 970 En 14 A OR IS:1570 20 Mn 2.

PROTECTIVE FINISH - SEE NOTE NO. 3

ASSY DRG.

DESIGN AUTHORITY

DRG. NO. ARM 1461 D

DET NO. SHTS SHT NO.

PART NO.

D.S. CAT NO.

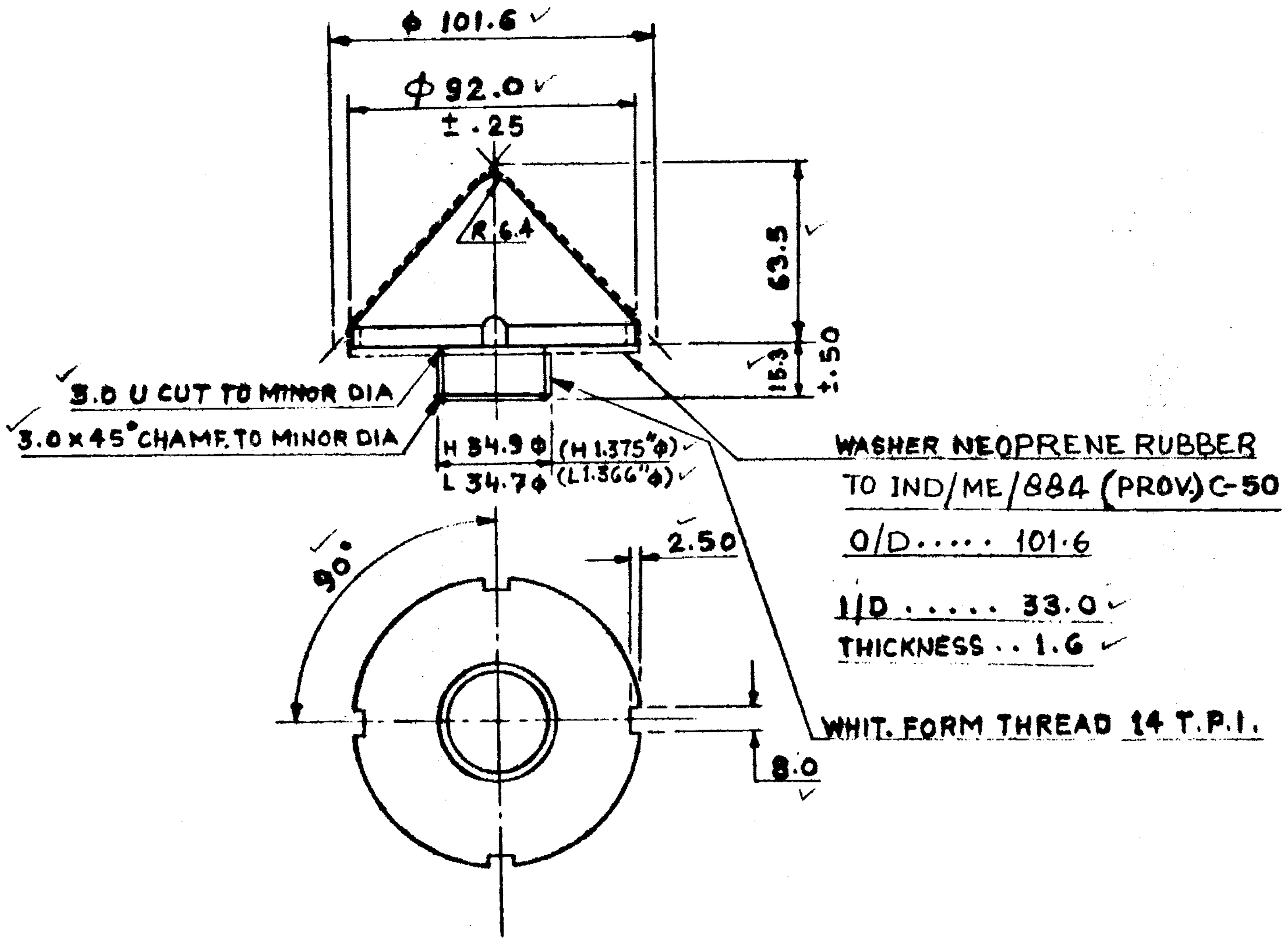
AHSP DGAQA

LUG SUSPENSION NO. 243 AND THRUSTER PLATE

RETRACED	CHECKED	SECTION CHECKED
[signature]	[signature]	

DRG. NO. ARM 1049 B

DRAWING CONVENTIONS ARE BASED ON IS-696.



(a). THE SURFACES INDICATED THUS ----------- ARE TO BE SHOT BLASTED FOLLOWED IMMEDIATELY BY A SPRAYED METAL COATING.

(b). ALL SCREW THREADS ARE TO BE PROTECTED DURING SHOT BLASTING AND METAL SPRAYING.

(c). APPLY ONE COAT OF PAINT, FINISHING, AMMUNITION (AIR DRYING) TO SPECN IS-168 TO THESE SURFACES.

(d). SHOT BLASTING AND METAL SPRAYING TO BE IN ACCORDANCE WITH SPECN DTD&P (AIR)/32/ARM.

FINISHING COAT TO BE TURQUES BLUE TINT NO. 102.
TINT TO CONFORM TO IS-5/55.
REMAINING SURFACES EXCEPT SCREW THREADS TO BE VARNISHED TWO COATS, WITH VARNISH.
TO SPECN JSS-1-63-14a AND STOVED.
SCREW THREADS TO BE FREE FROM VARNISH OR PAINT AND COATED WITH LUTING THIN.
MK. 8 (APC-10) TO JSS-1-65-9.

Certified Suitable to which manufacture Inspected
Date ....
Signature ....
Rank ....
S.No. ....
Directorate General of Aeronautical Quality Assurance

MARKING TO BE STAMPED IN 5mm CHARACTERS AS SHOWN.
+ CONTRACTOR'S INITIALS OR RECOGNISED TRADE MARK.
-/- DATE OF MANUFACTURE MONTH & YEAR E.G. 1/51.

REMOVE SHARP EDGES

R.NO.	DATE	ZONE	BRIEF RECORD	INITIAL
2	24.3.03	D-4	DRG. AMENDED VIDE AL. NO. 10/2003	
1	14.11.95	—	AL. No 32/95	
—	21.9.93	—	METRICATED & RETRACED	S.K.N.

	DATE	INITIAL
DGN		
DRN		
CHD		
TCD	23.2.93	
COMP	21.9.93	

SCALE :- 1:2

TOL. EXCEPT WHERE OTHERWISE STATED ±.25

DIMENTIONS ARE IN mm.
MATEL SPECN. B.S. 970 En. 3A
SEC. REF. NO. —
GAUGE SCHD. NO. —
DRG. LIST NO. —

TITLE: NOSE PLUG FOR BOMB H.E A/C 1000lb (450kg) MC

D.T.D & P (AIR)
MINISTRY OF DEFENCE

APPROVED.

DRG. NO. ARM. 1049 B.

Issue to OFK Jabalpur

DRG. LIST FOR — ARM 1482

20/6/19

S.N.	DRG. NO.	DESCRIPTION	NO. OFF	R.NO.	REMARKS
1	ARM-1482 D1	G.A. FILLING & MARKING BOMB H.E/INERT A/C MC 1000 Lbs (450 Kg) MK 11N NOSE & TAIL EXPLODERED	1		✗
2	ARM-1482 D2	EMPTY ASSY. BOMB H.E/INERT A/C M.C. 1000 Lb (450 Kg) MK 11N NOSE & TAIL EXPLODERED	1		✓
3	ARM-1302 D3	BODY BOMB	1		✓
4	ARM-1172 B4	RING NUT	1		✓
5	ARM-1172 B5	FILLING PLUG	1		✓
6	ARM-1049 B	NOSE-PLUG	1		✓
7	ARM-1172 C6	CONTAINER EXPLODER	2		✓
8	ARM-1482 B3	LABEL, H.E/INERT	1		✓
9	ARM-1172 B14	DETONATOR HOLDER	2		✓
10	ARM-1172 A15	PLUG A/C. BOMB NO.34 MK II (ASSY.)	1		✓
11	ARM-1172 A16	PLUG	1		✗
12	ARM-1172 A17	WASHER	1		✗
13	ARM-1172 A18	LOCKING SCREW	2		✗
14	ARM-1172 A19	SCREW	4		✓
15	N.D.	DRIVE SCREW NO. 6X6 mm LONG	2		TYPE 'U' PARKER KALON OR EQUIV.
16	ARM-1172 C20	BASE TRANSIT A/C BOMB NO. 53 MK 1	1		✓
17	ARM-1172 A21	LOCKING SCREW	2		✓
18	ARM-1172 B22	TUBE EXPLODER NOSE	1		✓
19	ARM-1172 B23	TUBE EXPLODER REAR	1		✗

R.N.	DATE	BRIEF RECORD	INITIAL	R.N.	DATE	BRIEF RECORD	INITIAL
1	30/6/05	AMENDED VIDE AL NO: 17/05 SEALED (PROV.)	[signature]				

DRN.		SEC. REF. NO.	D.G.A.Q.A. MINISTRY OF DEFENCE
COMP.	[signature]	STORE SPECN. NO.	
		ASSY. DRG. NO ARM-1482 D1	
CHD.		DRG. LIST FOR:- BOMB HE/INERT A/C 1000 lb (450 kg) MK 11N NOSE & TAIL EXPLODERED	APPROVED. [signature]
TCD.	Krishnan		DRG. LIST NO. ARM 1482
COMP		SHT. NO. 1 — NO. OF SHTS. 2	

LIST FOR
RM 1482

S.NO	DRG. NO.	DESCRIPTION	NO. OFF	R.NO	REMARKS
20	N.D.	WASHER CLOTH ALL WOOL MELTON FINISH 14 OZ. 30·2 O/D X 12·7 I/D.	2		MATL:- CLOTH
21	N.D.	WASHER GLAZED BOARD 228·5 O/D X 73 I/D. X ·51 THICK	1		MATL:- BOARD
22	N.D.	DISC FELT WHITE 44·5 DIA X 12·7 THK.	2		MATL:- FELT.
23	ARM-1172 C24	G.A. EXPLODER C.E. 9 OZ 5 DR	2		X
24	ARM-1172 B25	EXPLODER CASE.	2		X
25	ARM-1172 A26	CAP	2		X
26	N.D.	DISC CLOTH 40·64 DIA.	AS REQD		MATL:- CLOTH
27	N.D.	WASHER MILL BOARD 40·64 O/D X	2		MATL:- MILL BOARD
		26·92 I/D X 1·27 THICK			
28	ARM-1172 C27	EXPLODER C.E. 3 OZ 15 DR (G.A.)	2		X
29	ARM-1172 B28	EXPLODER CASE (3 OZ - 15 DR)	2		X
30	ARM-1172 A26	CAP	2		X
31	N.D.	DISC. CLOTH 40·64 DIA.	AS REQD		MATL:- CLOTH
32	N.D.	WASHER MILL BOARD 40·64 O/D X 26·92 I/D X 1·27 THICK	2		MATL:- MILL BOARD
33	ARM-1172 A29	CONCAL SET SCREW	4		X
34	ARM-1461 D	LUG SUSPENSION NO. 243 AND THRUSTER PLATE	2		✓
35	ARM-1460 D	PROTECTING RING	2		✓
36	N.D.	WASHER BOX CLOTH 40·64 O/D X 26·92 I/D X 1·27 THICK	2		MATL:- CLOTH
37	ARM-1302 B5	LUG SUSPENSION NO. 318	2		✓
38	ARM 1172 A30	SCREW	2		X
39	ARM 1172 A31	LOCKING SCREW	2		X
40	ARM 1172 A32	SOCKET SET SCREW	4		X

R.N.	DATE	BRIEF RECORD	INITIAL	R.N.	DATE	BRIEF RECORD	INITIAL
1	30/7/2001	AMENDED VIDE AL. NO. 17/2001					
		SEALED (PROV)					

DRN.		SEC. REF. NO.	DGAQA MINISTRY OF DEFENCE
COMP.		STORE. SPECN. NO.	
CHD.		ASSY. DRG. NO. ARM 1482 : D1	APPROVED
TCD.	Krishnan	DRG. LIST FOR:- BOMB HE/INERT A/C. 1000lb (450kg) MK 11N - NOSE & TAIL EXPLODERED	DRG. LIST NO. ARM 1482
COMP.		SHT. NO. 2 NO. OF SHTS. 2	

DRG. NO. ARM1482 D2

DRAWING CONVENTIONS ARE BASED ON IS: 696

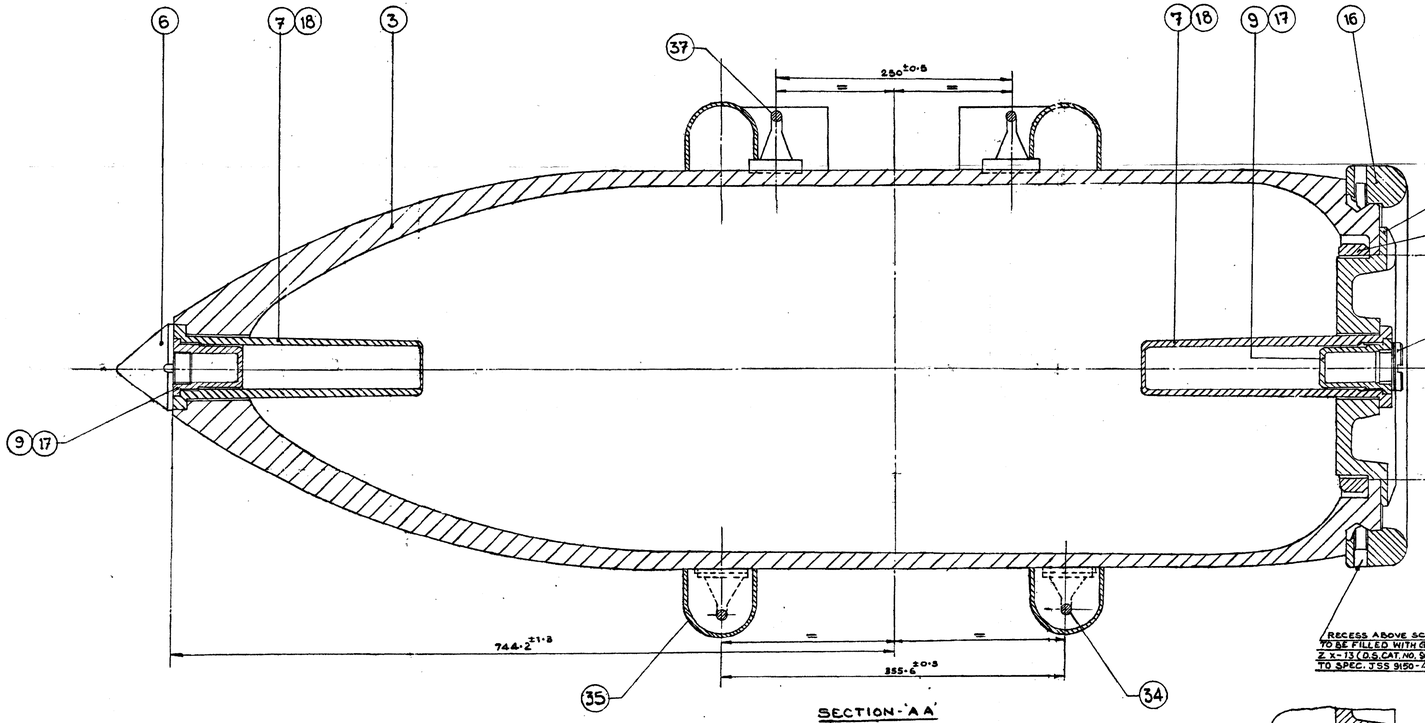
PROVISIONAL

NOTE:- LUGS:-
(i) LUG AXES SHALL BE NORMAL TO BE BOMB LONGITUDINAL WITH ±0·5 DEGREE AND IN THE SAME PLANE WITHIN TO·5 DEGREE.
(ii) LUG JOURNALS SHALL BE PARALLER TO EACH OTHER WITHIN 0·5 DEGREE AND PERPENDICULAR TO LONGITUDINAL FLAT AXIS WITHIN ±0·5 DEGREE.

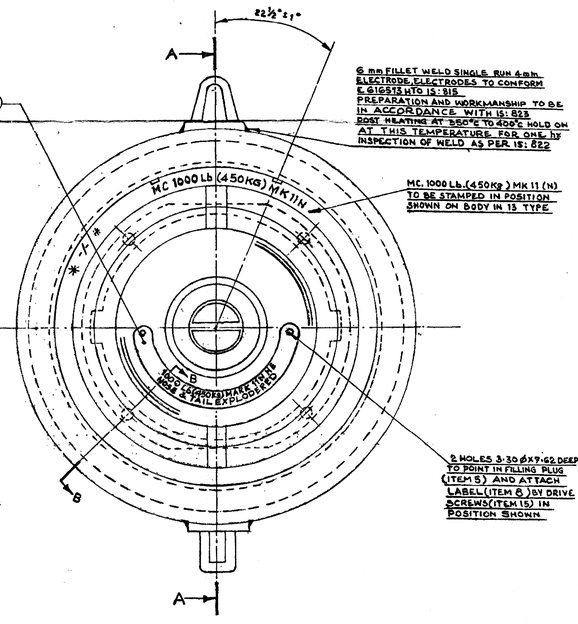
LUG NO. 243:-
A PROOF LOAD OF 7200 DAN SHALL BE APPLIED ON EACH LUG (SPREAD OVER JOURNAL FLAT 12·3 mm) WELDED TO BOMB-BODY IN A DIRECTION PERPENDICULAL TO AXIS OF JOURNAL (BOTH DIRECTION) THE LUG SHOULD NOT CAUSE PERMANENT DEFORMATION AFTER THE REMOVAL OF LOAD

LUG NO. 318:-
A PROOF LOAD OF 8500 Kg (SPREAD OVER JOURNAL FLAT 10·4 mm) SHALL BE APPLIED ON EACH LUG WELDED TO BOMB BODY IN A DIRECTION PERPENDICULAR TO THE AXIS OF JOURNAL (BOTH DIRECTION) THE LUG SHOULD NOT DEFORM AFTER TAG APPLICATION OF LOAD

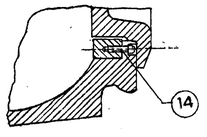
STRICT QUALITY CONTROL DURING MANUFACTURE OF THE LUGS AND THEIR ATTACHMENT TO THE BOMB BODY ESPACIALLY DURING THE HEAT TREATMENT/WELDING TO THE BOMB BODY SHOULD BE EXERCISED



SECTION 'AA'



TO BE STAMPED IN POSITION SHOWN ON BODY & TYPE :-
* MANUFACTURER'S INITIALS OR RECOGNISED TRADE MARK.
-/- DATE OF MANUFACTURE MONTH & YEAR E.G. 3/51
* IDENTIFICATION MARK SEE SPEC. D.T.D & P (AIR)/32/ARM



SCRAP SECTION-BB

FINISH:-
THE EXTERNAL SURFACES OF BODY, ITEM 3 & EXTERNAL SURFACES, EXCEPT TOP FACE OF LUG (AFTER WELDING TO BODY) ARE TO BE SHOT BLASTED FOLLOWED IMMEDIATELY BY A SPRAYED METAL COATING ALL SCREW THREADS ARE TO BE PROTECTED DURING SHOT BLASTING AND METAL SPRAYING, APPLY ONE COAT OF PAINT FINISHING, AMMUNITION (AIR DRAWING) TO IS: 168 EXCEPT FOR EXTERNAL SURFACES DETAILED BELOW. } SHOT BLASTING AND METAL SPRAYING TO BE IN ACCORDANCE WITH SPEC. D.T.D. & P (AIR)/32/ARM

FINISHING COAT TO BE DEEP BRONZE GREEN TINT NO. 224 TINT TO CONFORM TO IS: 5
(a) ALL SCREW THREADS
(b) SUSPENSION LUG JOURNAL ITEM 34 & 37
(c) MATING SURFACES OF ITEM 5 & 5
(d) SURFACES MARKED 'X' (DRG. NO. ARM 1172 B 6) } THESE SURFACES TO BE FREE FROM PAINT

INTERNAL SURFACES OF BODY ITEM 3 & 298·1 DIA MATING SURFACE BETWEEN ITEMS 3 & 5 TO BE COATED WITH BITUMEN (HARD) IS-702-1961 ALL SCREW THREADS TO BE FREE FROM BITUMEN THE SURFACES MARKED 'X' TO BE COATED WITH COMPOSITION PROTECTIVE PX2 (D.S. CAT NO. 8030-000004) TO SPEC. IS: 1153
SCREW THREADS OF ITEM 5, 6, 7, 9 & 15 TO BE COATED WITH APC-10 TO SPEC. J.S.S. 8030-15
JOURNAL OF ITEM 34 & 37 TO BE COATED WITH PROTECTIVE PX1 (D.S. CAT NO. 8030-000003) IS: 1674

NOTE:-
* WHEN BOMB BODY IS INERT
BOMB TO BE PAINTED EXTERNALLY WITH PAINT PFU AMMN AIR DRYING BLACK (MATT FINISH) TO SPECN IND/ME/437
INERT FILLING GREEN BAND + BENTONITE
SPECIFIC GRAVITY 1·65 APPROX.
ALTERNATIVE FILLING :- HES TO SPECN: JSS-8030-33: 1994 MIXTURE OF:-
BARYTES, KAOLIN, MINERAL JELLY, PARAFFIN WAX } S.G. = 1·65

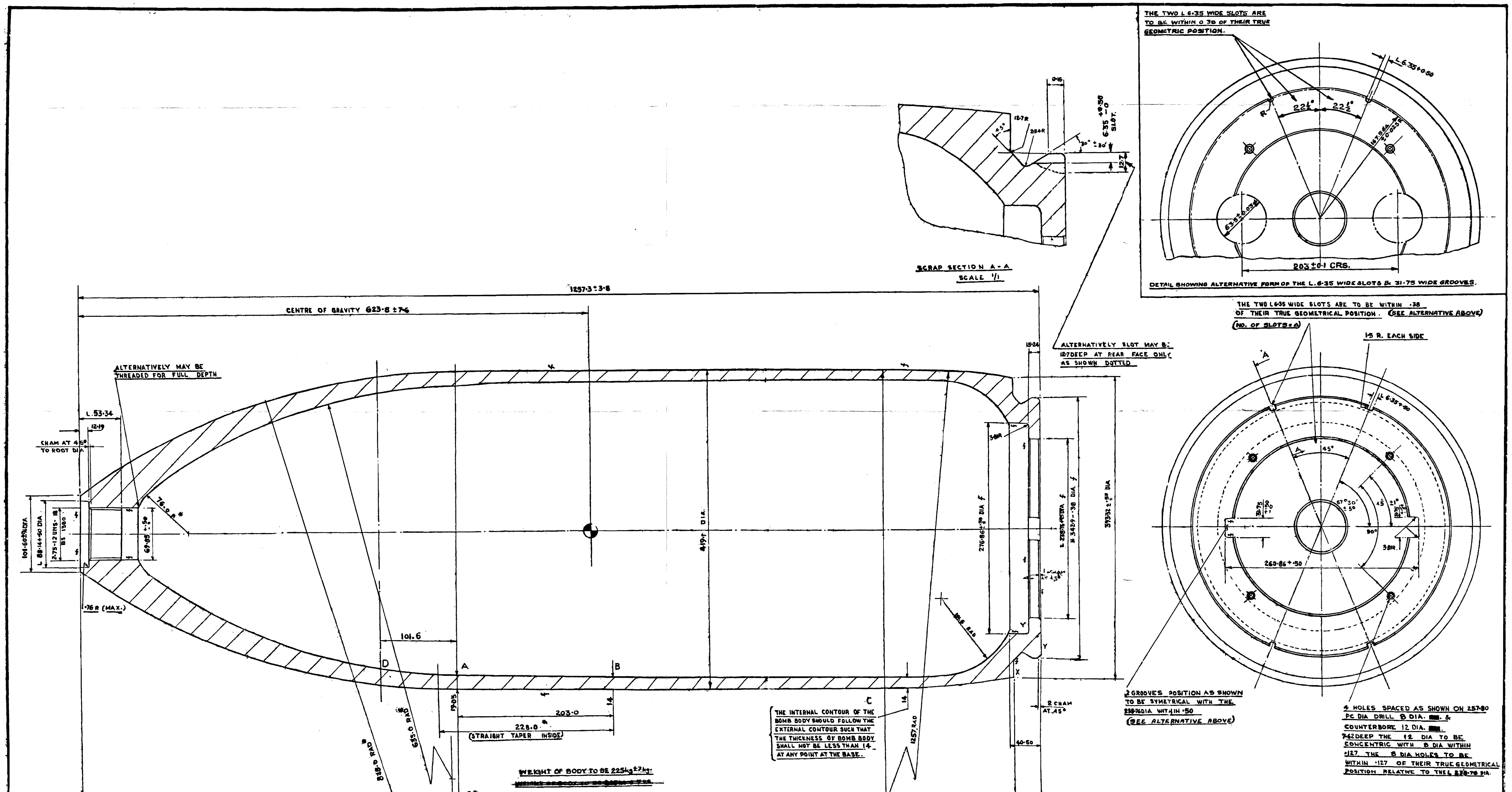
R.NO.	DATE	ZONE	BRIEF RECORD	INITIAL
3	23-10-07	B-4-7	AMENDED VIDE AL.NO. 16/2007	
2	30-6-05		AMENDED VIDE AL. NO. 17/2005	
1	24-2-94		AMENDED VIDE AL. NO. 4/94	
			PROV. SEALED	

	DATE	INITIAL	DIMENSIONS IN mm
DGN.			MATL. :- SPEC.
DRN.			
CHD.			SEC. REF. NO. :-
TCD.	1	Krishna	GAUGE SCHD. NO.
COMP.			DRG. LIST NO. ARM-1482

SCALE :- 1:2
TOL. :- UNLIMITED DIMENSIONS TO BE WITHIN ±·25 (MACHINED 2·1·3 UNMACHINED)

TITLE :- EMPTY ASSY.
BOMB HE/INERT A/C
M.C. 1000 LB (450 Kg)
MK II (N) NOSE & TAIL EXPLODERED

DGAQA MINISTRY OF DEFENCE
APPROVED
DRG. NO. ARM-1482 D2



WEIGHT OF BODY TO BE 225kg ± 7kg.

~~[illegible]~~

CONCENTRICITY

a. THE 393·32 ± ·50 DIA. & THE L 238·76 + ·25 DIA ARE TO BE CONCENTRIC WITH THE L 342·9 – ·38 WITHIN ·25 (MEASURE)
b. THE 276·86 + ·80 DIA. IS TO BE CONCENTRIC WITH THE L 238·76 + ·25 DIA. WITHIN ·25 (MEASURE)
c. THE L 88·14 + ·50 DIA. RECESS IS TO BE CONCENTRIC WITH THE 2·75-12 UNS-1B THREAD WITHIN ·25
d. THE BODY IS TO BE ROTATED BETWEEN CENTRES OF THE H 342·9 – ·38 DIA & 2·75-12 UNS-1B THREAD THE MAX. ECCENTRICITY OF EXTERIOR SURFACE AT POSITION A, B & C MUST NOT EXCEED 1·3 (MEASURE)
e. THE WALL THICKNESS IS TO BE MEASURED AT FOUR POINTS ON CIRCUMFERENCE 90° APART AT EACH POSITION A, B, C & D THE MEAN THICKNESS AT THE THREE POSITIONS A, B & C TO BE NOMINAL THICKNESS SHOWN (i.e. 19·05 AT 'A' & 14 AT B & C) ± ·76 THE MAXIMUM VARIATION FROM NOMINAL THICKNESS AT ANY ONE POINT MUST NOT EXCEED 1·3 THE WALL THICKNESS MEASURED AT FOUR POINTS AT POSITION D IN THE SAME LONGITUDINAL PLANE AS POINTS MEASURED AT POSITION A IS TO BE 1·0 MINIMUM, GREATER THAN THE THICKNESS AT THE CORRESPONDING POINT AT POSITION 'A'
f. THE EXTERNAL DIA IS TO BE MEASURED AT TWO POINTS ON CIRCUMFERENCE 90° APART AT EACH POSITION A & C THE MEAN DIA. AT THESE TWO POSITIONS TO BE NOMINAL DIA SHOWN 419·1 ± ·76 THE MAXIMUM VARIATION FROM NOMINAL DIA AT ANY ONE POINT MUST NOT EXCEED 2·5

SQUARENESS

THE FACE MARKED 'X' IS TO BE SQUARE WITH THE 2·75-12 UNS-1B THREAD & THE 342·9 – ·38 DIA WITHIN ·127 MEASURED AT THE PERIPHERY OF FACE 'X'

PARALLELISM

THE TWO FACES MARKED 'Y' TO BE PARALLEL WITHIN ·127 MEASURED AT EXTREME DIA.

NOTE ~

UNLIMITED DIMENSIONS TO BE WITHIN ± ·25 (MACHINED) & ± 1·3 (UNMACHINED)

GENERAL NOTES :-

DIMENSIONS ARE IN mm
INDICATES CONSTRUCTIONAL DIMENSIONS
INDICATES MACHINED SURFACE
ALL BURRS & SHARP EDGES TO BE REMOVED

ISSUE	DATE	ALTERATION.
5	8 11/95	AMENDED VIDE AL No. 35/95
4	9 12/93	AMENDED VIDE AL No. 724
3	1 6/73	AMENDED VIDE A.L NO 188
2	19 1/73	AMENDED VIDE A.L. No 187
1	18·3·65	

TYPE	ASSY. DRG. No.	SCHED No.	MOD. No.	FILE No.
	ARM 1302 D2			

DRAWN BY TECH. DRAWING OFFICE AND ISSUED BY C.D.L. & R. SECTION, TECH. DIRECTORATE, AIR HEADQUARTERS, NEW DELHI.

DRAWN	
CHECKED	
TRACED	RUP LAL
CHECKED	
PASSED	
APPROVED A.I.S	

TITLE ~

BODY - BOMB
A/C 1000 lbs (450 kg)

MATL.	SPECN.	FINISH	DRAWING No.
STEEL CASTING	ARM NO. 140		ARM 1302 D3
SCALE	1/2		

(163)

R E S T R I C T E D.

SPECIFICATION DTD&P(AIR)/32/ARM.

(Pages 9)

(Based on Prov. Specification No. ARM 140 Issue B as amended upto Feb '62).

BOMB H.E. AIRCRAFT M.C. 1,000 LBS. MK. 9U.

SPECIFICATION TO GOVERN MANUFACTURE OF EMPTY BOMB AND COMPONENTS.

Approved 1st June, 1963.

CONTENTS.

Amendment State										
Date										

Note : Amendment State is to be kept upto date.

SECTION I - GENERAL REQUIREMENTS.

1. This specification shall be read in conjunction with the drawings issued and the relevant contract requirements. All parts

dimensions thereon and as required by this specification. Any question relating to the drawings or specifications should be referred to the Inspector duly authorised to act on behalf of the Purchasing Department.

2. No component part shall be built up or repaired in any way not provided for by the drawings or this specification unless authorised in writing by the Inspector.

3. Where B. S. or other specifications are quoted on the drawings or in this specification, the latest issues are implied.

SECTION II - COMPONENTS AND MATERIALS.

1. The bomb shall consist of all the components listed in the Schedule of Parts issued with the drawings, and all must be supplied by the Contractor unless otherwise stated in the Contract. Any components supplied to the Contractor on "Free Issue" or "Repayment" terms shall be embodied in accordance with the drawin and/or this specification.

1.2 Unless otherwise stated in the Contract, the Contractor is also required to supply all paints, varnishes, luting and other preservatives called for on the drawings or this specification. These must conform to the latest issue of approved specifications

1.3 All materials used in the manufacture of the bomb bodies must have been accepted as satisfactory by the Inspector before being taken into use. No mechanical work, heat treatment or othe operation which may modify their physical properties may be carri out on the materials after they have been submitted for test, unless authorised in writing by the Inspector.

1.4 All billets, bars and forgings used in the manufacture of bomb components shall comply with the requirement of the material specifications quoted on the relevant drawings. Materials to be welded shall be of welding quality.

2. Steel Casting for bomb bodies.

2.1 Process of Manufacture - The steel for castings shall be made by the open hearth process (acid or basic) or an electric process (acid or Basic).

2.2 Chemical Composition - The steel shall contain :-

Carbon	-	not more than 0.33%	
Silicon	-	not more than 0.5%	
Manganese	-	not more than 1.7%	
Sulphur	-	not more than 0.04%	
Phosphorus	-	not more than 0.04%	
Nickel	-	not more than 0.4%	)
Chromium	-	not more than 0.25%	) Residual elements
Molybdenum	-	not more than 0.15%	) only.

Elements of which the content is not limited or which are given as residual elements only shall not be intentionally added without the agreement of the Inspector, other than for the purpose of deoxidising etc. All reasonable precautions shall be taken to prevent addition of such elements from the materials used.

The Contractor shall supply to the Inspector a certificate of analysis of each melt.

2.3 Mechanical Properties - The mechanical properties determined by the methods given in Section IV shall be :-

Ultimate tensile stress - not less than 35 tons/sq.in.
Elongation - not less than 20% on 2" gauge length.
Combined figure for Ultimate Tensile Stress and Elongation. - not less than 57.

3. Filling Plug.

It will be made either from material to Specification B.S-STA5/V3 or Forged Steel. The forged steel Filling Plug should satisfy the following requirements.

3.1 Mechanical properties

Ultimate tensile stress - not less than 28 tons/sq.in.
Elongation - not less than 10%

3.2 Freedom from defects.

The forgings are to be clean, sound and free from defects. They must be capable of being machined where necessary without showing evidence of the forged surface.

3.3 Selection and preparation of test pieces.

3.3.1. At least 1% of the forgings produced from each cast of material will be taken for test samples.

3.3.2 Tensile test pieces will be prepared from those samples to the dimensions of the British Tensile Test Pieces Figure 1 of B.S. specification 3A4.

3.4 Test requirement.

In the event of any test piece failing to comply with the requirements specified above, the Inspecting Officer may at his discretion select double the number of samples specified for re-test. Failure of any test piece at the re-test will entail rejection of the cast represented.

4. All other materials shall be in accordance with the specifications given on the relevant drawings including any special requirements given thereon.

SECTION III - MANUFACTURE.

1. BOMB BODY.

1.1 The bomb body shall be a steel casting having the chemical composition and mechanical properties given in Section II. It may be cast in the vertical position with the ogival nose up or in the horizontal position. A sufficient head of metal shall be provided, and the feeding arrangements are to be such that sound metal is obtained throughout the casting. No casting may be made from more than one melt. No chaplets may be used in casting the bomb body in positions where the remains of these would be present in the walls of the finished bomb.

1.2 The interior of the bomb shall, if possible, be cast to the dimensions and tolerances shown on the drawings so that no subsequent machining is necessary.

Contd.... Page 4.

1.3 The exterior of the bomb shall be machined all over. The machining allowance left for this purpose shall be the minimum possible to give the finished dimensions and wall thickness specified but extra allowance may be made where necessary to ensure sound castings. Before machining is commenced the fettled, dresse and cleaned casting shall be visually inspected for cracks and oth defects; all seriously cracked castings shall be rejected.

1.4 Where the finished bomb is supplied with the interior unmachined or partly machined, the interior shall be thoroughly clea ed by shot blasting. The interior shall be free from irregulariti discontinuities of profile or surface defects with re-entrant angl Minor surface defects free from re-entrant angles may be accepted provided they do not result in local weakening of the bomb. With the prior consent of the Inspector without exception, surface defects may be repaired by welding. No major defects or cracks ma be repaired in this manner. All such repairs by welding shall be carried out in accordance with Appendix A.

1.5 All bomb bodies shall be annealed and/or normalised to give the mechanical properties specified in Section II. After welding on the lug housing, the bomb body shall be stress relieved by reheating to a temperature of at least 500°C and cooled in air or suitably quenched.

For each lot or batch of bombs the Contractor shall supply a document to the Inspector certifying that heat treatment-includi stress relieving subsequent to welding- has been carried out in accordance with the requirements of this specification. If requir by the Inspecting Officer at any time, the Contractor shall supply details of the heat treatment actually applied to any lot or batch of bombs. No bomb may be re-treated more than three times.

1.6 On completion of all machining, heat treatment and stress relieving the bomb body shall have the form and dimensions shown o the drawing and lie within the limits of squareness, concentricity and screw thread fits specified.

The weight and centre of gravity position of each bomb body shall be checked and shall lie within the limits given on the drawing.

2 Assembly and Welding of Suspension Lug Housing.

2.1 The housing shall be a close fit on the bomb body and shall if necessary, be dressed or machined to ensure this. The top surface must be ground or machined if necessary to give a smooth flat surface. All flashes shall be ground off. The edge radius must b within the limits shown on the drawing.

2.2 The housing shall be welded to the bomb body by the electri arc process after the annealing/normalising operations. An approv welding fixture shall be used to position the housing accurately, both longitudinally and circumferentially, in relation to the bomb body. After completion of all welding the bomb body has to be stress relieved as given in para 1.5. The suspension lug must not be in position during these operations.

It is important that the weld size does not exceed that shown on the drawing and, if necessary, the finished weld shall be ground to ensure this. The height of the housing, after welding, shall be within the limits shown on the drawings.

Contd..... Page 5

2.3 Full details of the welding procedure to be employed shall be submitted to the Inspector for approval. The information given shall include the preheat temperature, the make and type of electrode, the gauge of electrode, the length of run per electrode and the current strength for each run. The approved procedure shall be strictly adhered to throughout the progress of the Contract.

2.4 All welding operators shall have been approved by the Inspector as fully competent to carry out welding on the materials of the bomb body.

2.5 On completion of all welding and heat treatment the bomb body and housing will be subjected to the tests given in Section IV

3. Filling Plug.

The filling plug shall be made to the form and dimensions shown on the drawings. If drop forging or other machine forging methods are employed a draw not exceeding 7° can be allowed where necessary but undue increase in weight of the finished filling plug must be avoided. All flashes must be ground off.

4. Containers and Detonator Holders.

These should preferably be manufactured in one piece by forging and/or machining. Where the alternative welded construction shown on the drawings is adopted each container must be subjected to the pressure test given.

SECTION IV - MATERIAL AND OTHER TESTS.

1. Mechanical Tests - Bomb Body.

1.1 Preparation of Test Pieces.

When test samples are cast attached to the bomb body they shall not be detached from the castings until heat treatment has been completed nor until they have been stamped to identify them with melt to which they relate.

Where test samples are cast separately, they shall be provided to the extent of 2% of the number of castings from each melt but in no case shall there be less than two samples per melt. The test samples shall be cast in moulds of the same material as is used for the bomb body castings and shall be made at the same time as the castings and run from the same ladle. The test samples shall not be less than 8" in length and not less than 1" in diameter. When cold and before heat treatment they shall be stamped to identify them with the melt to which they relate. Test samples shall be heat treated with the castings they represent. A tensile test piece shall be machined from the test sample to the dimensions of the test piece shown at figure 1 of B.S. Specification 3A4 for the tensile test specified in Section IV.

1.2 Test requirements.

If any test piece provided and prepared as specified above fails to comply with the tensile test specified, the Inspector may reject the casting represented by that test piece. However, the Contractor shall have the right to submit another test piece selected from the same heat and treated or re-treated by him with the bomb castings of the same cast. This further test piece prepared as specified above must comply with the tensile test specified in Section IV otherwise the castings from the cast of steel shall be rejected. Test pieces showing flaws shall be ignored.

Contd.... Page 6

1.3 The test certificate supplied is to incorporate full details of the analysis, mechanical properties and heat treatment of the steel.

2. Mechanical tests - other components including Filling Plug.

2.1 The preparation of test pieces and method of test for all billets, bars and forgings used in the manufacture of the Filling Plug and other components shall comply with the conditions laid down in the relevant specifications.

2.2 Izod test for Exploder Container (Extract from Spen.ARM 94).

The forgings bars used in the manufacture of the Exploder Container shall be supplied in the normalised condition and the steel shall have a minimum Izod value of 20 ft. lbs.

3. Pressure Test.

After completion of all machining, heat treatment, welding and stress relieving but before any finishes are applied each bomb body shall be subject to an air pressure test of 50 lb per sq. inch for five minutes when no trace of leakage must be shown.

4. Crack Detection.

4.1 On completion of all machining, heat treatment, welding and stress relieving but before any finishes are applied, each bomb body shall be subjected to a magnetic crack detection test. Any cracks found which are proved on exploration to be minor surface defects may, with the prior approval of the Inspector, be repaired as given in Section III para. 1.4. . All seriously cracked bombs shall be rejected.

4.2 Details of an approved crack detection equipment are given in Appendix C but other types of equipment may be used subject to the approval of D.T.D. & P(AIR). Where equipment other than that described in Appendix C, is used, each bomb body shall be effectively de-magnetised after the crack detection test unless it can be shown that the residual magnetism resulting from the equipment used is of an acceptably low order. All questions on the necessity for de-magnetisation shall be referred to the Inspector who may require sample bombs to be provided for compass deflection tests at a place arranged by him.

5. Proof Loading of Suspension Lug Housing.

After stress relieving and before any finishes are applied, the lug housing welded to the bomb body shall be subjected to the proof load given on the drawings. The load shall be applied slowly by tension machinery or other approved means. The reaction points on the bomb body shall be designed to avoid local high loads. The lug, suspension No. 27 Mk.1 shall not be used to apply the load but a special screwed adaptor, of the same or equivalent material, heat treated to give the same mechanical properties and with the same thread fit shall be provided for testing purposes. Great care must be taken not to damage the screw threads during this test.

There must be no sign of weld failure or appreciable permanent set due to the load applied.

SECTION V - PROOF TESTING.

1. Provision of bombs for proof testing.

1. Proof testing may be required by the Inspector. Details of the tests required will be made known when they

2. Whether or not proof testing is required, the bombs shall be divided into lots. Unless specially authorised by the Inspector, a lot shall comprise 200 bombs. The first lot produced by each Contractor shall be Lot No. 1 ; thereafter lots shall be numbered consecutively.

SECTION VI - IDENTIFICATION.

1. After completion of all manufacture but before any finishes are applied, each bomb body has to be legibly stamped on the rear face in the position shown on the drawing, with the following information :-

(a) Abridged nomenclature;
(b) Maker's initials or recognised trade mark;
(c) Month and year of manufacture;
(d) An identification mark which will allow the finished bomb to be traced back to the original cast and heat treatment batch. This mark shall be agreed between the Inspector and the Contractor.

2. Other marking which is required is given in Section IX.

SECTION VII - FINISHES.

1. The types of finish required and the surfaces to which they have to be applied are shown on the relevant drawing.

(a) Zinc sprayed metal coating only.
(b) Zinc sprayed metal coating with one coat of paint.
(c) Two coats of varnish with or without initial phosphate treatment.

Care must be taken to apply only the appropriate finishes to the surfaces specified on the drawings and to exclude all metal spray, Bitumen paint or varnish from screw threads, etc. which are required to be free from such finishes.

2. Surface Preparation - All components to be metal sprayed, painted, coated with bitumen or varnished shall be made perfectly clean, dry and free from grease, scale, rust or other foreign matter. Removal of grease shall be by an approved organic solvent - removal of scale and oxides shall only be by blasting with a suitable abrasive grit. When found necessary to give satisfactory cleaning, and in all cases where components have to be plated, treatment by organic solvent shall be followed by approved alkaline treatment.

3. Metal Spraying - The surfaces to be metal sprayed shall be prepared and coated with zinc in accordance with the requirements of Appendix B. The minimum thickness of zinc coating at any one point shall be 0.004". The spraying shall be automatically controlled and only metal spraying pistols of an approved type shall be used. Great care must be taken not to damage or coat screw threads, etc., which are specified to be free from finishes.

Note :- Appreciably thicker coatings are liable to be less adherent and should be avoided.

The thickness and adhesion tests specified in Appendix B shall be carried out on thefirst 100 bombs of any contract. Thereafter, ~~if he is satisfied~~ that consistent results are being obtained by the technique adopted, the Inspector may, at his discretion, reduce the number of bombs to be tested to not less than 1 per cent. Any damage to the zinc coat resulting from tests shall be rectified by re-spraying.

Contd.... Page 8

4. Phosphate Treatment.

Where phosphate treatment is specified a process approved in accordance with Specification DEF 29 (latest issue) shall be used. All materials applied and treatment of parts by such an approved process shall be in accordance with approval conditions. Inspection must be carried out in accordance with Specification DEF.29.

5. Varnishing.

In addition to the coal varnish specified on the drawings.

X Section VII para 5. "Delete" Para 5"

Introduce " The whole of the interior surface of the bomb will be co -ed with varnish st -ing ammunition to IND/MT/674.

X Amendment No: 2 dt. Feb-62.
vide Khamaria letter No: 28/Tech dt. 15.1.66.

6. Painting.

All painting operations shall be carried out under clean and dry conditions. Condensation of moisture before and during painting operations must be avoided and draughts and dust excluded. The under-coat must be thoroughly dry before the finishing coat is applied. The resultant finish must match the relevant standard of colour and must present a smooth surface free from brush marks, thin patches and other blemishes. Undue accumulation of paint at any point and tears and blobs must be avoided. All screw threads and the surfaces indicated on the drawing must be free from paint.

SECTION VIII - ASSEMBLY.

1. After completion of all tests and finishes the bomb and all its components shall be assembled as shown on the drawings. The interior of the bomb shall be clean and dry during and after assembly. It is of great importance that empty bombs be adequately sealed before despatch from the Contractor's works and the specified cement and luting etc., should be carefully applied to ensure this.

2. A transit base of the design shown on the drawings shall be fitted to the bomb before despatch from the Contractor's Works.

SECTION IX - MARKING.

1. After completion of assembly and all finishes a label of the design shown on the drawings has to be fixed to the filling plug in the position and by the method shown.

2. The label has to be engraved and/or stamped with the following information in the spaces provided.

(a) Abridged nomenclature ; (i.e. 1000 M.C. Mk.9)
(b) Maker's initials or recognised trade mark ;
(c) Month and year of manufacture e.g. 3/52 ;
(d) Empty lot number.

The spaces on the label for other informa

SECTION X - INSPECTION.

1. During all stages of manufacture and assembly all components will be subject to examination, gauging and testing to the satisfaction of the Inspector.

2. Any bomb or component not manufactured, assembled or finished to the satisfaction of the Inspector will be rejected.

3. If, on examination of 20% of a delivery, it is found that 25% of the number examined depart from the approved design further examination will be suspended and the whole quantity returned to the Contractor.

4. With prior permission of the Inspector, defective assemblies or components, may, if possible, be rectified and resubmitted for examination.

5. Any casting or component may be rejected for faults in manufacture, notwithstanding that they have been previously accepted.

SECTION XI - REPLACEMENT BY CONTRACTOR.

When finished or partly finished stores or components thereof are expended or damaged in test, re-test or examination as stipulated in this specification or elsewhere as a condition of acceptance, the Contractor supplying the store will be required to supply, replace, or repair, free of charge, the stores so damaged or expended, which become the property of the Government.

SECTION XII - PACKING.

The bombs shall be packed transversely in the railway wagon or other vehicle used for transport, and securely checked by wooden or metal dunnage so that no movement is possible.

for (K. K. SAHAI) Sqn. Ldr.
Director of Technical Development
& Production (AIR).

Procedure for Repair of Castings by Welding.

1. Approval of Welders.

All welding operators employed in the repairs of castings shall have been approved by the Inspector as fully competent to carry out all welding on the materials of the bomb body. Instructions for testing arc welders are given in B. S. 2645.

2. Electrodes.

Only electrodes (feritic or austentic) which deposit metal of the same general properties as the parent metal shall be used. The makers recommendation for the electrode shall be strictly followed in all respects. All electrodes shall be stored in a dry place adequately protected from weather effects. Any electrodes damaged by damp shall be discarded unless it is expressly stated by the manufacturers that they can be dried by facilities available without deterioration. All electrodes having areas of the flux broken away or badly damaged shall be discarded.

3. Preparation.

All surfaces to be welded shall be cleaned free from scale, dirt, grease, paint, heavy rust or other surface desposits.

The surface to be welded shall be prepared to give a sound foundation for welding and should be dressed to give clean sound metal with the edges bevelled and free from undercut.

4. Pre-heating.

Where necessary to obtain a crack free weld the casting shall be pre-heated to a temperature of between 150° and 300° C.

5. Welding.

The work shall be carried out in such a manner that :-

(a) the welds shall be of good clean metal free from cracks, gas holes, slag inclusions and all other impurities,

(b) the surface of the welds shall have an even contour and regular finish and shall indicate proper fusion with the parent metal.

(c) all welds shall be free from undercuts. No welds shall be painted until they have been inspected and approved.

6. Deslagging and Dressing.

All slag shall be thoroughly removed from welds.

All welds shall be ground to give a smooth finish with surrounding metal without discontinuities, steps or re-entrant angles. Great care must be taken not to reduce the wall thickness in the dressing operation.

7. Stress Relieving Treatment.

Welded bomb body shall be stress relieved at a temperature not less than 500° C.

8. Inspection.

The quality and acceptability of the repair by welding shall be adjudicated by the Inspector whose decision on these matters shall be final.

Requirements and Tests for Sprayed Metal Coatings.

1. Surface Preparation - The surface after preparation shall be free from grease, rust, scale or other foreign matter and shall provide an adequate key for the subsequent sprayed metallic coating. The surface shall be obtained by blasting with suitable metallic grit.* Only clean, sharp, angular grit shall be used uncontaminated with paint, grease, etc. Residual grit from the grit blasing operation shall be removed from the surfaces, e.g. by dry compressed air, before spraying.

The prepared surface shall be comparable in roughness with a reference surface produced in accordance with para 7.

The sprayed coating shall be applied as soon as possible after surface preparation. If visible deterioration as compared with a freshly prepared surface has occurred, then surface preparation shall be repeated.

2. Coating Metal. - The composition of the Zinc to be sprayed shall comply with the requirements of BS 220, Grade B (99.9 per cent purity) but the copper content shall not exceed 0.05 per cent.

3. Method of Application. - The coating shall be applied to clean and dry surface prepared in accordance with para.1, by means of an approved metal spraying pistol. The following metal sprayir pistols are approved :-

(i) Metallisation Ltd - Types "Standard" Mk.16, Mk.27.

(ii) Metallising Equipment Co. Ltd - Metco Types 2E, 3E, 4E 5E, Y.

(iii) Schori Metallising Process Ltd - Model 50 (powder pistol

Other pistols which can be shown to be capable of applying consistently efficient sprayed coatings to the satisfaction of the Inspection Authority, will be considered for approval on request.

The surface of the sprayed coating shall be of uniform texture free from lumps and coarse areas.

To provide some safeguard against excessive oxidation, the coating applied shall exhibit a bright metallic lustre when lightly burnished.

If it is necessary to apply a further coating to achieve the specified thickness great care must be taken that there is no contamination or corrosion of the previous coating.

4. The thickness of the coating shall be measured by means of a magnetic or electro-magnetic thickness meter approved by the Inspector, the calibration of which has been checked against a known similar thickness of coating within an accuracy of ± 10 per cent before and after the test. The effect on the measurements of modifications of the magnetic field associated with the shape and thickness of the article shall be taken into account when checking the calibration of the instrument.

5. Adhesion. - The sprayed metallic coating shall fulfil the requirements of the test described below.

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* For components with hardness in excess of 350 DPN it may be necessary to replace the usual chilled iron grit with alumina or similar hard abrasive.

Contd..... 3

Using a straight edge and hardened steel scriber ground to a sharp 30° point, two parallel lines shall be scribed at a distance apart equal to ten times the average coat thickness. In scribing the two lines enough pressure shall be applied on each occasion to cut through the coating to the basis metal in a single stroke. If, at the second cut, any part of the coating between the lines breaks away from the basis metal it shall be deemed to have failed the test.

6. Preparation of a reference surface - The basis metal shall be a flat piece of steel not less than $\frac{1}{4}$" thick and having a hardness of the same order as the bomb body. An unbroken surface shall be grit blasted in accordance with the details given below, until a uniformly rough clean surface has been attained and maintained without visible change for at least 25 per cent of the total blasting time.

Abrasive	-	Chilled iron grit No. 24
Air pressure	-	not less than 30 lbs/sq. in.
Nozzle diameter	-	not exceeding $\frac{1}{2}$ inch.
Nozzle position	-	at right angles to and about 9 inches from the surface.

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(13)

Crack Detection - Equipment and Operation.

1. Equipment.

1.1 The basic equipment consists of a 36ft multi conductor cable in series with a fuze system which passes for a very short period of time a current surge from the 230/250V single phase A.C. mains. The cable contains in its insulating sheath 10 cores connected in series, the total resistance not exceeding 5 ohms. A suitable multiconductor cable is 12 Met vin small which provides two spare cores in case of failure of one or two conductros and copper braiding for earthing purposes.

1.2 The apparatus is housed in a wooden box and is connected to a 15 Amp mains outlet by a three wire-cab type cable. As a safety precaution a double pole biassed isolating swith is incorporated in the supply circuit, which is actuated by a lid stay and thus completes the circuit only when the lid of the box is closed. The multi conductor cable terminates at its free and in a female socket (e.g. Plessey 12 pin Socket miniature type CZ.49126) which when inserted, via an aperture in the case side, into the male plug (e.g. Plessey 12 pin plug panel mounting miniature type CZ. 49112) mounted on the panel inside the box, complete the loop circuit through a 10 Amp Fuze system on the panel and a biassed operating switch on the outside of the wooden case.

1.3 A red pilot light on the outside of the box is fed through a small transformer and glows when the current flows through the flash loop thus indicating that magnetisation of the bomb under test has been effected.

1.4 Ancilliary equipment consists of (a) a hand spray for applying ink to the bomb (b) a supply of approved ink to be thoroughly mixed and used in accordance with the manufacturers instructions, and (c) an illuminating system for viewing the bomb internally after flaw detection.

2. Principle of Operation.

2.1 The passage of a high amperage current through a conductor produces a circular magnetic field in a plane at right angles to its axis. If the current passes through a number of conductors laid parallel to and near to each other and connected in series, then the resultant field is multiplied by the number of conductors used.

2.2 If three turns of the flash loop are threaded through the bomb and maintained concentric with the bomb axis the magnetic field produced will induce a circumferential magnetic flux in the bomb. Non magnetic discontinuities near or on the surface of the bomb up to $\pm 45^{\circ}$ from the longitudinal direction will cause flux leakages which can be indicated by black lines when ink is applied to the magnetised bomb.

2.3 Although this equipment employes A.C. for magnetisation, the use of a fuze to break the circuit ensures that the arc brings the current to zero on its wave i.e. the position on the hysteresis loop is such as to leave the component with remanent magnetism and flaw detection can be achieved by inking after the magnatising current has ceased to flow.

3. Method of operation.

3.1 The bomb to be tested must be free from grease and dirt. It is threaded with three turns of the flash loop, the two ends of

3.2 The fuze is inserted in the circuit by drawing sufficient wire from the fuze reel through a tensioning device on the panel in the wooden box. A spring loaded fuze cover is held open whilst the wire is drawn over the two fuze contacts and fastened on a screw head. Closing the fuze lid, gives a tight holding contact on the fuze wire.

3.3 The wooden box lid is now closed, the mains supply connected and the biassed operating switch on the outside of the case operated, the red pilot light glows, the fuze blows and the operating switch released.

3.4 The box lid is opened the multi-pin plug and socket unlocked to allow the flash loop to be removed from the bomb.

3.5 Before application of the ink the hand spray must be well shaken. The ink is then applied to the bomb and after drainage of surplus ink (which might obscure defect indications) inspection carried out.

3.6 Each day the ink should be checked with a magnetised sample having a known defect. If the defect is not indicated it is probable that fresh ink should be used.

3.7 4 oz reels of 33 S.W.G. tinned copper wire fuzing at 10 Amps should be used for the fuzing system.

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(15)

57
Specfns.
2492

WASHERS, LEATHER (VEGETABLE TANNED) LUBRICATED, LEAD FREE

Specification governing supply and inspection

Approved 23rd Nov., 1933
Reprinted Sept., 1948

SECTION I - GENERAL

1. The dimension of the washers are to be in conformity with the drawing issued to guide manufacture.

2. Any sample lent to the Contractor must be taken only as a general guide to workmanship and finish and not as a guide to dimensioning or quality of material.

3. Any question relating tho the drawing, samples or this specification shouldh be referred to The Chief Inspector of Armaments, The Chief Inspector of Naval Ordnance; The Director of Aeronautical Inspection, or other Inspecting Officer duly authorised to act on behalf of the Purchasing Department (hereinafter called the Inspecting Officer).

4. IMPORTANT: USE OF OPTIONAL ALTERNATIVES. Where the drawing or specification permits a choice of alternative materials or forms for particular components, the Contractor is required to notify, in writing, to the Inspecting Officer which of the permitted alternatives he chooses to produce. If the choice of alternatives is changed during the course of the contract, the Contractor shall again notify the Inspecting Officer of such change.

SECTION II - MATERIAL

1. The washers are to be of leather of the grain portion of best quality; well trimmed or even grain on the top side, free from necks, warbles, flaws or blemishes.

2. The leather must be specially prepared for the purpose and must not contain free fatty acid and other fatty substances in quantities exceeding the limits stipulated in this specification and must be free from adulterant of any description (natural glucose to the extent of 2.5 per cent. not being considered an adulterant). If, after tanning, prior to any further operation, it is necessary to "oil off," light mineral oil free from acid must be used and not the ordinary "dubbing" mixtures such as cod oil and tallow or other fats and fatty oils.

3. The leather must be subsequently impregnated with mineral jelly, lead free.

4. The following material may be supplied to the Contractor by the Purchasing Department. If not, they must conform to the requirements laid down in the appropriate approved specifications, copies of which will be issued to the Contractor -

MINERAL JELLY.

He will also supply any other material necessary for the completion of the contract.

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SECTION III - TESTS AND ANALYSIS OF MATERIAL

1. The leather will be tested as detailed below:-

(a) Prior to impregnation with mineral jelly.

Examination of samples must show that -

(i) The leather does not contain more than 2 per cent. of free fatty acid nor more than 4 per cent. of free fatty acid and fat calculated as oleic acid. This determination is made on the petroleum ether extract of the leather.

(ii) The leather does not contain more than 0.5 per cent. by weight of free mineral acid, calculated as sulphuric acid when determined by the procter Searle method. In view of the difficulty in obtaining concordant results of the analysis, a maximum allowance for variation, due to this cause, of plus 0.2 on the figure specified will be permitted.

If the percentages of free mineral acid exceeds 0.7 per cent. but does not exceed 0.8 per cent. the leather may be accepted provided that the acid figures as determined by the Atkin-Thompson method is not less than 2.5.

(iii) The leather is free from alkalinity and loading matter.

(iv) The leather does not contain lead or components of lead calculated as metallic lead together exceeding 0.05 per cent. and excluding the natural mineral matter of the materials, the toatal amounts of other metallic compounds, calculated as metals does not exceed 0.2 per cent.

(b) After impregnation with mineral jelly

Examination of samples must, in addition to (i), ((ii), Procter Searle Method), (iii) and (iv) above, show that:-

(i) When tested by folding and refolding the fold at right angles it does not crack on the grain.

(ii) The leather does not contain less than 20 per cent, of mineral jelly. This determination is made on the petroleum ether extract of the leather.

2. The Contractor will be required to supply, free of charge, the necessary material for testing.

3. When samples of ingredients or of prepared compositions are selected for chemical tests the Inspecting Officer may require the bulk represented to be bonded or sealed pending the results of the tests.

4. Occasional check tests may be made upon the material being employed by the Contractor or his Sub-contractor to ensure that it complies with the conditions contained therein.

5. Should it be found that the material does not comply with the prescribed conditions the bulk represented by the sample will be rejected.

SECTION IV - DELIVERY

1. The washers, unless otherwise ordered, are to be delivered in lots of 1000.

2. Each lot is to be packed in a strong cardboard box, well wrapped and secured to prevent ingress of grit and dirt into the packages.

3. Each package must be clearly marked with the nature of the contents, manufactur

(17)

SECTION V - INSPECTION

1. The washers may be inspected at any time during manufacture by, and after delivery will be subject to testing by, and to the final approval of, the Inspecting Officer.

2. If, on examination of 20 per cent. of a delivery it is found that 25 per cent. of the number examined depart from the approved design the lot will be rejected.

3. Any washer not finished to the satisfaction of the Inspecting Officer, or which has any flaw or imperfection will be rejected.

SECTION VI - REPLACEMENT BY CONTRACTOR

1. Where finished or partly finished washers are expended or damaged in test, re - test or examination, as stipulated for in this specification or elsewhere as a condition of acceptance, the Contractor supplying the washers will be required, free of charge, to supply, or replace the number so expended, which become the property of the Government.

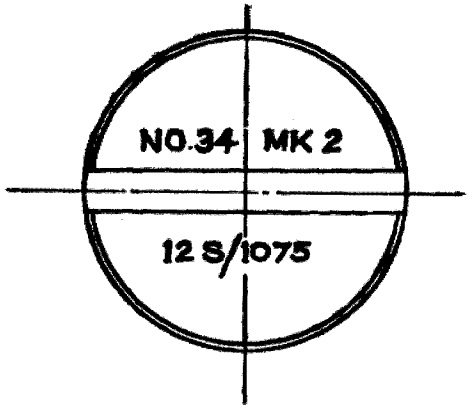
J.U. HOLT.
DIRECTOR OF ARTILLERY.

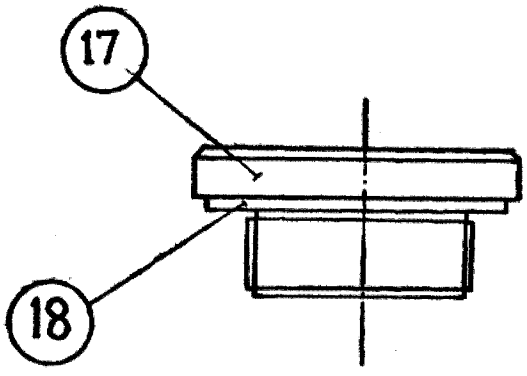
THIS SPECIFICATION IS TO BE RETURNED TO THE CHIEF INSPECTOR OF ARMAMENTS, IMMEDIATELY TENDER HAS BEEN SUBMITTED OR CONTRACT COMPLETED.

4	3	2	1

DRG. Nº ARM 1172 A15 FOR EXPLANATION OF DIMENSIONING ETC. SEE IS:696

NOTE - BALOON NOS. INDICATE SL. NO. IN DRG. SCHEDULE

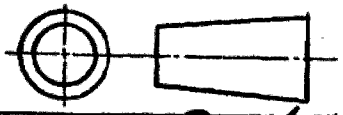




R.Nº	DATE	ZONE	BRIEF RECORD	INITIAL	R.Nº	DATE	ZONE	BRIEF RECORD	INITIAL
3	24.11.79	—	AMENDED VIDE A.L. NO 367						
2	19.1.73	—	RETRACED & AMENDED VIDE AL. NO. 186	RAV					
1	11.9.63	—	ORIGINAL ISSUE						

	DATE	INITIAL	
			DIMNS. IN MM.
DGN			MATL. SPEC. —
DRN		G LAL	
CHD		P.N.C.	I.A.F. SEC. REF. NO.
TCD		MJH	ASSY. DRG Nº ARM 1172 E2 / ARM 1302 D2
COMP			DRG. SCHD. Nº ARM 1172 / ARM 1302
SCALE :- 1:1			TITLE :- PLUG A/C BOMB NO. 34 MK. 2 (ASSEMBLY)
TOL. TOL. EXCEPT WHERE OTHERWISE STATED			

D.T.D. & P. (AIR)
MINISTRY OF DEFENCE



APPROVED R.E. Yardley

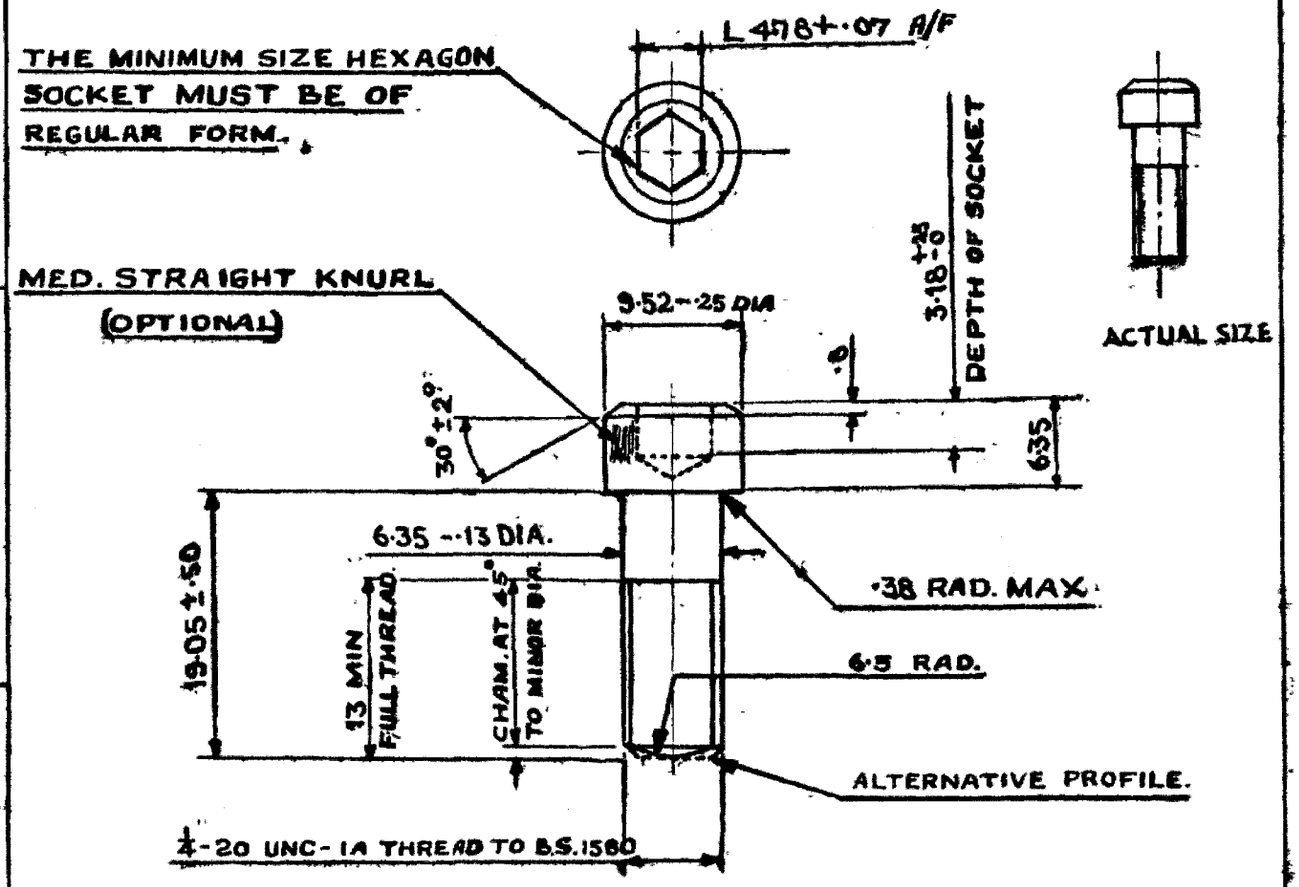
DRG. NO.
ARM 1172 A15

4	3	2	1

DRG. NO. ARM.1172 A19

FOR EXPLANATION OF DIMENSIONING ETC SEE IS:696

FOR ALTERNATE DESIGN SEE ARM 1172 A30



NOTE:-

AFTER HEAT TREATMENT THE MATERIAL MUST GIVE THE FOLLOWING MINIMUM PROPERTIES.

U.T.S. −110 KGF/mm²

ELONGATION — 16%

IZOD −4·84 KGM.

FINISH CADMIUM PLATED TO IS: 1572 Gde A TYPE 2

R.No	DATE	ZONE	BRIEF RECORD	INITIAL	R.No	DATE	ZONE	BRIEF RECORD.	INITIAL
3	24 11/79	—	AMENDED VIDE AL. 367						
2	19·1·73	—	RETRACED & AMENDED VIDE AL No. 186	RW					
1	11-9-63	—	ORIGINAL ISSUE						

	DATE	INITIAL
DGN.		
DRN.		G.LAL
CHD.		
TCD		S Ramesh
COMP		

DIMENSIONS ARE IN mm OR AS STATED.

MATL. SPEC. STEEL IS:1570.40 Ni 2 Cr 1 Mo 28

I.A.F. SEC. REF. NO.

ASSY. DRG. No. ARM1172E2 ARM1302D2

DRG. SCHD. No. ARM 1172 ARM 1302

SCALE: 2:1

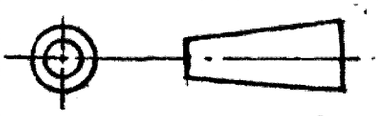
TOL:- UNLIMETED DIMN. TO BE WITHIN ±·13

TITLE:-

SCREW.

D.T.D. & P (AIR)

MINISTRY OF DEFENCE



APPROVED. R.S. Tarling

DRG.NO. ARM.1172 A19