

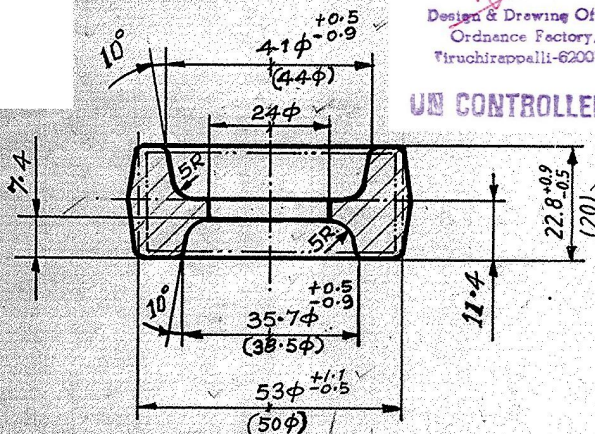
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OF APPROVED DRAWINGS
AT THIS DATE.....

FORGING DRAWING

17.11.2020

Design & Drawing Office
Ordnance Factory,
Tiruchirappalli-620016

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CHEMICAL COMPOSITION OF THE MATERIAL 25X17H26-w			
C	0.22 - 0.28	Si	0.30 - 0.70
Mn	0.30 - 0.70	Cr	16.3 - 17.7
Ni	2.30 - 2.80	P	0.020 Max.
Cu	0.25 Max.	S	0.045 Max.
NIOBIUM	0.05 - 0.10		

TESTS / INSPECTION TO BE CARRIED OUT

- a) ON BASIC MATERIAL
 - i) CHEMICAL ANALYSIS:- CHEMICAL COMPOSITION SHOULD CONFORM TO SPECIFICATION REQUIREMENT (ESR STEEL)
 - ii) MACRO EXAMINATION :- ACCEPTANCE STANDARD C, R, S, OF ASTM, E 381-84

- iii) NON-METALLIC INCLUSION RATING TEST

THE TEST SHALL BE CARRIED OUT AS PER SPEC. IS:4163-84
ACCEPTANCE STANDARD

- A - 1.5 THIN
- B - 1.5 THIN
- C - 1.5 THIN
- D - 1.5 THIN

FIG. NO .2

NIL FOR THICK SERIES

- iv) MECHANICAL TEST :- MECH. TEST SHALL BE CARRIED OUT ON SEPARATELY HEAT-TREATED TEST SAMPLE. TEST SAMPLE IS TO BE HEAT-TREATED AS PER SPECN. TEST RESULTS SHOULD CONFORM TO THE SPECN. REQUIREMENT.

- b) FOR FORGINGS

- v) ANNEALED FORGINGS ARE TO BE CHECKED FOR HARDNESS. HARDNESS OF ANNEALED FORGING SHOULD NOT EXCEED 302 HRC
- vi) ANNEALED FORGINGS ARE TO BE TESTED FOR SURFACE DEFECTS BY MPI METHOD AS PER SPECN. IS:7743-75 FORGING SHALL BE FREE FROM CRACKS AND OTHER SURFACE DEFECTS.

HEAT-TREATMENT PROCESS CHART

NOMENCLATURE AND IDT. NO.	STEEL GRADE	TYPE OF OPERATION	EQUIPMENT	TEMP. IN °C	TIME	COOLING MEDIUM	FIXTURE	HARDNESS INSPN. %
PISTON C 3004	25X17H26-w	ANNEALING HEATING	ELECTRIC CHAMBER FURNACE	860-880	1 HRS.	WITH FURNACE UP TO 400°C THEN IN AIR	ON TRAY	3% BUT NOT LESS THAN 3 PIECES.
		HIGH TEMPERING HEATING	ELECTRIC CHAMBER FURNACE	660-680	4 HRS.	WITH FURNACE UP TO 500 °C THEN IN AIR	ON TRAY	

DRESS THE PLACES FOR CHECKING HARDNESS
CHECKING OF HARDNESS.

- vii) FINISHED COMPONENT SHOULD ATTAIN A HARDNESS RANGE OF 43.5 TO 51.5 HRC.

VETTED FOR MATERIAL ONLY

AS PER LAST DC (1) / LTRC (1) / MQA-3/TS/1 dt. 9/4.6.97

1. DIMENSIONS ARE IN mm.
2. HEAT-TREATMENT :- ANNEALING AND HIGH TEMPERING; HARDNESS HB 302 MAX.
3. SCALE :- 1:1
4. DISPLACEMENT IN PARTING LINE SHOULD NOT BE MORE THAN 0.3 mm
5. REMAINDER FLASH ALONG DIE-PARTING LINE SHOULD NOT EXCEED 0.5 mm
6. FIRST ANGLE PROJECTION
7. SURFACE DEFECTS SHOULD NOT EXCEED 0.5 mm IN DEPTH
8. UN-SPECIFIED DRAFT ANGLE 7°
9. UN-SPECIFIED RADII 1.5 mm
10. OTHER REQUIREMENTS ARE AS PER GOST 8479-70 GROUP 2
11. FREE-SIZE TOLAS PER II CLASS GOST 7505-74
12. DIE FORGING BY HAMMER
13. DIMENSIONS GIVEN IN BRACKETS ARE FOR MACHINING
14. WEIGHT OF THE FORGING 0.260 Kgs.
15. RAW MATERIAL SIZE :- 30φ x 55 LONG (HOT ROLLED)
16. MATERIAL :- 25X17H26-w T.Y-14-1-1062-74

17. ALT. MATL. :- BS 970 PART 1-1983 GRADE 431 929/ESR QUALITY CARBON 0.17% MAX. (ESR QUANTITY)

STEEL WITH SULPHUR 0.015% MAX AND PHOSPHORUS 0.02% MAX.

INDIGENOUS MATERIAL: BS 970 Pt. 1-83 GR. 431S29 WITH C: 0.17-0.23, S & P: 0.015 MAX. EACH
ESR QUALITY. MACROSTRUCTURE :- BETTER THAN OR EQUIVALENT TO C1 R1 S1 FOR PLATE I
AND NIL FOR PLATE II. TO IS: 13015 NMIR TEST :- 1.5 FOR THIN SERIES MAX. AND NIL FOR THICK
SERIES FOR ALL TYPES OF ABCD TO IS 4163, FIG 2 AUTHORITY: CQAI METALS ICHAPUR
LY. NO. MQA-3/TS/1 dt. 6/11-6-97

SL. NO.	STORE DRG. NO ADDED AMENDMENTS	SIG & DATE

Redrawn	Checked	Approved	F.M.PROJ	AWM/PROJ.
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SL. NO.	AMENDMENTS	SIG & DATE
E	DA NO. 052/97 dt. 11/8/97	
D	DA NO. 22/97 dt. 23-3-97	
C	DA NO. 95/94, dt. 9-4-94	
B	DA NO. 23/93, dt. 25-4-93	
A	DA NO. 71/92, dt. 2-11-92	

FOR COMPONENT NO
242-03-004 - PISTON

ORDNANCE FACTORY
TIRUCHIRAPALLI-16

DRG NO:
64 C 3004 200 E 3

ALB. NO. 363/58