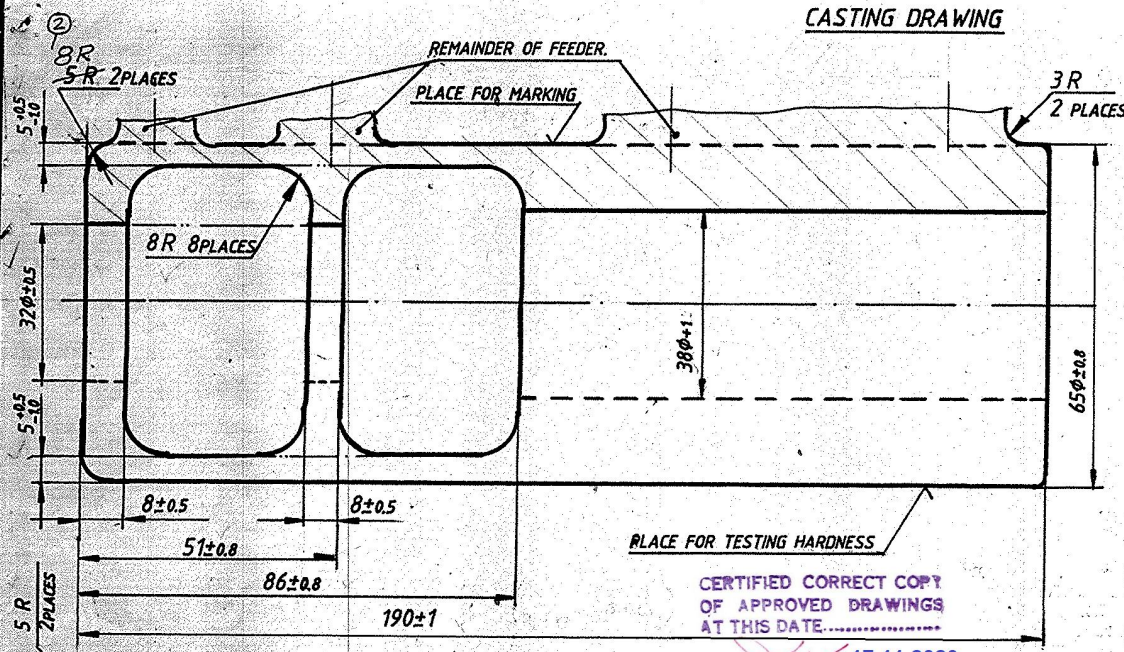
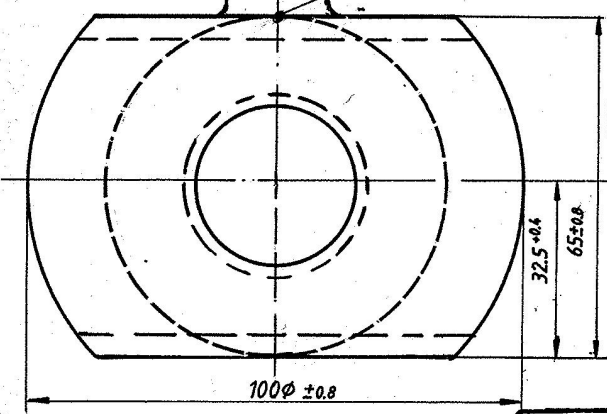


CASTING DRAWING



CHEMICAL COMPOSITION OF THE MATERIAL 23XTC2M0TL4	
C	0.20 - 0.24
Si	1.8 - 2.0
Mn	0.5 - 0.8
Cr	0.4 - 0.9
Mo	0.25 - 0.38
V	0.10 - 0.15
S	0.025 MAX.
P	0.025 MAX.
Ni	1.0 MAX.



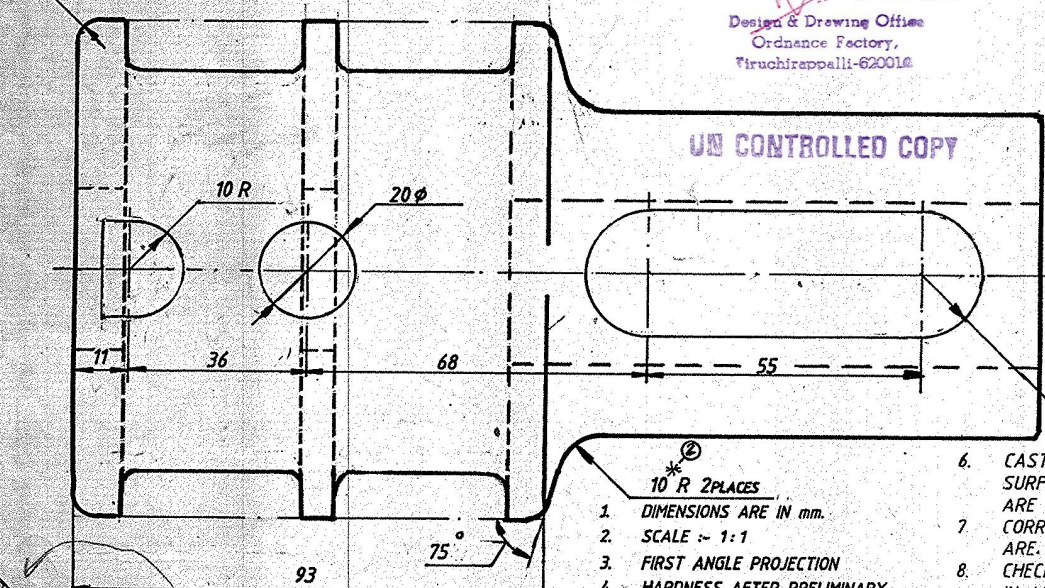
MATL.: 23XTC2M0TL4  
MECH. PROPERTIES:-  
ULTIMATE STRENGTH 130 Kgf/mm<sup>2</sup> AND  
YIELD STRENGTH 110 Kgf/mm<sup>2</sup> ARE ALSO BE ACCEPTABLE

FOR COMPONENT NO 2A42-02-028 - BRAKE

MECHANICAL PROPERTIES OF THE MATERIAL 23XTC2M0TL4	
ULTIMATE STRENGTH	140 Kgf/mm <sup>2</sup>
YIELD STRENGTH	120 Kgf/mm <sup>2</sup>
RELATIVE ELONGATION	6%
IMPACT STRENGTH	4 KgfM/cm <sup>2</sup>

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Tiruchirappalli-620016

UN CONTROLLED COPY



- ACCEPTANCE OF CASTING IS CARRIED OUT AS PER GOST 977-75 (PARAGRAPH 2 AND 3) BUT WHILE MANUFACTURING CASTING AS PER MELTED MODELS AS PER OST 3-4365-79
- MECHANICAL PROPERTIES OF STEEL IS DETERMINED ON THE SPECIMENS, CUT FROM THE TEST BARS AS PER GOST 977-75 AFTER CARRYING OUT COMPLETE HEAT-TREATMENT PROCESS
- TENSILE TEST IS CARRIED OUT AS PER GOST 1497-73 ON CYLINDRICAL SPECIMEN WITH DIA-30 mm WITH LENGTH 50 mm TESTS ON SPECIMENS (SAMPLES) ON 5mm DIAMETER WITH 25mm LENGTH IS PERMITTED.
- DETERMINATION OF IMPACT STRENGTH IS CARRIED OUT AS PER GOST 9454-78 ON THE SPECIMEN OF TYPE I AT NORMAL TEMPERATURE AND AS PER GOST 9454-78 AT LOW TEMPERATURE.

- CASTINGS AND TEST BARS ARE SUBJECTED TO FOLLOWING HEAT-TREATMENT :-
- PRELIMINARY HEAT-TREATMENT (PRIOR TO MACHINING) NORMALIZING AT TEMPERATURE 1000° ± 20° C FOR 1-2 HOURS.
  - TEMPERING AT TEMPERATURE 720° C ± 20° C FOR 4 HOURS.
- FINAL HEAT TREATMENT (AFTER MACHINING) TEST BARS ONLY AS PER FOLLOWING SEQUENCE OPERATION; HARDENING AT TEMP. 1000° ± 20° C SOAKING TIME IS ONE HOUR; COOLING IN OIL; TEMPERING TEMP. 200° ± 20° C FOR 4 HOURS.
- HEATING FOR NORMALIZING AND HARDENING IS TO BE CARRIED OUT WITH PROTECTION OF CASTING FROM DECARBURIZATION AND OXIDATION

CASTING BELONGS TO GROUP NO. 11, OST 3-4365-79 (SPECIAL PURPOSE CASTING)

AS PER LAST D.O. (1) No. 1/LETTER NO MQA-3/TS/18/11/6/11-6-97

- DIMENSIONS ARE IN mm.
  - SCALE :- 1:1
  - FIRST ANGLE PROJECTION
  - HARDNESS AFTER PRELIMINARY HEAT-TREATMENT HB 255 MAX.
- UN-SPECIFIED CASTING RADII 1.5 mm MAX.

- CASTING DEFECTS ON NON MACHINED SURFACES AS PER OST 3-4365-79 ARE ALLOWED
- CORRECTION OF CASTING DEFECTS ARE ALLOWED
- CHECKING UP OF IMPACT STRENGTH IN ACCORDANCE WITH CHAPTER 3 GOST 977-75 SHOULD BE ADDITIONALLY CARRIED OUT

- SURFACE FINISH ✓ MAX.
  - SPECIAL TEST :- MAGNETIC FLAW DETECTION.
  - MATERIAL 23XTC2M0TL4, TYAR 116-78.
  - WEIGHT OF THE CASTING 3.8 Kgs.
  - \*SMOOTH TRANSITION OF R10 TO R20 IN POINT A INDI. MATL. AND RADIOGRAPHIC TEST ADDED IN SHEET 2
- SHEETS:- 1/2

GUIDELINES FOR PROCUREMENT AND INSPECTION OF INVESTMENT CASTING (REF. CONTROLLED COPY OF QUALITY ASSURANCE (METALS) ICMAPUR LETTER NO. MQA-11/QA/11/2 Dt. 05 MAY '94)

① C	DA No. 007/95 Dt. 0-2-95	
② B	NOTE NO. 13 ADDED DA No. 27/92 DRG. ADVANCED TO B3 Dt. 25-9-92	
③	STORE DRG. NO ADDED	
SL. NO	AMENDMENTS	SIG & DATE

Redrawn	Checked	Approved	F/M. PROJ	A.WM/PROJ
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ORDNANCE FACTORY  
TIRUCHIRAPALLI-16

DRG NO: 64 C 2028 250 H 3

INDIGENOUS MATERIAL

IS: 10343 Gr. 4D, OF BS: 3146 Pt 1/74, TYPE CLA-5/GR. B  
 IS: 10343 Gr. 4D, CASTING TO BE HEAT-TREATED TO ACHIEVE 41.5-51.5 HRC  
 SEPARATELY CAST TEST BARS SHALL MEET THE SPECIFIED MECH. PROPERTIES INCLUDING IZOD IMPACT VALUE 14J-MIN.

CERTIFIED CORRECT COPY OF APPROVED DRAWINGS AT THIS DATE.....

17.11.2020

Design & Drawing Office  
 Ordnance Factory,  
 Tiruchirappalli-620016

RADIOGRAPHIC TEST

- (a) RADIOGRAPHIC ACCEPTANCE STANDARD OF THE CASTING SHOULD BE AS PER ASTM-E-192, GAS HOLES: LEVEL 3, FOREIGN MATERIAL: LEVEL 3, SHRINKAGE (ALL TYPES): LEVEL 2 & CRACKS, HOT TEARS & COLD SHUTS: NIL
- (b) 100% OF THE ADVANCE SAMPLE (NOT LESS THAN 5) WILL BE SUBJECTED TO RADIOGRAPHIC TEST.
- (c) RADIOGRAPHIC TEST OF ADVANCE SAMPLE WILL BE CARRIED OUT BY CQA(MET) ICHAPUR.

OR

THE AREA QUALITY ASSURANCE OFFICER CONCERNED WOULD GET THE RADIOGRAPHIC TEST DONE IN HIS PRESENCE AND FORWARD THE PLATES TO TO CQA (MET) ICHAPUR FOR SENTENCE AND APPROVAL OF THE MOULD.

(d) BULK PRODUCTION WOULD COMMENCE ONLY AFTER MOULD AND MATERIAL HAS BEEN APPROVED BY CQA(MET) ICHAPUR.

(e) 5% OF THE CASTING SELECTED AT RANDOM FROM <sup>THE</sup> BULK WOULD BE SUBJECTED TO RADIOGRAPHIC TEST. THIS MAY BE DONE UNDER THE ARRANGEMENT OF THE AREA QUALITY ASSURANCE OFFICER AND SENTENCE MAY BE AWARDED BY HIM BASED ON THE STANDARD OF THE ADVANCE SAMPLES CLEARED BY CQA(MET) ICHAPUR.

REF. :- CONTROLLERATE OF QUALITY ASSU(W) JABALPUR LETTER NO. 50431/CQAW/QA-11 DATED 14 MARCH 95.

CONTROLLERATE OF QUALITY ASS(M) ICHAPUR LETTER NO. MQA-3/41W/3/W DT. 03 MAY 1995

INDIGENOUS MATERIAL: IS 10343 WITH C% 0.45-0.50 AND MECHANICAL PROPERTIES SPECIFIED IN THE SPECIFICATION FOR THE GRADE. AUTHORITY: CQA (METALS) ICHAPUR LN. NO. MQA-3/TS/B/I DT. 6/11-6-97

INDIGENOUS MATERIAL: IS: 10343 Gr. 4E WITH C% 0.45-0.50 AND MECHANICAL PROPERTIES SPECIFIED IN THE SPECIFICATION FOR THE GRADE. AUTHORITY: CQA (METALS) ICHAPUR LETTER NO. MQA-3/TS/B/I DT. 6/11-6-97

INDIGENOUS MATERIAL:- IS 10343-99, GRADE 199, MECHANICAL PROPERTIES SPECIFIED IN THE SPECIFICATION FOR THE GRADE. AUTHORITY: DGQA-19 No-CQAW/NI/04/2011 DT. 19 APR 2011 VETTED FOR MATERIAL ONLY AS PER LAST DC (I) 19217-W dt 19.4.2011

DA No 005/2011 DT 11/10/2011

DA NO. 000/10 DT 6.9.10	DA NO. 007/01 DT 12/11/01	DA NO. 052/97 DT 11/8/97	DA NO. 022/97 DT 23-3-97	DA NO. 70/95 DT 7-8-95	DA NO. 020/95 DT 11-4-95
DA NO. 022/97 DT 23-3-97	DA NO. 70/95 DT 7-8-95	DA NO. 020/95 DT 11-4-95			

LTCOL  
 Quality Assurance Officer  
 Sr. Quality Assurance Estt (Arms)  
 Tiruchirappalli-620016  
 SHEETS 2/2  
 DRAWING NO. 2442-02-028  
 BRAKE  
 DRG. NO. 64C 2028250/13  
 TIRUCHIRAPALLI  
 1/C.30mm D&DO

SHEETS 2/2	APPROVED	SIG. & DATE
DRAWN	CHECKED	