


Sl no.	Nomenclature & drawing No.	Manufacturing technology & Testing / Inspection Facilities required to produce the item	Must be possessed by the vendor in his premises (P&M list and testing / inspection equipment list to be submitted)	May be possessed by the vendor in his premises or out sourced (Self declaration to be submitted)	FIRM Compliance (Y/N)	Remarks
1	Components as per enclosed list of Machined Components (Group I)	TEST / INSPECTION-1	3D CMM	3D CMM 300 x 300 mm		
			Surface Roughness Tester		Surface Roughness Tester for Ra & Rz values	
			Gauges	Standard Gauges for checking Holes and threads suitable to the requirement of the components. Firm should submit the undertaking in this regard that they will create the facilities within 6 months from the date of receipt of order.		
			Measuring Instruments	* Vernier Caliper, Groove Vernier, Radius gauge, Feeler Gauge etc. suitable to the requirement of the components		
		TEST / INSPECTION-2	Hardness measurement		Brinell / Rockwell Hardness Tester	

**Note : Justification for alternate facilities may be shared to prove that alternate facilities can be utilised to manufacture the item wherever the facilities are mentioned above are not available, but vendor has alternate facilities.**

  
(D.SATHISH KUMAR)  
WM/QA(NF& QMSC)

  
(LUXMAN SINGH)  
WM/TRG-II, HT & EP

  
(K.DURAIRAJ)  
JWM/Trans -II


  
(J.P.SINGH)  
GM-OPERATIONS I

  
(NEERAJ KUMAR)  
QA-RIG(OE)

  
(ANIMESH PAIK)  
DGM/CA, TRG & RG

**MACHINED COMPONENTS (GROUP -I)**

Sl no.	Nomenclature & drawing No.	Manufacturing technology & Testing / Inspection Facilities required to produce the item		Must be possessed by the vendor in his premises (P&M list and testing / inspection equipment list to be submitted)	May be possessed by the vendor in his premises or out sourced (Self declaration to be submitted)	FIRM Compliance (Y/N)	Remarks	
1	Components as per enclosed list of Machined Components (Group I) <i>Total items = 114 Nos</i>	TECHNOLOGY-I	Turning	CNC Turning machine suitable to accommodate components upto dia 100mm diameter with 0.010mm accuracy				
			Milling & Drilling	HMC/VMC machine suitable to component requirement with 0.010mm accuracy				
			Grinding	Internal/ External /Surface grinding machine as per component requirement upto 0.010mm accuracy				
		TECHNOLOGY-2	Heat Treatment		Carburising, Hardening, Induction Hardening & Tempering furnace with Oil quenching facility suitable to the components			
			Protection coating		Oxidising , Phosphating, Zinc chromatising, Hard Chromium Plant suitable to the components			
		TECHNOLOGY-3	Raw material		Firm should be capable to arrange the raw material like forging, casting, bar material etc as per drawing specification and standard.			

  
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 WM/TRG-II,HT & EP

  
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 JWM/Trans -II

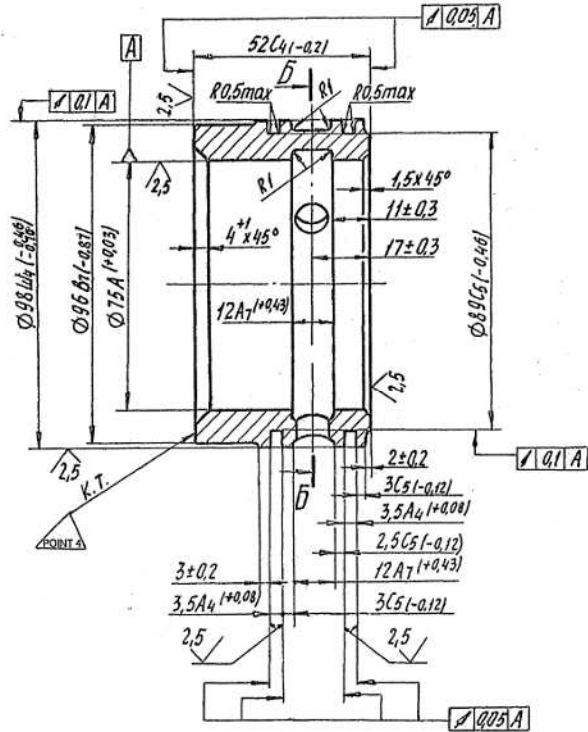
### MACHINED COMPONENTS (GROUP -I)

SI No	LF No	Drawing No	Nomenclature
1	6106202014	172.17.010	COVER
2	6106113013	172.23.010CBCB	DRUM PRESSURE ASSY.
3	6106113048	172.23.021	DRUM PRESSURE
4	6101023024	172.23.078-1	THRUST DISK
5	6101023089	172.23.112	NUT
6	6106208038	172.25.066	BUSHING DRIVING (25P&28RG)
7	6106208039	172.25.067	PLUG
8	6106208041	172.25.069	CUP
9	6106851033	172.25.087	UPPER HOUSING
10	6101025013	172.25.106	FLANGE
* 11	6106210038	172.27.010-1	AXLE
12	6106210048	172.27.046	BRACKET
13	6106210055	172.27.052-2	BRACKET
14	6106210057	172.27.055	BRACKET
15	6106210058	172.27.056	BRACKET
16	6106210059	172.27.057	BRACKET
17	6106210067	172.27.066	TIE ROD
18	6106210074	172.27.074-A	BUSHING
19	6106210076	172.27.082	TRUNNION
20	6106210089	172.27.096	BRACKET
21	6106210120	172.27.132/PL	COVER
22	6106210144	172.27.161	COVER
23	6106211072	172.28.021-1A	CAP OIL SEAL
24	6106211073	172.28.022-2	STOP
25	6106211173	172.28.186	SLEEVE
26	6106211185	172.28.203	SPINDLE
27	6106401031	172.40.019-1	GEAR SHAFT H
28	6106401042	172.40.042	BUSH
29	6106401037	172.40.044	BUSH
30	6106401055	172.40.151	CLAMPING DEVICE AXLE
31	6106401056	172.40.152	CLAMPING DEVICE AXLE
32	6106401057	172.40.153	CLAMPING DEVICE AXLE
33	6106401061	172.40.211	BOSS (STEEL 30XGCA GOST:4543-71)
34	6106401063	172.40.223	STUD
35	6106401066	172.40.227	STUD
36	6106401069	172.40.230	STUD
37	6106401075	172.40.241	GEAR AXLE RIGHT
38	6106401076	172.40.242	GEAR AXLE L.H.

DRAWING NUMBER  
172.40.044

SHEET No. 1 OF 1

Rz 80 ✓ (✓)



1. BHN 302 - 255 (DIA OF INDENTATION 3.5 TO 3.8)
2. THE RUN - OUT OF OTHER SURFACES IS NOT MORE THAN 0.2 MM.
3. COATING : CHEMICAL OXIDIZING, OIL OR CHEMICAL OXIDIZING - PHOSPHATING, OXIDO - PHOSPHATING OIL FINISHING.
4. TO BE MARKED.
5. THE OTHER REQUIREMENTS AS PER 520 TY 1.

IR. PARAMJITTO  
10-03-06

" COMMON TO T - 90 " & BLT  
DRG. RE INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL

F - 75  
SIZE A2

PILOT SAMPLE SHOULD BE APPROVED BY A H S P BEFORE BULK PRODUCTION.

EST. WT. (Kg) TO BE STAMPED OR MARKED WHERE INDICATED THUS # ( LETTERS)

ALL SHARP EDGES AND CORNERS TO BE REMOVED UNLESS OTHERWISE STATED MACHINED CORNERS TO HAVE R OUTSIDE R INSIDE EQUIVALENT CHAMFERS ARE PERMISSIBLE.

172.40.052cbCb (B)  
172.40.053cbCb

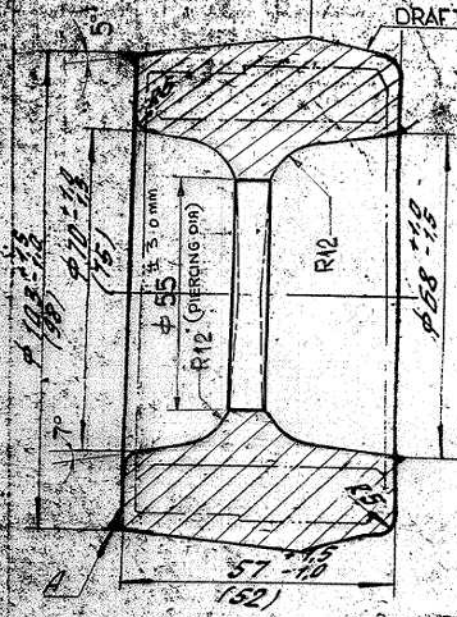
DRN	Sd / =	MATERIAL :-	USED ON :-
CHD	Sd / =	STEEL 38XC	172.40.019cbCb
APPD	Sd / =	GOST 4543 - 71	172.40.020cbCb
DATE	07 - 01 - 88	CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES)	
SCALE:-	1 : 2	AVADI	
DIMENSIONS IN mm		TITLE :-	
TOLERANCE ON DIMS UNLESS OTHERWISE STATED IS : 2102 - 69		BUSH	
B	17.9.04	N OF A. No. CQA(HV)/T90/40/001	ALL THREADS TO CONFORM TO
A	28.11.96	RUSSIAN SPLTS. DECISION ON 23.10.96	D S CAT NUMBER
ISSUE	DATE	NATURE OF AMENDMENTS	DRAWING NUMBER
			172.40.044

172-40-044

технологического процесса изготовления  
20 поковки из проката  
Чертеж:ковки, эскиз:технологических переходов

Витцлака

172.40.044



DRAFT TO MATCH

Технические требования  
1. Подвергнуть термической обработке  
- /Калить /до 35-38/  
2. Очистить от окислов  
- /травить/

Допускается  
1. Поверхностные дефекты и углубления от окислов глубиной до 0,5 допуска  
2. Перекал /глубина матрицы до 0,6мм/  
3. Зудение в месте А до 3мм  
4. Зудение по развеху матрицы до 0,5мм  
5. Эллиптичность в осевом направлении до 0,5мм  
6. Эксцентриситет отверстия до 0,15мм

Примечание  
1. Размеры в скобках даны для мех. цеха.  
2. Размеры без допусков для

TOOL NO.	TOOL DESCRIPTION	MACHINE	REMARKS
20184	PIERCING TOOL	250T	
20183	TRIMMING TOOL	250T	
20182	STAMPING DIES	MPM	

ISSUE	MODIFICATIONS & ADDITIONS	SIG & DATE
①	R12- ADDED PIERCING DIA ADDED INSIDE DRAFT 7° ADDED DRAFT ANGLE 5° ADDED DRAFT TO MATCH ADDED DIM 20.0 ADDED	19/2/84

TECHNICAL REQUIREMENTS.

- HEAT TREAT. DIA OF IND. 3.5-3.8
- DESCALE
- DEPTH OF SURFACE DEFECTS AND SCALE PITS UPTO 0.5 OF ACTUAL MACHINING ALLOWANCE ARE ALLOWED.
- MISMATCH SHOULD NOT EXCEED 0.6MM
- RESIDUAL FIN ALONG PARTING LINE SHOULD NOT EXCEED 1.5MM AT PLACE 'A'. UPTO 3MM IS ALLOWED.
- FOLDING OF FIN IN PIERCED HOLE IS ALLOWED.
- ELLIPTICITY SHOULD NOT EXCEED TOLERANCE LIMITS.
- MARK PART NO.
- UNSPECIFIED RADI = R
- MACHINING DIMENSIONS ARE SHOWN IN BRACKETS.
- UNTOLERANCED DIMENSIONS ARE FOR CONSTRUCTION.
- ECCENTRICITY OF HOLE SHOULD NOT EXCEED 1.5MM

MATERIAL :- STEEL GOST 30XC 4543-71

FORGING WEIGHT:- 2.1 KG

92

CHKD	Ramm 14/8/85	MPM
APPD.	Jones 14/8/85	
DRG. NO.	172.40.044/F	
TITLE:	BUSHING	

HEAVY VEHICLES FACTORY,  
AVADI, MADRAS.

RESTRICTED  
(DRAFT/PROVISIONAL)  
QUALITY ASSURANCE PLAN

FOR

(BUSH)

DRG.NO. 172.40.044

(LF NO: 6206401037)

No: HVF/T- 72C/QAP/40/BUSH/242918 - 00

ISSUE No: 00

DATE: DEC - 2021

QUALITY ASSURANCE (RIG-SUB ASSEMBLY)

HEAVY VEHICLES FACTORY

AVADI CHENNAI - 600 054

QUALITY ASSURANCE PLAN (QAP)

FOR


BUSH

DRG. NO. 172.40.044

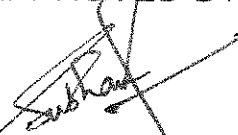
PREPARED BY

  
(C. NANDA KUMAR)  
JWM/QA (RIG-SA)

REVIEWED BY

  
(HANUMANTHA RAO GALLA)  
JWM/QA (RIG-SA /TA)

APPROVED BY

  
(SUBHAM BIJLWAN)  
AWM/QA-RIG-(SA)

ISSUED BY

QUALITY ASSURANCE (RIG- SUB ASSEMBLY)  
HEAVY VEHICLES FACTORY  
AVADI CHENNAI – 600 054

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## 1.IMPORTANT NOTE

### **Note-1**

This is only a provisional and will be amended from time to time according to the requirement. No addition, deletion and reproduction will be done without permission of The Sr. General Manager, Heavy Vehicles Factory, Avadi, Chennai – 54.

### **Note –2**

Any instruction contained in this does not prejudice the terms and conditions of the contract what so ever. In case of any contradiction between the contents of this QAP and the clause in the contract, the latter will prevail.

### **Note-3**

The stores should be manufactured strictly only as per the drawings supplied by the Inspection Authority and not as per the samples, if any received by the manufacturer for guidance purpose.

### **Note-4**

Any amendment issued by the Inspection Authority shall be incorporated in the QAP and the records for the amendments carried out should be maintained as per the Performa at Appendix-"A".

### **Note-5**

In case of any contradiction between the contents of this QAP and drawings issued along with the contract, the latter will prevail.

## 2.INTRODUCTION

1. This quality plan lays down the inspection and testing procedure to be carried out on the component **BUSH TO DRG.NO 172.40.044** being procured indigenously. This is prepared, based on the acceptance standards and inspection parameters laid down in collaborators documents and on the inspection test standards followed in respect of similar indigenous items.
2. This QAP is the property of Government of India and is liable for amendments as and when required. The Sr. General Manager, Heavy Vehicles Factory, Avadi, Chennai – 600 054, is the inspecting Authority for this assembly. Any query / clarification on the content of this QAP shall be referred to this Factory. Any departure from these instructions is allowed only after written approval from the above authority. Notwithstanding the tests indicated in this QAP, the inspecting Officer has the right to carry out any test to check conformance to the paper particulars quoted in the Supply Order, which he may consider necessary to satisfy himself about the stores which he has to accept.

### 3.AIM

The QAP is aimed at standardizing the Inspection procedure and acceptance norm for **BUSH TO DRG.NO:172.40.044**

It also aims at giving adequate information to the manufacturer on the quality requirements so that the required quality control methods are established. This is also meant to guide authorized Inspection Officer in his routine inspection and to set out main points to which his attention must be drawn to ensure that the accepted stores meet the stipulated standards.

#### **4. SCOPE:**

This QAP outlines in general terms, the checks and methods to be used during inspection of **BUSH TO DRG.NO.172.40.044** including the technical requirements of the drawings. The recommended Quality Plan stipulated herein is mandatory and should be strictly adhered to.

For inspection purpose, only the latest issue of this QAP will be made applicable and copies of this QAP can be obtained from the issuing authority i.e. The Sr. General Manager, Heavy Vehicles Factory, Avadi, and Chennai..

#### **Note:**

1. Tender enquiry (TE) and supply order (S.O) will be issued with QAP stating that inspection will be done as per QAP.
2. In case of TE, It is responsibility of the vendor to obtain the copy of QAP and give the statement of compliance that vendor will abide by the QAP in case supply order is placed.
3. In case of S.O, it is the responsible of the vendor to obtained copy of QAP and give the statement of compliance that the vendor will follow QAP. However, GM/HVF reserves the right to revise/update the QAP from time to time.

#### **5. DOCUMENTS:**

- a) On placement of firm supply order, One set of relevant specification and technical instructions on the subject item can be obtained by the contractor from AHSP through DDO/HVF
- b) Any clarification required on these documents should be obtained from the Inspecting Authority i.e. The Sr. General Manager, Heavy Vehicles Factory, Avadi, Chennai – 600 054. Equivalent to the collaborators specifications and standards will be decided only by the Inspecting Authority and should not be unilaterally decided. For any change in the specifications, standards or written approval, any alterations in specification can be affected and not otherwise.
- c) The process instruction sheets supplied by the collaborators are available with the Authority Holding Sealed Particulars, i.e. The Controller ate of Quality Assurance (Heavy Vehicles), Avadi, Chennai for the reference. The relevant process sheets may be studied at the premises of the AHSP after obtaining necessary permission.

- d) The supplier after scrutiny of the concerned process sheets and connected paper particulars should establish the necessary production and inspection facilities. Particularly the inspection test rigs, stands, fixtures, BUSH, gauges etc should be provided as recommended in these process sheets. If process sheet / Process Book is not available the details particulars/parameters available in the drawings to be strictly adhered.

**6. ITEM USED ON:**

1. 172.40.052CBCB/PL- RIGHT HAND REAR FLANGE ASSY

**7. LIST OF DRAWINGS:**

SI. NO.	DRG. NO	NOMENCLATURE	REMARKS
1	172.40.044	BUSH	-

**8. BILL OF MATERIALS:**(Individual items as mentioned in table to Para 7)

SI. NO	DRG. NO	NOMENCLATURE	MATERIAL SPECIFICATIONS	Qty
1	172.40.044	BUSH	STEEL 38XC GOST 4543-71	1

**Note:** Vendor/Contractor may use approved alternate material as per drawing if any as specified in drawing / specification / GOST also refer\*\* Para no:13.

**9. CONDITIONS OF USE/STORAGE INSTRUCTIONS**

This assembly/item should be properly packed to protect from transit / handling damage and influence of atmospheric precipitations. In addition, the following parameters should be ensured:

- (a) The threaded parts if any should be covered with suitable plastic caps to prevent damages.
- (b) If the item consists of assemblies, each assembly should be packed separately.
- (c) The stores are to be suitably covered for preventing ingress of dust and Dirt/entry of sunlight / moisture.
- (d) The packaging slip shall contains
  - (i) Certificate of testing- NABL Certificate.
  - (ii) Guarantee/ Warranty Certificate.
  - (iii) Service and maintenance instructions.
  - (iv) Delivery Slip with Inspector's Acceptance Mark.

- (e) The stores are not permitted to be stored together with oils. Petrol, acids, alkaline and other substances to avoid damage to the metal / rubber components.

#### 10. SAMPLING PLAN:

Sl. No.	Sampling Plan	Pilot	Bulk
(i)	Visual Inspection	100%	100%
(ii)	Dimensional Inspection	100%	General Inspection level III, single sampling, Normal Inspection, AQL 2.5 of IS 2500 (Part-I)-2000
(iii)	Material Inspection	1 No	1 No. for each batch of raw material or heat treatment lot as required by specifications.
(iv)	Acceptance test	-----	-----
(v)	Pressure testing	-----	-----
(vi)	Machining/Fitment/ Performance trial on higher assembly / Tank	-----	-----
vii)	Interchangeability Test	02 Nos.	02 Nos. per batch on randomly basis, except selective assembly.
viii)	Test stand/Jigs/ Fixtures/Gauges/Man drels/etc.	100 %	100 %
ix)	Marking/Identification	100%	100%
x)	Packing/ Preservation	100%	100%

#### Note:-

A New (First time supplier of this item) supplier should obtain clearance from HVF for bulk production which will be issued only after inspection/evaluation of pilot samples by HVF.

#### 11. VISUAL INSPECTION[Sampling plan as per Para- 10 (i)]

The stores are to be visually examined on 100 % of pilot /bulk and same should be free from any defects and all the finishing requirements shall satisfy as indicated in technical conditions of the assembly / component drawing.

The components shall be checked for the following and should be free from the defects:

- Defects in construction
- Cracks/Dents/Scratches
- Fitment of all components
- Presence of foreign particles
- Moisture and dust
- Corrosion of metal parts
- Mechanical imperfections & distortion
- Any form of deterioration of material and finishing.

Packing and preservation should be ensured as per drawings/relevant TY specification (To be ensured on receipt at consignee end).

## **12. DIMENSIONAL CHECK[Sampling plan as per Para- 10(ii)]**

The dimensions of individual component, sub assembly and major assembly shall be checked and ensured as per respective drawing. Dimensional check should be carried out as per sampling plan. However, the inspecting authority/rep. may at his discretion, tighten the inspection level and acceptance quality level on the critical items and adopt check point during manufacture.

### **12.1 BUSH TO DRG.NO 172.40.044:**

1. All dimensions should be confirmed as per drawing.
2. Surface finish/Roughness should be confirmed as per drawing and specification.
3. Refer drawing/specification for admissible alternate manufacture in dimensions/material if any specified for the component.

## **13) MATERIAL CHECKS [SAMPLING PLAN AS PARA – 10 (iii)]**

Material specimen /test bars of the components shall be in conformity as per the material mentioned in the relevant documents/drawing. The material check will be carried out as per sampling plan. \*\*However, if the manufacturer proposes any alternative material at the stage of tender enquiry, the same has to be approved and a written concurrence should be obtained from AHSP through DDO/HVF, before usage of such materials.

### **13.1 BUSH TO DRG.NO 172.40.044**

- a) The component should be manufactured from STEEL 38XC GOST 4543-71.
- b) **Chemical properties:** As per STEEL 38XC GOST 4543-71.

CONTENT OF ELEMENTS%							
C	Si	Mn	Cr	S	P	Cu	Ni
0.34 to 0.42	1.00 to 1.40	0.30 to 0.60	1.30 to 1.60	0.035	0.035	0.30	0.30
MAX							

Note: For mass fraction of other elements refer GOST 4543-71.

c) Mechanical properties: As per STEEL 38XC GOST 4543-71

Yield point, N/mm <sup>2</sup> / (kgf/mm <sup>2</sup> )	Ultimate strength, N/mm <sup>2</sup> (Kgf/mm <sup>2</sup> )	Elongation %	Relative reduction of area %	Impact strength KCU, ( $\frac{\text{kgf.m}}{\text{cm}^2}$ )
(735) 75	930 (95)	12	50	69 (7)
Not less than				

Note: For other parameters refer GOST 4543-71.

#### 14) PERFORMANCES / ACCEPTANCE TEST: BUSH TO DRG.NO: 172.40.044

1. BHN 302 - 255 (DIA OF INDENTATION 3.5 TO 3.8)
2. THE RUN-OUT OF OTHER SURFACES IS NOT MORE THAN 0.2 MM.
3. COATING : CHEMICAL OXIDIZING, OIL OR CHEMICAL OXIDIZING-PHOSPHATING, OXIDO - PHOSPHATING OIL FINISHING.
4. TO BE MARKED.
5. THE OTHER REQUIREMENTS AS PER 520 TY 1.

#### 15) FITMENT AND PERFORMANCE TEST:

- a. Pilot samples should be checked for fitment and Performance test to ascertain the efficacy of the system under different operating conditions by fitting in higher assembly and repeating it for functional checks, wherever required.
- b. Items of Bulk supplies may be subjected to performance trial in tank in case of repeated failure/defects during exploitation.

**16) INTERCHANGEABILITY:**

The assemblies should be interchangeable component wise and assembly wise, except the Component are to be supplied as a set and to be assembled selectively as per sampling plan.

**17) CALIBRATION CHECKS**

**(TEST STANDS/JIGS/FIXTURES/GAUGES/INSTRUMENTS):**

The supplier / Contractor should have suitable Instruments, Test Stand, jigs, fixture, mandrels and gauges to carry out quality checks, to ensure conformance of components/assembly as per drawing and Specification /T.R points.

The supplier / contractor should submit calibration reports for instruments/fixtures/gauges/mandrels etc., which are used during process of inspection activities.

**18) MARKING / IDENTIFICATION.**

Marking of the items is to be carried out as called for in the relevant drawing, drawing/T.R points.

Inscription if any on the components is to be carried out as called for in the drawing/T.R points. Unless otherwise specified in the drawing/ specification, marking should not be carried out over the components.

For traceability, marking of part No., Manufacturer name, supply order No. Serial No/Qty, batch No. and manufacture date & year are to be carried out. Suitable method can be adopted, provided that the above parameters are legible and considering the parameters mentioned in the drawing and specification. Refer QAP para no.14(4).

**19) PRESERVATION CHECK**

Preservative coatings are to be strictly adhered to as called for in the drawing. However, equivalent BIS Standards can also be followed, subject to the thickness of the coating/preservative is maintained as per the drawing/specification.

Other preservations as necessary to prevent damages due to moisture and dust during process, storage and transit are to be carried out. Conventional Methods can also be resorted to.

**20) PACKING CHECK**

Components / Assemblies are to be packed separately to avoid damages during transit / handling of the same. Part No. and No. of sets are to be marked on the packing.

Packing and preservation should be ensured as per drawings/relevant TY specification (To be ensured on receipt at consignee end).

Finished products shall be wrapped / packed using black and opaque polyethylene sheet or bags.

### 31) DOCUMENTATION

- i. Firm has to maintain all the documents as per QAP with respect to the SI.No.to have traceability.
- ii. Vendor has to submit Bill of materials, Material test reports, Class 'C' /Endurance test reports (wherever specified in drawing/TY specification/QAP) and Complete PIR (pre-inspection report)at the time of offering the item for inspection. HVF will commence inspection only after scrutiny of these documents.
- iii. The testing/inspection responsibility to test all the parameters as per QAP and drawing specifications as mentioned in Annexure -A (enclosed).
- iv. Pre inspection reports (PIR) of firm like, 1. Chemical analysis (NABL Certificate), 2.Mechanical properties (NABL Certificate), 3. Pre-forming process, 4. Coating certification, 5. Calibration reports of instruments and 6. Dimensional inspection reports.

### 32) REFERENCE:

- a) Drawing No: 172.40.044
- b) Material specification as per drawing:  
STEEL 38XC GOST 4543-71
- c) GOST 4543-71
- d) 520 TY 1.



SL. NO	ITEM/ SUB ASSY/ ASSEMBLY	CATEGORY	TESTS/INSPECTION PARAMETERS	STANDARDS TO BE REFERRED	ACCEPTANCE CRITERIA	INSPECTION RESPONSIBILITY			REMARKS
						Firm	HVF	DGQA	
1	BUSH to DRG.NO: 172.40.044	Pre inspection reports (PIR) of firm	Firm has to produced all the document as per QAP	As per the relevant drawing and QAP.	Confirm to drawing and QAP as per bill of material	P	W/W	R	100% should be ensured.
2		Bill of material (BOM)	Firm has to prepare the BOM as per QAP	Refer QAP Para no: 8	Confirm to QAP.	P	W/W	R	100% should be ensured.
3		Material Checks	Chemical composition & Physical, Mechanical Properties	As per the GOST 4543-71	All the values to confirm with QAP (Para no.13.1(a),(b),(c))	P	W/W	R	100% should be ensured.
4		Hardness checks	Hardness dia of indh 3.5 to 3.8 mm(302-255 BHN)	Refer QAP Para no 14(1)	Confirm to QAP Para no 14(1)	P	V	R	100% should be ensured.
4		Coating checks	Chemical oxidising, oxido-phosphating, oil finishing.	Refer QAP Para no 14(3)	Confirm to QAP Para no 14(3)	P	W/W	R	100% should be ensured.
5		Dimensional checks	Dimensions as per the drawing	Refer drawing / QAP Para no: 12.1	Confirm to drawing and QAP.12.1	P	W/W	R	100% should be ensured.
6		Marking / traceability	Firm has to make marking / traceability records.	Refer QAP Para no: 18, 14(4)	Confirm to QAP Para no: 18, 14(4)	P	V	R	100% to be done
7		Preservation & packing	Firm has to make Preservation & packing records	Refer QAP Para no 19 & 20	Confirm to QAP Para no 19 & 20	P	V	R	100% to be done

## Note:

For conformity of the items (Chemical/Physical/Mechanical properties)

- One sample per heat / batch shall be tested under NABL Lab/Govt. Approved lab by firm. In case of non-compliance to standards at the lot shall be rejected or not to use in production further
- For cross conformation of material manufacturer has to submit test sample pieces for the items used / test slab and button for Rubber joints / HVF will draw samples from supplied lot for Witnessing (W) at HVF premises. In case of non-compliance to standards entire lot will be rejected

P- Perform

W- Witness

V-Verify

R-Review



