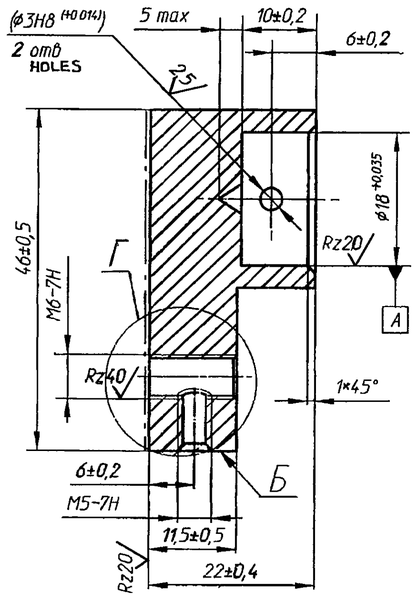
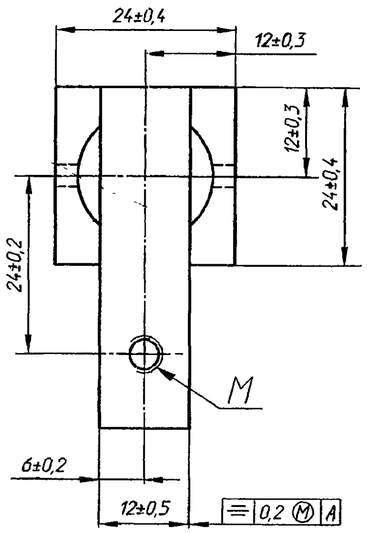
DRAWING NUMBER
447A.17.114

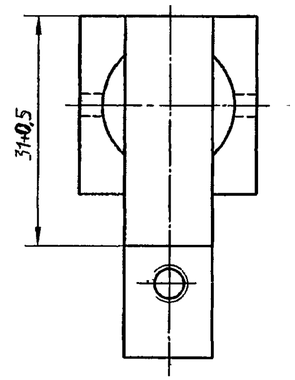
SHEET No 1 OF 1

Rz80 (√)

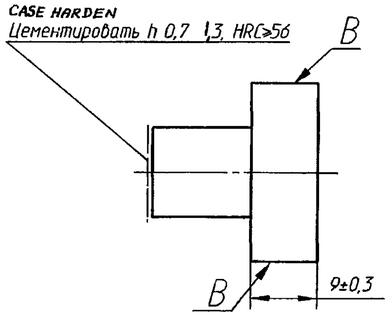




ALTERNATE
Вариант



1 Overall casehardening is permitted, except surfaces **М, Б, В**.
2 Coating. Zn9, chromatizing.
3. Dimensions in bracket -- after assembly.
4 Other requirements are as per specification 520 TY1



ALTERNATE
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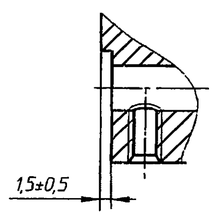

DRG. INDIANISED BASED ON RUSSIAN ORIGINAL ISSUE - NIL

356
SUPPLY CODE
U-01-1-4
D90198

F - 92
68

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)
0 0045	

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

ISSUE	DATE	NATURE OF AMENDMENTS

DRN		MATERIAL :- STEEL 12XH3A GOST 4543-71
CHD		USED ON :- 188 17 002cb-1Cb
APPD		CONTROLLERATE OF QUALITY ASSURANCE (HEAVY VEHICLES) AVADI
DATE	30.07.04	
SCALE:- 2 1		TITLE :- LEVER
DIMENSIONS IN mm		
TOLERANCE ON DIMNS UNLESS OTHERWISE STATED IS : 2102 - 69		
ALL THREADS TO CONFORM TO		D S CAT NUMBER
		DRAWING NUMBER 447A.17.114

RESTRICTED
(DRAFT/PROVISIONAL)
QUALITY ASSURANCE PLAN

FOR

(LEVER)

DRG. NO. 447A.17.114

(LF NO: 6201017023)

No.HVF/T-90/QAP/17/LEVER/240036 - 00

ISSUE No: 00 **DATE: Jan - 2021**

QUALITY ASSURANCE (RIG – SUB ASSEMBLY)

HEAVY VEHICLES FACTORY

AVADI CHENNAI – 600 054

QUALITY ASSURANCE PLAN (QAP)

FOR

LEVER

DRG. NO. 447A.17.114

PREPARED BY

( ) JWM/QA (RIG-SA)

REVIEWED BY

( ) JWM/QA (RIG-SA / TA)

APPROVED / REVIEWED BY

( ) DGM/QA-RIG-(SA)

ISSUED BY

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

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".

2. INTRODUCTION

1. This quality plan lays down the inspection and testing procedure to be carried out on the **LEVER TO DRG. NO 447A.17.114** 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 **LEVER TO DRG. NO 447A.17.114**. 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 **LEVER TO DRG. NO 447A.17.114** including the technical requirements as per the drawings/ specifications. The recommended Quality Plan stipulated herein is mandatory and should be strictly adhered to.

Note:

Tender enquiry (TE) and supply order (S.O) will be issued with QAP stating that inspection will be done as per QAP.

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.

In case of S.O, it is the vendor responsibility 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. Equivalents 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 Controllerate 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, template, 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. **188.17.002CB-1CB-RH.LATCH LOCK ASSY.**

7. LIST OF DRAWINGS:

SI. NO.	DRG. NO	NOMENCLATURE	REMARKS
1	**447A.17.114**	**LEVER**	-

8. BILL OF MATERIALS:

SI. NO.	DRG. NO	NOMENCLATURE	MATERIAL SPECIFICATIONS	QTY
1	**447A.17.114**	**LEVER**	STEEL 12XH3A GOST 4543-71	1

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)
- (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)	Fitment/ Performance trial on higher assembly / Tank	1 No	--------
vii)	Interchangeability Test	02 Nos.	02 Nos. on randomly basis, except selective assembly.
viii)	Test stand/Jigs/ Fixtures/Gauges/Mandrels/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

Sl. No.	Drawing Dimension (In mm)
(i)	$22^{\pm 0.4}$ mm
(ii)	$11.5^{\pm 0.5}$ mm
(iii)	M5 – 7H
(iv)	$6^{\pm 0.2}$ mm
(v)	M6 – 7H mm
(vi)	$46^{\pm 0.5}$ mm
(vii)	Ø3 H8 $^{(+0.014)}$ mm 2 holes
(viii)	5 max
(ix)	$10^{\pm 0.2}$ mm
(x)	$6^{\pm 0.2}$ mm
(xi)	Ø18 $^{+0.035}$ mm
(xii)	1 x 45°
(xiii)	$12^{\pm 0.5}$ mm
(xiv)	$6^{\pm 0.2}$ mm
(xv)	$24^{\pm 0.2}$ mm
(xvi)	$24^{\pm 0.4}$ mm
(xvii)	$12^{\pm 0.3}$ mm
(xviii)	$12^{\pm 0.3}$ mm
(xix)	$24^{\pm 0.4}$ mm
(xx)	⌖ | 0,2 Ⓜ | A
(xxii)	9 ± 0.3 mm
(xxiii)	Case hardening to be ensured as per drawing HRC ≥ 56
(xxiv)	Surface finish/Roughness of items should be ensured as per drawing and specification

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 LEVER TO DRG. NO 447A.17.114

a) The component should be manufactured from STEEL 12XH3A GOST 4543-71

b) Chemical properties: as per Steel 12XH3A GOST 4543-71

CONTENT OF ELEMENTS %						
C	Si	Mn	Cr	Ni	S	P
					MAX	
0.09 to 0.16	0.17 to 0.37	0.30 to 0.60	0.60 to 0.90	2.75 to 3.15	0.035	0.035

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

Yield limit σ_T, N/mm^2 (kgf/mm^2)	Ultimate strength, σ_B, N/mm^2 (kgf/mm^2)	Relative elongation, δ %	Relative compression, ψ %	Impact strength KCU, kgf.m/cm^2
Not Less than				
685 (70)	930 (95)	11	55	88 (9)

14) PERFORMANCES/ ACCEPTANCE TEST: LEVER TO DRG. NO 447A.17.114

1. Overall casehardening is permitted , except surfaces М,Б,В.
2. Coating : Zn9,chromatizing.
3. Dimensions in bracket – after assembly.
4. Other requirements are as per specification 520 TY1

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/FIXTUERS/GAUGESINSTRUMENTS):

The supplier / Contractor should have a 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.

19) PRESERVATION CHECK

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

21) DOCUMENTATION

i. Firm has to maintain all the documents as per QAP with respect to the Sl.No.to have traceability.

ii. Vendor has to submit Bill of materials, Material test reports, Class 'C' /Endurance test reports (wherever specified in drg/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, 2.Mechanical properties, 3. Pre-forming process, 4. Coating certification, 5. Calibration reports of instruments and 6. Dimensional inspection reports.

22) REFERENCE:

a) Drawing 447A.17.114.
b) Relevant material specification as per drawing - (STEEL 12XH3A GOST 4543 - 71).
c) As per specification 520 TY1

ANNEXURE-A

SL. NO.	CATEGORY	ASSEMBLY / SUB ASSEMBLY	TESTS / INSPECTION PARAMETERS	STANDARDS TO BE REFERRED	ACCEPTANCE CRITERIA	INSPECTION RESPONSIBILITY			REMARKS
						Firm	HVF	DGQA	
1	LEVER TO DRG. NO 447A.17.114	**Pre inspection reports (PIR) of firm**	Firm has to produced all the document as per Para 21 (iv)	As per the relevant drawing and QAP.	Confirm to drawing and QAP as per bill of material	P	W/V	R	100% should be ensured.
2		**Bill of material (BOM)**	Firm has to prepare the BOM as per QAP	Refer QAP Para no: 8 or item list.	Confirm to QAP.	P	W/V	R	100% should be ensured.
3		**Material tests**	Chemical composition & Mechanical / Physical Properties	As per – GOST 4543-71 Grade 12XH3A	All the values to confirm with QAP (Para no:13.1 (a), (b), (c))	P	W/V	R	100% should be ensured.
4		**Coating**	Zn 9 chromatizing.	Refer QAP Para no: 14 (2)	All the values to confirm with QAP	P	W/V	R	100% should be ensured
		Hardness check	Case Hardening HRC ≥ 56	Refer drawing	All the values to confirm with QAP	P	W/V	R	100% should be ensured
5		**Marking / traceability**	Firm has to make marking / traceability records.	Refer QAP Para no 18	Confirm to QAP Para no 18	P	W/V	R	100% to be done
6		**Preservation & packing**	Firm has to make Preservation & packing records	Refer QAP Para no 19 & 20	Confirm to QAP Para no 19 & 20	P	W/V	R	100% to be done

Note:
For conformity of the items (Chemical/Physical/Mechanical properties).
1. One sample per heat / batch shall be tested under NABL Lab/Govt. Approved lab by firm. In case of non-compliance to standards entire lot shall be rejected or not to use in production further.
2. For cross conformation of material, manufacturer has to submit test sample pieces for the items used / test slab and button for rubber items / 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**

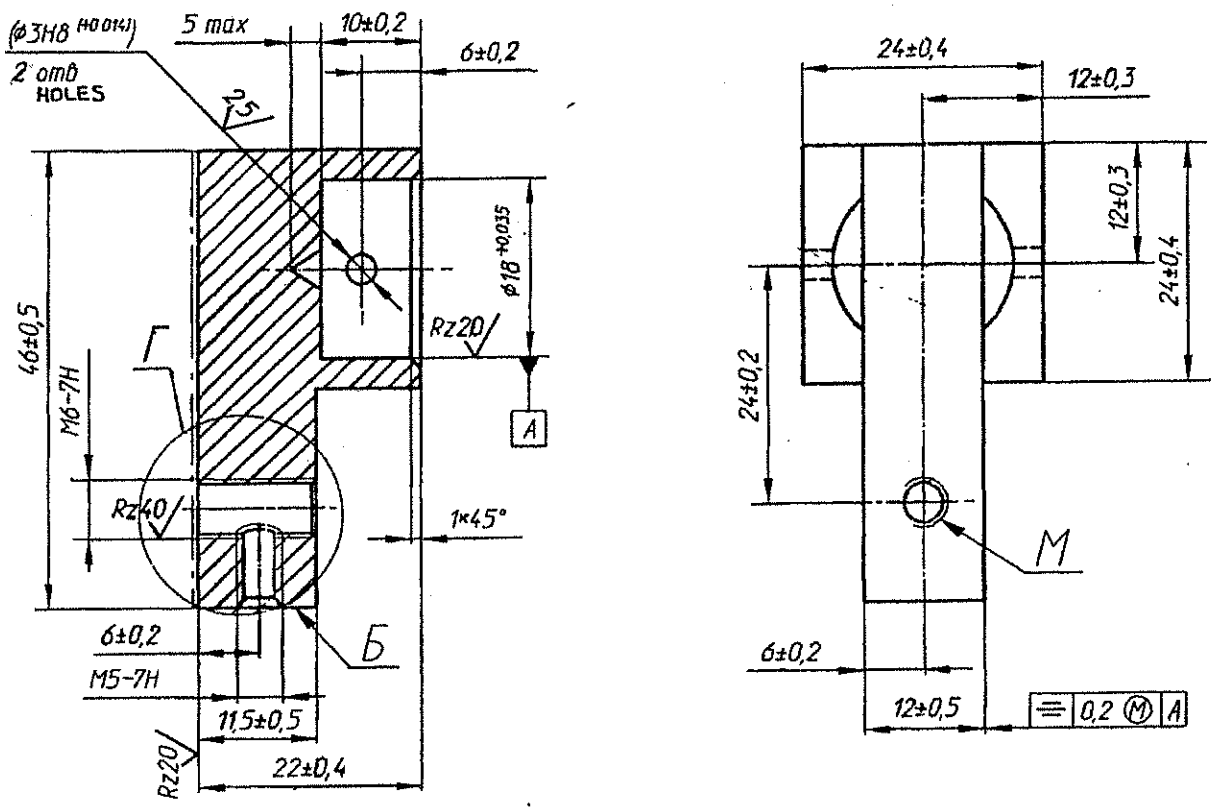

FIG: LEVER TO DRG. NO 447A.17.114

APPENDIX 'A'

RECORD OF AMENDMENTS

Sl. No	Amendment No. & date	Amended by	Date of Insertion	Initial

FORMAT FOR THE METHOD OF MANUFACTURE/ INFRASTRUCTURE AVAILABLE

Nomenclature & Drawing No: _____

1	2	3	4	5	6	**Remarks**
MANUFACTURING TECHNOLOGY&TESTING/ INSPECTION FACILITIES REQUIRED TO PRODUCE THE ITEM		POSSESSED BY THE VENDOR IN HIS OWN PREMISES –(P&M LIST &TESTING/INSPECTION EQUIPMENT LIST TO BE SUBMITTED)	PROVIDE DETAILS OF THE FACILITIES ASKED IN COLUMN (3)THAT ARE AVAILABLE IN-HOUSE (SELE-DECLARED P&M LIST (Nomenclature of machine, make/model, capacity/size & accuracy, date of installation, vintage of machine /year of manufacturing of machine)AND TESTING/INSPECTION EQUIPMENT,LIST (Nomenclature of the testing/inspection equipment make/model, size & range, Date of calibration)also to be submitted)	IF NOT POSSESSED BY THE VENDOR IN HIS OWN PREMISES IT MAY BE OUT SOURCED.(MOU/TIE-UP WITH THE OUTSOURCING VENDOR/SUB-VENDOR AND THEIR P&M LIST &TESTING/INSPECTIN EQUIPMENT LIST TO BE SUBMITTED)	PROVIDE DETAILS OF THE FACILITIES ASKED IN COLUMN (5)OUT-SOURCED FIRMS(NAME &ADDRESS OF THE OUTSOURCING VENDOR TO BE DECLARED BY THE FIRM IN FIRM'S LETTERHEAD, SELF-DECLARED P&M LIST (Nomenclature of machine, make/model, capacity/size& accuracy, date of installation, vintage of machine /year of manufacturing of machine)AND TESTING/INSPECTION EQUIPMENT,LIST (Nomenclature of the testing/inspection equipment make/model, size& range, date of calibration)AND MOU/TIE-UP ALSO TO BE SUBMITTED)	
Technology 1						
Technology 2						
Technology 3						

Test/ inspection1						
Test/ Inspection2						
Test/ Inspection3						

*The above details furnished by the vendor is to be self-certified for technical evaluation

*Inspection of item will be carried out at par with QAP, which is attached along with TE

SIGNATURE OF AUTHORIZED PERSON WITH SEAL