



### REQUIREMENT OF HOSE AND HAND PUMP HYDRAULIC

The Heavy Electricals Equipment Plant (HEEP) located in Haridwar, India is one of the major manufacturing plants of Bharat Heavy Electricals Ltd. The core business of HEEP includes design and manufacture of large steam and gas turbines, turbo generators, Defense Items and so on.

Details of items details as below:

Sl. NO.	MAT CODE	ITEM DISCREPTION	Quantity (Nos)	Delivery (Days)
1	W97010601348	MICRO HOSE (FLEXIBLE) WITH FITTINGS.HOSE ID:2.0-3.0 MM, OD:5.0-6.0 MM, WORKING PRESSURE :600 BAR, LENTGH OF HOSE ASSY: 3 METERS, MINIMUM RADIUS OF CURVATURE :30MM, END FITTINGS (BOTH SIDE): SWIVEL NUT M16X2, ACROSS FLAT:19MM, PROTECTION TIE OF PA-NYLON 11, MODEL NO: FAA-30 OF RAICO OR EQUIVALENT. SIZE: P/N 137697540	4	45
2	W97010601356	HOSE ASSEMBLY AS PER TECHNICAL SPECIFICATION DPE/TS/HA-137605190 SIZE: P/N 137605190	3	45
3	W97016002012	HYDRAULIC ADAPTER 1/4" GAS MALE TO 1/4" GAS FEMALE (REVOLVING), COMPLETE WITH ORING, MAKE - FLEXTUBO AS PER DRG. 127697621 SIZE: 127697621	4	45
4	W97010601321	HOSE ASSEMBLY AS PER TECHNICAL SPECIFICATION: DPE/TS/HA-157618465 SIZE: P/N 157618465	1	45
5	W97033101040	HAND PUMP HYDRAULIC PRESSURE = 0-700KG/CM2 LOAD = 705 CM3 PUMP CAPACITY = 2.61CM3. MODEL TYPE P39 OF ENERPAC. N.STD: ENERPAC MAKE SIZE: P/N 137697100	1	45

1. ALL VENDORS TO PROVIDE POINT WISE REPLY/CONFIRMATION ALONG WITH RELEVANT SUPPORTING DOCUMENTS TO EACH AND EVERY POINT OF PRE-QUALIFICATION REQUIREMENT/PQR FOR ALL ENQUIRY ITEMS. NONCOMPLIANCE OF THESE MAY LEAD TO REJECTION OF OFFER AS THESE ARE ESSENTIAL CONDITION FOR PARTICIPATING IN TENDER ENQUIRY
2. KINDLY UPLOAD/ATTACH THE SPECIFICATION DETAILS/ CATALOGUE OF OFFERED ITEMS.
3. KINDLY SUBMIT TECHNO-COMMERCIAL CHECKLIST ALONG WITH YOUR OFFER.

4. KINDLY SUBMIT TECHNICAL CHECKLIST ALONG WITH YOUR OFFER.
5. VENDOR TO CONFIRM TO PROVIDE DIMENSIONAL AND PROOF PRESSURE TEST CERTIFICATES OF MICRO HOSE ASSEMBLY ALONGWITH THE MATERIALS.
6. VENDOR TO CONFIRM TO PROVIDE MATERIAL, DIMENSIONAL AND PROOF PRESSURE TEST CERTIFICATES OF HOSE ASSEMBLY.
7. VENDOR TO CONFIRM TO PROVIDE MATERIAL AND DIMENSIONAL TEST CERTIFICATES OF HYDRAULIC ADAPTERS.
8. VENDOR TO CONFIRM TO PROVIDE TECHNICAL DATAHSEET OF HYDRAULIC HAND PUMP.
9. VENDOR TO CONFIRM TO PROVIDE O.E.M. CERTIFICATE OF CONFORMANCE.
10. VENDOR TO CONFIRM TO PROVIDE CO-RELATED TEST CERTIFICATES OF MATERIALS.
11. VENDOR TO CONFIRM TO PROVIDE IDENTIFICATION OF HOSES AS PER ENQUIRY SPECIFICATION AND SUBSEQUENT REPORT ACCORDINGLY.
12. EARLY DELIVERY IS ACEPTABLE.

**QUALIFYING CONDITIONS for Hose Assemblies and Hydraulic Connectors and Hand Pump**

**Following can quote:**

- a. Manufacturer**
- b. Authorized Dealer/ Distributor**

**A. Item 1: Micro Hose Assembly:**

Sl.	PQR Requirement	Vendor Response	Vendor Response (Yes / No / Enclosed)
1.	who are capable to manufacture or supply Aerospace / Military grade Hose Assemblies.	Vendor to confirm	
2.	Can provide Proof Pressure Test report	Vendor to confirm	
3.	Authorized Dealer/ Distributor to submit Authorization certificate from OEM	Vendor to submit	

**B. Item 2 & 4: Hose Assemblies:**

Sl.	PQR Requirement	Vendor Response	Vendor Response (Yes / No / Enclosed)
1.	who are capable to manufacture or supply Aerospace / Military grade Hose Assemblies.	Vendor to confirm	
2.	who can meet the requirements of Technical Specification <b>DPE/TS/HA-137605190 and DPE/TS/HA-157618465</b>	Vendor to confirm	
3.	Can provide Proof Pressure Test report	Vendor to confirm	
4.	Authorized Dealer/ Distributor to submit Authorization certificate from OEM	Vendor to submit	

**C. Item 3: Hydraulic Adapter:**

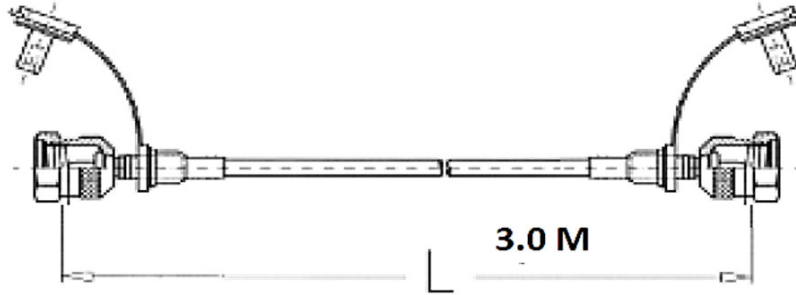
Sl.	PQR Requirement	Vendor Response	Vendor Response (Yes / No / Enclosed)
1.	who are capable to manufacture or supply Aerospace / Military grade Hydraulic Connectors.	Vendor to confirm	
2.	Authorized Dealer/ Distributor to submit Authorization certificate from OEM	Vendor to submit	

**D. Hand Pump:**

Sl.	PQR Requirement	Vendor Response	Vendor Response (Yes / No / Enclosed)
1.	who are capable to manufacture or supply Hydraulic Hand Pump with Reservoir capacity 600cm <sup>3</sup> or above and Maximum flow at rated pressure 2.46cm <sup>3</sup> /stroke	Vendor to confirm	
2.	Authorized Dealer/ Distributor to submit Authorization certificate from OEM	Vendor to submit	

**TECHNICAL PARAMETERS CHECK LIST**  
**DATA VALUES TO BE FILLED AND CONFIRMED BY VENDOR**

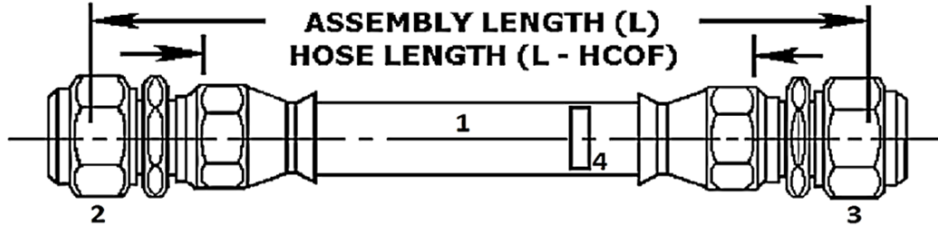
ITEM CODE                    W97010601348  
ITEM NAME                    MICRO HOSE (Flexible) / Test Hoses  
ITEM PART NO                P/N 137697540  
INTERNATIONAL EQUIVALENT    FAA-30 OF RAICO



SN.	PARAMETERS	VALUES / RANGE	UNIT	RESPONSE TYPE	VENDOR RESPONSE
1	Hose ID	2.0-3.0	mm	Input Value →	
2	Hose OD	5.0-6.0	mm	Input Value →	
3	LENGTH	3	mtr	Input Value →	
4	WORKING PRESSURE	600	bar	Input Value →	
5	Radius of curvature (Minimum)	30	mm	Input Value →	
6	End fittings ( <b>Both Side</b> )	Swivel Nut M16X2	-	To confirm →	
7	Across flat	19	mm	To confirm →	
8	PROTECTION	Protection TIE of PA-NYLON 11	-	To confirm →	
9	SHELF LIFE	Available Shelf life min 8 year (32 quarters) with cure date not older than 8 quarters from date of dispatch	-	To confirm →	
10	CERTIFICATION	Certificate of Conformance / Compliance (COC)	Y /N	To confirm →	
11	VENDOR REMARKS: Vendor to give here details of quoted item and deviations, if any. Specify the Make >> and Model quoted. >> Deviation, if any >>				

**TECHNICAL PARAMETERS CHECK LIST  
DATA VALUES TO BE FILLED AND CONFIRMED BY VENDOR**

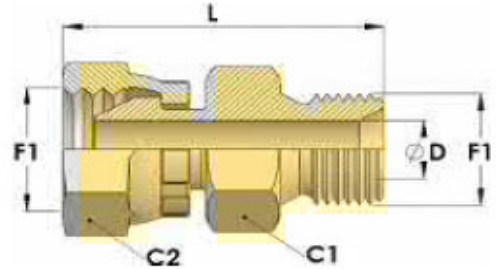
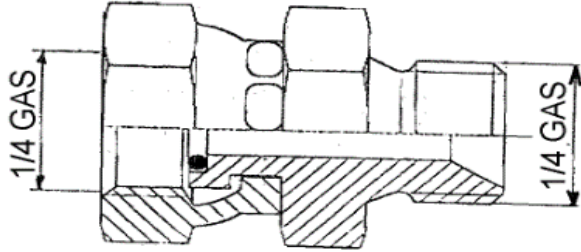
ITEM CODE                   W97010601356  
 ITEM NAME                 HOSE ASSEMBLY  
 ITEM PART NO             P/N 137605190  
 INTERNATIONAL EQUIVALENT   -



SN.	PARAMETERS	VALUES / RANGE	UNIT	RESPONSE TYPE	VENDOR RESPONSE
1	MANUFACTURE AS PER SPECIFICATION	DPE/TS/HA-137605190		To confirm →	
2	Hose ID <b>Nominal</b>	0.313 (7.95) ± 0.015 (0.38)	INCH (MM)	Input Value →	
3	Hose OD <b>Maximum</b>	0.469 (11.913)	INCH (MM)	Input Value →	
4	LENGTH	34.625 inch ± 1/4 inch (879.475 mm ± 6.35 mm)	INCH (MM)	Input Value →	
5	WORKING PRESSURE	1500 PSI (10.3 MPa)	PSI (MPA)	Input Value →	
6	Bending Radius	4.00 inch (101.6 mm)	INCH (MM)	Input Value →	
7	End fittings ( <b>Both Side</b> )	Straight Flared Fitting; 37° Flare Swivel; Threads 9/16-18 UNJF – 3B and Mates with SAE AS4395 connection ends.	-	Input Value →	
8	End Fittings Material	Corrosion-Resistant Steel (CRES).		To confirm →	
9	SHELF LIFE	Available Shelf life min 8 year (32 quarters) with cure date not older than 8 quarters from date of dispatch	-	To confirm →	
10	CERTIFICATION	Proof Pressure test reports	Y	Confirm to provide →	
		Certificate of Conformance / Compliance (COC)	Y	Confirm to provide →	
11	VENDOR REMARKS: Vendor to give here details of quoted item and deviations, if any.				
	<i>Specify the Make &gt;&gt; and Model quoted. &gt;&gt; Deviation, if any &gt;&gt;</i>				

**TECHNICAL PARAMETERS CHECK LIST**  
**DATA VALUES TO BE FILLED AND CONFIRMED BY VENDOR**

**ITEM CODE** W97016002012  
**ITEM NAME** HYDRAULIC ADAPTER 1/4" GAS MALE TO 1/4" GAS FEMALE (REVOLVING), COMPLETE WITH O-RING  
**ITEM PART NO** P/N 127697621  
**INTERNATIONAL EQUIVALENT** FLEXTUBO Model no 01MG04PM



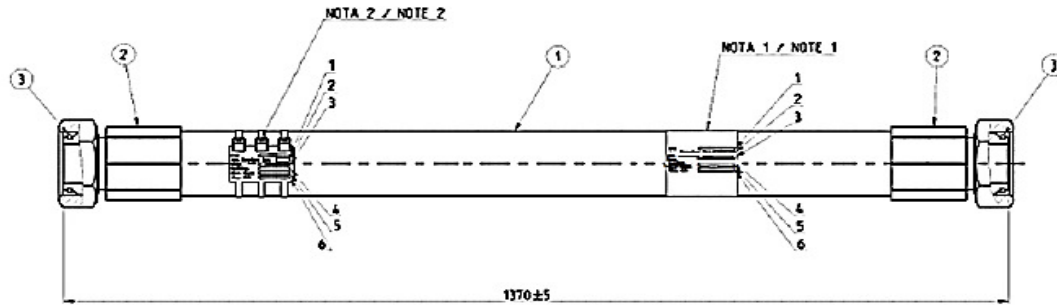
MANUFACTURER : FLEX-TUBO (MODENA) OR EQUIVALENT

CONNECTION MALE-FEMALE (REVOLVING) COplete OF O-RING

SN.	PARAMETERS	VALUES / RANGE	UNIT	RESPONSE TYPE	VENDOR RESPONSE
1	ITEM	HYDRAULIC ADAPTER 1/4" GAS MALE TO 1/4" GAS FEMALE (REVOLVING), COMPLETE WITH ORING	-	To confirm →	
2	MATERIAL	Steel	-	To confirm →	
3	Finish	Zinco-Nickel	-	To confirm →	
4	END-1 THREAD (F1)	1/4" Gas Female Swivel	inch	Input Value →	
5	END-2 THREAD (F2)	1/4" Gas Male	inch	Input Value →	
6	C1	19	mm	Input Value →	
7	C2	19	mm	Input Value →	
8	L	34	mm	Input Value →	
9	O-RING	Complete with O-Ring as per attached drawing	-	To confirm →	
10	CERTIFICATION	Certificate of Conformance / Compliance (COC)	Y	Confirm to provide →	
	VENDOR REMARKS: Vendor to give here details of quoted item and deviations, if any.				
11	Specify the Make >> and Model quoted. >> Deviation, if any >>				

**TECHNICAL PARAMETERS CHECK LIST  
DATA VALUES TO BE FILLED AND CONFIRMED BY VENDOR**

ITEM CODE                   W97010601321  
ITEM NAME                 HOSE ASSEMBLY  
ITEM PART NO             P/N 157618465  
INTERNATIONAL EQUIVALENT   -



SN.	PARAMETERS	VALUES / RANGE	UNIT	RESPONSE TYPE	VENDOR RESPONSE
1	MANUFACTURE AS PER SPECIFICATION	DPE/TS/HA-157618465		To confirm →	
2	Hose ID <b>Nominal</b>	38.1 mm (1.50 inch)	MM (INCH)	Input Value →	
3	Hose OD <b>Maximum</b>	50.6 mm (1.99 inch)	MM (INCH)	Input Value →	
4	LENGTH	1370 mm (Final finished length) +/- 5 mm	MM	Input Value →	
5	WORKING PRESSURE	Max. 52 bar ( 750 psi)	BAR (PSI)	Input Value →	
6	BENDING RADIUS	MIN. 250 mm	MM	Input Value →	
7	BURST PRESSURE	Max. 208 bar (3000 psi)	BAR (PSI)	Input Value →	
8	End fittings ( <b>Both Side</b> )	Female Straight M45 x 2 swivel 60 Degree.	-	Input Value →	
9	End Fittings Material	Steel R400-600 N/mm	-	To confirm →	
10	SHELF LIFE	Available Shelf life min 8 year (32 quarters) with cure date not older than 8 quarters from date of dispatch	-	To confirm →	
11	CERTIFICATION	Hydrostatic Pressure test reports	Y	Confirm to provide →	
		Certificate of Conformance / Compliance (COC)	Y	Confirm to provide →	
12	VENDOR REMARKS: Vendor to give here details of quoted item and deviations, if any.  <i>Specify the Make &gt;&gt; and Model quoted. &gt;&gt; Deviation, if any &gt;&gt;</i>				

**TECHNICAL PARAMETERS CHECK LIST**  
**DATA VALUES TO BE FILLED AND CONFIRMED BY VENDOR**

ITEM CODE                    W97033101040  
ITEM NAME                    HAND PUMP HYDRAULIC  
ITEM PART NO                P/N 137697100  
INTERNATIONAL EQUIVALENT    MODEL TYPE P39 OF ENERPAC



SN.	PARAMETERS	VALUES / RANGE	UNIT	RESPONSE TYPE	VENDOR RESPONSE
1	Maximum operating pressure	700	bar	Input Value →	
2	Cylinder compatibility	Single acting		To confirm →	
3	Pump Type	Single speed		To confirm →	
4	Reservoir Capacity	672	cm3	Input Value →	
5	Usable Oil capacity	672	cm3	Input Value →	
6	Maximum flow at rated pressure	2.46cm3/stroke		Input Value →	
7	Maximum Handle effort	39	kg	Input Value →	
8	Piston stroke	25.4	mm	Input Value →	
9	Valve operation	Manual		To confirm →	
10	Power Source	Manual		To confirm →	
11	Weight	6.2	Kg	Input Value →	
12	CERTIFICATION	Certificate of Conformance / Compliance (COC)	Y /N	To confirm →	
13	VENDOR REMARKS: Vendor to give here details of quoted item and deviations, if any.  <i>Specify the Make &gt;&gt;</i> <i>and Model quoted. &gt;&gt;</i> <i>Deviation, if any &gt;&gt;</i>				



**TECHNICAL SPECIFICATION FOR  
HOSE ASSEMBLY P/N 137605190**

	Name	Date
<b>Drafted by:</b>	S. K. SINGH	28.12.2020
<b>Approved by:</b>	Umesh DUTT	28.12.2020



## REVISION HISTORY

REV.	DATE	DESCRIPION
0	December 2020	Issue

**-INDEX-**

<b>1.</b>	<b>SCOPE .....</b>	<b>4</b>
<b>2.</b>	<b>MATERIALS, PROCESS AND WORKMANSHIP .....</b>	<b>4</b>
<b>3.</b>	<b>APPLICABLE SPECIFICATIONS AND STANDARDS .....</b>	<b>4</b>
<b>4.</b>	<b>REQUIREMENTS .....</b>	<b>4</b>
<b>4.1.</b>	<b>CONSTRUCTIONAL FEATURES &amp; MATERIAL.....</b>	<b>5</b>
<b>4.1.1.</b>	<b>HOSE TYPE .....</b>	<b>5</b>
<b>4.1.2.</b>	<b>HOSE DIAMETER .....</b>	<b>5</b>
<b>4.1.3.</b>	<b>HOSE LENGTH .....</b>	<b>6</b>
<b>4.1.4.</b>	<b>HOSE WORKING &amp; BURST PRESSURE.....</b>	<b>6</b>
<b>4.1.5.</b>	<b>HOSE MATERIAL.....</b>	<b>6</b>
<b>4.1.6.</b>	<b>HOSE FITTINGS.....</b>	<b>6</b>
<b>4.1.7.</b>	<b>HOSE ASSEMBLIES .....</b>	<b>7</b>
<b>4.2.</b>	<b>AMBIENT CONDITIONS .....</b>	<b>7</b>
<b>5.</b>	<b>INSPECTION AND TESTING .....</b>	<b>7</b>
<b>5.1.</b>	<b>GENERAL.....</b>	<b>7</b>
<b>5.2.</b>	<b>HOSE FITTINGS.....</b>	<b>8</b>
<b>5.3.</b>	<b>PROOF PRESSURE TESTING .....</b>	<b>8</b>
<b>5.4.</b>	<b>SHELF LIFE .....</b>	<b>8</b>
<b>6.</b>	<b>DOCUMENTATION .....</b>	<b>8</b>
<b>7.</b>	<b>PACKING AND IDENTIFICATION .....</b>	<b>9</b>
<b>8.</b>	<b>COMMERCIAL EQUIVALENTS.....</b>	<b>9</b>



## 1. SCOPE

This specification covers the manufacture, assembly, inspection, testing, packing and delivery of Hose Assembly **P/N 137605190**.

The hose assemblies manufactured and delivered shall strictly conform to the requirements mentioned herein, unless modified by the purchaser.

## 2. MATERIALS, PROCESS AND WORKMANSHIP

The materials and process employed and the workmanship in manufacturing of the hoses, hose fittings shall be in accordance with the relevant MILITARY/AEROSPACE/SAE specifications.

## 3. APPLICABLE SPECIFICATIONS AND STANDARDS

ASTM D4895	: SPECIFICATION FOR POLYTETRAFLUOROETHYLENE (PTFE) RESIN PRODUCED FROM DISPERSION
MIL-DTL-25579	: HOSE ASSEMBLY, POLYTETRAFLUOROETHYLENE, HIGH TEMPERATURE, MEDIUM PRESSURE, GENERAL SPECIFICATION FOR
MIL-DTL-27267	: HOSE, CRES WIRE REINFORCED, POLYTETRAFLUOROETHYLENE, 450°F, MEDIUM PRESSURE
MIL-DTL-27272	: FITTINGS, POLYTETRAFLUOROETHYLENE HOSE, HIGH-TEMPERATURE, MEDIUM-PRESSURE, GENERAL SPECIFICATION FOR
MS27053	: ADAPTER ASSEMBLY, FLARED, STRAIGHT, TUBE TO HOSE - WITH SWIVEL NUT
MS27061	: NIPPLE SUBASSEMBLY, FLARED, STRAIGHT - WITH SWIVEL NUT
MS27069	: DETAIL SPECIFICATION SHEET SOCKET, HOSE COUPLING
MS27070	: DETAIL SPECIFICATION SHEET SLEEVE, HOSE COUPLING
MS33656	: FITTING END, STANDARD DIMENSIONS FOR FLARED TUBE CONNECTION AND GASKET SEAL
MS8000	: HOSE ASSEMBLY, POLYTETRAFLUOROETHYLENE, REUSABLE FITTINGS, HIGH TEMPERATURE, MEDIUM PRESSURE, FLARE-TO-FLARE
SAE-AMS2700	: PASSIVATION OF CORROSION RESISTANT STEELS
SAE-AS1946	: HOSE ASSEMBLY, POLYTETRAFLUOROETHYLENE, METALLIC REINFORCED, UP TO 1500 PSI AND 450 DEGREES F, HYDRAULIC AND PNEUMATIC
SAE-AS2078	: HOSE ASSEMBLIES, POLYTETRAFLUOROETHYLENE (PTFE), TEST METHODS

## 4. REQUIREMENTS

The technical requirements of hoses, hose fittings & hose assemblies are described below:

#### 4.1. CONSTRUCTIONAL FEATURES & MATERIAL

The hose assembly shall consist of a seamless polytetrafluoroethylene (PTFE) inner tube, reinforced with Corrosion Resistant Steel (CRES) reinforcement wires and coupled with corrosion resistant (Stainless Steel) End Fittings (Class 1). The assemblies shall comply with the requirements of **MIL-DTL-25579** and **MS8000**.

Standard hose assemblies shall have flared fittings to mate with **SAE-AS4395** in accordance with **MIL-DTL-25579/1**. The hose assemblies shall withstand the strain and vibrations encountered during shipment, storage, installation, and service.

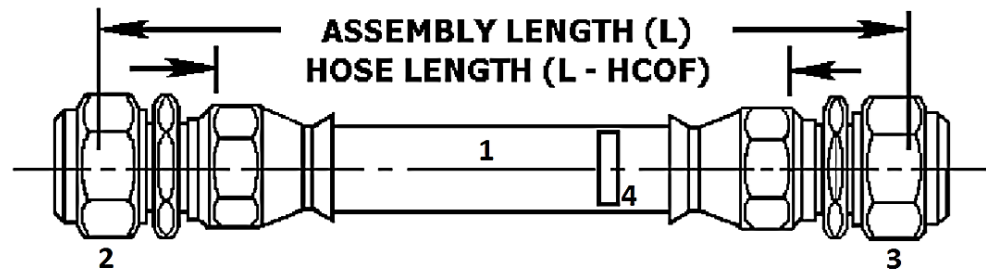


FIGURE 1.

- 01. Hose
- 02. End-1
- 03. End-2
- 04. Identification Plate

##### 4.1.1. HOSE TYPE

Medium pressure, high temperature, polytetrafluoroethylene (PTFE) hose, reinforced with a Corrosion-Resistant Steel (CRES) wire braid as per **MIL-DTL-27267** for use in fuel, lubricating oil, water-alcohol, hydraulic and pneumatic systems within the specified limits.

##### 4.1.2. HOSE DIAMETER

Inside and outside diameter of the hose shall be as below:

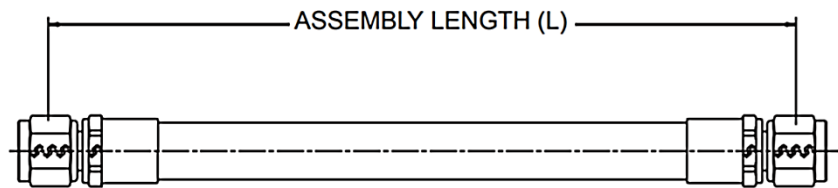
**Inner Diameter ( ID )**      0.313 (7.95)      ± 0.015 (0.38)  
**Nominal**

**Outer Diameter ( OD )**      0.469 (11.913)  
**Maximum**

*Dimensions are in inches.*

*Metric equivalents given in bracket for information only.*

#### 4.1.3. HOSE LENGTH



**Assembly Length ( L )** - 34.625 inch  $\pm$  1/4 inch  
(879.475 mm  $\pm$  6.35 mm)

**Hose cut-off factor (HCOF)** - 1.62 inch (41.148 mm)

**Bending Radius** - 4.00 inch (101.6 mm)

#### 4.1.4. HOSE WORKING & BURST PRESSURE

**OPERATING PRESSURE** - 1500 PSI (10.3 MPa)

**PROOF PRESSURE** - 3000 PSI (20.7 MPa)

**OPERATING TEMPERATURE** - -65°F to + 450°F  
-53°C to 232°C

#### 4.1.5. HOSE MATERIAL

##### 4.1.5.1. TUBE.

The tube shall be a seamless, uniformly gauged extrusion of virgin PTFE resin. The base resin shall conform to **ASTM D4895**

##### 4.1.5.2. WIRE BRAID

The reinforcement for the hose shall be a single layer CRES wire braid.

#### 4.1.6. HOSE FITTINGS

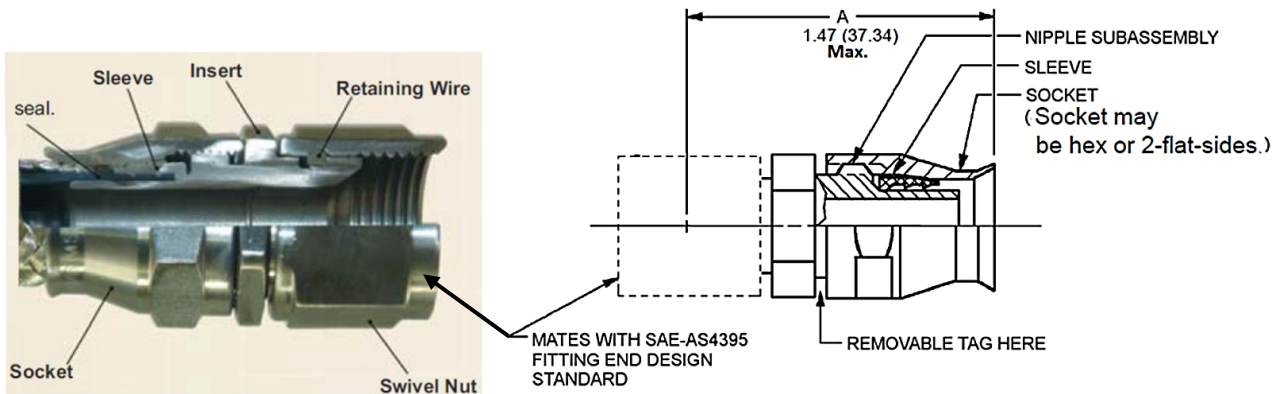
All fittings shall be qualified in accordance with **MIL-DTL-27272**.

Threads shall be UNJ profile inch series of screw in accordance with **SAE AS8879**.

Flared fittings shall mate with **SAE AS4395**

All fitting shall be made of Corrosion-Resistant Steel (CRES).

Unless otherwise specified, corrosion-resistant steel parts shall be passivated in accordance with **SAE AMS2700** method 1, type 6.



Adapter assembly illustration.

**END-1 & END-2:** Straight Flared Fitting; 37° Flare Swivel; Threads **9/16-18 UNJF – 3B** and Mates with **SAE AS4395** connection ends.

**Material:** Corrosion-Resistant Steel (CRES).

**Plating:** Passivated

#### 4.1.7. HOSE ASSEMBLIES

Each hose assembly shall be made by assembling specified hose fittings to the hose length as per the requirement in such a way that the length of finished hose assembly (when stretched) shall be within +10mm of the specified length.

**Total weight: 0.4 Kg/meter (approx..)**

#### 4.2. AMBIENT CONDITIONS

The grade of material for hoses, hose fittings shall be such as to work satisfactorily in the following ambient conditions:-

**TEMPERATURE** - -65°F to + 450°F (-53°C to 232°C)

### 5. INSPECTION AND TESTING

The hoses, hose fittings, hose assemblies be inspected & tested for type and routine tests as per relevant standards.

#### 5.1. GENERAL

All hoses, hose fittings & hose assemblies shall be visually inspected for workmanship, finish, absence of defects like dents, burrs, sharp edges, cuts, cracks, scratches, damages etc. Threaded-components shall be checked by using proper thread gauges.

## 5.2. HOSE FITTINGS

Hose fittings (100%) shall be subjected to thread checking and free movement of swivel nut, concentricity of various components when assembled.

## 5.3. PROOF PRESSURE TESTING

Hose assembly shall meet the proof pressure test in accordance with **SAE-AS2078**.

- a) Prior to testing, the hose assembly shall be examined to ensure that it is properly assembled.
- b) The test sample shall then be subjected to testing in accordance with SAE-AS2078 using the applicable proof pressure.
- c) Test fluid shall be water; however, fluid conforming to MIL-PRF-5606, MIL-PRF-83282, or MIL-PRF-87257 may be used during qualification testing.

Hose assemblies are "proof pressure" tested (normally 2 x working rated pressure) to confirm proper fabrication of the assembly.

The hose shall not leak or fail during or at the completion of testing. There shall not be any visual evidence of permanent deformation or damage.

## 5.4. SHELF LIFE

**Unlimited shelf life.**

## 6. DOCUMENTATION

Schedules of submission of various documents are given below:-

### 6.1. DOCUMENTS REQUIRED AFTER PLACEMENT OF PURCHASE ORDER

Following documents shall be submitted for purchaser's approval.

- **By Manufacturer:** QA plan to be submitted within one month after receiving of purchase order for purchaser's approval.
- **By Stockist:** Not applicable.

### 6.2. DOCUMENTS REQUIRED ALONGWITH THE SUPPLY OF FINISHED MATERIAL

Three copies of the following documents shall be furnished along with the finished material:-

- a) Proof Pressure test reports (*OEM certificate also acceptable*)
- b) Conformance/ Compliance certificate.

**7. PACKING AND IDENTIFICATION**

- A. The finished material shall be packed and shipped after clearance from BHEL.
- B. Before packing, the items shall be thoroughly dried and ends capped or plugged with screwed or threaded plastic caps.
- C. Individual items shall be packed adequately to prevent ingress of moisture & dust and with adequate cushioning to prevent damage during transit and storage.
- D. Each hose assembly shall have Identification Plate with Unique serial number, hose size, length, cure date/shelf life, fittings etc. in such a way that it is visible without removing individual packing.
- E. Material shall be packed to prevent damage during transportation & storage.
- F. Each box shall be labeled regarding its content along with Purchase Order Details, PO. Item no., destination and dispatchers address.

**8. COMMERCIAL EQUIVALENTS**

<b>MAKE</b>	<b>MODEL NO.</b>
EATON / AEROQUIP	M666000-6-0345
HYDRASEARCH	MS8000-G-345-A
PARKER	124001-6CR-0345



**TECHNICAL SPECIFICATION FOR**  
**HOSE ASSEMBLY P/N 157618465**  
**(OLD P/N 127618248)**

	Name	Date
<b>Drafted by:</b>	S. K. SINGH	11.11.2020
<b>Approved by:</b>	UMESH DUTT	11.11.2020



## REVISION HISTORY

REV.	DATE	DESCRIPTION
0	November 2020	Issue

**-INDEX-**

<b>1.</b>	<b>SCOPE .....</b>	<b>4</b>
<b>2.</b>	<b>MATERIALS, PROCESS AND WORKMANSHIP .....</b>	<b>4</b>
<b>3.</b>	<b>APPLICABLE SPECIFICATIONS AND STANDARDS .....</b>	<b>4</b>
<b>4.</b>	<b>REQUIREMENTS .....</b>	<b>4</b>
<b>4.1.</b>	<b>CONSTRUCTIONAL FEATURES &amp; MATERIAL.....</b>	<b>4</b>
<b>4.1.1.</b>	<b>HOSE TYPE .....</b>	<b>5</b>
<b>4.1.2.</b>	<b>HOSE DIAMETER .....</b>	<b>6</b>
<b>4.1.3.</b>	<b>HOSE LENGTH .....</b>	<b>6</b>
<b>4.1.4.</b>	<b>HOSE WORKING &amp; BURST PRESSURE.....</b>	<b>6</b>
<b>4.1.5.</b>	<b>HOSE MATERIAL.....</b>	<b>6</b>
<b>4.1.6.</b>	<b>HOSE FITTINGS.....</b>	<b>6</b>
<b>4.1.7.</b>	<b>HOSE ASSEMBLIES .....</b>	<b>7</b>
<b>4.2.</b>	<b>AMBIENT CONDITIONS .....</b>	<b>7</b>
<b>5.</b>	<b>INSPECTION AND TESTING .....</b>	<b>7</b>
<b>5.1.</b>	<b>GENERAL.....</b>	<b>7</b>
<b>5.2.</b>	<b>HOSE FITTINGS.....</b>	<b>7</b>
<b>5.3.</b>	<b>HYDRAULIC PRESSURE TESTING .....</b>	<b>7</b>
<b>5.4.</b>	<b>PRE DISPATCH INSPECTION .....</b>	<b>8</b>
<b>5.5.</b>	<b>SHELF LIFE .....</b>	<b>8</b>
<b>6.</b>	<b>DOCUMENTATION .....</b>	<b>8</b>
<b>7.</b>	<b>PACKING AND IDENTIFICATION .....</b>	<b>8</b>
<b>8.</b>	<b>COMMERCIAL EQUIVALENTS.....</b>	<b>9</b>
<b>9.</b>	<b>BILL OF MATERIAL .....</b>	<b>9</b>



## 1. SCOPE

This specification covers the manufacture, assembling, inspection, testing, packing and delivery of Hose Assembly **P/N 157618465 (OLD P/N 127618248)**.

The hose assemblies manufactured and delivered shall strictly conform to the requirements mentioned herein, unless modified by the purchaser.

## 2. MATERIALS, PROCESS AND WORKMANSHIP

The materials and process employed and the workmanship in manufacturing of the hoses, hose fittings shall be in accordance with the relevant MILITARY/AEROSPACE/SAE specifications.

## 3. APPLICABLE SPECIFICATIONS AND STANDARDS

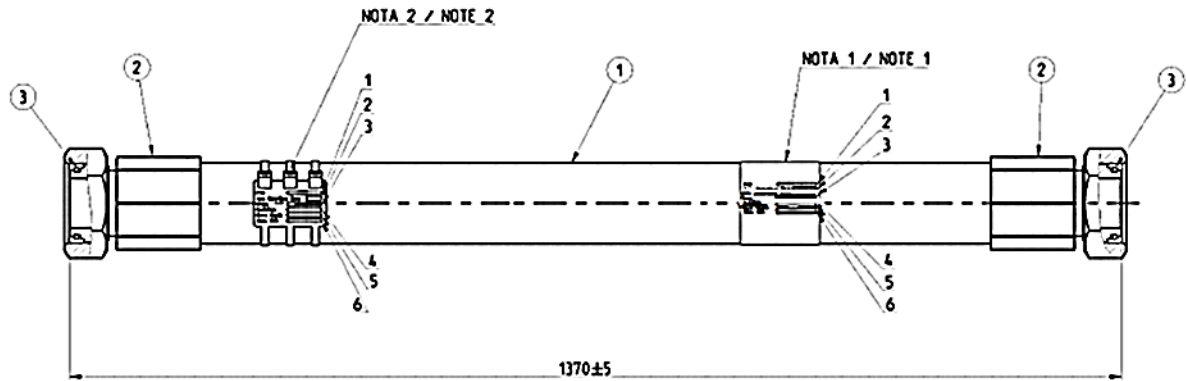
ANSI B 1.1	: Unified screw threads
ASTM B117	: Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM D380	: Standard Test Methods for Rubber Hose
ASTM-D-413	: Test for adhesion of vulcanized rubber
EN853	: Rubber Hoses And Hose Assemblies - Wire Braid Reinforced Hydraulic Type
ISO 1436-1	: Rubber hoses and hose assemblies — Wire-braid-reinforced hydraulic types — Specification — Part 1: Oil-based fluid applications
MIL-DTL-13531	: Hose and hose assembly, rubber (hydraulic, pneumatic, flexible)
SAE-AMS2700	: Passivation of Corrosion Resistant Steels
SAE-J516	: Hydraulic Hose Fittings
SAE-J517	: Hydraulic Hose
SAE-J518-1	: Hydraulic Flanged Tube, Pipe, and Hose Connections, 4-Screw Flange Connection Part 1: 3.5 MPa to 35 MPa (Code 61)
SAE-J518-2	: Hydraulic Flanged Tube, Pipe, and Hose Connections, 4-Screw Flange Connection Part 2: 42 MPa (Code 62)
SAE J343	: TEST AND TEST PROCEDURES FOR SAE 100R SERIES HYDRAULIC HOSE AND HOSE ASSEMBLIES

## 4. REQUIREMENTS

The technical requirements of hoses, hose fittings, hose assemblies are given below:

### 4.1. CONSTRUCTIONAL FEATURES & MATERIAL

Hose shall be constructed as per **figure-1** with an inner tube, Four steel wire spirals reinforcement (**see figure-2**), and an outer cover - Black synthetic rubber resistant to oils and weather agents. The entire construction shall be vulcanized so that the cover, wire reinforcement, and inner tube are bonded to the reinforcement layers.



**FIGURE 1.**

**Sub-parts:**

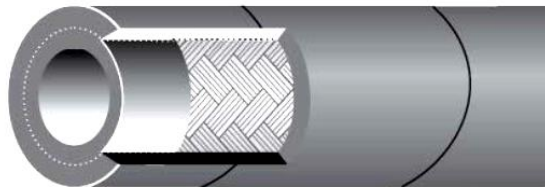
- 01. Hose
- 02. Female Straight Fittings
- 03. End Nuts

**Identification Tag:** Note-1 & Note-2:

- 1. Part Number
- 2. Assembly Date / Cure Date
- 3. Supplier Name
- 4. Max. Working Pressure (bar)
- 5. Test Certificate No.
- 6. Order No./Item No.

**4.1.1. HOSE TYPE**

Single wire braid reinforced, Type I as per MIL-DTL-13531 J



**FIGURE 2. MIL-DTL-13531, type I, class A...**

Reinforcement of type I hose shall consist of one braid of high-tensile steel wire (see figure 1).

Manufactured and tested to meet or exceed all the requirements to **MIL-DTL-13531 J**

OR

Synthetic rubber tube, single wire braid reinforcement with synthetic rubber cover. That meets or exceeds SAE J517 100R1AT Type S, EN853 1SN, ISO 1436-1 Type 1SN requirements at 1/2 SAE Bend Radius.



#### 4.1.2. HOSE DIAMETER

Inside diameter and outside diameter of the hose shall be as below:

<b>Inside diameter</b>	-	<b>38.1 mm (1.50 inch)</b>
<b>Outside diameter</b>	-	<b>50.6 mm (1.99 inch)</b>

#### 4.1.3. HOSE LENGTH

**Length - 1370 mm (Final finished length) +/- 5 mm**

#### 4.1.4. HOSE WORKING & BURST PRESSURE

<b>WORKING PRESSURE</b>	-	<b>Max. 52 bar ( 750 psi)</b>
<b>BURST PRESSURE</b>	-	<b>Max. 208 bar (3000 psi)</b>

#### 4.1.5. HOSE MATERIAL

##### 4.1.5.1. INNER TUBE.

The inner tube shall consist of an oil-resistant compound seamless and uniform gauge. The inner tube shall have a smooth bore, shall be free of pitting and other defects and shall be cleaned free of dirt, foreign material and mandrel lubricants.

##### 4.1.5.2. OUTER COVER.

The outer cover shall be a synthetic rubber compound capable of meeting the performance requirements of this specification. Hoses shall be manufactured and tested to meet or exceed all the requirements to SAE specification J517 (latest).

##### 4.1.5.3. WIRE BRAID

The material of wire braids shall be high tensile steel wires.

#### 4.1.6. HOSE FITTINGS

**Both Ends:** Female Straight M45 x 2 swivel 60 Degree cone.

**Material:** Steel R400-600 N/mm

**Plating:** Galvanized and white passivated

Hose fittings shall be manufactured as per SAE J-516. All fitting shall be made of Steel or corrosion resistant steel. Corrosion



resistant steel shall be passivated in accordance with SAE-AMS2700, type 6 or 7.

Except corrosion resistant steel - Cadmium plating shall be in accordance with SAE-AMS-QQ-P-416, type and class optional.

Or

Zinc plating shall be in accordance with ASTM B633

#### 4.1.7. HOSE ASSEMBLIES

Each hose assembly shall be made by assembling specified hose fittings to the hose length as per the requirement in such a way that the length of finished hose assembly (when stretched) shall be within +100mm of the specified length.

**Total weight : Approx. 2. 2 Kgs (approx..)**

#### 4.2. AMBIENT CONDITIONS

The grade of material for hoses, hose fittings shall be such as to work satisfactorily in the following ambient conditions:-

**Temperature : -40 deg C to >= +75 deg C**

### 5. INSPECTION AND TESTING

The hoses, hose fittings, hose assemblies to be inspected & tested for type and routine tests as per relevant standards.

#### 5.1. GENERAL

All hoses, hose fittings, hose assemblies shall be visually inspected for workmanship, finish, absence of defects like dents, burrs, sharp edges, cuts, cracks, scratches, damages etc. Threaded-components shall be checked by using proper thread gauges.

#### 5.2. HOSE FITTINGS

Hose fittings (100%) shall be subjected to thread checking and free movement of swivel nut, concentricity of various components when assembled.

#### 5.3. HYDRAULIC PRESSURE TESTING

Hose and hose assemblies shall meet the proof pressure test in accordance with **SAE-J343**.



The hose or hose assembly shall be subjected to twice the operating pressure specified at **4.1.4** for not less than **60 seconds** and not more than **5 minutes**. Tolerance shall be  $\pm 5\%$ .

Hose assemblies during and after hydrostatic test as specified above, shall not show any leak, bulging, blistering or any other defect.

#### 5.4. PRE DISPATCH INSPECTION

**First Article Acceptance:** In case, Hose assembly is manufactured, Pre-dispatch inspect is must for the 1<sup>st</sup> Hose Assembly by BHEL or its authorized representative. Only after BHEL clearance, further manufacturing will be allowed to complete the order.

#### 5.5. SHELF LIFE

The Cure date should not be older than **8 quarters** from the date of dispatch.

### 6. DOCUMENTATION

Schedules of submission of various documents are given below:-

#### 6.1. DOCUMENTS REQUIRED AFTER PLACEMENT OF PURCHASE ORDER

Following documents shall be submitted for purchaser's approval.

- **By Manufacturer:** QA Plan to be submitted within one month after receiving of purchase order for purchaser's approval.
- **By Stockist:** Not applicable.

#### 6.2. DOCUMENTS REQUIRED ALONGWITH THE SUPPLY OF FINISHED MATERIAL

Three copies of the following documents shall be furnished along with the finished material:-

- a) Hydrostatic Pressure test reports (*OEM certificate also acceptable*)
- b) Conformance/ Compliance certificate.

### 7. PACKING AND IDENTIFICATION

- A. The finished material shall be packed and shipped after clearance from BHEL.
- B. Before packing, the items shall be thoroughly dried and ends capped or plugged with screwed or threaded plastic caps.
- C. Individual items shall be packed adequately to prevent ingress of moisture & dust and with adequate cushioning to prevent damage during transit and storage.
- D. Each hose assembly shall have Identification Plate with Unique serial number, hose size, length, cure date/shelf life, fittings etc. in such a way that it is visible without removing individual packing.



- E. Material shall be packed in strong wooden cases to prevent damage during transportation & storage.
- F. Each box shall be labeled regarding its content along with Purchase Order Details, PO. Item no., destination and dispatchers address.

**8. COMMERCIAL EQUIVALENTS**

NIL

**9. BILL OF MATERIAL**

ITEM NO.	ITEM DESCRIPTION	ITEM QUANTITY	COMMERCIAL REFERENCE
1	HOSE 1.5 MM ID	1	GH681-24 OF AEROQUIP/ EATON
2	FEMALE STRAIGHT FITTINGS	2	
3	END NUTS	2	
4	IDENTIFICATION TAG	2	

## TECHNO-COMMERCIAL CHECKLIST

SL. NO.	TERMS & CONDITION	VENDOR CONFIRMATION /REMARKS / REPLY
1	BIDDER NAME	
2	GEM BID NO	
3	ITEM IS TO BE SUPPLIED AS PER TECHNICAL SPECIFICATION	
4	ALL VENDORS TO PROVIDE POINT WISE REPLY/CONFIRMATION ALONG WITH RELEVANT SUPPORTING DOCUMENTS TO EACH AND EVERY POINT OF PRE-QUALIFICATION REQUIREMENT/PQR FOR ALL ENQUIRY ITEMS. NONCOMPLIANCE OF THESE MAY LEAD TO REJECTION OF OFFER AS THESE ARE ESSENTIAL CONDITION FOR PARTICIPATING IN TENDER ENQUIRY	
5	KINDLY UPLOAD/ATTACH THE SPECIFICATION DETAILS/ CATALOGUE OF OFFERED ITEMS ( IF APPLICABLE).	
6	KINDLY SUBMIT TECHNICAL CHECKLIST ALONG WITH YOUR OFFER.	
7	VENDOR TO CONFIRM TO PROVIDE DIMENSIONAL AND PROOF PRESSURE TEST CERTIFICATES OF MICRO HOSE ASSEMBLY ALONG WITH THE MATERIALS.	
8	VENDOR TO CONFIRM TO PROVIDE MATERIAL, DIMENSIONAL AND PROOF PRESSURE TEST CERTIFICATES OF HOSE ASSEMBLY.	
9	VENDOR TO CONFIRM TO PROVIDE MATERIAL AND DIMENSIONAL TEST CERTIFICATES OF HYDRAULIC ADAPTERS.	
10	VENDOR TO CONFIRM TO PROVIDE TECHNICAL DATA SHEET OF HYDRAULIC HAND PUMP.	
11	VENDOR TO CONFIRM TO PROVIDE O.E.M. CERTIFICATE OF CONFORMANCE.	
12	VENDOR TO CONFIRM TO PROVIDE CO-RELATED TEST CERTIFICATES OF MATERIALS.	
13	VENDOR TO CONFIRM TO PROVIDE IDENTIFICATION OF HOSES AS PER ENQUIRY SPECIFICATION AND SUBSEQUENT REPORT ACCORDINGLY.	
14	<b>RISK PURCHASE:</b> IN CASE OF ABNORMAL DELAYS (BEYOND THE MAXIMUM LATE DELIVERY PERIOD AS PER LD CLAUSE) IN SUPPLIES / DEFECTIVE SUPPLIES OR NONFULFILLMENT OF ANY OTHER TERMS AND CONDITIONS GIVEN IN PURCHASE ORDER, BHEL MAY CANCEL THE PURCHASE ORDER IN FULL OR PART THEREOF, AND MAY ALSO MAKE THE PURCHASE OF SUCH MATERIAL FROM ELSEWHERE / ALTERNATIVE SOURCE AT THE RISK AND COST OF THE SUPPLIER. BHEL WILL TAKE ALL REASONABLE STEPS TO GET THE MATERIAL FROM ALTERNATE SOURCE AT OPTIMUM COST. IF BIDDER DOES NOT AGREE TO THE ABOVE RISK PURCHASE CLAUSE, BHEL RESERVES THE RIGHT TO REJECT THE OFFER. IN CASE FOR COMPELLING REASONS BHEL ACCEPTS THE OFFER WITHOUT ACCEPTANCE OF THIS CLAUSE BY THE BIDDER AND IN THE EVENTUALITY OF RISK PURCHASE, APPROPRIATE ACTION WILL BE TAKEN AS PER BHEL EXISTANT RULES. THIS WILL BE WITHOUT PREJUDICE TO ANY OTHER RIGHT OF BHEL UNDER THE CONTRACT OR UNDER GENERAL LAW.	
15	<b>ACTION AGAINST BIDDERS / VENDOR / SUPPLIER / CONTRACTOR IN CASE OF DEFAULT:</b> IN ORDER TO PROTECT THE COMMERCIAL INTERESTS OF BHEL, BHEL SHALL TAKE ACTION AGAINST SUPPLIES / CONTRACTORS BY WAY OF SUSPENSION OF BUSINESS DEALINGS, WHO EITHER FAIL TO PERFORM OR ARE IN DEFAULT WITHOUT ANY REASONABLE CAUSE, CAUSE LOSS OF BUSINESS/ MONEY/ REPUTATION, INDULGE IN MALPRACTICES, CHEATING, BRIBERY, FRAUD OR ANY OTHER MISCONDUCT OR FORMATION OF CARTELS SO AS TO INFLUENCE THE BIDDING PROCESS OR INFLUENCE THE PRICE ETC. SUSPENSION OF BUSINESS DEALINGS COULD BE IN THE FORM OF "HOLD" OR "BANNING" A SUPPLIER/ CONTRACTOR OR A BIDDER AND SHALL BE AS PER "GUIDELINES FOR SUSPENSION OF BUSINESS DEALINGS WITH SUPPLIERS/ CONTRACTORS" AVAILABLE AT BHEL'S WEBSITE " <a href="https://www.bhel.com/guidelines-suspension-business-dealings-supplierscontractors">https://www.bhel.com/guidelines-suspension-business-dealings-supplierscontractors</a> "	

1. **MSE/MII:** THE SUPPLIER NEEDS TO SUBMIT/UPDATE MSE/MII CREDENTIALS ON GEM PORTAL DURING PROFILE UPDATION/ OFFER SUBMISSION STAGE. THE MSE DATA SUBMITTED IS CROSS VERIFIED BY GEM WITH GOVT. OF INDIA UDYAM/NSIC DATABASE THROUGH API INTEGRATION ON REAL TIME BASIS AND FOR MII, A SELF DECLARATION IS BEING GIVEN AND AUTHENTICATED BY AADHAR OTP. IF THE SELLER FAILS TO CLAIM MSE/MII PROVISION ON GEM PORTAL AT PROFILE UPDATION/BID SUBMISSION STAGE, THE SAID SELLER WILL BECOME INELIGIBLE FOR GETTING THE MSE/MII BENEFITS FOR THAT BID AUTOMATICALLY. THE VENDOR CAN ALWAYS CONTACT THE GEM HELPDESK, IN CASE OF ANY ISSUES.
2. THE PRICE QUOTE BY BIDDER SHOULD BE INCLUSIVE OF GST & SHOULD BE ON BHEL HEEP HARIDWAR STORES BASIS.
3. BIDDER'S OFFER IS LIABLE TO BE REJECTED IF THEY DON'T UPLOAD ANY OF THE CERTIFICATES / DOCUMENTS SOUGHT IN THE BID DOCUMENT, ATC AND CORRIGENDUM IF ANY.
4. **RISK PURCHASE:** IN CASE OF ABNORMAL DELAYS (BEYOND THE MAXIMUM LATE DELIVERY PERIOD AS PER LD CLAUSE) IN SUPPLIES / DEFECTIVE SUPPLIES OR NONFULFILLMENT OF ANY OTHER TERMS AND CONDITIONS GIVEN IN PURCHASE ORDER, BHEL MAY CANCEL THE PURCHASE ORDER IN FULL OR PART THEREOF, AND MAY ALSO MAKE THE PURCHASE OF SUCH MATERIAL FROM ELSEWHERE / ALTERNATIVE SOURCE AT THE RISK AND COST OF THE SUPPLIER. BHEL WILL TAKE ALL REASONABLE STEPS TO GET THE MATERIAL FROM ALTERNATE SOURCE AT OPTIMUM COST. IF BIDDER DOES NOT AGREE TO THE ABOVE RISK PURCHASE CLAUSE, BHEL RESERVES THE RIGHT TO REJECT THE OFFER. IN CASE FOR COMPELLING REASONS BHEL ACCEPTS THE OFFER WITHOUT ACCEPTANCE OF THIS CLAUSE BY THE BIDDER AND IN THE EVENTUALITY OF RISK PURCHASE, APPROPRIATE ACTION WILL BE TAKEN AS PER BHEL EXISTANT RULES. THIS WILL BE WITHOUT PREJUDICE TO ANY OTHER RIGHT OF BHEL UNDER THE CONTRACT OR UNDER GENERAL LAW.
5. **ACTION AGAINST BIDDERS / VENDOR / SUPPLIER / CONTRACTOR IN CASE OF DEFAULT:**  
IN ORDER TO PROTECT THE COMMERCIAL INTERESTS OF BHEL, BHEL SHALL TAKE ACTION AGAINST SUPPLIES / CONTRACTORS BY WAY OF SUSPENSION OF BUSINESS DEALINGS, WHO EITHER FAIL TO PERFORM OR ARE IN DEFAULT WITHOUT ANY REASONABLE CAUSE, CAUSE LOSS OF BUSINESS/ MONEY/ REPUTATION, INDULGE IN MALPRACTICES, CHEATING, BRIBERY, FRAUD OR ANY OTHER MISCONDUCT OR FORMATION OF CARTELS SO AS TO INFLUENCE THE BIDDING PROCESS OR INFLUENCE THE PRICE ETC.  
SUSPENSION OF BUSINESS DEALINGS COULD BE IN THE FORM OF "HOLD" OR "BANNING" A SUPPLIER/ CONTRACTOR OR A BIDDER AND SHALL BE AS PER "GUIDELINES FOR SUSPENSION OF BUSINESS DEALINGS WITH SUPPLIERS/ CONTRACTORS" AVAILABLE AT BHEL'S WEBSITE <https://www.bhel.com/guidelines-suspension-business-dealings-supplierscontractors>
6. BIDDERS ARE ADVISED TO CHECK APPLICABLE GST ON THEIR OWN BEFORE QUOTING. BUYER WILL NOT TAKE ANY RESPONSIBILITY IN THIS REGARDS. GST REIMBURSEMENT WILL BE AS PER ACTUALS OR AS PER APPLICABLE RATES (WHICHEVER IS LOWER), SUBJECT TO THE MAXIMUM OF QUOTED GST %.
7. BIDDER SHALL SUBMIT THE FOLLOWING DOCUMENTS ALONG WITH THEIR BID FOR VENDOR CODE CREATION:  
**A. COPY OF PAN CARD B. COPY OF GSTIN C. COPY OF MSE CERTIFICATE**
8. DEDICATED/TOLL FREE TELEPHONE NO. FOR SERVICE SUPPORT: BIDDER/OEM MUST HAVE DEDICATED/TOLL FREE TELEPHONE NO. FOR SERVICE SUPPORT.
9. DATA SHEET OF THE PRODUCT(S) OFFERED IN THE BID, ARE TO BE UPLOADED ALONG WITH THE BID DOCUMENTS. BUYERS CAN MATCH AND VERIFY THE DATA SHEET WITH THE PRODUCT SPECIFICATIONS OFFERED. IN CASE OF ANY UNEXPLAINED MISMATCH OF TECHNICAL PARAMETERS, THE BID IS LIABLE FOR REJECTION.
10. SCOPE OF SUPPLY (BID PRICE TO INCLUDE ALL COST COMPONENTS): ONLY SUPPLY OF GOODS.
11. PRODUCTS SUPPLIED SHALL BE NONTOXIC AND HARMLESS TO HEALTH. IN THE CASE OF TOXIC MATERIALS, MATERIAL SAFETY DATA SHEET MAY BE FURNISHED ALONG WITH THE MATERIAL.
12. WHILE GENERATING INVOICE IN GEM PORTAL, THE SELLER MUST UPLOAD SCANNED COPY OF GST INVOICE AND THE SCREENSHOT OF GST PORTAL CONFIRMING PAYMENT OF GST.
13. **PAYMENT TERMS SHALL BE AS PER FOLLOWINGS:**

- a) **For Non-MSME bidders:** 100% payment along with taxes, freight & insurance will be made after receipt and acceptance of material and within 90 days from the date of invoice subject to submission of non-discrepant documents within 15 days of supply as per terms and conditions of Purchase Order. (MSME means Micro, Small & Medium Enterprises) (THIS IS IN SUPERSESSION OF 10 DAYS' TIME AS PROVIDED IN CLAUSE 12 OF GEM GTC).
- b) **FOR MSE BIDDER:** For MSEs (covered under MSME Act) which are registered and periodically renewed with BHEL, the payment will be made within 45 days or as prescribed in the relevant act. Benefits of MSE (such as EMD Waiver, Tender fee exemption, Price preference, Payment preference etc.) will be given only to those MSE Vendors who are manufacturers of offered items against the NIT. No MSE benefits shall be provided to Agents / Stockists /Dealers / Traders etc. for the items offered but not manufactured by themselves.”
- c) **FOR MEDIUM ENTERPRISES:** 100% payment along with taxes, freight & insurance will be made after receipt and acceptance of material and within 60 days from the date of invoice subject to submission of non-discrepant documents within 15 days of supply as per terms and conditions of Purchase Order.
- d) Please note that vendor to adhere to the payment terms as per above. No deviation in payment terms shall be accepted. Vendor to submit their offer accordingly.