GRI	LEAD IN PLATE FOR PIEZOLECTRIC ACCELEROMETER FOR STATOR END WINDING VIBRATION MEASUREMENT	GRI NO.: GRI/27/04/09-10 DATE : 30.10.2009 PAGE : 1 OF 4

1.0 INTRODUCTION :

This specification covers the requirement of Lead in Plates required as interface for inter connecting low noise accelerometer cables from inside of pressurized generator casing to the outside of generator casing and to external signaling devices. The generator may be pressurized with H2 gas up to 6kg/cm2 pressure. This specification also deals with the various tests to be conduced by the supplier and the technical delivery terms for the same.

2.0 SCOPE

2.1 Each **20 pin** Lead in Plate assembly for **PEA (Piezoelectric Accelerometer) Sensors** shall consist of :

a. 20 Pin Lead in Plate top part for PEA(Drawing no. GRI-8280-007 & 008) - 1 no.
b. Pressure cap- 1 no
c. Allen bolts with washer (M10 X 45) - 13 no.
d. "O" rings for Lead-in-Plates- 2 no.
e. "O" rings for pressure caps- 1 no.
f. Protection cover with gland – 1 no.

3.0 COMPLIANCE WITH STANDARD

There is no national /international standard available on the above subject. However this standard is based on BHEL's experience.

4.0 TECHNICAL REQUIRMENT:

4.1 General: All the surface of Lead in Plate must be clean (especially the sinter glass filling should not have any deposits)

4.2 Construction, Dimension and Finishing:

4.2.1 The shape, dimension, tolerances and finish of the Lead in Plate shall be strictly in accordance with those given in drawing at Annexure- I & II of this standard as specified in the order. All the measurement shall be done by means of instruments of 0.01 (or better) accuracy .

4.2.2 Anti rust coating : Lead in Plate assembly shall have polished anti rust coating protection.

4.3 MATERIALS: The materials of various item of Lead in Plate shall be as bellow:

4.3.1 Item 2.1a- Lead in Plate top part assembly for **PEA (refer drawing at annexure-I & annexure-II)**

4.3.1.1 Body of Lead in Plate top part shall be to BHEL material standard AA 10119. Neoprene sealing 'O' rings shall be provided as applicable for lead in Plate, pressure cap etc for air tight sealing.

4.3.1.2 Filling:

a) This shall be of sinter glass between Plate and cable connector Finger.

b) This shall be epoxy resin between connection finger and central conductor.

4.3.1.3 Cable connector and central conductor:

The material should be copper alloy of industrial grade suitable for electrical connector and compatible with other lead in plate components material.

4.3.2 Pressure cap for 2.1a : Matching Pressure cap as per Annex–III for leakage protection on blanking the flange to cover any contingency in operation. Body of pressure cap shall be to BHEL material standard AA 10119.

4.3.3 Protective Cap: One number protective cap as per Annexure –IV shall be supplied loose with each Lead in Plate.The protective cap shall be fastened with Lead in plate top part with the help of 4 Nos. .M3 Screw to enable ease in handling. Body of pressure cap shall be of epoxy casting.

5.0 **TESTING**: Besides the dimensional ,constructional and material checks , following tests shall be conducted by the supplier:

5.1 Test for Dielectric Strength : The Dielectric Strength shall be tested with the help of suitable equipment. During this testing , no flashover should take place. The Voltage level at which this test should be performed is given as below.

5.2 Testing Voltage:

1 kV DC for 1 minute between each Finger body and its central conductor and 2kV DC for 1 minute between each Finger body and Plate. In both the cases, the IR value should greater than 100 MΩ.

5.3 Mechanical Strength Test : The Lead in Plate shall be subjected to hydraulic pressure by fixing it on a fixture. The direction of pressure is as shown in the Annex.-1& III. When tested at a pressure of 15 bars with water for 30 minutes, there should not be any leakage or deformation.

5.4 Gas Tightness Test: The Lead in Plate shall be tested for gas tightness also. The Nitrogen at 12 bars pressure shall be applied in the direction as shown in Annexure-1 & III. When tested for two hours ,there should not be any leakage that can be detected through by application of soap solution. Alternatively, leakage test can also be performed with helium gas applied at a pressure of 10 bars for one hour and leakage should be checked with the help of helium leak detector. The norms for acceptance will be as per standard helium leak test norms..

6.0 **ACCEPTANCE NORMS** :

The material shall be accepted as per requirements of spec & meeting scope of supply in full.

6.1 **TEST CERTIFICATES** : Three copies of the following test certificates shall be produced by the Supplier quoting BHEL specification no. Manufacture identification serial number, tests conducted and their results:

6.2 Dielectric Test Certificates.

6.3 Strength Test Certificates

6.4 Gas tightness Test Certificates

6.5 Certificate of compliance to BHEL Material Standard AA10119

6.6 Dimensional Test Certificates

6.7 **GUARANTEE CERTIFICATE** : A guarantee certificate for 24 months of trouble free performance from date of shipment or 24 months from the date of commissioning , whichever is earlier shall be supplied .

6.8 PACKING: The Lead in plate shall be packed in such a way that no damage occurs to any of its component during transit and storage i.e. pin should always remain protected on both ends from any direct contact with any external object.

7.0 **MARKING**::

7.1 Each packing shall be marked with the following:

a. BHEL order no.
b. Designation of the component.
c. Supplier's name and reference
d. Batch no and date of manufacture.
e. Net weight/ Gross weight.

7.2 Each lead in Plate shall be tagged with the following information:

a) Supplier reference.
b) Designation of the component.
c) Date of manufacture.

7.3 Each Lead in Plate shall be

8.0 **INSPECTION**: The vendor shall submit the quality plan in BHEL format along with the offer for approval of BHEL. Also the supplier shall provide all facilities to BHEL inspector or there authorized representative to witness the testing of this item as per agreed plane .

9.0 **REJECTION**: BHEL reserves the right to reject complete supply or part of the supply not conforming to the requirements of this specification.

10.0 **PRE-QUALIFYING REQUIREMENT (PQR) :**

Only those vendors (OEMs/ Authorised dealer), who have supplied and installed at least one 9-Pin Lead in Plate for PEA(Piezo-electric Accelerometer), in past five years (on the date of opening of tender) and 9-Pin Lead in Plate for PEA is presently working satisfactorily for more than one year (on the date of opening of tender) after Installation, should quote. However, if 9-Pin Lead in Plate for PEA (s) has/had been supplied to BHEL, then the 9-Pin Lead in Plate for PEA should be presently working satisfactorily for more than six months (on the date of opening of tender) after its installation and acceptance in BHEL.

The following information should be submitted by vendor about the companies where 9-Pin Lead in Plate for PEA have been supplied. This is required from all the vendor for qualification of their offer.

a. Name of the customer/company where 9-Pin Lead in Plate for PEA is installed.
b. Complete postal address of the customer.
c. P.O.No., date, scope of supply and Month & year of installation.
d. Name and designation of contact person of the customer.
e. Phone, Fax no. and e-mail address of the contact person of the customer.
f. Performance certificate from the customers regarding satisfactory performance of 9-Pin Lead in Plate for PEA supplied to them (Original Certificate or Through E-mail directly from customer). The original performance certificate may be returned after verification by BHEL, if required.

11.0 **CROSS REFERRED STANDARDS** : AA 10119