



OPERATING SOLENOID FOR VACUUM CIRCUIT BREAKERS

1.0 INTRODUCTION:

Operating solenoid to Drg. No.: 25211001563 is used in spring operating mechanism to facilitate the electrical closing and opening of vacuum Circuit Breakers. The reliability of operation of these solenoids is of utmost importance for proper functioning of VCBs during service condition.

2.0 FORM OF CONSTRUCTION AND TYPE :

This is a DC solenoid plunger type armature Construction fitted with closed yoke. Armature is fitted in MS/Brass sleeve. All iron parts are Zinc plated / Chromated. Surface of armature pressings is hard chrom plated. Coils are made of Polyester enamelled copper wire and baked. The force-Displacement Characteristics of the solenoid is given as Fig 'A' on drawings.

3.0 MATERIALS:

The materials, process to be followed and finish of operating solenoid shall be as specified on assembly and individual item drawings.

4.0 TEST AND CHECK REQUIREMENTS:

4.1 TYPE TEST

2 No. solenoid assemblies shall be subjected to check caulking between magnet body and clamp piece. The caulking should withstand a pull force of 400kgf minimum. This test should be carried out once in a year & certificate shall be submitted to BHEL.

4.2 ROUTINE TEST

i) Following tests shall be conducted on each operating solenoid at Supplier's works:

- 2kV power frequency voltage for one minute with stand test.
- Measurement of coil resistance as per drawing.
- Tests for inter turn shorting.

ii) Following test shall be conducted on one coil from each lot of 50 operating solenoids at Supplier's works:

- Force-Displacement Characteristics as per drawing.

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REV.	05	PRINTS TO :-		APPROVED –		
ALTD.	MAK	SWM(PLNG)	1	R.K. SHUKLA		
APPD.	DKD	QCX (SCR)	1	PREPARED	ISSUED	DATE
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iii) Each solenoid assembly shall be checked for smooth movement of plunger throughout stroke inside the coil spool tube.

5. ACCEPTANCE CRITERION :

i) **VISUAL CHECKS:** Operating solenoid assemblies shall be inspected for general finish and completeness of the assembly.

ii) **TEST CERTIFICATES :** Supplier shall submit following test certificate with every lot of supply:

- Certificate for the tests conducted and observation made as per the requirements of para 4.
- Certificate for meeting the requirements of materials used, processes followed and finish as specified on individual item and assembly drgs. of operating solenoid assembly.

iii) **Tests at BHEL** 2% Solenoid assemblies from each lot (min-2 Nos) of supply shall be subjected to 2 kV power frequency voltage withstand test for 1 minute and measurement of Coil resistance as per the drg. specification.

6. PACKAGING:

Each solenoid shall be packed in a suitable cardboard carton and then the lot placed in a wooden crate for bulk supply.

7. IDENTIFICATION MARKINGS FOR TRACEABILITY:

- Each solenoid assembly shall have following markings at location (*) shown on drawing:
- Suppliers name or logo
- Coil Voltage
- Coil Resistance
- Style No
- Month & year of manufacturing.

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