Bharat Heavy Electricals Limited

Power Sector – Southern Region – Service After Sales
39, Sarojini Devi Road, Ek Tara Building, SECUNDERABAD-500 003
Phone: 040-27702905/27700827/27704776/27802056/27705376, Fax:040-27701768

Dt. 09.11.2006

AC HIGH VOLTAGE TEST SET
SERIES: AHVMTOC5
TYPE: 050K5A.

HV TEST KIT.

SCOPE OF SUPPLY

AC High Voltage Test set is suitable for applied voltage test on Transformers, Motors, Insulators, Generators of large size, Cables etc. The set is capable of giving – continuously variable High Voltage from zero to 50 kV.

TECHNICAL SPECIFICATION:

Input	:	415 Volts, 50Hz, 1 Phase (Between two Phase of three phase system) AC
Output	:	Continuously variable 0to 50 kV AC.
Capacity	:	5A.
Duty	:	Intermittent duty cycle, ie., 100 Min ON, 100 Min OFF.
Over load Tripping adjustment	:	Variable tripping current as discussed inside can be set between 10 and 110 percent of test set rating.
Over Voltage	:	Indication & Protection circuit as discussed Inside to adjust over voltage level from 10 to 110 percent of set rating.

The above test kit will be in 5 units ie.,

1. Power Mains Control panel with Air Circuit Breaker.
2. Control & Measurement Unit.
3. Regulator.
4. Reactor.
5. AC HV Transformer.

All the above units will be provided with Cast Iron wheels for easy movement & each unit will also be provided with suitable lifting hooks.

1.**POWER MAIN S CONTROL PANEL WITH AIR CIRCUIT BREAKER**.

Power mains ON – OFF operation is done by means of a air Circuit Breaker which is coupled to the over current Trip Circuit and other protective device like zero start interlock, reactor over current protection circuit. An auxiliary mains ON/Off circuit with fuse arrangement is provided for control circuit only.

2.**CONTROL UNIT:**

Mains ON – OFF switch & fuse.

LT & HT ON indicating lamp.

Isolation transformer for control operation and auxiliary supply for meters.

Digital AC Voltmeter connected to low voltage tertiary winding & scaled in kV. SINGLE RANGE DISPLAY IN KV. RESOLUTION 0.1KV. ACCURACY + 1% OF RANGE.

Digital AC Ammeter to measure output current. SINGLE RANGE DISPLAY IN AMPERE. RESOLUTION – 1mA. ACCURACY + 1% OF RANGE.

ON & OFF push button switch incorporating automatic tripping mechanism for protecting the HV transformer against over loading. The tripping mechanism can be adjusted to different values a mentioned above. In addition to that a protective device against overloading will be provided in the regulator output side and that will be set at maximum permissible loading in the regulator output side. These protective devices will be coupled to the Mains Air Circuit breaker unit.

Zero start interlocking will be provided to ensure that the HV circuit cannot be energized unless the regulating transformer is initially kept or brought back to zero position.

Enclosure interlocking will be provided ie., high voltage circuit cannot be energized unless all doors of the testing enclosure is closed. However, this interlock can be by – passed by shorting corresponding terminals.

Protective devices to provide pre indication (lamp & buzzer) in case of high oil temperature for HV Transformer as well as Regulator. If the temperature increases furthe3r a protective device will work to tripp off the whole circuit ie., air circuit breaker. This pre indication of temperature rise will rule out the confusion on the reason of tripping.

Increase / Decrease circuit to control motor operated voltage regulator & reactor. In auto mode when high voltage circuit is switched ON the regulator will be rotated to increase the output test voltage at a set speed (Approximate 1 KV/Sec) up to a preset voltage level. On reaching that set voltage the timer will be automatically started and at the end of the set time period the voltage will come back to zero with an indication (audio as well as lamp indication) of end of test. In manual mode 'INCREASE' and 'DECREASE' push button will be provided alongwith the indicating lamp. Even in Manual mode voltage could not be raised above the present voltage level. In case of over voltage a lamp & buzzer will indicate over voltage and the increase mode circuit will be automatically cut off. The set voltages can be varied from 10% to 110% of rated output. An over voltage trip circuit will work to trip off the HV output if voltage croses 110%.

Digital Timer with Variable Time setting between 0.01 to 99.99 minutes for conducting a test. At the end of the pre set time the timer will automatically lower the voltage to minimum.

The whole control circuitry will be housed within a sheet metal cabinet treated with anti – corrosive prima and painted with stoved enamel paint or powder coated as found suitable at the time of manufacturing.

3. REGULATOR:

Continuously variable voltage regulator of suitable capacity fitted with motor for control operation.

Over voltage protection ie., the regulator will be switched out of circuit when the output voltage crosses the maximum limit of the selected output range. There will be an indicating lamp to show over voltage condition.

4. REACTOR:

If the device or component under test has large capacitance as in the case of cable, large transformer, motor, Generator etc a reactor is required to avoid too low power factor situation.

The reactor will be motor controlled. Minimum & maximum position interlock for the reactor will be provided so that limit switch will automatically disconnect increase / decrease circuit of motor connection at maximum and minimum position respectively.

Apart from the interlock facility overload tripping for the reactor current will be provided.

5. **HV TRANSFORMER**:

HV Transformer used in the test set will be oil natural cooled type and of suitable capacity. One end of the high voltage winding will be earth through an ammeter & protective device.

The transformer will be designed to withstand frequent intermittent spark over to short circuit conditions under which such testing transformers are designed to operate.

DISCHARGE ROD:

In AC High Voltage test, after testing, the device under test is normally discharged through transformer winding. However for device under test having large capacitance a discharge rod may be used and hence it is provided with the set.

Operation and Maintenance Manual Works Test Report, Guarantee Certificate will be supplied alongwith the set.