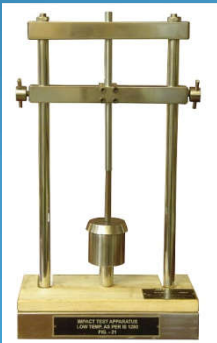




SCR ELEKTRONIKS

SALES PRESENTATION ON TESTING OF SWITCHES , SOCKETS & FAN REGULATOR





LIST OF TESTING EQUIPMENT'S FOR SWITCHES AS PER IS 3854:

1. SWITCH ENDURANCE TEST BENCH
2. PLC BASED SWITCH DI-ELECTRIC ROUTINE TEST BENCH
3. ARRANGEMENT FOR CHECKING DAMAGE TO CONDUCTORS WITH MASS (FIG. 3)
4. IMPACT TEST APPARATUS IS 3854 1997 CLAUSE NO. 20 (FIG. 15)
5. GLOW WIRE APPARATUS
6. HIGH VOLTAGE TESTER
7. COMPARATIVE TRACKING INDEX TESTER FOR TEST AS PER IEC 60112
8. TEMPERATURE RISE TEST APPARATUS FOR SWITCHES & SOCKETS AS PER IS 3854 CLAUSE 17
9. HIGH VOLTAGE TEST SETUP FOR SWITCHES & SOCKETS



LIST OF TESTING EQUIPMENT'S FOR SOCKET AS PER IS 1293:

1. SOCKET ENDURANCE TEST BENCH
2. PLC BASED SOCKET DI-ELECTRIC ROUTINE TEST BENCH
3. MAX & MIN 'GO' GAUGE FOR SOCKET OUTLET FOR 6A – 16A (FIG B-2 & 3)
4. TEST FINGER APPARATUS
5. GAUGE CHECKING FOR NON-ACCESSIBILITY FOR SHUTTERED SOCKET AFTER NORMAL OPERATION AS PER IS 1293 FIG. 3
6. GAUGE FOR CHECKING NON-ACCESSIBILITY FOR SHUTTERED SOCKET (FIG.4)
7. DEVICE FOR CHECKING THE RESISTANCE TO LATERAL STRAIN (FIG. 6) AS PER CLAUSE 13.14
8. GAUGE FOR THE VERIFICATION OF THE OUTLINE OF COVERS FOR COVER-PLATES AS PER IS 1293 (FIG. 7)
9. APPARATUS FOR CHECKING MAXIMUM WITHDRAWAL FORCE (FIG.13)
10. APPARATUS FOR TESTING CORD RETENTION AS PER (FIG. 14)
11. APPARATUS FOR FLEXING TEST AS PER (FIG. 15)
12. IMPACT TEST APPARATUS AT LOW TEMPERATURE (FIG. 21)
13. ARRANGEMENT FOR COMPRESSION TEST (FIG. 22)
14. TEST ARRANGEMENT TO VERIFY THE FIXATION OF PIN IN THE BODY OF PLUG AS PER IS 1293 FIG. NO. 25
15. COMPRESSING TEST APPARATUS (FIG. 28)
16. DEVICE FOR TESTING NON-SOLID PINS (FIG. 31)
17. GAUGE FOR VERIFICATION OF THE MINIMUM WITHDRAWAL FORCE AS PER IS 1293 CLAUSE 22 (FIG 42)
18. BALL PRESSURE TEST APPARATUS (FIG. 27) CLAUSE 25.2
19. TUMBLING BARREL APPARATUS
20. SINGLE PIN GAUGE WITH FORCE 40 N & 75 N FOR SHUTTER SOCKET
21. TEST PANEL FOR ABOVE WITH 40-50V SOURCE AND CONTINUITY INDICATOR
22. TORQUE SCREW DRIVER



LIST OF TESTING EQUIPMENT'S FOR FAN REGULATOR:

1. HIGH VOLTAGE TESTER
2. EARTH LEAKAGE CURRENT TESTER
3. EARTH CONTACT RESISTANCE TESTER
4. TEST FINGER
5. SPRING HAMMER IMPACT TESTER
6. TEMPERATURE RISE TEST SETUP FOR FAN REGULATOR
7. ENDURANCE TEST SETUP FOR FAN REGULATOR



Testing Equipment's For Switches

1. SWITCH ENDURANCE TEST BENCH

- **What It Is?**

- The SCR Elektroniks 3 station Switch Endurance Test Bench is designed to verify the endurance testing of household and rocker switches as per IEC 60669, IS 3854 and BS EN 60669.
- Typical switch ratings covered are for the entire range (typically 6 – 45 A) for both 3 phase and single phase loads.

- **Models Available :**

- The number of stations, discrete current ratingd, PLC / microcontroller / PC based, tests as per BIS, IEC, BS, etc. can be customized.
- The system can also be clubbed with socket endurance bench wherein the source and load are common, thus giving a economical solution. The fixtures are designed exactly as per the customer samples – they could be common for a switch and a socket



- **Tests Performed By This Test Bench Are:**

1. Normal Operation (Referred to as Cl 19.1 in IEC 60669, IS 3854 and BS EN 60669)
2. Making and Breaking Capacity (Referred to as Cl 18.1 in IEC 60669, IS 3854 and BS EN 60669)
3. Temperature Rise (Referred to as Cl 17 in IEC 60669, IS 3854 and BS EN 60669)
4. Fluorescent Lamp Load (Referred to as Cl 19.2 in IEC 60669, IS 3854 and BS EN 60669)
5. Tungsten Filament Lamp Load (Referred to as Cl 18.2 in IEC 60669, IS 3854 and BS EN 60669)



● Basic Specifications :

- Total Voltage and current range of the source: 200-270 V , 6-57 A AC (This can be customised depending upon the switch ratings selected)
- Load Current options: 6, 10, 13, 15 16, 20, 25, 32, 45 Amp for Normal Operation and 1.25 times 6, 10, 13, 15 16, 20, 25, 32, 45 Amp for Making-Breaking test (Also respective test currents for fluorescent lamp load (Load A and Load B) and tungsten filament lamp load)
- Rated Voltage Options: 220 V, 230 V, 240 V and 250 V (As per user specifications)
- Power Factor: 0.3 for Breaking Capacity and 0.6 for Normal Operation
- User Specified Number of Phases: 3 phase or 1 Phase
- For temperature rise test: k type Cr / Al thermocouples with upto 12 temperature channels (customizable) per phase
- 50 / 60 Hz operation as per incoming line frequency
- Pneumatic Pressure: approximately 6 - 8 bar
- Class 1 Accuracy (for current and voltage display)



● Salient Features :

- Servo controlled mechanism to control current ($\pm 1\%$) against incoming fluctuations
- CT range selection for current measurement accuracy
- Load selection is selector switch based: Quick and easy
- Accurately designed iron core inductors (Optional air core inductors as per customer specifications) for circuit parameter accuracy
- Specially designed fixture for safe operation with operator safety in view
- Cooling shall be provided by means of optimally placed Exhaust fans distributed all over to remove the hot air generated inside the panel cabinet: This avoids change in circuit parameters as a result of over heating of loads
- Ceramic core wire wound resistors with enamel coating: This ensures best quality of resistors that have a favourable resistance v/s temperature rise graph enabling operation for an elongated duration with accuracy
- Temperature rise test can be integrated with the main endurance test
- PC based option available: Complete PC data logging and control plus online plotting of temperature rise graphs
- Touchscreen PLC based operation available



- **Key Benefits :**

- The product is used to test the endurance of switches when subjected to repetitive strokes with an inductive load at the output. The product also identifies the number of cycles it withstands before 'contact open' or 'contact weld' condition is detected thus giving an exact quality assessment of the switch under test.
- The customer can even test its own and competitor's product and compare the performance
- Stand-alone unit after initial configuration of test parameters: The panel is capable to generate accurate test results even after days of continuous operation with no loss of data.
- PLC based timer unit (Siemens Logo / optionally selected Siemens PLC touchscreen module) for quick and easy user interface and automated operation: Easy setting of parameters such as on time, off time, no. of cycles and threshold consecutive contact weld, contact open cycles
- User friendly operations make the equipment to be handled easier for any operator.

- Key Photos :



Three Station Switch Endurance Test Bench



2. PLC BASED SWITCH DI-ELECTRIC ROUTINE TEST BENCH

- **What It Is?**

- The SCR Elektroniks Switch Di-Electric Test Bench is designed to verify the high voltage testing of household and rocker switches (SPST and SPDT) as per IEC 60669, IS 3854 and BS EN 60669. The system employs Siemens PLC to carry out the test sequence and test parameter (timing) setting.
- The di-electric strength test is referred to as Clause 16.2 in the following standards: IEC 60669 BS-EN 60669 IS 3854.
- In addition, there is a continuity test module which helps in checking the conformance of the switch in closed condition to ensure complete reliability of the switch w r t operation and safety before being shipped out for sale.

- **Models Available :**

- The product can be made PC based or PLC based.
- The maximum di-electric withstand level (kV) can be customized. A 2-in-1 switch / socket dielectric withstand test can also be designed and integrated in a single bench with two distinct set of fixtures, one for switch testing and other for socket testing



● Basic Specifications :

- Input voltage: 230 V
- 50 / 60 Hz operation as per incoming line frequency
- Test voltage: 200 V – 1500 V
- Threshold Leakage current setting: 2, 5, 10, 20, 50 mA
- Pneumatic Pressure: approximately 6 bar
- Class 1 Accuracy for measurement of current and voltage

- **Salient Features :**

- User friendly Front control panel for easy setting of parameters
- Siemens PLC for completely automated operation Specially designed fixture for safe operation with operator safety in view
- User selectable threshold mA leakage current
- Diagnostic mode for periodical debugging and diagnostic check of machine / controls and fixture
- Mounted on castor wheel



● Key Benefits :

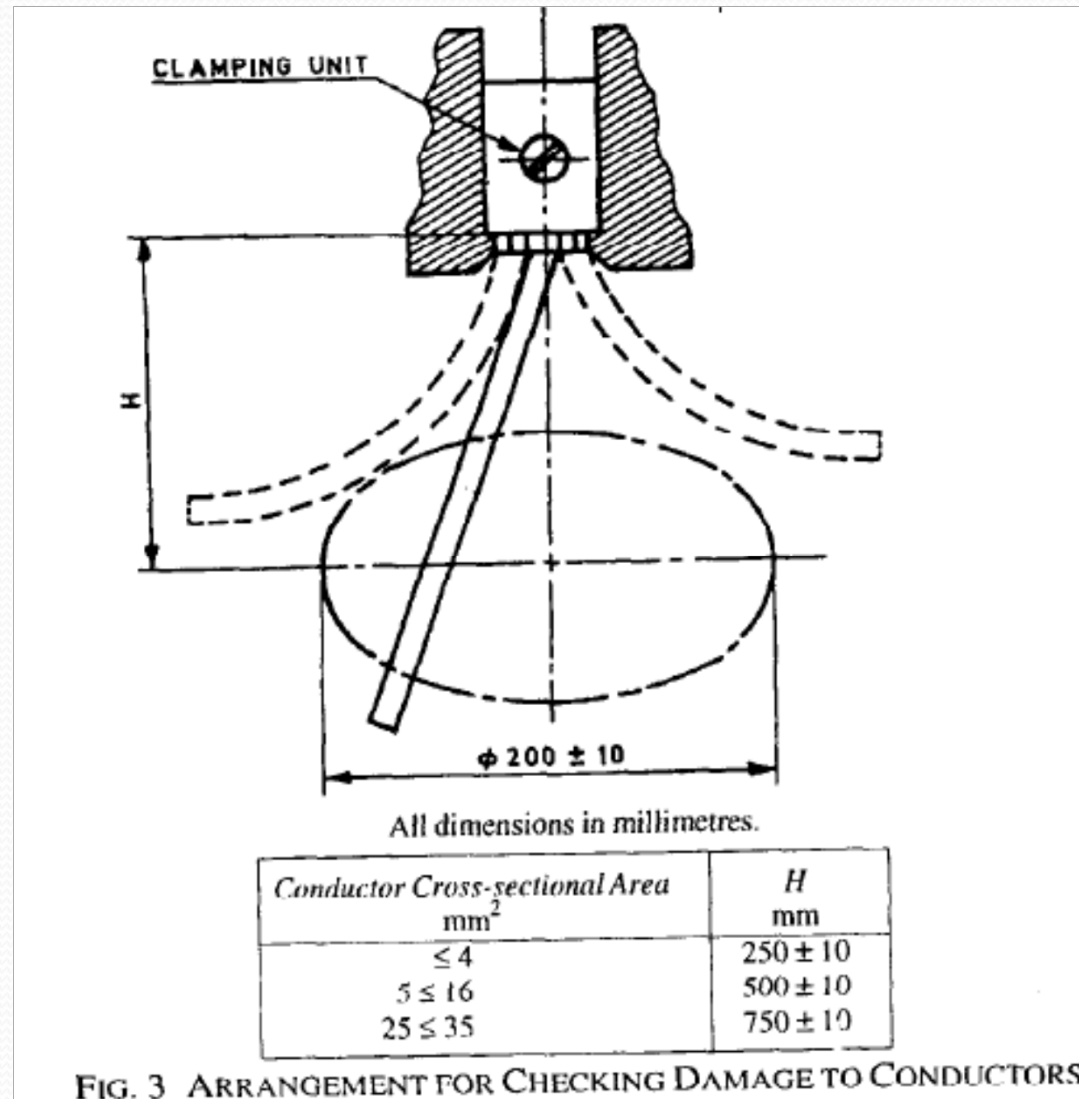
- The product tests di-electric withstand capacity of various insulating paths in a switch such as opposite poles, adjacent poles, terminals to body, etc. as given in IEC standard. The yield of this equipment is extremely high, thus enabling rapid testing of switches
- Stand-alone unit after initial configuration of test parameters: The operator just pushes a push button for initiation of the test sequence.
- User friendly operations make the equipment to be handled easier for any operator.

- Key Photos :



Plc Based Switch Di-electric Routine Test Bench

3. ARRANGEMENT FOR CHECKING DAMAGE TO CONDUCTORS WITH MASS (FIG. 3)



- Key Photos :



Arrangement For Checking Damage To Conductors



4. IMPACT TEST APPARATUS

- **What It Is?**

- SCR Elektroniks make Impact Test Apparatus is used to test the Electrical Accessories / appliances for their mechanical strength.
- It is designed as per IS 3854 1997

- **Models Available :**

- The product is designed as per the specifications and drawings in the relevant standard. The base plate and boxes, if any, can be customized as per diagrams in the standard



- **Salient Features :**

- Robustly built
- Can be mounted vertically or horizontally
- Tests a range of products of different application such as MCBs, switches and sockets

- **Basic Specifications :**

- Striking Element - hemispherical face of radius 10 mm, made of Teflon, weighing 0.15 kg
- Steel Tube - 9 mm diameter and 0.5 mm thickness
- Striking force - between 1 N to 2 N
- Height of fall - 250 mm

- **Key Benefits :**

- The tester is used to test the mechanical strength of a switch against impact

- **Key Photos :**



Impact Test Apparatus



5. GLOW WIRE TESTER

- **What It Is?**

- Table top model to verify flammability characteristics of moulds and insulators
- IEC 60695-2-10 (1980)

- **Models Available :**

- **Automatic Version** – motorized movement of test specimen with automatic current control on contact with the heating loop (most popular model – less costly than pc based version)
- **Pc Based** - the above automated version with complete pc control and data logging + user management



• Basic Specifications :

- **Temperature Sensor** – Thermocouple: Fine wire of Cr/Al of 0.5 mm diameter located in 0.6 mm diameter pocket hole in temperature sheath resistant to 1000 degree centigrade
- In the model GWT A2, current is held approximately constant (15 % swing) once the heating element touches the specimen.
- **Heating Element** – Glow Wire: Nickel / Chromium (Ni/Cr-80:20%) wire of 4mm diameter with a shape as per the standard
- **Time Controller** - Micro-controller based programmable timer 0 to 999 sec
 - The total test time can be programmed through keyboard
 - The ignition time and extinguish time of flame can be registered in timer
 - The stored time values can be viewed after the end of test
 - Setting on PC for PC based variant
- **Penetration Depth** - Mechanically restricted to 7 mm
- **Specimen size** - 180 x 150 Sq.mm max. & 15 x 15 Sq. mm min., Thickness 10mm to 80 mm.
- Test specimen contact force against the glow wire is preloaded to 0.8 to 1.2N
- **Test Chamber Dimensions** – (Available only with automatic variants)
 - Dimensions – 600 mm W x 300 mm D x 610 mm H. (approx.)
- **Supply Voltage** – 230 V AC, 50 Hz, 1 Phase, 500 VA



- **Salient Features :**

- Nickel / Chromium based heating element (glow wire)
- Cr/Al based fine wire based thermocouple for temperature sensing
- Temperature Range - Adjustable up to 960° centigrade
- A motorized sliding carrier with an universally adjusted SS perforated tray is provided to mount the specimen
- Self adjusting constant current mode operation as soon as heater-specimen contact is established
- Motor brings the jig back to the pre-test position automatically as soon as the test is concluded
- Time Controller - Micro-controller based programmable timer 0 to 999sec Precision scale: Precision scale is provided to measure the height of the flame
- Safety – Emergency Switch, MCB, Fuses
- Entire panel hoisted in aluminium sections for better aesthetics
- Fully Automated Panel



● Key Benefits :

- Unique Benefits That Make Testing Reliable And Compliant :
 - Constant current mode (available only in automatic variants – the point of operation shifts from constant temperature mode to constant current mode once the loop touches the specimen)
 - Motor + weight arrangement – ensures 10 n force (thus, once loop – specimen contact takes place, the only force on the specimen stand (specimen) is that of a fixed weight
- Available Only In Pc Based Variant :
 - All the key benefits stated above
 - Plus, pc software for control and data logging with a few software features such as:
 - User hierarchy
 - Diagnostic and debug mode
 - Reports exportable to excel format
 - Calibration mode

- Key Photos :



Automatic Glow Wire Tester



Automatic Glow Wire With PC Based
Data Logging and Test Chamber



6. HIGH VOLTAGE TESTER

- **What It Is?**

- Generate High Voltage across the Output terminal and measure the Leakage current flowing across the Earth Terminal.
- Product ranging up to 5 kV.
- Range of leakage current for tripping threshold up to 100 – 200 mA
- Prominently featuring indication lamps and buzzers for indicating results of test
- Quick and Easy Selection of leakage current threshold value
- As per IS 15885 Cl no.1



• Basic Specifications :

- **Voltage :** 0 – 5 kV.
- **Current :** 0 – 5, 10, 25, 50, 100, 200mAmps.
- **Time Setting :** 0 to 60 Sec.
- **Safety Factors :**
 - a) Zero Interlocks.
 - b) Shrouded type Push Button for H.T. ON.
 - c) H.V. Transformer heavy duty epoxy cast.
- **Indications :**
 - a) High Voltage and leakage current on separate meters.
 - b) Separate lamp indication for H.T. ON, OK, NOT OK
- With Timer and “OK”, “NOT OK” indications.

- Key Photos :



Fig. HVT 5 kV



7. COMPARATIVE TRACKING INDEX TESTER

- **What It Is?**

- The Comparative Tracking Index Tester is designed to determine the resistance to tracking in insulating parts supporting live parts used for electrical accessories such as MCBs, switches, sockets, plugs, etc.
- This test is specified in IEC 60112.

- **Models Available :**

- **Non PC Based** – State of the art equipment with inbuilt variable high voltage source, pre-settable drop volume, number of drops, drop interval and an indigenously developed opto-proximity sensor
- **PC Based** - The above mentioned version with complete PC Control and Data Logging + User Management.



● Basic Specifications :

- **Test Voltage :** 100 to 600V (or 1200 V) AC
- **Short Circuit Current :** 1 A
- **Trip Current :** 0.5 A, Adjustable
- **Voltage Indication :** 1/ 8 DIN, 3 Digit Voltmeter, 0 to 750 V
- **Dropping Unit :** Automatic by special positive displacement pump
- **Dropping Interval :** 30 +/-, Seconds
- **Drop Volume :** 20, (-0/+5) MM Cube
- **Drop Number Indication :** Pre-set digital Counter, 0 to 999 drops.
- **Dropping Height :** Err:510
- **Electrolyte** 0.1% NH_4Cl (Ammonium Chloride) in distilled water
- **Load On Each Electrode :** 1.0 Newton
- **Electrode :** Brass (Option = Platinum)
- **Max. Fuse Rating :** 3A Rapid, 20*5 mm Glass Cartridges
- **Weight :** 22Kgs. Approx. (total)
- **Dimensions (W*H*D) :** 450mm*280mm*400mm Electrical Control Panel.
450mm*235mm*200mm, Test Chamber - Approximate
- **Input Voltage Specification :** 230V /110V/ 100V ; 50 Hz, 60 Hz – As per Customer's Specification



● Salient Features :

- Built in electrolyte container with pump, producing drops of $20 \pm 3 \text{ mm}^3$ volume at precise interval of 30 seconds. The drop falling height is adjustable to 35 mm.
- Priming facility for the pump to enable removal of initial electrolyte having higher concentration.
- Fully automatic unit with minimum of controls & adjustments.
- Micro-controller based timer control unit used to set the timings and to control the sequence of operations.
- Pre-set load on the electrodes with a force of 1.0 N each.
- Short circuit release – 0.5 A for 2 sec; Short circuit current limited to 1 A.
- Electrode Voltage Settings – 0 to 230V, 0 to 350V, 0 to 450V, 0 to 550V, 0 to 650V adjustable.
- Current limiting resistances automatically selected with test voltage.
- Adjustable platform with glass top for Placing the sample.
- Clear acrylic front cover for safety and a draught free surrounding.
- Cover open interlock switch for safety.
- Exhaust fans for removal of fumes.



● Key Benefits :

- Unique Benefits That Make Testing Reliable:
 - Micro controller based operation enables pre-configurable settings on a user friendly touch-pad
 - Totally stand alone operation with automatic cut-off facility after the test is passed or short circuit is detected
 - User-safety is ensured by mechanical interlocking of the test chamber
 - Modular design makes the tester maintenance friendly

- Available In Pc Based Variant:
 - All the key benefits stated above
 - Plus, pc software for control and data logging with a few software features such as:
 - User hierarchy with password control
 - Automatic Operation
 - Automatic data saving
 - Diagnostic and debug mode
 - Reports exportable to excel format
 - Calibration mode

- Key Photos :



Non PC Based Comparative Tracking Index Tester



PC Based Comparative Tracking Index Tester



8. TEMPERATURE RISE TEST APPARATUS FOR SWITCHES & SOCKETS AS PER IS 3854 CLAUSE 17

• What It Is?

- It is used to carry out temperature rise test at low voltage (without load).
- It consists of True RMS constant Current source, which maintains the Current with + / - 1 % of set value with Digital indication, Digital Temperature indicator having twelve channels for temperature measurement.
- Cr/Al' types of thermocouple sensors are used for temperature sensing. Digital voltmeter used to indicate position of autotransformer.
- The panel is fabricated using CR CA Sheets and powder coated for superior finish.
- Three Terminals of Binding Post type are brought out for output connections. This panel is Table Top Mounting Type.

- Key Photos :



TEMPERATURE RISE TEST APPARATUS FOR SWITCHES & SOCKETS



9. HIGH VOLTAGE TEST SETUP FOR SWITCHES & SOCKETS

- **What It Is?**

- The High voltage tester for routine testing of Switches & Sockets with a specially designed robust fixture to hold either 20 Nos. switches one way or two way 20 Nos. and 10 Nos. Sockets at a time.
- The solution comes as a single trolley with easy-to-set test parameters with safety interlocks designed for user safety with respect to electric shock and mechanical fixture.
- An advantage of the system is – it gives a high yield (20 Switches OR Sockets are tested in about one minute) thus yielding user safety at a high value for money.

- **Models Available :**

- The product can be customized for the total number of switches / sockets that can be tested



- **Basic Specifications :**

- **Input Supply** : 230 V AC, +/- 10 %, 50 Hz
- **Test Voltage** : 0 - 3 KV AC
- **Tripping** : 5 mA, 10 mA, 25 mA, 50 mA, 100 mA
- **Time Setting** : 0 - 6 Sec for each test.
- **Voltage Indication** : Digital LED, 0 - 3 KV.
- **Current Indication** : Digital LED, 0 - 100 mA
- **Safety Features** : (a) Fixture Cover Interlock
(b) Epoxy cast Transformer
- **Lamp Indication** : HT ON, OK, NOT OK (fault), Test 1, Test 2, UP position OFF, Down position OFF



- **Salient Features :**

- The product tests switch and socket together for the dielectric withstand test
- One can test either 20 Nos. switches one way or two way 20 Nos. and 10 Nos. Sockets.
- The separate fixture arrangement will be made with pneumatic arrangement to connect the switches and sockets, all in parallel and voltage is applied.
- In case there is no failure then pass signal will be displayed. If there is failure in any one of the switch/socket the fail signal will be displayed. Then one can test individual switch to find out the failed switch/socket.

- **Key Photos :**



High Voltage Test Setup For Switches & Sockets



Testing Equipment's For Socket

1. SOCKET ENDURANCE TEST BENCH

- **What It Is?**

- The SCR Elektronik 3 station Socket Endurance Test Bench is designed to verify the endurance testing of sockets as per IEC 60884, IS 1293 and BS 1363.
- Typical sockets ratings covered are for the entire range (typically 6 – 32 A) for both 3 phase and single phase loads.

- **Models Available :**

- The number of stations, discrete current ratingd, PLC / microcontroller / PC based, tests as per BIS, IEC, BS, etc. can be customized.
- The system can also be clubbed with switch endurance bench wherein the source and load are common, thus giving a economical solution. The fixtures are designed exactly as per the customer samples.



- **The Tests Included (That Can Be Customized) Are As Follows:**

- Normal Operation (Referred to as Cl 21 in IEC 60884, Cl 21 in IS 1293 and Cl 18 in BS 1363)
- Making and Breaking Capacity (Referred to as Cl 20 in IEC 60884, Cl 20 in IS 1293 and Cl 17 in BS 1363)
- Temperature Rise (Referred to as Cl 19 in IEC 60884, Cl 19 in IS 1293 and Cl 17 in BS 1363)



• Basic Specifications :

- Total Voltage and current range of the source: 200-270 V , 6-40 A AC (This can be customised depending upon the switch ratings selected)
- Load Current options: 6, 10, 13, 15, 16, 20, 25, 32 Amp for Normal Operation and 1.25 times 6, 10, 13, 15 16, 20, 25, 32 Amp for Making-Breaking test (Also respective test currents for fluorescent lamp load (Load A and Load B) and tungsten filament lamp load)
- Rated Voltage Options: 220 V, 230 V, 240 V and 250 V (As per user specifications)
- Power Factor: 0.6 for Breaking Capacity and 0.8 for Normal Operation
- User Specified Number of Phases: 3 phase or 1 Phase
- For temperature rise test: k type Cr / Al thermocouples with upto 12 temperature channels (customizable) per phase
- 50 / 60 Hz operation as per incoming line frequency
- Pneumatic Pressure: approximately 6 - 8 bar
- Class 1 Accuracy (for current and voltage display)



● Salient Features :

- Single / Three Phase operation possible
- Servo controlled mechanism to control current (+/- 1%) against incoming fluctuations
- CT range selection for current measurement accuracy
- Load selection is selector switch based: Quick and easy
- Accurately designed iron core inductors (Optional air core inductors as per customer specifications) for circuit parameter accuracy
- Specially designed fixture for safe operation with operator safety in view
- Cooling shall be provided by means of optimally placed Exhaust fans distributed all over to remove the hot air generated inside the panel cabinet:
- This avoids change in circuit parameters as a result of over heating of loads
- Ceramic core wire wound resistors with enamel coating: This ensures best quality of resistors that have a favourable resistance v/s temperature rise graph enabling operation for an elongated duration with accuracy
- Temperature rise test can be integrated with the main endurance test



● Key Benefits :

- The product is used to test the endurance of sockets when subjected to repetitive strokes with an inductive load at the output. The product also identifies the number of cycles it withstands before 'contact open' or 'contact weld' condition is detected thus giving an exact quality assessment of the socket under test.
- Mechanically the customer can assess the damage / change in structure using test finger and go / no go apparatus
- The customer can even test its own and competitor's product and compare the performance
- Stand-alone unit after initial configuration of test parameters: The panel is capable to generate accurate test results even after days of continuous operation with no loss of data.
- PLC based timer unit (Siemens Logo / optionally selected Siemens PLC touchscreen) for quick and easy user interface and automated operation: Easy setting of parameters such as on time, off time, no. of cycles and threshold consecutive contact weld, contact open cycles.
- PC based option available: Complete PC data logging and control plus online plotting of temperature rise graphs.
- User friendly operations make the equipment to be handled easier for any operator.

- **Key Photos :**



Three Station Socket Endurance Test Bench

- **Key Photos :**



Three Station Switch / Socket Combination Endurance Test Bench (with colour touchscreen)



2. PLC BASED SOCKET DI-ELECTRIC ROUTINE TEST BENCH

- **What It Is?**

- The SCR Elektroniks Socket Di-Electric Test Bench is designed to verify the high voltage testing of household sockets as per IEC 60669, IS 1293 and BS EN 60884. The system employs Siemens PLC to carry out the test sequence and test parameter (timing) setting.
- The di-electric strength test is referred to as Clause 16.2 in the following standards: IEC 60884-1, IS 1293, BS-EN 60884.
- The above test can be customized with respect to the test voltage (kV), leakage current measurement (mA), test time, etc.
- In addition, there is a continuity test module which helps in checking the conformance of the socket to ensure complete reliability of the switch w r t operation and safety before being shipped out for sale.

- **Models Available :**

- The product can be made PC based or PLC based.
- The maximum di-electric withstand level (kV) can be customized. A 2-in-1 switch / socket dielectric withstand test can also be designed and integrated in a single bench with two distinct set of fixtures, one for switch testing and other for socket testing



● Basic Specifications :

- Input voltage: 230 V
- 50 / 60 Hz operation as per incoming line frequency
- Test voltage: 200 V – 1500 V
- Threshold Leakage current setting: 2, 5, 10, 20, 50 mA
- Pneumatic Pressure: approximately 6 bar
- Class 1 Accuracy for measurement of current and voltage



● Salient Features :

- Stand-alone unit after initial configuration of test parameters: The operator just pushes a push button for initiation of the test sequence
- User friendly Front control panel for easy setting of parameters
- Siemens PLC for completely automated operation
- Specially designed fixture for safe operation with operator safety in view
- User selectable threshold mA leakage current
- Diagnostic mode for periodical debugging and diagnostic check of machine / controls and fixture
- Mounted on castor wheel



● Key Benefits :

- The product tests di-electric withstand capacity of various insulating paths in a switch such as L-N poles shorted with respect to the earth pin, adjacent poles, terminals to body, etc. as given in IEC standard. The yield of this equipment is extremely high, thus enabling rapid testing of sockets
- Stand-alone unit after initial configuration of test parameters: The operator just pushes a push button for initiation of the test sequence.
- User friendly operations make the equipment to be handled easier for any operator.
- Operator safety considered

- Key Photos :



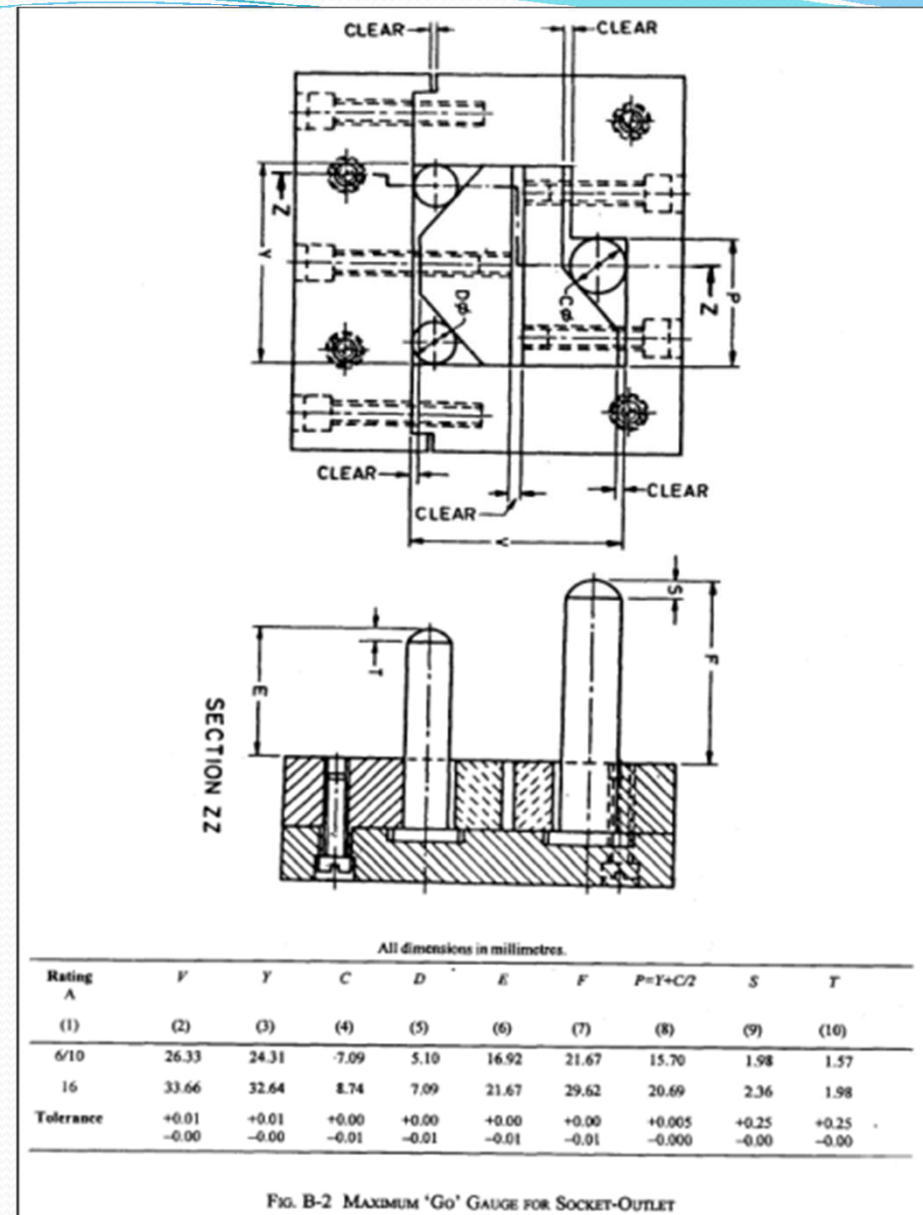
Plc Based Socket Di-electric Routine Test Bench



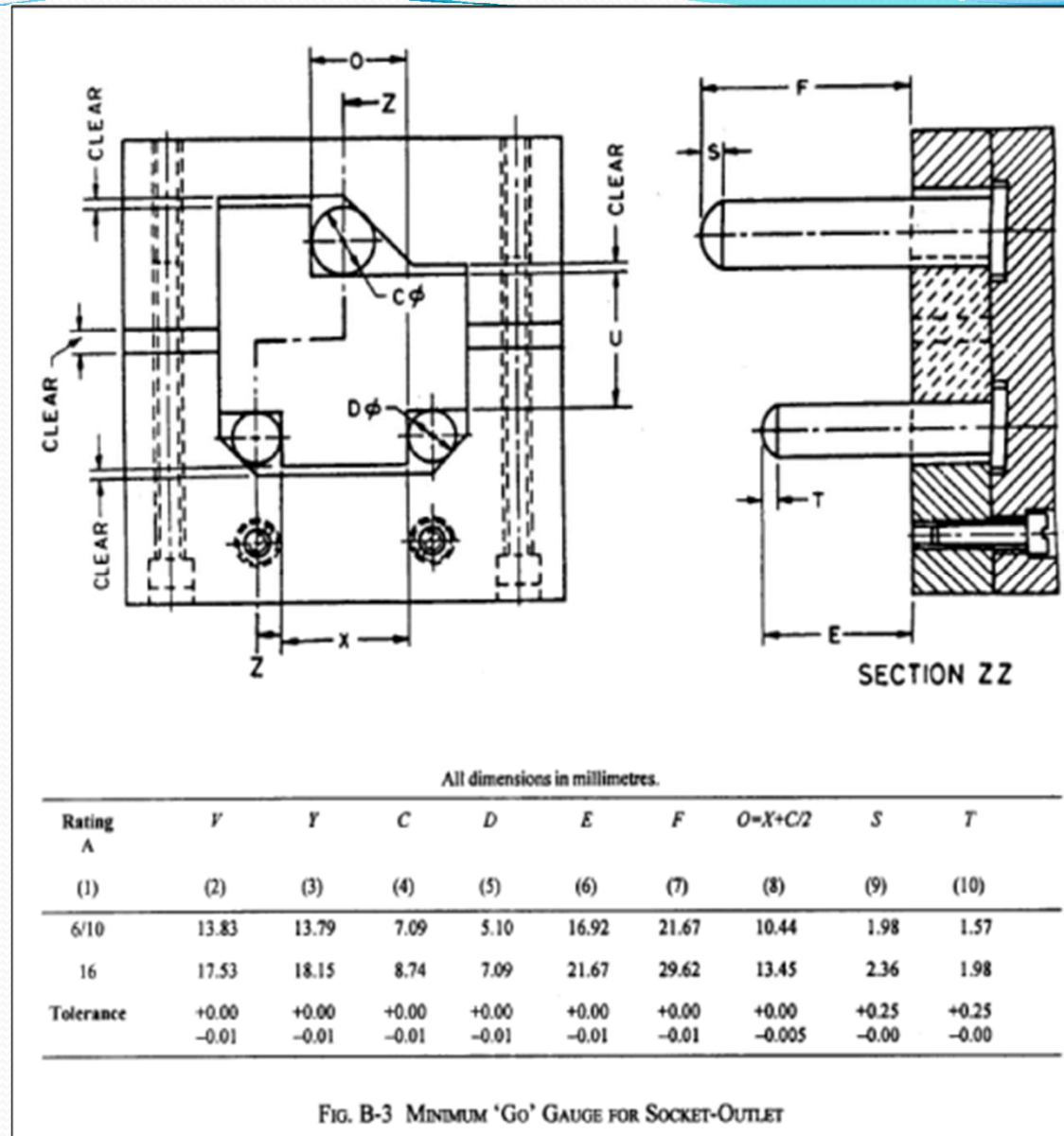
3. MAX & MIN 'GO' GAUGE FOR SOCKET OUTLET FOR 6A - 16A (FIG B-2 & 3)

- **What It Is?**

- Two gauges are required, one gauge having its pins so set that its complete insertion into socket-outlet proves that the socket outlet will accept without interference, a plug having plug pins at the maximum center distance and other gauge having its pins so set that its complete insertion into a socket-outlet proves that the socket-outlet will accept without interference a plug having plug pins at the minimum center distance.
- The socket-outlet gauges also prove the absence of axial projections on the face of the socket-outlet.



Max 'Go' Gauge for Socket Outlet for 6A – 16A (Fig B-2)



Min 'Go' Gauge for Socket Outlet for 6A – 16A (Fig B-3)

- Key Photos :



Max 'Go' Gauge



Min 'Go' Gauge



4. TEST FINGER APPARATUS

- **What It Is?**

- **SCR ELEKTRONIKS** Designs for the Test of the products non Accessible of live parts through shutters, when the plug is in partial with the product.
- **FLEXIBLE TEST FINGER** is applied in every possible positions of the Test Product. Assuming a live Finger.
- If there is a short then BUZZER will sound and the fault indicator will indicate the fault of the Test Product.
- It is mentioned in standards IEC 60669, IEC 60884 IS: 302 – 1979, IS 1293, IS 3854.

- **Models Available :**

- The product is designed as per the specifications and drawings in the relevant standard.



● Salient Features :

- Test Finger with spring loaded arrangement
- Flexible Test Finger
- Control Panel for Test Finger Apparatus

● Basic Specifications :

- Analog voltmeter for voltage Indication
- Probe - Flexible as per standard
- Product dimension - as per mentioned in standrds

- **Key Benefits :**

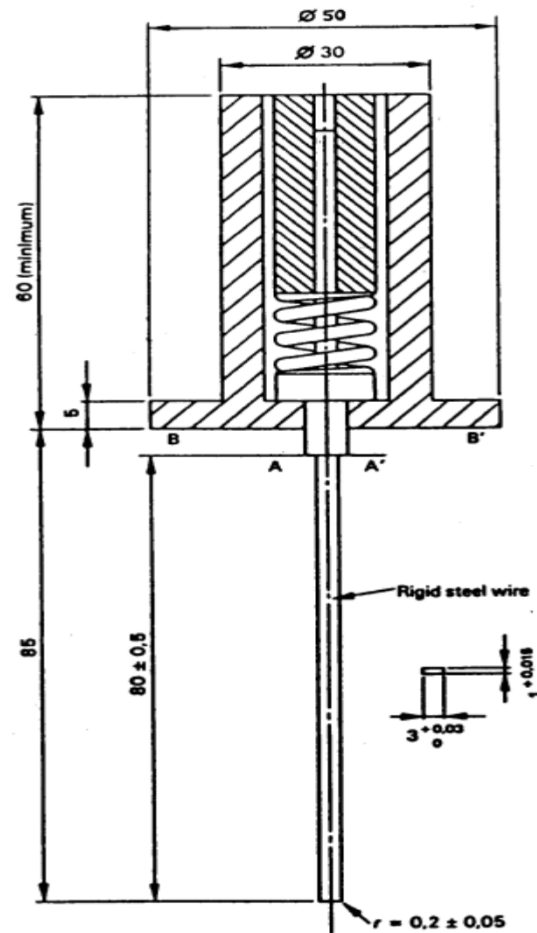
- The product is used to test switchgears, wiring accessories and domestic appliances against electric shock during human handling
- A common solution to test other electrical accessories like MCB can be provided

- **Key Photos:**



Test Finger Apparatus

5. GAUGE CHECKING FOR NON-ACCESSIBILITY FOR SHUTTERED SOCKET AFTER NORMAL OPERATION AS PER IS 1293 FIG. 3

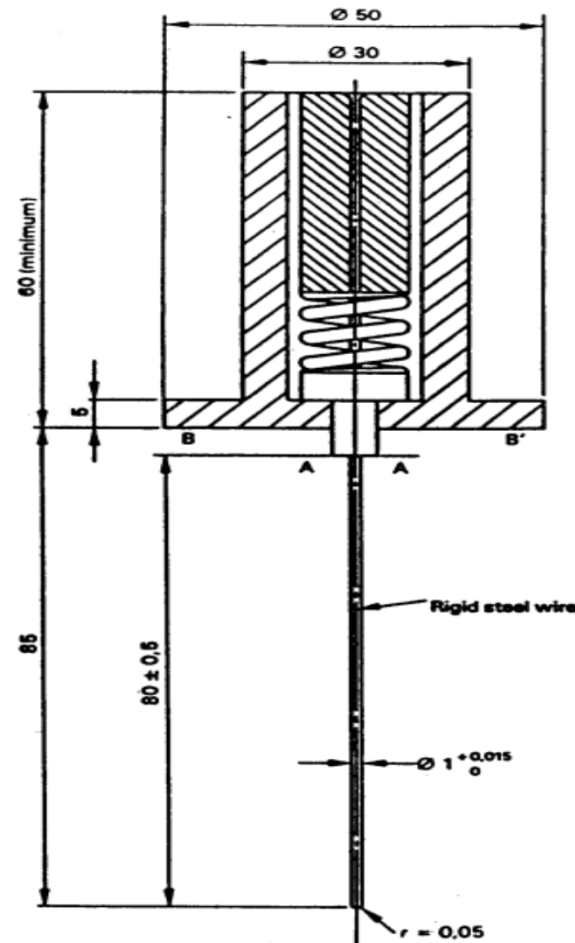


Dimensions in millimetres.

To calibrate the gauge, a push force of 20 N is applied on the steel rigid wire in the direction of its axis; the characteristics of the gauge internal spring shall be such that the surface A — A' is brought practically to the same level as the surface B — B' when this force is applied.

FIG. 3 GAUGE FOR CHECKING NON-ACCESSIBILITY OF LIVE PARTS, THROUGH SHUTTERS AFTER NORMAL OPERATION TEST

6. GAUGE FOR CHECKING NON-ACCESSIBILITY FOR SHUTTERED SOCKET (FIG.4)

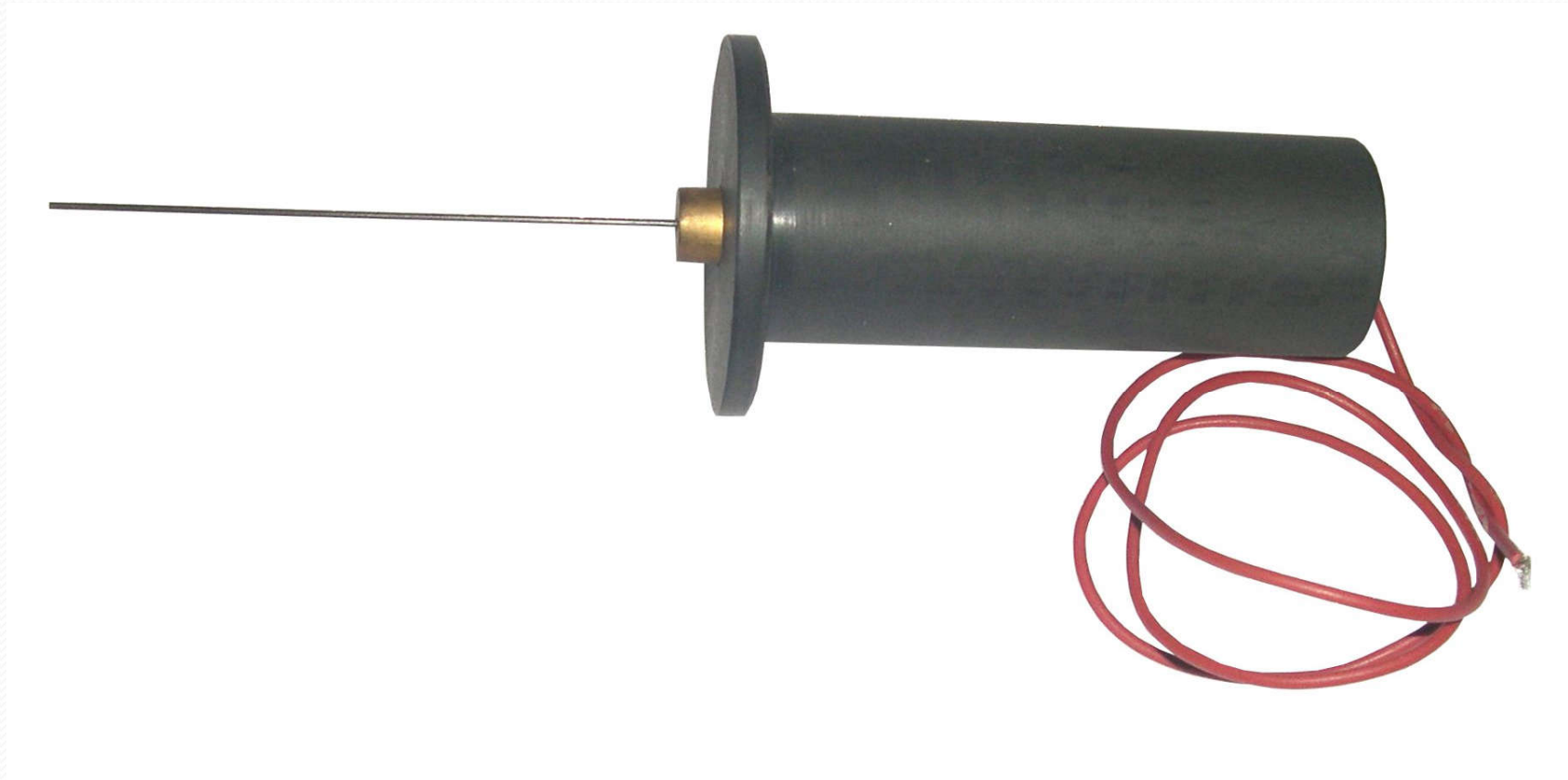


Dimensions in millimetres.

To calibrate the gauge, a push force of 1 N is applied on the steel rigid wire in the direction of its axis; the characteristics of the gauge internal spring shall be such that the surface $A - A'$ is brought practically to the same level as the surface $B - B'$ when this force is applied.

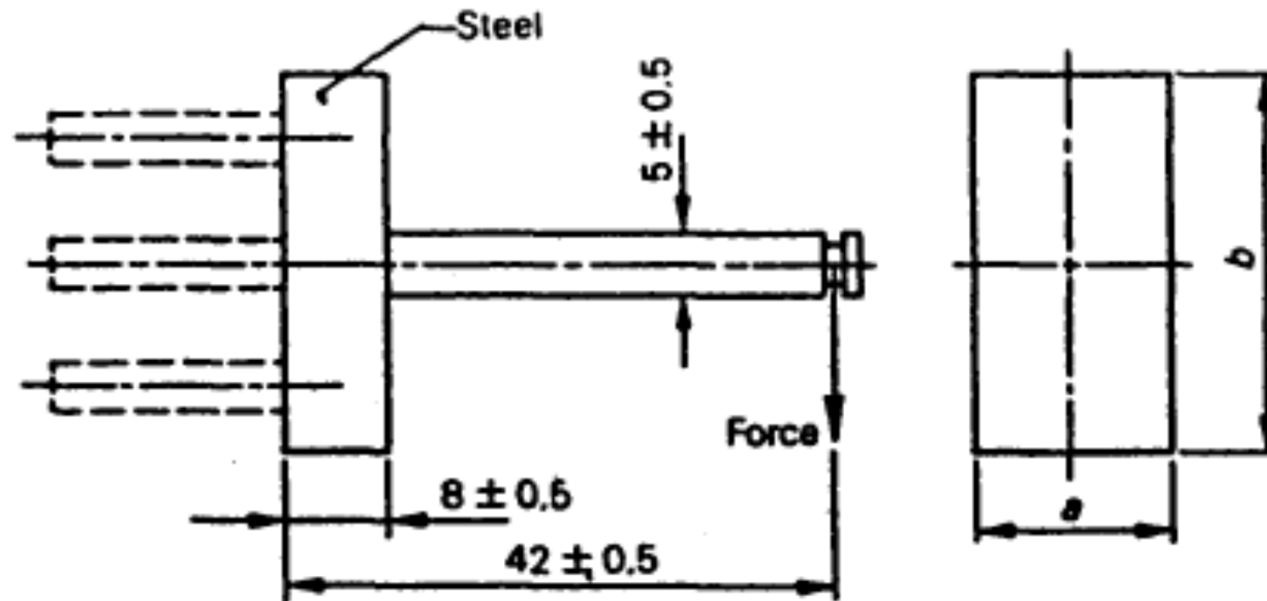
FIG. 4 GAUGE FOR CHECKING NON-ACCESSIBILITY OF LIVE PARTS, THROUGH SHUTTERS, AND OF LIVE PARTS OF SOCKET-OUTLETS WITH INCREASED PROTECTION

- Key Photos :



Gauge Checking For Non-accessibility

7. DEVICE FOR CHECKING THE RESISTANCE TO LATERAL STRAIN (FIG. 6) AS PER CLAUSE 13.14



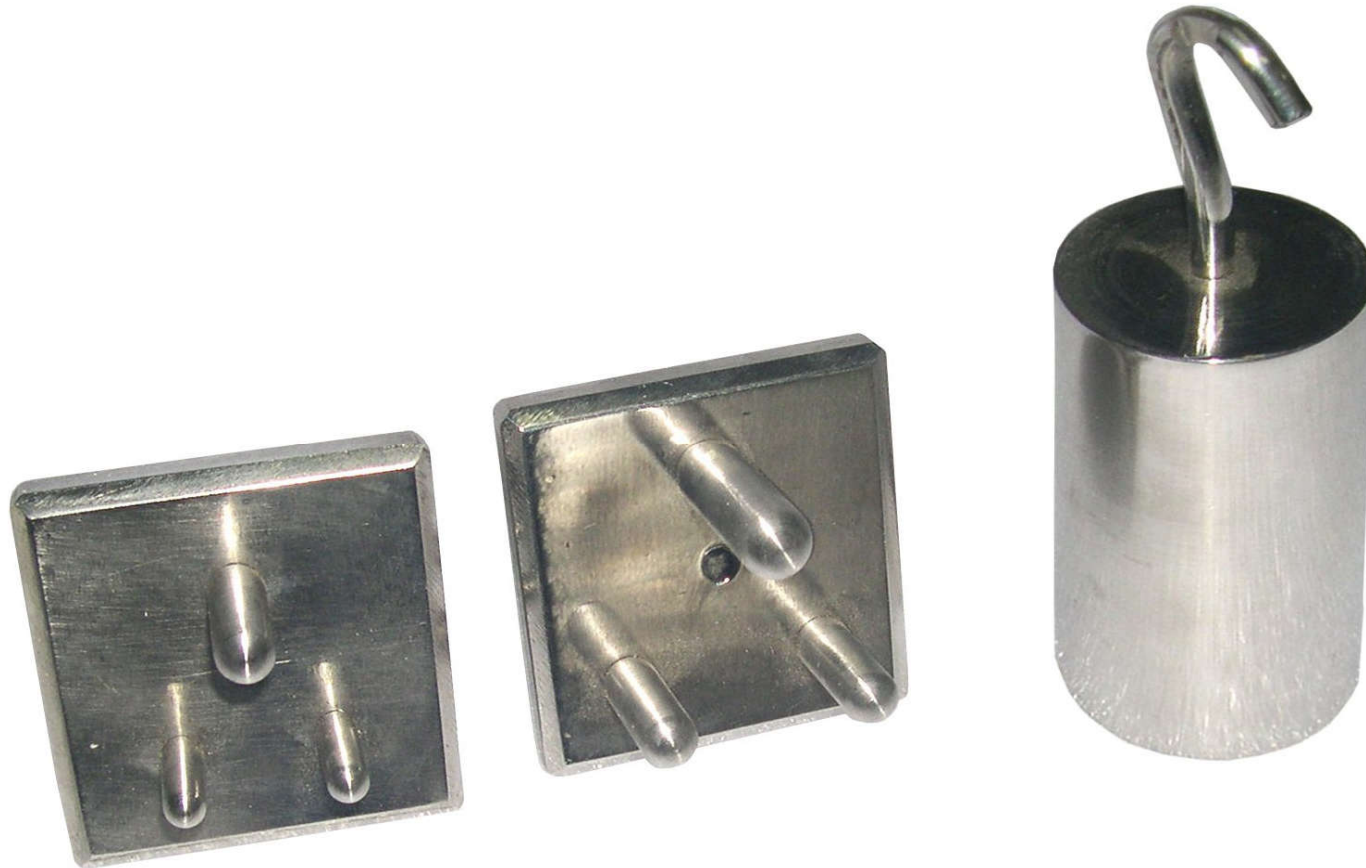
Dimensions in millimetres.

NOTES

- 1 The dimensions a and b are to be chosen according to the appropriate dimension given in Annex A.
- 2 Dimensions and arrangement of pins complying with Annex A.

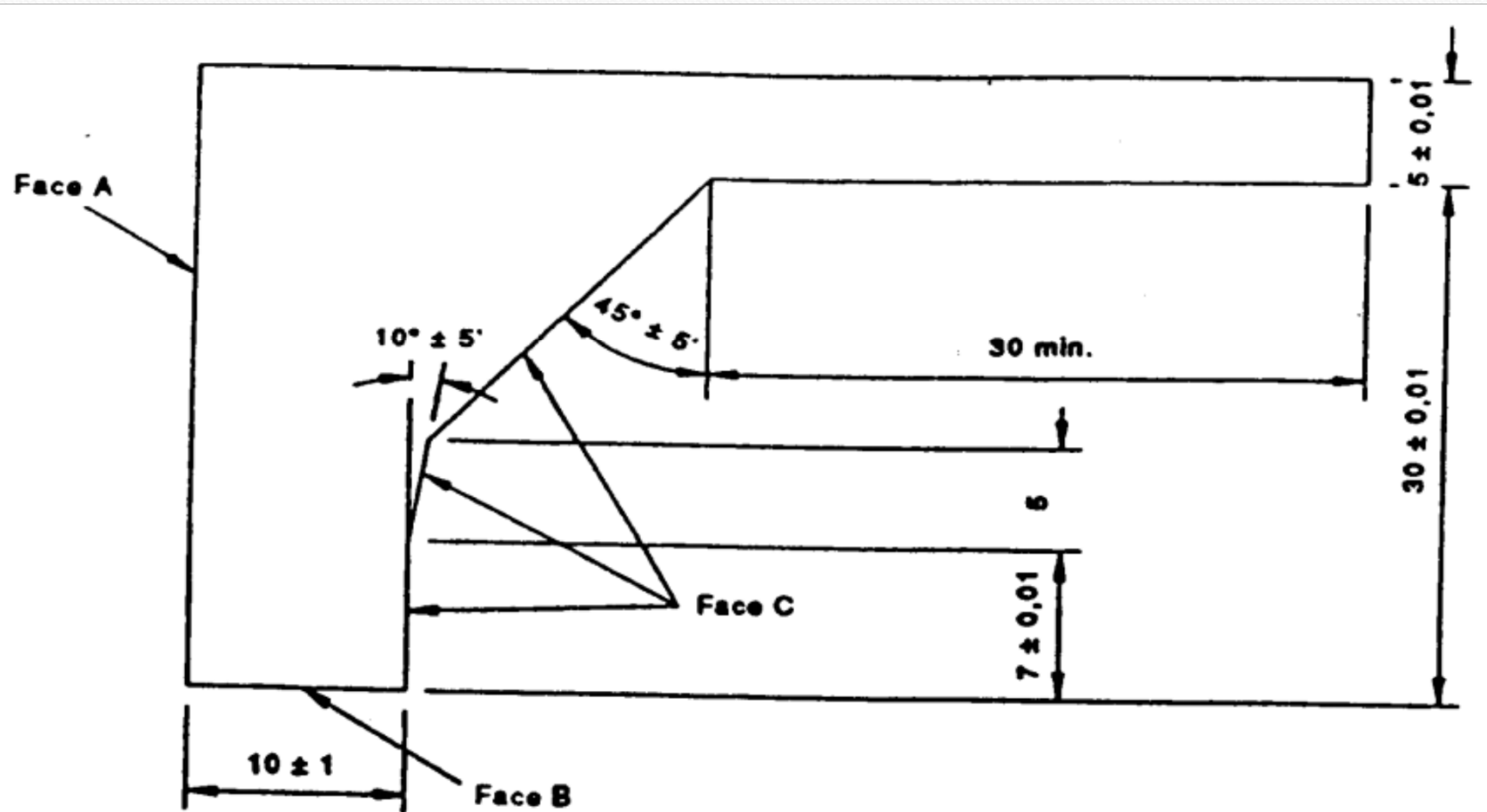
FIG. 6 DEVICE FOR CHECKING THE RESISTANCE TO LATERAL STRAIN

- Key Photos :



Device For Checking The Resistance To Lateral Strain

8. GAUGE FOR THE VERIFICATION OF THE OUTLINE OF COVERS FOR COVER-PLATES AS PER IS 1293 (FIG. 7)



Dimensions in millimetres.

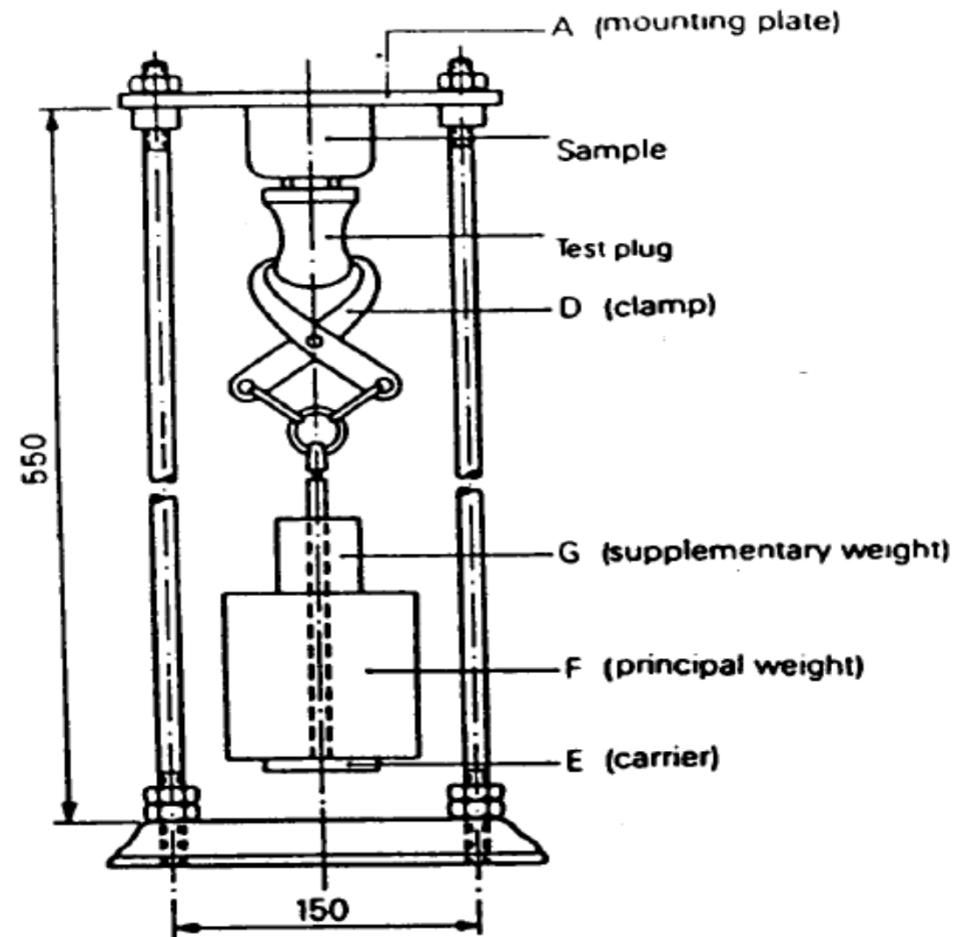
FIG. 7 GAUGE (THICKNESS: ABOUT 2 mm) FOR THE VERIFICATION OF THE OUTLINE OF COVERS OR COVER-PLATES

- Key Photos :



Gauge For The Verification Of The Outline Of Covers

9. APPARATUS FOR CHECKING MAXIMUM WITHDRAWAL FORCE (FIG.13)



Dimensions in millimetres.

FIG. 13 APPARATUS FOR CHECKING THE WITHDRAWAL FORCE

- Key Photos :



Apparatus For Checking Maximum Withdrawal Force



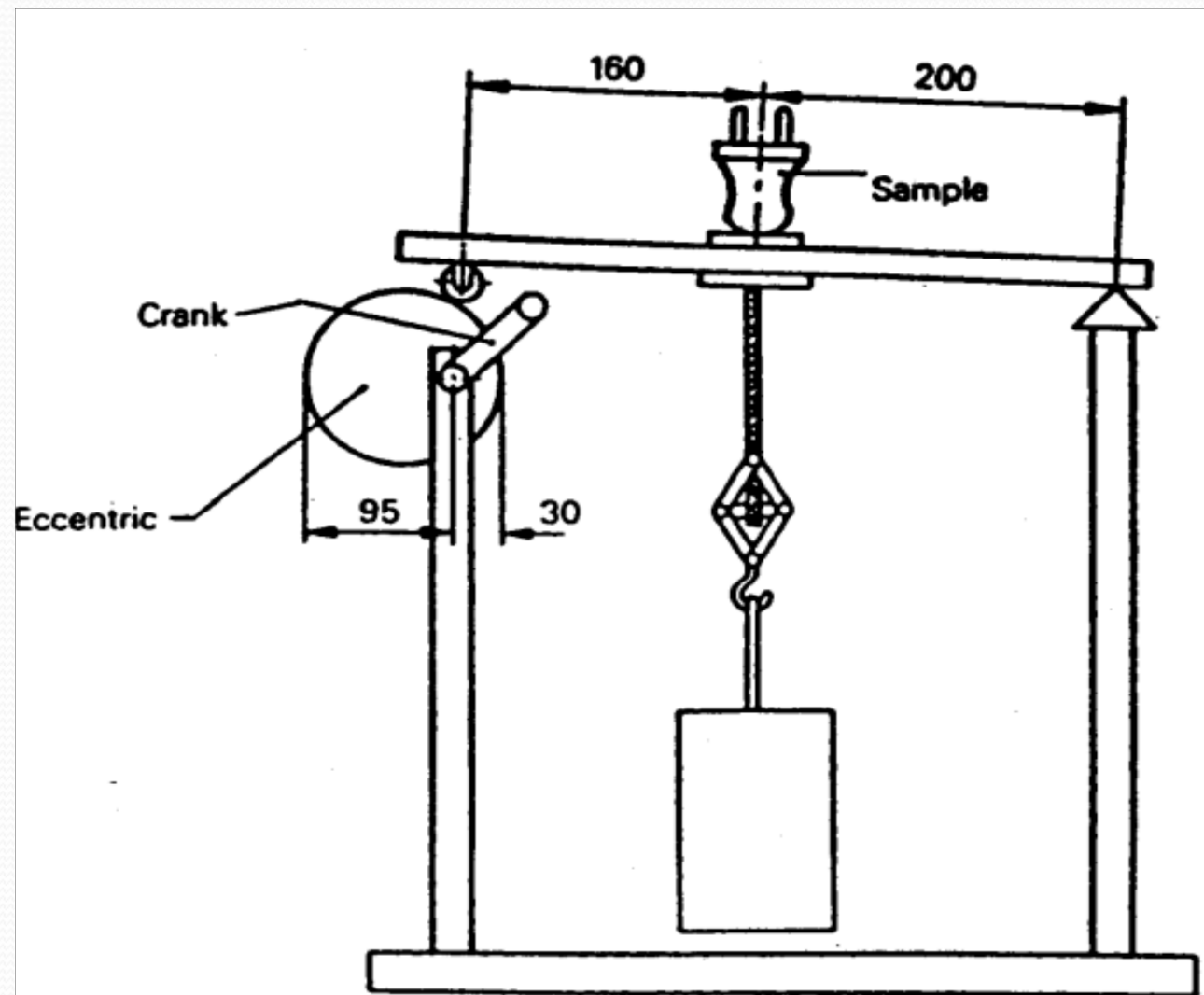
10. APPARATUS FOR TESTING CORD RETENTION AS PER (FIG. 14)

- **What It Is ?**

- Cord Grip Test Apparatus for testing effectiveness of the retention in flexible cables.
- It is mentioned in standard IEC – 60898-1 & IS 1293.

- **Models Available :**

- The product is designed as per the specifications and drawings in the relevant standard.



Dimensions in millimetres.

FIG. 14 APPARATUS FOR TESTING THE CORD RETENTION



● **Salient Features :**

- Settable weight (force)
- Counter to count number of pull offs
- Hinged plate for test specimen
- Crank or handle based arrangement for simplicity
- Pull offs are applied without jerks

● **Basic Specifications :**

- 50 N if the rated current is 2.5 A
- 60 N if the rated current is from 2.5 A to 16 A and rated voltage upto 250 V
- Screw based clamp arrangement for testing of cable by subjecting it to weight
- 100 pull up rotations by handle

- **Key Benefits :**

- The product is used to test the tensile strength of the electric cord against a flexible force obtained by rotation of eccentric circular plate

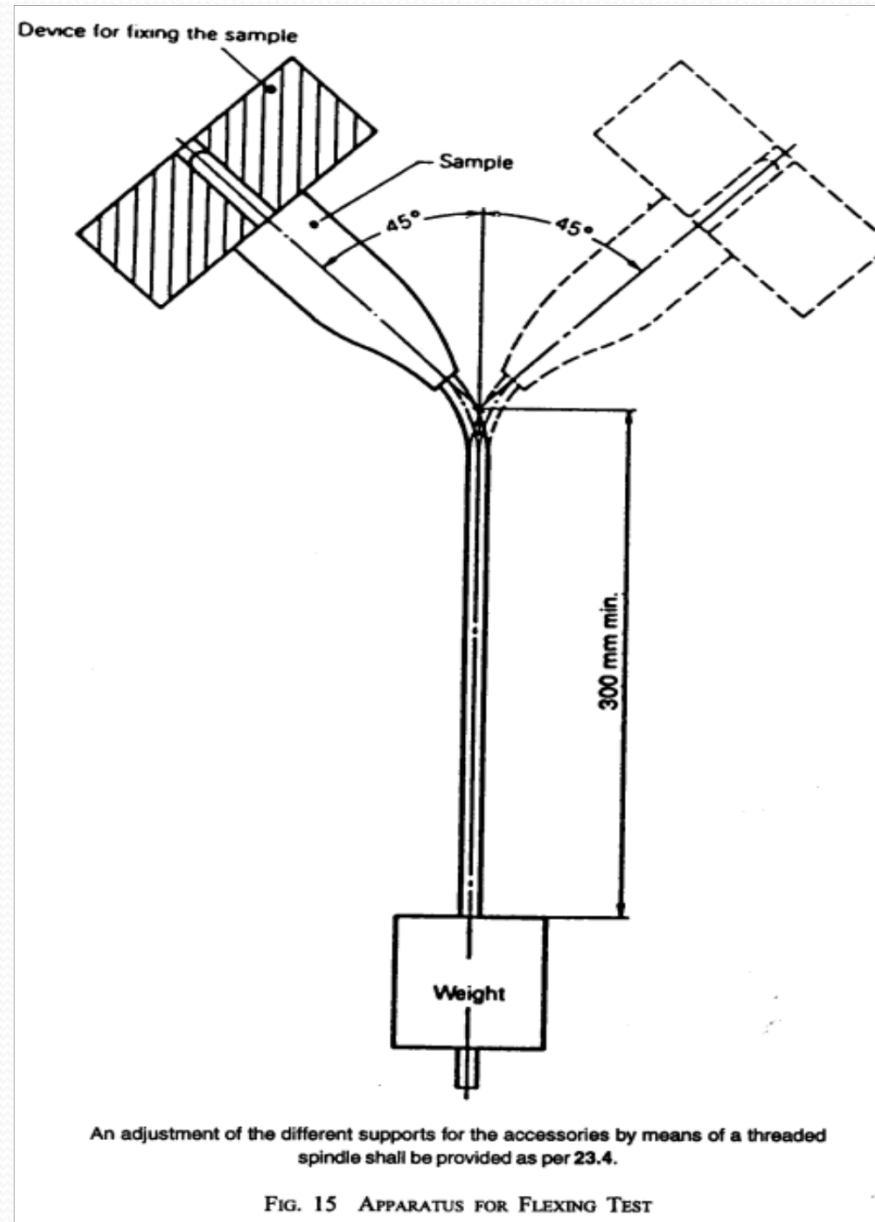
- **Key Photos :**



Cord Retention Test Apparatus



11. APPARATUS FOR FLEXING TEST AS PER (FIG. 15)



12. IMPACT TEST APPARATUS AT LOW TEMPERATURE (FIG. 21)

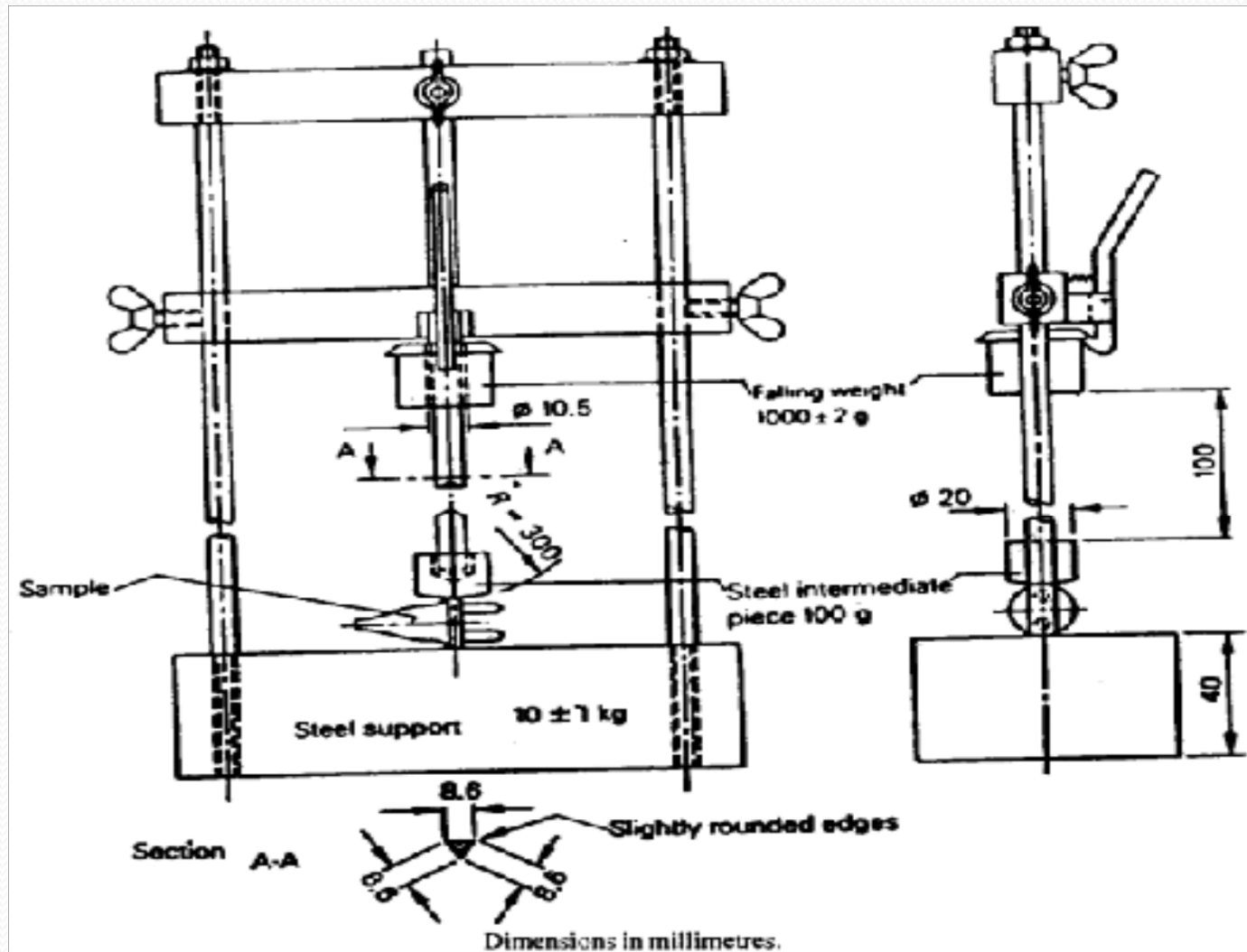
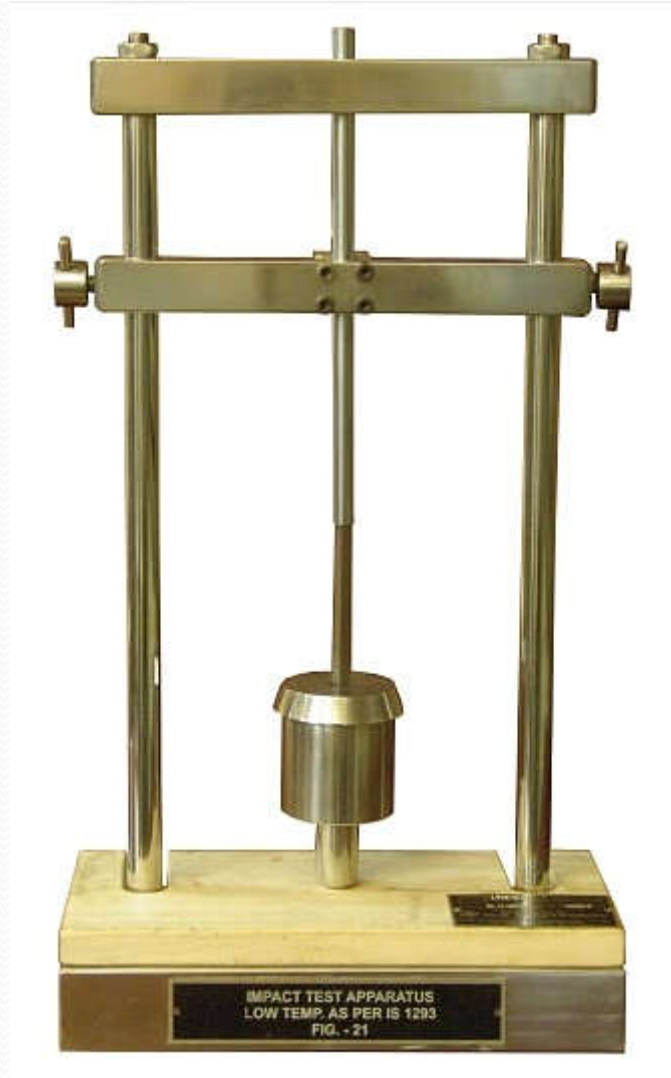


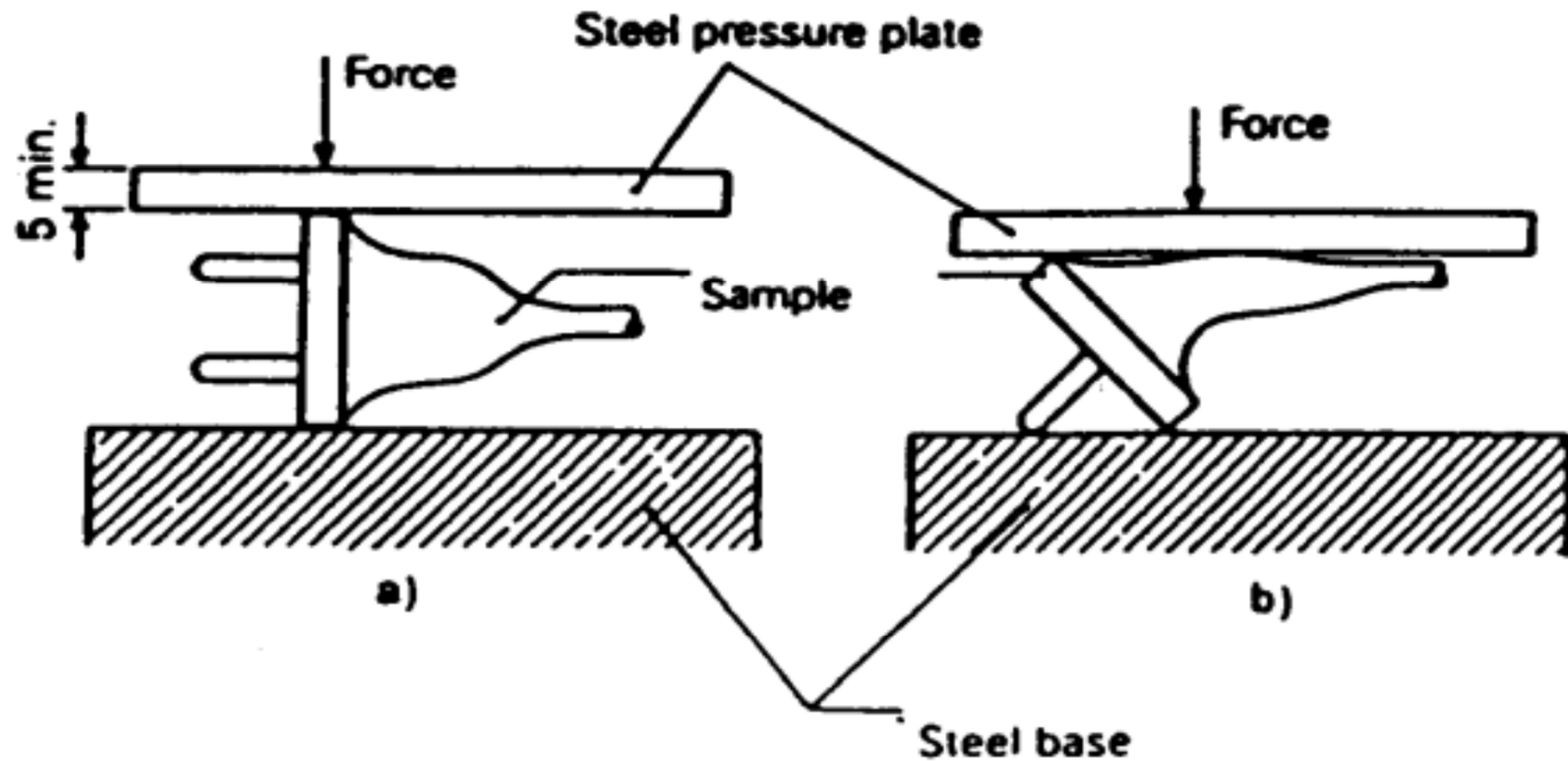
FIG. 21 APPARATUS FOR IMPACT TEST AT LOW TEMPERATURE OF 24.5

- Key Photos :



Impact Test Apparatus At Low Temperature

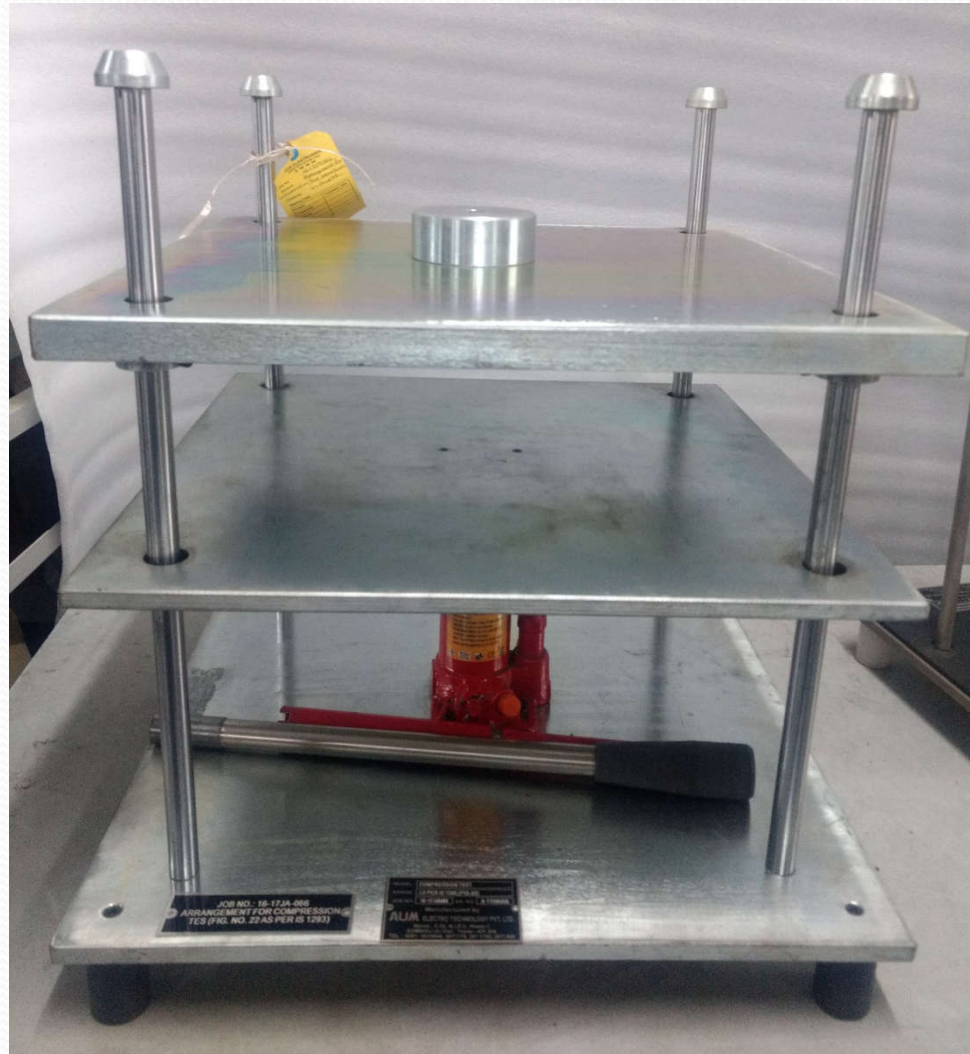
13. ARRANGEMENT FOR COMPRESSION TEST (FIG. 22)



Dimensions in millimetres.

FIG. 22 ARRANGEMENT FOR COMPRESSION TEST OF 24.5

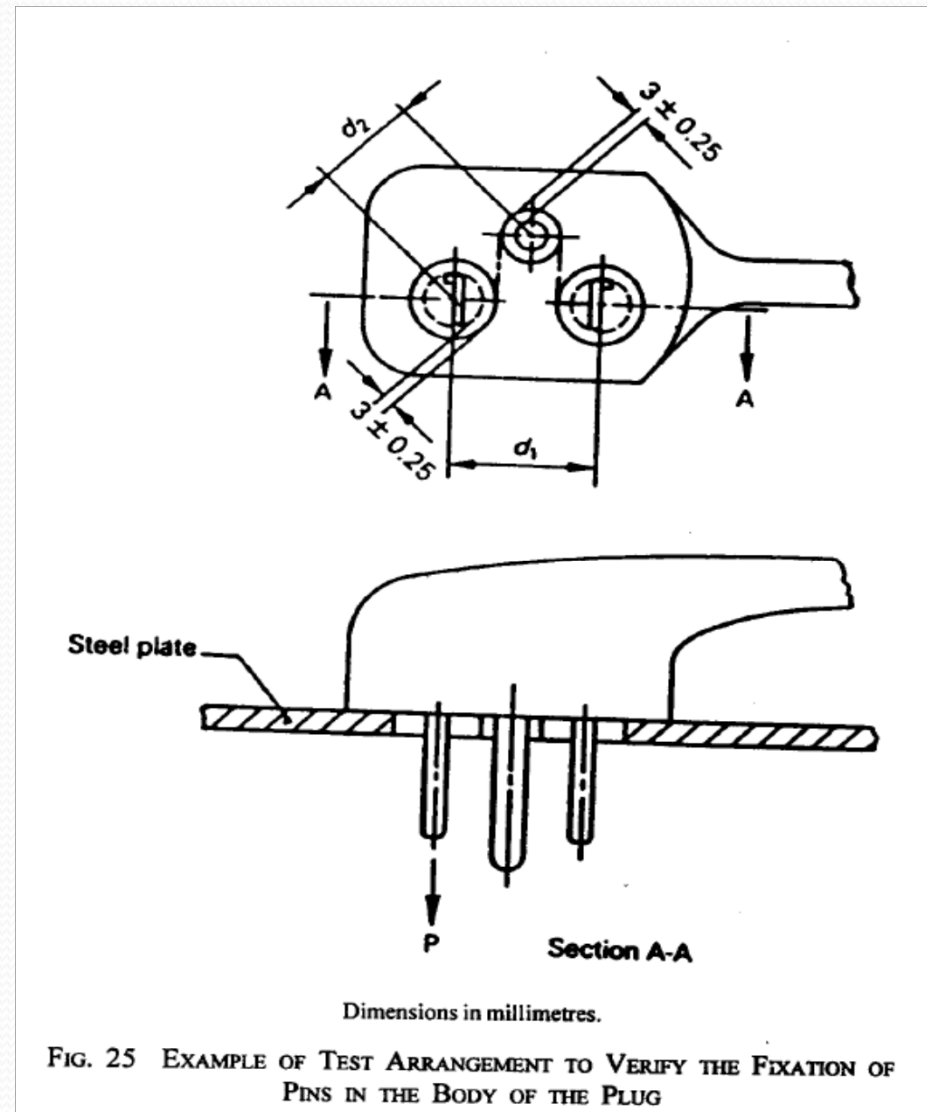
- Key Photos :



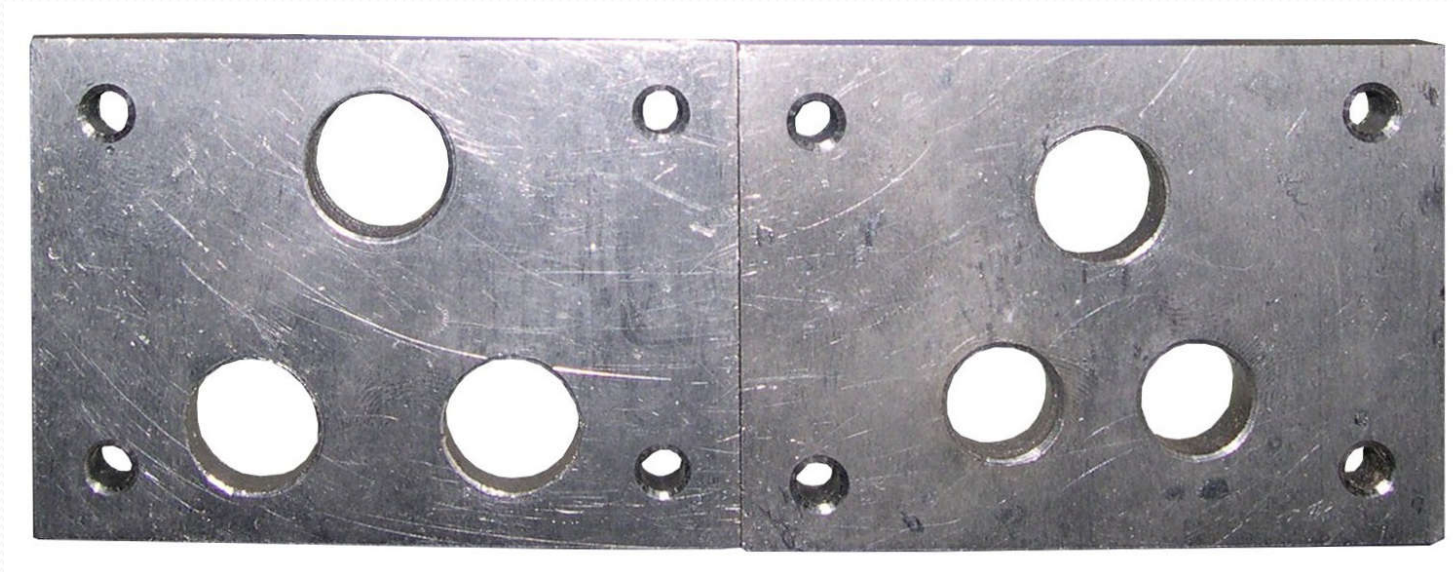
Arrangement For Compression Test



14. TEST ARRANGEMENT TO VERIFY THE FIXATION OF PIN IN THE BODY OF PLUG AS PER IS 1293 FIG. NO. 25



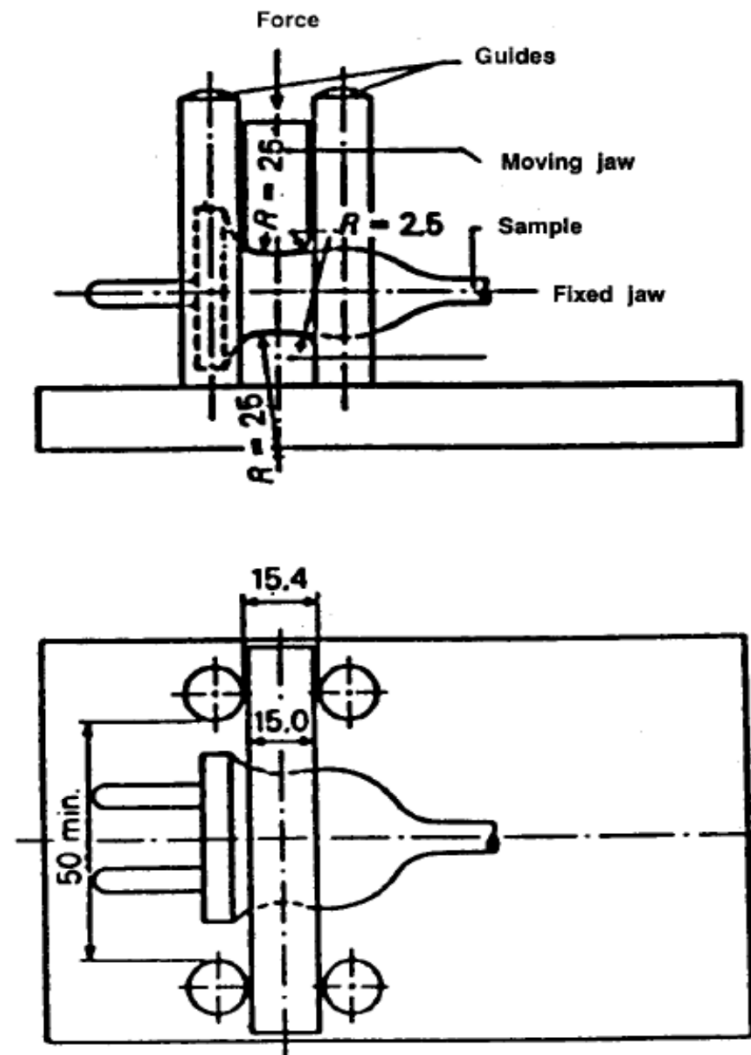
- Key Photos :



Test Arrangement To Verify The Fixation Of Pin In The Body Of Plug As



15. COMPRESSING TEST APPARATUS (FIG. 28)



Dimensions in millimetres.

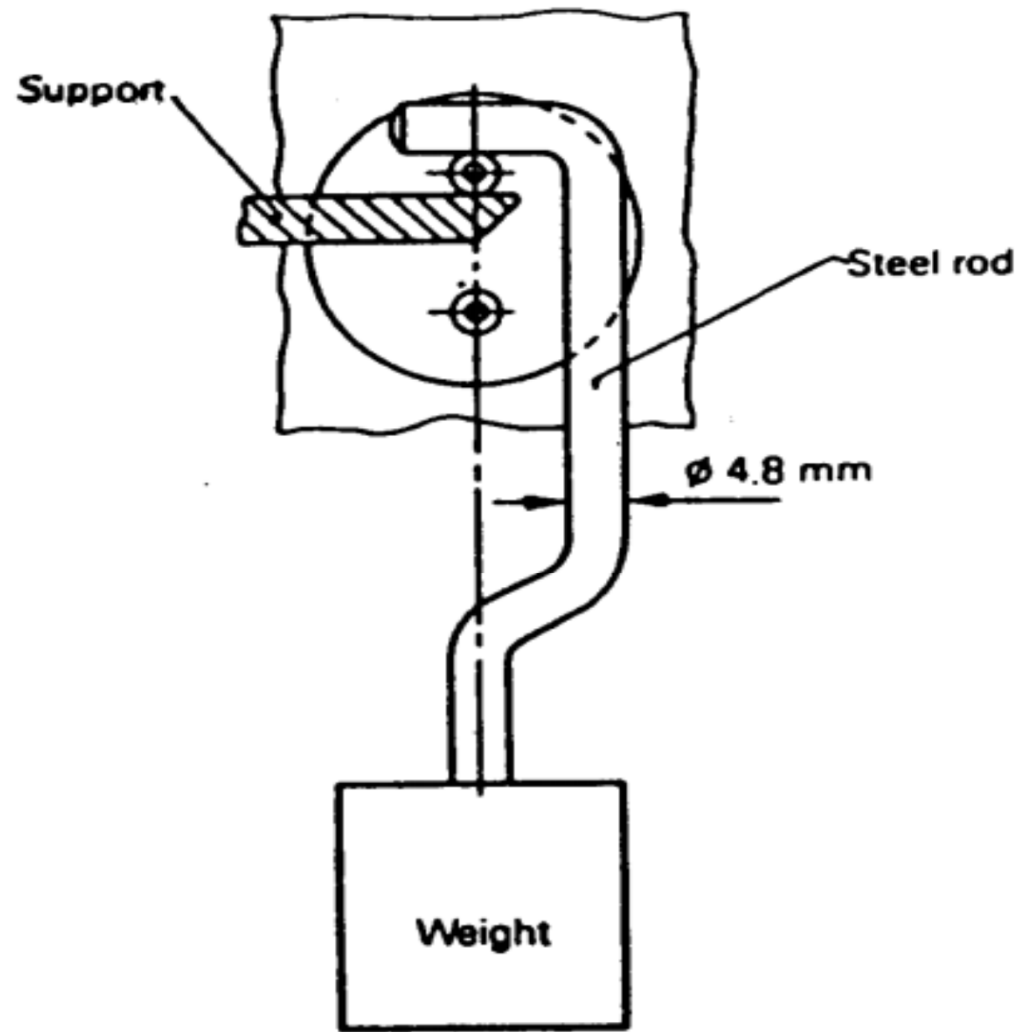
FIG. 28 APPARATUS FOR COMPRESSION TEST FOR THE VERIFICATION OF RESISTANCE TO HEAT OF 25.4

- Key Photos :



Compressing Test Apparatus

16. DEVICE FOR TESTING NON-SOLID PINS (FIG. 31)



Dimensions in millimetres.

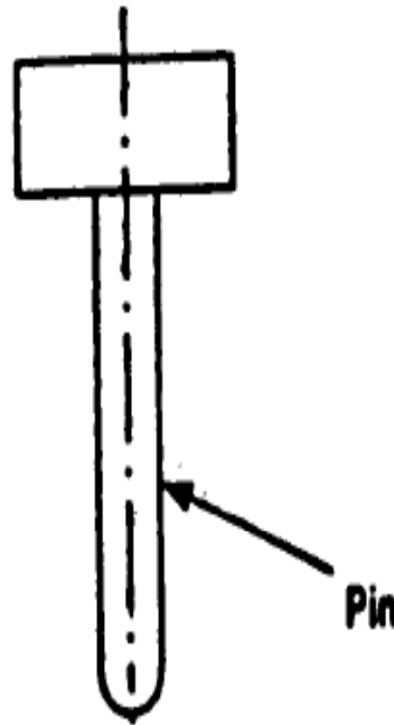
FIG. 31 DEVICE FOR TESTING NON-SOLID PINS

- Key Photos :



Device For Testing Non-solid Pins

17. GAUGE FOR VERIFICATION OF THE MINIMUM WITHDRAWAL FORCE AS PER IS 1293 CLAUSE 22 (FIG 42)



(Dimensions according to Annex A)

NOTE — The mass to be equally positioned around the centre line(s) of the pin.

FIG. 42 GAUGE FOR THE VERIFICATION OF THE MINIMUM WITHDRAWAL FORCE

- Key Photos :



Gauge For Verification Of The Minimum Withdrawal Force



18. BALL PRESSURE TEST APPARATUS

- **What It Is?**

- The Ball Pressure Test Apparatus is used to check the integrity of dielectric material with respect to resistance to elevated operating temperature.
- The Ball Pressure Test Apparatus model BP 21 takes care of this testing useful for insulator manufacturers and other electro-technical manufacturers who use insulating material in their electrical appliances. The BP21 is made of stainless steel for long life.
- It is mentioned in standards IEC 60335, IEC 60695, IEC 60950, IEC 61010, IS 302, IS 1293, IS 3854, IS 2215, BS, UL

- **Models Available :**

- The product is designed as per the specifications and drawings in the relevant standard.



- **Salient Features :**

- All stainless steel construction.
- Magnifier with built-in scale for measuring the depression created by the ball pressure test apparatus.
- Supplied in a compact and neat carrying case.
- Precision engineered and manufactured for ball pressure test covering all popular standards.

- **Basic Specifications :**

- Ball diameter : 5 mm.
- Force exerted on sample : 20 n, + \ - 0.1 n.
- Material of construction : Stainless steel.
- Magnifier : X 10 magnification, 0.1 + mm
- Resolution : 0~10mm scale

- **Key Benefits :**

- The tester is used to assess the effect of ball pressure typically on insulator surfaces in a hot environment

- **Key Photos:**



Ball Pressure Test Apparatus



19. TUMBLING BARREL APPARATUS

- **What It Is?**

- SCR Elektroniks make Tumbling Barrel Apparatus is specially designed and manufactured for use in laboratories involved in testing Appliances, Electrical Accessories, Luminaries and other related Electro technical products.
- It is used to perform the test specified in many standards to determine compliance with safety requirements, particularly mechanical strength of test samples. SCR Elektroniks Makes Counter to count ON/OFF of Limit switch.

- **Key Benefits :**

- The test bench is used to assess any possible damage arising out of falling inside the barrel for a pre-set amount of time and revolutions.



• Basic Specifications :

- Drop Height : 500 mm
- Base Plate : 3 mm thick Steel Plate.
- Rotation Speed : 10 Falls per minute (5 rpm)
- Control : Digital Pre Set Counter, 4 digits, with battery back-up.
- Sensor : Non contact Inductive Proximity Sensor, 12 mm diameter.
- Indicator : Power ON, Barrel ON, End of Test (Audible beeper)
- Access : Through sliding acrylic cover with magnetic latch & key lock.
- Drive : AC Induction motor, geared, with reduction pulley and V-Belt.
- Power : 110 V AC, 50/60 Hz single phase.
- Safety Fuse : 2 Amp., slow blow, glass cartridge, 35 x 6 mm.
- Dimension : 450 mm W x 750 mm D x 1000 mm H approximate.



• Salient Features :

- Self contained compact unit that can be floor mounted.
- Laminated wooden barrel mounted on a sturdy support frame.
- Motorized operation enables ease of use.
- Rotation Speed of five RPM, providing a fall rate of ten falls per minutes.
- Steel base plate fixed at both ends of the barrel as specified in the standards.
- Digital pre-set four digits counter with bright LED dual display, membrane keypad Selection And battery back-up to memorize count value in case of power cut off.
- Audible / Visible 'Find of Test' indication.
- Transparent acrylic sliding cover allows easy loading and unloading of the test sample, and allows inspection during the test. Cover can be locked during the test.
- Two castor wheels and one adjustable foot provide mobility as well as leveling facility.
- Non contact proximity sensor ensure reliable operation Barrel JOG Switch to bring the barrel to upright position after End of Test.

- **Key Photos :**



Tumbling Barrel Apparatus



Testing Equipment's For Fan Regulator

1. HIGH VOLTAGE TESTER

- **What It Is?**

- Generate High Voltage across the Output terminal and measure the Leakage current flowing across the Earth Terminal.
- Product ranging up to 5 kV.
- Range of leakage current for tripping threshold up to 100 – 200 mA
- Prominently featuring indication lamps and buzzers for indicating results of test
- Quick and Easy Selection of leakage current threshold value
- As per IS 15885 Cl no.1



• Basic Specifications :

- Voltage: 0 - 5kV.
- Tripping Current: 5 mA, 10 mA, 25mA, 50mA, 100mA and 200mA.
- Time Setting: 0 to 60 Sec.
- Safety Factors:
 - Zero Interlocks.
 - Shrouded type push button for H.T. ON.
 - H.V. Transformer heavy-duty epoxy cast.
- Indications
 - High Voltage and leakage current on separate meters.
 - Separate lamp indication for H.T. ON and FAULT.
- With Timer and "OK", "NOT OK" indications.

- Key Photos :



Fig. HVT 5 kV



2. EARTH LEAKAGE CURRENT TESTER

- **What It Is?**

- SCR ELEKTRONIKS have developed the Earth Leakage Current Tester to meet the IS requirements of Domestic Appliances like Mixer Grinders, Irons, Ovens, Fans, Medical Equipment etc.

- **Models Available :**

- This is to carry out leakage Current Test at 240V. The Current will be indicated on Digital Ammeter with maximum Current limit setting. The load current rating is 4Amps. Max.



- **Basic Specifications :**

- User can set Tripping Current setting from 0.000 Milli Amps to 1.999 Milli Amps.
- User can perform the test for Both Live And Neutral polarity of supply.
- Out put for Unit Under Test: 230 v/ 5 Amps Max.
- Reset facility after tripping

- **Key Photos :**



Earth Leakage Current Tester



3. EARTH CONTACT RESISTANCE TESTER

- **What It Is?**

- To ensure the safety of operator it is essential that the Earth path (connection) should offer minimum impedance to by pass short circuit Current to Earth.
- This is ensured by measuring Resistance of the Earth path by passing heavy Current say 25 A.

- **Models Available :**

- The test bench can be customized as per the constant current value that is passed through the earthing circuit, but usually the tester is procured with 30 A capacity



- **Salient Features :**

- AC Variable Current Source 0 to 30A AC @10V.
- Digital Ammeter 0 to 30.0A True RMS – 1 No.
- Digital mV /Ohm Meter with following range :
 - a) For mV – 0 to 200mV/2V range.
 - b) For Resistance 0 to 1.999 Ohms.
- The resistance will calibrated at 25A AC current.
- Output – On binding post type terminals 4 Wire measurement system.
- Two terminal for current & Two terminal for measurement of mV drop.
 - a) Mains ON/OFF switch
 - b) mV/Resistanace range switch Range.
- Output ON/OFF with Push button & Relay.
- Built in Extruded Aluminium section with duly powder coated M.S. covers Table top Model.



● Key Benefits :

- The tester is used to measure the voltage drop of the earthing circuit at a constant current - thus assessing how well the product earth is 'bounded' to the system earthing



• Basic Specifications :

- Input supply 230 V +/- 10% AC 50HZ.
- Current source : 0 to 30 A max.
- Test Voltage : 12 V max.
- Digital Display 3 1/2 digit for all measurable parameters (Ammeter, Voltmeter and Resistance - 0.001 Resolution for 1.999 Ohms range) at 25 A current.
- Voltage measurement: Two ranges namely 2 V, 20 V.
- Current Measurement: 0 to 30 Amps.
- Resistance Measurement: At 25 Amps. 0 to 1.999 Ohms.
- Separate Voltage and Current terminals.

- Key Photos :



Earth Contact Resistance Tester



4. TEST FINGER APPARATUS

- What It Is?

- **SCR ELEKTRONIKS** Designs for the Test of the products non Accessible of live parts through shutters, when the plug is in partial with the product.
- **FLEXIBLE TEST FINGER** is applied in every possible positions of the Test Product. Assuming a live Finger.
- If there is a short then BUZZER will sound and the fault indicator will indicate the fault of the Test Product.
- It is mentioned in standards IS 15885 Cl No. 10.

- Models Available :

- The product is designed as per the specifications and drawings in the relevant standard.



● Salient Features :

- Test Finger with spring loaded arrangement
- Flexible Test Finger
- Control Panel for Test Finger Apparatus

● Basic Specifications :

- Analog voltmeter for voltage Indication
- Probe - Flexible as per standard
- Product dimension - as per mentioned in standrds

- **Key Benefits :**

- The product is also used to test switchgears, wiring accessories and domestic appliances against electric shock during human handling – thus the use is universal

- **Key Photos:**



Test Finger Apparatus



5. SPRING IMPACT HAMMER

- **What It Is?**

- SCR ELEKTRONIKS have developed The tester tests strength and resilience of the domestic appliance / switchgear / wiring accessory under test against striking force derived from a mechanically charged spring hammer

- **Models Available :**

- The product is designed as per the specifications and drawings in the relevant standard



- **Salient Features :**

- Simple portable design
- Material not prone to rust
- Supplied in a wooden case to prevent damage during transit

- **Basic Specifications :**

- Striking Element - 10 N Force
- Mass of assembly - 250 gm not exceeding 1 J and 500 gm not exceeding 2 J
- Distance of striking element - 8 mm to 12 mm



- Key Photos :



Spring Impact Hammer



6. TEMPERATURE RISE TEST PANEL

- **What It Is?**

- It is used to carry out temperature rise test for low voltage items.
- It consists of True RMS constant Current source, which maintains the Current with $+ / - 1$ % of set value with Digital indication, Digital Temperature indicator having twelve channels for temperature measurement.
- Cr/Al' types of thermocouple sensors are used for temperature sensing. Digital voltmeter used to indicate position of autotransformer.
- The panel is fabricated using CR CA Sheets and powder coated for superior finish.
- Three Terminals of Binding Post type are brought out for output connections. This panel is Table Top Mounting Type.



• Basic Specifications :

- Variable AC Constant Voltage Source 150V to 310V @ 1A max.
- Auto/Manual selection for voltage control. Adjustment of voltage with potmeter in Auto mode and with switch in manual mode.
- Digital Multi Function Meter to read voltage, current, wattage and p.f. Of LED Luminaire.
- Digital Temperature Indicator 0 to 200° C for 'J' Type thermocouple sensor 6 channel switch selectable.
- 'J' Type Thermocouple Sensors Teflon coated bid type junction 2 meter long – 6 Nos.
- Output ON/OFF with Push Buttons and Relays.
- MCB's for Input and Output.
- M.S. Fabricated Panel duly powder coated Table Top

- Key Photos :



TEMPERATURE RISE TEST PANEL

7. ENDURANCE TEST SETUP FOR FAN REGULATOR

- **What It Is?**

- Scr Elektronik manufactures test panel for carrying out endurance test for Fan regulator/Dimmer.
- In this Regulator/Dimmer is made on and off for set no of cycles and condition for Contact open and weld is checked.
- Micro controller Unit is used to carry out the sequence. Test Parameters are programmable and can be programmed on Micro Controller Unit.

- **Models Available :**

- This can be customized for number of stations required.



• Features & Specifications :

- Microcontroller based System.
- LCD display to display test time & other test settings.
- Membrane keys for Settings.
- Operates on 230 V +/- 10 % Supply
- Accuracy of class 1.
- Battery Backup provided so cycles before power off can be continued after power on.
- Programmable test times from 1.0 to 9.9 Secs.
- Speed programmable from 10 rpm to 60 rpm thus adjustable cycle time as per requirement.
- Programmable total angle from 0 to 360 degree which allows flexibility to check any fan regulator or dimmer suitable electrical load provided.
- Diagnostic mode provided which makes it easy for maintenance. (input, outputs and motor can be diagnosed in this mode.)

- **Key Photos :**



Three Station Endurance Test Setup For
Fan Regulator



Single Station Endurance Test Setup
For Fan Regulator



- **Documentation That Will Be Provided With Product :**

- Layout (dimensions, etc.)
- Metering and PCB termination diagram
- Power wiring diagram
- Control wiring diagram
- User manual
- Data acquisition module details (for PC based variants)
- Signed warranty certificate
- Calibration certificates (NABL optional)



• **Why SCR Elektroniks ?**

- Since 1975: Rich Experience In Test And Measurement
- Customized Solution
- Dedicated After Sales Support Team
- Designed More Than 100 Different Products
- In- House Team Of Micro-controller Design, Electrical And Electronic Design, Micro Controller Development, Labview (PC) Software And PLC Logic, Production, Testing And Commissioning And Support
- In-house Development Of Critical Electronic And Electrical Meters, Modules And Components
- ISO 9001 : 2015 Certified By Bureau Veritas – Maintaining High Quality In Our Internal Process
- Listed By IEC In The Past
- Fair And Consistent Pricing
- Our Ultimate Prize: Customer Delight



● Our Recent Valuable Clients For Socket :

Sr. No.	Customer	Destination
1	Philips Electronics India Ltd	Gurgaon
2	Philips Electronics India Ltd	Noida
3	Elin Appliances Pvt. Ltd.	Baddi
4	Salzer Electronics Ltd.	Coimbatore
5	C & S Electric Ltd.	Haridwar
6	Legrand India Pvt. Ltd	Sinnar
7	Schneider Electric	Bangalore
8	Indo Asian Electric Pvt. Ltd.	Noida
9	Anchor Electrical Pvt. Ltd.	Haridwar
10	Great White Electrical Pvt. Ltd.	Haridwar
11	Teknic Electromeconics Pvt. Ltd.	Bangalore
12	Siemens Ltd.	Aurangabad
13	Honeywell Electrical & Devices India Pvt. Ltd.	Dehradun
14	Al Motawaset Factory for Plastics & Electrical Sockets	Kingdom of Saudi Arabia



- **Our Recent Valuable Clients For Switch :**

Sr. No.	Customer	Destination
1	Philips Electronics India Ltd.	Gurgaon, Baddi
2	Anchor Electricals Pvt. Ltd.	Haridwar
3	Elin Appliances Pvt. Ltd.	Baddi
4	Salzer Electronics Limited	Coimbatore
5	Legrand India Pvt. Ltd.	Sinnar
6	Honeywell Electrical Devices and Systems India Limited	Dehradun, Chennai
7	Schneider Electric India Pvt. Ltd.	Vdodara, Coimbatore



8	Tri Spectrum Ltd.	Riyadh
9	C & Electric Ltd.	Haridwar
10	Great White Electricals Pvt. Ltd.	Haridwar
11	Al-Motawaset Factory for Plastics & Electrical Sockets	Riyadh
12	Teknic Electromeconics Pvt. Ltd.	Bangalore
13	Novateur Electrical and Digital Systems Pvt. Ltd.	Parwanoo
14	Finolex Cables Limited	Roorkee
15	Siemens Ltd	Thane, Aurangabad
16	Indo Asian	Haridwar
17	HPL Electric & Power Pvt. Ltd.	Himachal Pradesh
18	Namo Electric	Pune
19	Astron Switch Craft	Pune
20	Panasonic Appliances India Co. Ltd.	Chennai
21	Esbee Industrial Combines	Pune
22	Luminous Power Technologies Pvt. Ltd.	Himachal Pradesh

SCR ELEKTRONIKS

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- Email: auto@screlektroniks.com
- Website: www.screlektroniks.com



THANK YOU