Our Ref:CL/PP/BID-04(06-07) Date: 21 Aug 2006

Subject: SUPPLY OF TEST EQUIPMENTS FOR 3 PIN PLUGS & SOCKETS.

Dear Sirs,

Technical & Commercial Bids are invited for the supply of _ **TEST EQUIPMENTS FOR 3 Pin Plugs & Sockets,** in separate SEALED covers, which should reach the undersigned latest by **1700 h**, on **11September 2006,** at the following address.

Director & Head (Planning & Purchase)
BUREAU OF INDIAN STANDARDS
Central Laboratory
Plot No.20/9, Site-IV,
Sahibabad Industrial Area, Sahibabad,
Distt. Ghaziabad-201010 (U.P.)

2. The detailed specification(s) of the above mentioned equipment(s)/item(s) are given in Annex-**I**

3. Terms and conditions of supply are given in **Annex-II**

4. The technical Bids shall be opened in the **Conference Hall**, of the Central Lab, at the address mentioned above at **1500 h on 12 Sep 2006** and in the presence of such tenderers or their duly authorized representatives, who may like to attend.

5. Please note that the envelopes containing Technical & Commercials Bids are sealed properly i.e. either wax sealed or with adhesive cello tape on both ends. Unsealed and stapled envelopes shall not be accepted.

6. The specification and terms & conditions can also be downloaded from BIS Website – www.bis.org.in

Thanking you,

Yours faithfully,

Encls: as above

--sd---
Scientist-'F' & Head
(Planning & Purchase)

ANNEX-II

TERMS & CONDITIONS

1. The BUREAU gives FIRST PREFERENCE in its purchase to goods bearing ISI CERTIFICATION MARK and second preference to those which conform to the relevant Indian Standard Specifications.
2. The delivery of the stores is required to be made within 30 days of receipt of order. If, it is not possible for you to effect delivery within the period, you are required to specify the date by which you can guarantee delivery of the stores.
3. The Technical & Commercial Bids should be sealed and sent separately in sealed envelopes. Such Bids shall remain valid for a period of 90 days from the date of opening.
4. Quotations/Bids, qualified by indefinite expressions as "Subject to immediate acceptance, Subject to prior sale" etc. and incomplete quotations are liable to be summarily rejected.
5. The Bids should clearly give break-up of cost of each equipment. The rates quoted should separately indicate Basic Cost, Excise Duty, Sales Tax, P&F charges, Freight, Insurance, VAT etc. Rates quoted should specifically state Sales Tax, Excise Duty or any other taxes/charges. In absence of any such stipulation, it will be presumed that the prices include all such charges and no claim for the same shall be entertained.
6. Each tender document shall be accompanied with **EMD of 3% of cost of the equipment.** The demand draft for the EMD amount shall be drawn in favour of BUREAU OF INDIAN STANDARDS payable at Sahibabad/Ghaziabad. The sealed envelope containing EMD should be super scribed **"EMD"** and stapled separately with the envelope containing the commercial Bids.
7. BIS shall pay 90% of the cost after satisfactory installation & commissioning and the Balance of **10%** as **contract performance security** would be paid after expiry of warranty period. However other terms of payment for contract performance security can also be considered, if so stated clearly.
8. The warranty period of the equipments may be stated clearly in the Technical Bids. In case the same is not found stated, it will be presumed that warranty period as mentioned in their respective specifications of the tender document (if specified), is applicable
9. Please mention clearly in the Technical Bids regarding address of **arrangements for service/repair** of the equipments are available. Suppliers having such arrangements near Delhi/Ghaziabad would be preferred.
10. All goods received would be subjected to inspection, by BIS before or after receipt or commissioning (as applicable) and the decision of BIS shall be binding. Rejected items/goods/stores shall be removed by the supplier at his own cost and risk, within 30 days of receipt of notice for the removal of such goods, and no liability, whatsoever, on the Bureau shall be attached for the rejected/disapproved goods/items/stores.
11. The Bureau reserves the right to accept or reject summarily and or all tenders in whole or part without assigning any reason whatsoever.
12. The Bureau takes no responsibility for delay, loss or non-receipt of tenders after dispatch.
13. In case of non compliance with the Terms & Conditions of the contract, the Bureau reserves its right to:

    a) Cancel/rescind/revoke the order if supply is not made in time and is not conforming to the required specifications.

    b) Impose Penalty up to 1% of the total value of the order for a delay of every seven days after the schedule date subject to the ceiling of a maximum of 10% of the total value of the order.
14. All questions, disputes or difference arriving under, out of or in connection with this tender enquiry shall be subject to the exclusive jurisdiction of Delhi/ Ghaziabad Courts.

SPECIFICATIONS **ANNEX-1**

Compression Test Apparatus

Name of Equipment	:	Compression test apparatus
Purpose	:	To check compression properties of plugs and single socket outlets.
Reference	:	Cl.24.5 (Page-38) and Fig 22(Page-64) of IS:1293-2005.

Features of apparatus :

1.1 Test apparatus shall be strictly as per Cl 24.5(Page-38), Fig-22(Page-
of IS: 1293-2005.

1.2 It shall be suitable to work at 230 Volt, 50 Hz, ac supply, single phase.

1.3 Fig. 22A attached for guidance.

1.4 Apparatus shall be of robust construction with anti-rust and anti-corrosi
property.

1.5 A steel pressure plate shall be of at least of 5 mm thickness.

1.6 Apparatus shall have provision to apply a pressure of 0-500 N through
the steel pressure plate shown in Fig. 22A attached and pressure should
smooth & gradual.

1.7 Apparatus shall have provision for digital display of compression force.

1.8 Pressure gauge shall be supplied with Calibration Certificate from NAB
approved Calibration agency

1.9 The apparatus shall be warranted for minimum one year of satisfactory
operation

CORD RETENTION TEST APPARATUS

Name of Equipment : Cord retention test apparatus

Purpose : To check effectiveness of the retention for rewirable & non-rewirable accessories.

Reference : As per Cl.23.2 (Page-32), Fig 14 (Page-59) of IS:1293-2005.

Features of apparatus :

1.1 Apparatus shall be strictly as per Cl 23.2 (Page-32), Fig-14 (Page-59) IS: 1293-2005.

1.2 It shall be suitable to work at 230 Volt, 50 Hz, ac supply.

1.3 The apparatus shall have the provision to fix the accessories of 2.5A, and 16A rating.

1.4 Motorized system to rotate crank without jerk shall be provided with apparatus.

1.5 The pull shall be applied practically without jerks each time for 1 secon

1.6 The load of 50 N & 60 N shall be supplied with the apparatus.

1.7 Digital Counter (Presettable) shall be provided to count the rotation crank.

1.8 Provision to carry out torque test as per table-18 (Page-33) shall provided with the apparatus and digital torque meter shall be provided measure the applied torque.

1.9 Apparatus shall be of robust construction with anti-corrosion and anti- property.

1.9 The measuring instruments shall be supplied with Calibration Certific from approved NABL Calibration Agency.

1.10 Audio buzzer for drawing attention shall be provided for completion test.

1.11 The apparatus shall be warranted for at least one year of satisfact operation.

Name of Equipment : Deflection test Apparatus for Screw less terminals

Purpose : To check electrical and thermal stresses of screw less terminals of Socket outlets.

Reference : Cl.12.3.11 (Page-16), Fig.33 (Page-70) & Cl.12.3.12 (Page-17), Fig.33 A&B (Page-70) of IS:1293-2005.

Capacity : Apparatus shall be capable to test 6 Nos of socket outlets of 2.5A, 6/10A and 16A each.

Features of apparatus :

1.1 Apparatus shall be strictly as per Cl 12.3.11 (Page-16) & 12.3.12 (Pa 17) Fig 33A & 33 B (Page-70) of IS: 1293-2005.

1.2 It shall be suitable to work at 230 Volt, 50 Hz, ac supply.

1.3 The apparatus shall have the provision to mount the Socket out (2.5A, 6/10A and 16A) as in normal use without using special tools.

1.4 The apparatus shall be able to accommodate following types of soc outlets:

a) Surface Type
b) Flush type
c) Semi flush type
d) Panel type
e) Architrave type
f) Portable type
g) Table type
h) Floor recessed type, and
i) Appliance type

1.5 A suitable and variable low voltage high current source shall be provi with test apparatus to apply test current from 0 to 100 Amp.

1.6 Provision to apply 0 to 500 adjustable temperature cycles shall provided. Each temperature cycle of approximately 1 h comprises 30 with current flowing and 30 min without current flowing.

1.7 Provision to display and record the temperature cycles shall be provi with the equipment.

Name of Equipment : Earthing contacts test apparatus

Purpose : To check earthing contacts on sockets outlets.

Reference : Cl.10.6 (Page-9) of IS:1293-2005.

Features of apparatus :

1.1 Apparatus shall be strictly as per Cl 10.6 (Page-9) of IS: 1293-2005.

1.2 The apparatus shall have the provision to mount the Socket outlets (6/1
and 16A) as in normal use without using special tools.

1.3 The apparatus shall be suitable to test the following types of socket outlets:

a) Surface Type
b) Flush type
c) Semi flush type
d) Panel type
e) Architrave type
f) Portable type
g) Table type
h) Floor recessed type, and
i) Appliance type

1.4 Apparatus shall have provision to insert the test plug into correspondin
socket outlets with a force of 150 N.

1.5 A digital pressure gauge (0-200 N) shall be provided in the apparatus to
measure the pressure.

1.6 The measuring instrument shall be supplied with Calibration Certificate
from NABL approved Calibration Agency.

1.7 Test plugs of 6A & 16A shall be supplied with the apparatus.

a) Test plugs shall be with Brass pins as per IS: 292,
type Cu Zn 39 Pb 2-M
b) The micro composition of brass pins shall be homogeneous.
c) The test plugs shall have maximum specified dimensions
(with a tolerance of 0-0.06 mm and spaced at nominal distance with
tolerance of + 0.05 mm)as per Annex. A(Page 77 & 78)(Cl.9.1 &
of IS: 1293-2005) [Data sheet enclosed]

Name of Equipment : Flexing test apparatus for non-rewirable plugs & socket outlets

Purpose : To check protection against excessive bending of the flexible cable provided with non-rewirable plugs and non-rewirable socket outlets.

Reference : As per Cl.23.4 (Page-34), Fig-15 (Page-60) of IS:1293-2005.

Capacity : Apparatus shall be capable to test the plugs & socket outlets of 2.5A, 6/10A an 16A rating.

Features of apparatus :

1.1 Apparatus shall be strictly as per Cl 23.4(Page-34), Fig-15 (Page-60) of IS: 1293-2005.

1.2 It shall be suitable to work at 230 Volt, 50 Hz, ac supply.

1.3 The apparatus shall have the provision to fix the non-rewirable Soc outlets & non-rewirable plugs (2.5A, 6A and 16A) on oscillating mem without using special tools as per Cl.23.4.

1.4 Provision of fixing of specimen to the oscillating member of the appara shall be such that, when the specimen is at the middle of its travel, the a of the flexible cable, where it enters the specimen, is vertical and pas through the axis of oscillation.

1.5 Suitable provision shall be provided to adjust the accessories on oscillating member to minimize lateral movement.

1.6 The apparatus shall have the provision to automatically stop testing a the completion of the test.

1.7 The oscillating member shall have movement of 90º (45º on either sid the vertical) with rate of flexing 60 per minute.

1.8 Apparatus shall have suitable provision as per Fig 15 to load the flex cable with specified force (i.e., 10 N or 20 N).

1.9 Suitable provision shall be provided to measure voltage drop between e contacts and corresponding conductor.

1.10 A source of variable current (0-30A) shall be provided with the appara to apply specified current at adjustable test voltage (0 to 300V).

GAUGE FOR MAXIMUM WITHDRAWAL FORCE

Name of Equipment : **Gauge for maximum withdrawal force**

Purpose : To check maximum withdrawal force for all types of socket outlets of 2.5A, 6/10A and 16A current rating.

Reference : As per Cl.22.1 (Page 31), Fig. 13 (Page 59) of IS:1293-2005.

Features of apparatus :

1.1 Apparatus shall be strictly as per Cl 22.1 (Page 31), Fig. 13 (Page 59) of IS:1293-2005.

1.2 Apparatus shall be of robust construction with anti-corrosion and anti- property.

1.3 The pins of test plug shall be made up of finely ground hardened steel w surface roughness not exceeding 0.8µm over their active length and spa at the nominal distance, with a tolerance of ± 0.05 mm.

1.4 The supplementary mass G (Ref. Fig 13 of IS: 1293-2005) is such tha exerts a force equal to one tenth of maximum withdrawal shown in Ta 16 of IS: 1293-2005.

1.5 Total force exerted by the principal mass, together with supplement mass G, the clamp D, the carrier E and the test plug shall be equal to maximum withdrawal force shown in Table 16 of IS: 1293-2005.

1.6 The loads (N) shall be supplied with Calibration Certificate fr approved NABL Calibration Agency.

1.7 The apparatus shall be warranted for minimum one year of satisfactory operation.

GAUGE FOR VERIFICATION OF MINIMUM WITHDRAWAL FORCE

Name of Equipment : **Gauge for verification of minimum withdrawal force**

Purpose : To check minimum withdrawal force for all type of socket outlets of current rating 2.5A, 6/10A and 16A.

Reference : As per Cl.22.2 (Page-31), Fig -42 (Page-77), Table-16 (Page-31) of IS:1293-2005.

Features of apparatus :

1.1 Apparatus shall be strictly as per Cl 22.2 (Page-31), Fig-42 (Page-77) of IS: 1293-2005.

1.2 Apparatus shall be of robust construction with anti-corrosion and anti- property.

1.3 Apparatus shall be so designed that the insertion of test pin gauge into socket contact is vertically downwards and the socket outlet h horizontally with the face downwards.

1.4 The test pin gauge is made of hardened steel with surface roughness exceeding 0.8µm over its active length.

1.5 The total mass of gauge shall be equal to that specified in Table 16 of IS: 1293-2005.

1.6 The plug pin portion of the gauge shall have cross sectional dimensions equal to the minimum shown in Fig. A-1, a tolerance of 0 mm/0.01 mm and a length sufficient to make adequate contact with the socket outlets

1.7 The apparatus shall be warranted for minimum one year of satisfactory operation.

Test gauge for non-accessibility of live parts through shuttered socket outlets
After Normal Operation Test

Name of Equipment : Test gauge for non-accessibility of live parts for shuttered socket outlets After Normal Operation Test.

Purpose : To check non-accessibility of live parts in shuttered socket outlets without a plu in engagement with socket outlet.

Reference : As per Cl.21 (Page-30), Fig. 3 (Page-51) of IS:1293-2005.

Capacity : Gauges shall be capable to test socket outlets of 6/10A and 16A rating.

Features of apparatus :

1.1 Gauges shall be strictly as per Cl.21 (Page-30), Fig. 3 (Page-51) IS: 1293-2005.

1.2 The design of the gauge shall be as per drawing and dimension given in Fig on Page 51 of IS: 1293-2005.

1.3 Provision for calibration of the gauge as per Fig. 3 (A-A' & B-B') shall provided to calibrate 20 N force.

1.4 It shall be suitable to work at 60 Volt, 50 Hz, ac supply.

1.5 An electrical indicator, and audio buzzer shall be provided (voltage not l than 40 V and not more than 50 V to show the contact with relevant live pa with the gauge.

1.6 A force applied through the gauge shall be 20 N.

1.7 The gauge shall be supplied with calibration/ verification report prefera from NABL approved source.

1.8 The apparatus shall be warranted for minimum one year of satisfact operation.

Test gauge for non-accessibility of live parts through shuttered socket outlets With increased protection

Name of Equipment	:	Test gauge for non-accessibility of live parts for shuttered socket outlets with increased protection.
Purpose	:	To check non-accessibility of live parts in shuttered socket outlets without a plu in engagement with socket outlet.
Reference	:	As per Cl.10.5 (Page-09), Fig-04 (Page-52) of IS:1293-2005.
Capacity	:	Gauges shall be capable to test socket outlets of 6/10A and 16A rating.
Features of apparatus	:	

1.1 Gauges shall be strictly as per Cl 10.5 (Page-09), Fig-04 (Page-52) IS: 1293-2005.

1.2 The design of the gauge shall be as per drawing and dimension given Fig. 4 on Page 52 of IS: 1293-2005.

1.3 Provision for calibration of the gauge as per Fig. 4 (A-A' & B-B') shall provided to calibrate 1 N force.

1.4 It shall be suitable to work at 60 Volt, 50 Hz, ac supply.

1.5 An electrical indicator, and audio buzzer shall be provided (voltage less than 40 V and not more than 50 V to show the contact with relev live parts) with the gauge.

1.6 A force applied through the gauge shall be 1 N.

1.7 The gauge shall be supplied with calibration/ verification report prefera from NABL approved source.

1.8 The apparatus shall be warranted for minimum one year of satisfact operation.

IMPACT TEST APPARATUS

Name of Equipment	:	Impact test apparatus
Purpose	:	To test the mechanical strength at low temperature
Reference	:	Cl.24.4 (Page-38), Fig-21 (Page-63) of IS:1293-2005.
Capacity	:	Apparatus shall be capable to test plugs and socket outlets of 2.5A, 6/10A and 16A rating.
Features of apparatus	:	

1.1 Apparatus shall be strictly as per Cl 24.4 (Page-38), Fig-21 (Page-63) of IS: 1293-2005.

1.2 The Apparatus shall be designed as per drawing and dimensions given Fig. 21 on page 63 of IS: 1293-2005.

1.3 Two pads of sponge rubber as per Cl.24.4, each of suitable dimensi with 40 mm thickness shall be supplied with the apparatus.

1.4 Apparatus shall be of robust construction with anti-rust and anti corros property.

1.5 The apparatus shall be supplied with calibration/ verification rep preferably from NABL approved source.

1.6 The apparatus shall be warranted for minimum one year of satisfact operation.

LATERAL STRAIN TEST APPARATUS FOR SOCKET OUTLET

Name of Equipment : Lateral strain test apparatus for socket out lets

Purpose : To check resistance to lateral strain of socket outlets.

Reference : As per Cl.13.14 (Page-20), Fig. 6 (Page-53) of IS:1293-2005.

Capacity : Apparatus shall be capable to test the socket outlets of following types of Current rating 2.5A, 6/10A and 16A:

a) Surface Type
b) Flush type
c) Semi flush type
d) Panel type
e) Architrave type
f) Portable type
g) Table type
h) Floor recessed type, and
i) Appliance type

Features of apparatus:

1.1 Apparatus/ Test device shall be strictly as per Cl 13.14 (Page-20), Fig. (Page-53) of IS: 1293-2005.

1.2 The Test Device shall be made of stainless steel as per drawing and dimensions given in Fig. 6 on page 53 of IS: 1293-2005.

1.3 Apparatus shall be of robust construction with anti-rust and anti corrosi property.

1.4 Mounting arrangement of socket outlet shall be suitable to rotate throug 90º intervals on the vertical mounting surface.

1.5 The apparatus shall have arrangement to load the strain device up to 5 N

1.6 The apparatus shall be supplied with calibration/ verification re preferably from NABL approved source.

1.7 The apparatus shall be warranted for minimum one year of satisfactory operation.

Name of Equipment : Making & Breaking Capacity and Normal Operation Test Apparatus for Plugs & Socket Outlets.

Purpose : i) To check making & breaking capacity of plugs and single socket outlets.

ii) To check mechanical, electrical and thermal stresses of plugs and single socket outlets in normal use.

Reference : **Cl.20 & Cl 21(Page-29 & 30), Fig-12(Page-58) and Fig-40(Page-75) o IS:1293-2005.**

Capacity : The apparatus shall be capable to test 2 sets of 3 Nos. each of plugs & socket outlets of 2.5A, 6/10A and 16A rating simultaneously.

Features of apparatus:

1. Operational Mechanism

1.1 Apparatus shall be strictly as per Cl 20 & Cl 21 (Page-29 & 3 Fig-12 (Page-58) and Fig-40 (Page-75) of IS:1293-2005.

1.2 It shall be suitable to work at 230 Volt, 50 Hz, ac supply, sin phase.

1.3 The equipment shall be supplied with separate sets of 3 test plu and 3 test socket outlets each suitable for testing different curr rating and types of plugs and socket outlets mentioned be at Sl. No. [1.7, a) to i)].

1.4 The composition and dimensions of test plugs and test soc outlets shall be as specified below at Sl. No. 3 and 4.

1.5 It shall be motorized and with a uniform speed of 30 strokes minute (a stroke is an insertion or a withdrawal of the plug).

1.6 Apparatus shall have the provision to mount the socket outlets plugs (2.5A, 6A and 16A) as in normal use without using spe tools.

MECHANICAL STRAIN TEST APPARATUS

Name of Equipment : Mechanical Strain Test Apparatus for Portable Socket Outlets.

Purpose : To check mechanical strain on portable socket outlets.

Reference : Cl.24.11 (Page-40) of IS:1293-2005.

Features of apparatus :

1.1 The apparatus shall be made strictly as per Cl 24.11 (Page-40) of IS:1293-2005.

1.2 Apparatus shall have the provision to apply variable force 0 to 100 N perpendicular to fixing wall through the cylindrical steel rod.

1.3 The Cylindrical Steel Rod shall be of 3 mm diameter & a hemispherical end of radius 1.5 mm.

1.4 Apparatus shall have facility to measure the compression force varying from 0 to 200 N by suitable means.

1.5 Apparatus shall have suitable mounting arrangement for portable socke outlets.

1.6 Provision to have digital display of compression force.

1.7 The apparatus shall be supplied with calibration/ verification re preferably from NABL approved source.

1.8 The apparatus shall be warranted for minimum one year of satisfactory operation.

MECHANICAL STRENGTH TEST APPARATUS

(For Rewirable Multiple Portable Socket Outlets)

Name of Equipment	:	Mechanical strength test arrangement for rewirable multiple portable socket Outlets.
Purpose	:	To check mechanical strength of rewirable multiple portable socket outlets aga concrete floor.
Reference	:	Cl.24.9 (Page-39), Fig-24 (Page-65) of IS:1293-2005.

Features of apparatus:

1.1 Arrangements shall be strictly as per Cl 24.9 (Page-39), Fig-24 (Page- of IS: 1293-2005.

1.2 Apparatus shall be of robust construction with anti-rust and anti corros property.

1.3 Suitable means to fix the free end of the cable to the wall at a heigh 750 mm

1.4 Suitable device to hold the test specimens at a distance of 2250 mm fr the end of the clamp (provided to fix the free end of the cable on the w in such a way that the cable connected to the test specimen shall be horizontal position at a height of 750 mm.

1.5 Holding device shall have the provision to release the test specimen fre from the height of 750 mm whenever required.

1.6 Apparatus shall have provision to rotate Fixing end of the cable at interval of 45º , 90º , 135º , 180º ,225º , 270º , 315º and 360º in direction.

1.7 The apparatus shall be warranted for minimum one year of satisfactory operation.

Name of Equipment : Apparatus to check Non-Removal and Removal Forces on Covers and Cover-Plates

Purpose : To check the force required to come off or not to come off, covers & cover pla of socket outlets.

Reference : Cl.24.14 (Page-40) of IS:1293-2005.

Features of apparatus :

1.1 Apparatus shall be strictly as per Cl 24.14.1 & Cl 24.14.4 (Page-40), Fig-08 (Page-54) of IS: 1293-2005

1.2 Apparatus shall be provided with a pulling arrangement to apply pull o covers, cover plates or parts of them in the direction perpendicular to th mounting surface.

1.3 Pull is to be applied in such a way that the resulting force acting on the centre of covers, cover plates or parts of them.

1.4 Provision shall be provided to apply specified pull by means of a suitab hook placed in turn in each of the grooves, holes, spaces or the like, provided for removing them.

1.5 Provision shall be given to fit the cover or cover plate on the wall after sheet of hard material, 1 mm ± 0.1 mm thick, has been fitted around the supporting frame as per Fig 8 of IS 1293-2005.

1.6 Gauge as per Fig 7 (Page-54), Cl 24.17 (Page-40) shall be provided wit the apparatus.

1.7 To measure the pull force, a digital meter (0 to 200 N) shall be provid with the apparatus.

1.8 Gauge as per Fig 5 (Page-53) Cl.24.18 (Page-41) shall be provided wit the apparatus.

Pin Deflection test Apparatus for plugs

Name of Equipment	:	Pin deflection test apparatus for plugs
Purpose	:	To check fixation of pins in the body of the plug.
Reference	:	As per Cl.24.10 (Page-39), Fig 25 (Page-65) of IS:1293-2005.
Capacity	:	Apparatus shall be capable to test plugs of current rating 2.5A, 6/10A and 16A
Features of apparatus	:	

1.1 Apparatus shall be strictly as per Cl 24.10 (Page-39) Fig 25 (Page-65) IS: 1293-2005.

1.2 Separate rigid steel plates provided with holes (example given in Fig- Page-65),Annex A, Cl 9.1 & Cl 9.3 (Page-77 & 78) shall be supplied all types and current ratings (i.e. 2.5A, 6/10A and 16A) of plugs. (different steel plates should be provided for each rating)

1.3 Each hole in the plate shall have a diameter equal to that of the circle circumscribed around the cross-sectional area of pin plus 6 mm ± 0.5 m

1.4 Apparatus shall be provided with a pulling arrangement to apply pull in the direction of longitudinal axis of the pin of plug.

1.5 To measure the pull force, a digital meter (0 to 200 N) shall be provid with the apparatus.

1.6 The measuring instruments shall be supplied with Calibration Certifica from approved NABL Calibration Agency.

1.7 The apparatus shall be warranted for minimum one year of satisfactory operation.

STANDARD JOINTED TEST FINGER

Name of Equipment : Standard Jointed Test Finger

Purpose : To check protection against electric shock on accessories.

Reference : As per Cl.10 (Page-07), Fig 02 (Page-50) of IS:1293-2005.

Features of apparatus :

1.1 Apparatus shall be strictly as per Cl 10 (Page-07), Fig-02 (Page-50) of IS: 1293-2005

1.2 An electric indicator with voltage between 40 V to 50 V shall be provi with the test finger to indicate contact with the relevant part.

1.3 Electric Indicator unit shall be suitable to work at 230 Volt, 50 Hz, supply

1.4 Apparatus shall be of robust construction with anti-corrosion and anti- property.

1.5 Voltmeter (0-100 V) shall be provided with the electric indicator display output voltage.

1.6 The Voltmeter shall be supplied with Calibration Certificate fro approved NABL Calibration Agency.

1.7 Audio buzzer for drawing attention shall be provided for contact

1.8 The apparatus shall be warranted for minimum one years of satisfacto operation.

STANDARD UNJOINTED TEST FINGER

Name of Equipment : Standard Un-jointed Test Finger

Purpose : To check protection against electric shock with force on accessories.

Reference : As per Cl.10 (Page-07), Fig 02 (Page-50) of IS:1293-2005.

Features of apparatus :

1.1 Apparatus shall be strictly as per Cl 10 (Page-07), Fig-02 (Page-50) of IS: 1293-2005

1.2 An electric indicator with voltage between 40 V to 50 V shall be provi with the test finger to indicate contact with the relevant part.

1.3 Electric Indicator unit shall be suitable to work at 230 Volt, 50 Hz, supply

1.4 Apparatus shall be of robust construction with anti-corrosion and anti- property.

1.5 Voltmeter (0-100 V) shall be provided with the electric indicator display output voltage.

1.6 Force applied through un-jointed test finger should be 75 N & 10 separately.

1.7 Suitable Digital Force Indicator (0-200 N) shall be provided to indic force applied through the un-jointed test finger.

1.8 The measuring instruments shall be supplied with Calibration Certific from approved NABL Calibration Agency.

1.9 Audio buzzer for drawing attention shall be provided for contact.

1.10 The apparatus shall be warranted for minimum one year of satisfacto operation.

PULL TEST APPARATUS FOR SCREW CLAMPING TERMINAL

Name of Equipment : Pull test apparatus for screw clamping terminals

Purpose:

To check clamping properties of terminals of socket outlets and plugs.

Reference: Cl.12.2.6 (Page-12) of IS:1293-2005.

Features of apparatus:

1.1 Apparatus shall be strictly as per Cl 12.2.6 (Page-12) of IS: 1293-2005

1.2 Apparatus shall be provided with a pulling arrangement to apply pull to the conductor in the direction of axis of the conductor space.

1.4 To measure the pull force a digital meter (0 to 200 N) shall be provided with the apparatus.

1.5 The measuring instrument shall be supplied with Calibration Certificate from approved NABL Calibration Agency

1.6 The apparatus shall be guaranteed for at least three years of satisfactory operation