



TESTING AND MEASURING EQUIPMENT/ALLOWED SUBCONTRACTING
IEC 60884-1:2002-06+A1:2006-05, Edition 3.0
Plugs and socket-outlets for household and similar purposes –
Part 1: General requirements

R = Required to be at Lab
S = May be subcontracted
W = May be witnessed at MTL
SF = Specialized Facility
3PPS = Three Phase Power Supply required

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
8.8	Test of markings	Water, petroleum spirit	R
9	Checking of dimensions	Caliper, micrometer, gauges	R
10	Protection against electrical shock	Jointed test finger, unjointed testfinger, electrical indicator Figures 9 and 10: Gauges for checking non-accessibility of live parts, through shutters, and of live parts of socket-outlets with increased protection Test plug	R
11.5	Measuring of contact resistance	AC source, measuring instruments	R
12.2	Tests on screw terminals	Screw driver and spanner with torque meter, weights Figure 11: Arrangement for checking damage to conductors	R
12.3	Tests on screwless terminals Weights	Figure 11: Arrangement for checking damage to conductors AC source, measuring instruments Figure 12: Deflection test apparatus	R
13.14	Lateral strain of socket-outlets	Figure 13: Device for checking the resistance to lateral strain	R
13.23 13.24	Test on membranes	Heating cabinet Freezer	R

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
14.2	Test of non-solid pins	Figure 14: Device for testing of non-solid pins	R
14.23.1	Temperature rise test on plugs of plug-in equipments	AC source, measuring instruments, temperature measuring device	R
14.23.2	Torque test on plugs of plug-in-equipment	Apparatus for the torque test	R
16.1	Ageing test	Heating cabinet, humidity chamber	R
16.2	Protection provided by enclosures	Figure 15: Test wall in accordance with the requirements of 16.2.1	R
		Test apparatus acc. IEC 60529: Jointed test finger Rigid sphere 50 mm diameter Rigid sphere 12,5 mm diameter Rigid steel rod 2,5 mm diameter Rigid steel rod 1,0 mm diameter	R
		Dust chamber	S
		Drip box Drip box -15° Oscillating tube/spray ± 60° or spray nozzle/spray ± 60° Oscillating tube/spray ± 180° or spray nozzle/spray ± 180°	R
		Water jet hose nozzle – nozzle 6,3 mm diameter Water jet hose nozzle – nozzle 12,5 mm diameter Immersion tank	S
16.3	Humidity treatment	Humidity chamber	R
17.1	Insulation resistance	Insulation test equipment	R
17.2	Electric strength	High voltage test equipment	R
19	Temperature rise	AC source, measuring instruments, temperature measuring device, test block for flush-mounted accessories Clamping unit for the temperature rise test (Figure 44)	R
20 21	Breaking capacity Normal operation	Figure 16: Apparatus for breaking capacity and normal operation, AC source, adjustable load (resistors and inductors), measuring instruments Figure 9: Gauge for checking non-accessibility of live parts, through shutters, after normal operation test Figure 10: Gauge for checking non-accessibility of live parts, through shutters, and of live parts of socket-outlets with increased protection	R 3PPS

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22.1	Verification of the maximum withdrawal force	Figure 18: Apparatus for checking the withdrawal force, test-plug	R
22.2	Verification of the minimum withdrawal force	Figure 19: Gauge for the verification of the minimum withdrawal force	R
23.2	Test of the cord retention	Figure 20: Apparatus for testing the cord retention Apparatus for the torque test	R
23.4	Flexing test	Figure 21: Apparatus for flexing test	R
24.1	Impact test	Figures 22, 23, 24, 25 and 26: Impact-test apparatus	R
24.2	Tumbling barrel test	Tumbling barrel according to IEC 60068-2-32	R
24.3	Test on ordinary surface-type socket-outlets	Cylinder of rigid steel sheet Flat steel sheet	R
24.4	Impact test at low temperature	Figure 27: Apparatus for impact test at low temperature	R
10.1 24.5	Impact test at low temperature	Figure 8: Arrangement for compression test	R
24.6	Test on screwed glands	Metal rods Test-spanner with torque meter	R
24.7	Abrasion test	Figure 28: Apparatus for abrasion test on insulating sleeves of plug pins	R
24.8	Test on shutters	Test-pin, electrical indicator	R
24.9	Test on multiple portable socket-outlets	Figure 29: Arrangement for mechanical strength test on multiple portable socket-outlets	R
24.10	Test of the fixing of the pins	Figure 30: Example for test arrangement to verify the fixation of pins in the body of the plug	R
24.11 24.12 24.13	Test on portable socket-outlets with suspension means	Cylindrical steel rod	R
24.14 up to 24.18	Removal of covers or cover-plates Weights	Figure 31: Arrangement for test on covers or cover-plates Figure 32: Gauge for the verification of the outline of covers or coverplates Figure 35: Gauge for verification of grooves, holes and reverse tapers	R
25	Resistance to heat	Heating cabinet Figure 37: Ball pressure test apparatus Figure 38: Apparatus for compression test for the verification of resistance to heat	R

Clause	Measurement/testing	Testing / measuring equipment / material needed	Subcontracting
26	Screws, current carrying parts and connections	Screw-driver and spanner with torque meter	R
27	Creepage distances, clearances	Caliper Tolerances gauges	R
28.1.1	Glow-wire test	Test apparatus according to IEC 60695-2-10	R
28.1.2	Test of the resistance to heat of pins with insulating sleeves	Figure 40: Apparatus for testing resistance to abnormal heat of insulating sleeves of plug pins	R
28.2	Resistance to tracking	Test apparatus according to IEC 60112	R
29	Resistance to rusting	Chemicals Humidity cabinet Heating cabinet	R
30.1	Pressure test at high temperature	Figure 41: Apparatus for pressure test at high temperature Heating cabinet	R
30.2	Static damp heat test	Climatic chamber according to IEC 60068-2-30	R
30.3	Test at low temperature	Freezer	R
30.4	Impact test at low temperature	Figure 42: Impact test apparatus on pins provided with insulating sleeves	R