

**IS : 3850 - 1981**

(Reaffirmed 2016)

**AMENDMENT NO. 1 JULY 1991**  
**TO**  
**IS 3650 : 1981 SPECIFICATION FOR COMBINATION SIDE**  
**CUTTING PLIERS**  
**( *Second Revision* )**

( *Page 1, clause 4* ) — Replace the existing by the following:

**'4 Hardness** — The hardness of pliers when tested at three points on fiat and parallel surfaces to each of cutting edges ( not beyond 3 mm away ) and for body adjacent to gripping surfaces ( not more than 1 mm away ) shall be within the limits as given below:

Body ( gripping surfaces ) : 350 to 510 *HV*  
(  $\approx$  35 to 50 *HRC* )

Near the cutting edges: 510 to 700 *HV*  
(  $\approx$  50 to 60 *HRC* )'

( PE 05 )

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*Indian Standard*

(Reaffirmed 2016)

**SPECIFICATION FOR**

(Reaffirmed 2021)

**COMBINATION SIDE CUTTING PLIERS**

(Reaffirmed 2022)

( *Second Revision* )

**1. Scope** — Specifies the dimensions and other requirements for combination side cutting pliers.

**2. Nomenclature** — Shall be as shown in Table 1.

**3. Dimensions** — Shall be as given in Table 1.

**3.1** The pliers shall have either flat or raised surface for side cutter and the cutting angle shall be from 90° to 120°.

**4. Hardness**

Nose and body: 350 to 550 *HV* ( ≈ 36 to 52 *HRC* )

Side cutters: 550 to 750 *HV* ( ≈ 52 to 62 *HRC* )

**5. General Requirements** — The material, manufacture, workmanship and finish, preservation, packing and sampling shall conform to IS: 2615-1981 'General requirements for pliers, pincers and nippers ( *first revision* )'.

**6. Insulation** — The pliers having insulated handles shall be supplied as agreed to between the supplier and the purchaser. The insulating material shall be PVC or any other suitable material as agreed to between the supplier and the purchaser. The insulation shall cover the whole of the handle including the outer ends and may be shouldered at the head end. The insulating material shall adhere firmly to the handles and shall be such that it does not easily splinter or get damaged. The insulation shall successfully withstand the test laid down in 9.6 of IS : 2615-1981. The test voltage shall not be marked on the tool or insulation.

**7. Designation** — The combination side cutting pliers of nominal size 200 mm shall be designated as:

Combination Plier 200, IS :3650

**8. Tests** — When tested in accordance with the methods described in 9 of IS : 2615-1981, the combination side cutting pliers shall pass the following tests.

**8.1 Cutting Test for Side Cutter and Joint Cutter** — The side cutter and joint cutter of the pliers shall pass the cutting test for hard material, given in 9.1.1 of IS : 2615-1981. The side cutter shall further pass the cutting test for soft material given in 9.1.2 of IS : 2615-1981.

**8.2 Tube Gripping Test** — The pliers shall pass the tube gripping test given in 9.2 of IS : 2615-1981.

**8.3 Shock Test** — The pliers shall pass the shock test given in 9.3 of IS : 2615-1981.

**8.4 Torsion Test** — The pliers shall pass the torsion test given in 9.4 of IS : 2615-1981. The testing torque to be applied shall be as specified in Table 2.

**8.5 Handle Load Test** — The pliers shall pass the handle load test for deflection and permanent set as given in 9.5 of IS : 2615-1981. The test load, the combined deflection and the combined permanent set shall be as specified in Table 2.

Adopted 1 June 1981

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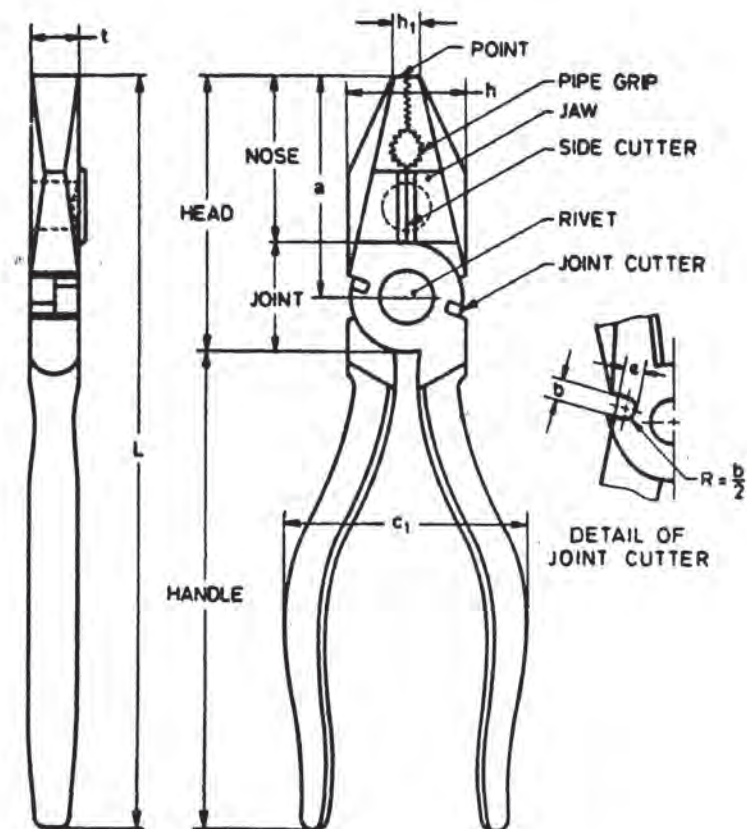
Hand Tools Sectional Committee, EDC 12; Spanners and Pliers Subcommittee, EDC 12:7 [ Ref: Doc: EDC 12 ( 31<sup>st</sup> ) ]

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TABLE 1 DIMENSIONS OF COMBINATION SIDE CUTTING PLIERS

( Clauses 2 and 3 )

All dimensions in millimetres.



Nominal Size	$\pm 10$	$a$ $\pm 5$	$b$ Min	$c_1$ $\pm 5$	$e$ Min	$h$ $\pm 3$	$h_1$ $\pm 3$	$t$ $\pm 1$
160	160	48	2.5	48	4	28	7	9.5
180	180	80	2.5	50	4	27	7.5	10.5
200	200	55	2.3	50	4	30	8	11.0
250	250	65	2.8	50	4	36	12	12.0

**Note** — The supply of combination side cutting pliers with or without joint cutter shall be optional unless otherwise agreed to between the supplier and the purchaser.

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TABLE 2 TEST REQUIREMENTS FOR COMBINATION SIDE CUTTING PLIERS  
( Clauses 8.4 and 8.5 )

Nominal Size $L$ mm	Torsion Tutting Torque $(W \times R)^*$ N.m	Handle Load Test		
		$(W \times L)^\dagger$ N.m	Combined Deflection Max mm	Combined Permanent Set, Max mm
160	9.4	94	9.60	0.76
180	11.7	117	12.50	0.76
200	13.5	135	15.24	0.76
250	15.8	158	19.00	0.76

\*See Fig. 1 of IS : 2615-1981.

†See Fig. 2 of IS : 2615-1981.

**8.6 Bend Test** — The pliers when tested by bending hard drawn 1.25 mm diameter steel wire with the help of its gripping portion shall work satisfactorily and shall not show any sign of damage, distortion or indentation on the noses on completion of the test

**8.7 Insulation Test** — The pliers with insulated handles shall pass the insulation test given In 9.6 of IS : 2615-1981.

**9. Marking** — The pliers shall be clearly and legibly stamped with the manufacturer's name, initials or recognized trade-mark. The year of manufacture, if required by the purchaser, shall also be marked.

**9.1 ISI Certification Marking** — Details available with the Indian Standards Institution.

## EXPLANATORY NOTE

This standard was first issued in 1966 and revised in 1973. The second revision of this standard has been taken up to bring it in line with the present manufacturing practices being followed in the Indian Industry.

In this revision the figure has been modified to include the nomenclature of various parts of pliers, the dimensions and tests for joint cutter have been added and a few other dimensions and corresponding tolerances have been modified.