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भारतीय मानक मसौदा

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(आई एस 3108 का तीसरा पुनरीक्षण)

Draft Indian Standard

DOUBLE ACTION PRUNING SAW — SPECIFICATION

(Third Revision of IS 3108)

ICS 65.070.40

Agricultural Machinery and Equipment
Sectional Committee, FAD 11

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FOREWORD

(Formal clause will be added later)

The Pruning Saw is one of the essential hand tools, extensively used in tea, coffee and rubber plantation for trimming those twigs and branches which are inconvenient to cut with shears, secateurs or pruning knives. It is also used in orchards and sometimes in vegetable gardens. Nowadays, double action pruning saws are available which combine forward and reverse cutting action. The double action pruning saw with special tooth form results in more efficient cutting, lesser force with higher volume removal of saw dust in each stroke.

This standard covering the requirements of pruning saw was first published 1965 and it was revised in 1982 to include certain essential dimensions. Subsequently, the standard was again revised in 1991 to incorporate the requirements of pruning saw used for pruning of branches of a tree. The current revision of this standard incorporates the following modifications:

- 1) The double action pruning saw has replaced the light and heavy duty pruning saw which were covered in earlier version of this standard as per the usage and latest manufacturing practices. The title of the standard has been modified accordingly.
- 2) Double action pruning saw has been classified into two types based on teeth.
- 3) Raw material requirements for saw blade and handle have been updated as per latest manufacturing practices.
- 4) Hardness value of the blade has also been updated.

The figures given in this standard are meant only for illustration and should not be considered as suggestive of any standard design.

In revising this standard, considerable assistance has been derived from the information provided by Agricultural Machinery Manufacturers Association, Pune, India

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, or analysis shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding of numerical values

(*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Draft Indian Standard
DOUBLE ACTION PRUNING SAW — SPECIFICATION
(*Third Revision of IS 3108*)

1 SCOPE

This standard specifies material dimensions and other requirements for double action pruning saw.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

| <i>IS No.</i> | <i>Title</i> |
|---|---|
| IS 1570 (Part 2/Sec 1) : 1979 | Schedules for wrought steels: Part 2 Carbon steels (Unalloyed Steels): Section 1 Section 1 Wrought products (other than wires) with specified chemical composition and related properties (<i>first revision</i>) |
| IS 1586 (Part 1) : 2018 / ISO 6508-1 : 2016 | Metallic materials — Rockwell hardness test: Part 1 test method (<i>fifth revision</i>) |
| IS 2507 : 1975 | Specification for cold - rolled steel strips for springs (<i>first revision</i>) |
| IS 7201 (Part 1) : 1987 | Methods of sampling of agricultural machinery and tractors: Part 1 Hand tools and hand operated/animal drawn equipment (<i>first revision</i>) |
| IS 15226: 2002 | Rigid polyvinyl chloride (PVC) compounds — Specification |
| IS 13463 : 2022 | Polyamide 6 materials for moulding and extrusion specification |
| IS 9776 : 1992 | Flexible pvc compounds — Specification (First Revision) |
| IS 1153: 2021 | Temporary corrosion preventives hard film solvent deposited — Specification (<i>third revision</i>) |

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Curved Edge — A saw blade, on which the toothed edge is concave.

3.2 Straight Edge — A saw blade, on which the toothed edge is straight.

3.3 Skew Back — A saw blade, on which the edge opposite to the toothed edge is concave.

3.4 Flat Ground — A saw blade, which is ground so as to be of the same thickness across the entire width, from the toothed edge to the back edge.

4 GRADES

The double action pruning saws shall be of the following two grades and types:

4.1 Grade 1 – Folding Handle (see Fig. 1).

- a) Type 1 – with relieving groove teeth
- b) Type 2 – without relieving groove (continuous teeth)

4.1 Grade 2 – Fixed handle (see Fig. 2).

- a) Type 1 – with relieving groove teeth
- b) Type 2 – without relieving groove (continuous teeth)

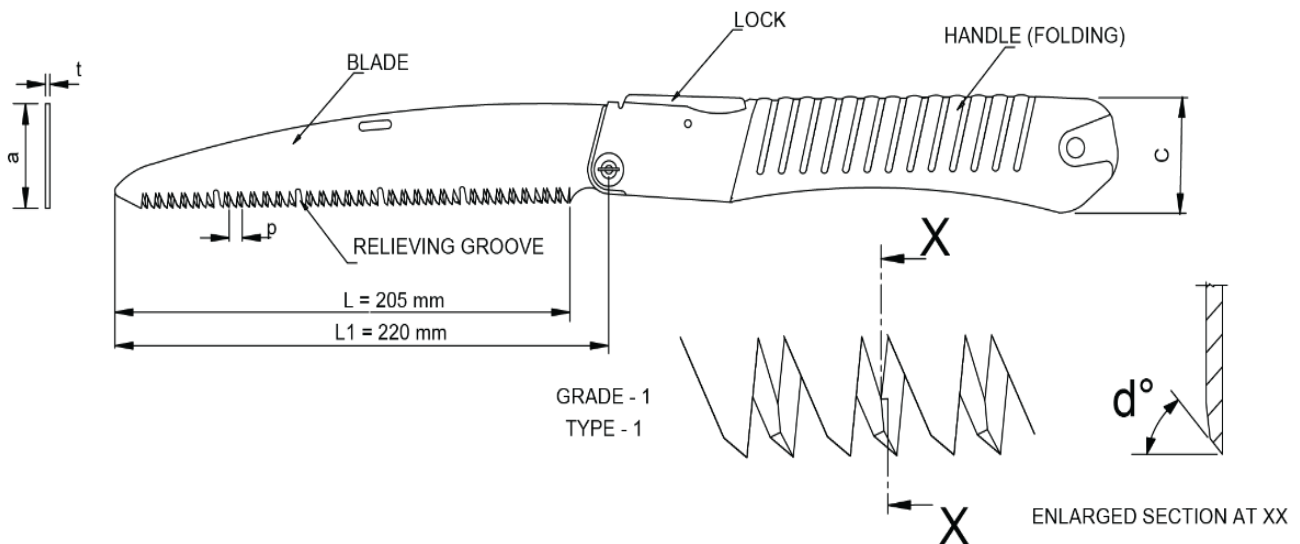


FIG. 1A TYPICAL EXAMPLE OF DOUBLE ACTION PRUNING SAW, GRADE - 1, TYPE -1
(FOLDING HANDLE)

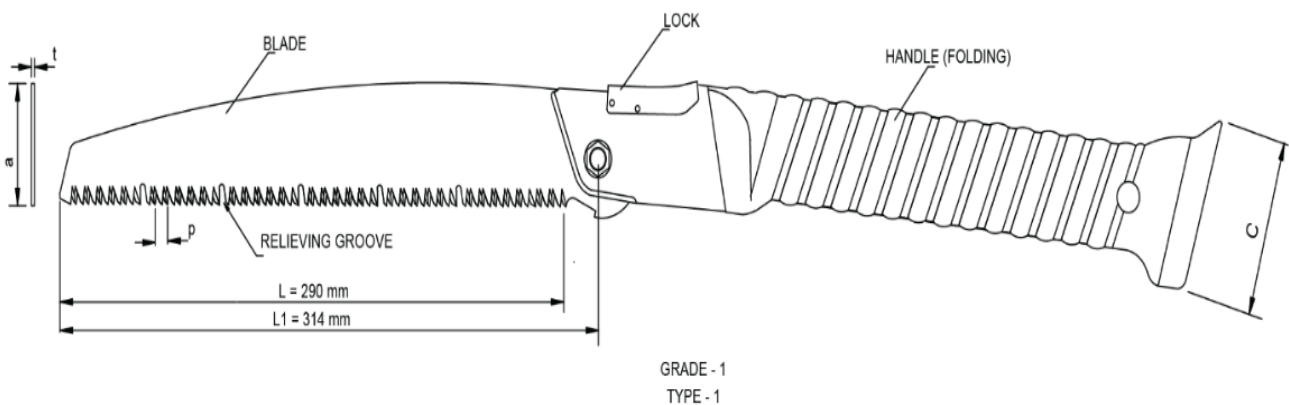


FIG. 1B TYPICAL EXAMPLE OF DOUBLE ACTION PRUNING SAW, GRADE - 1, TYPE -1
(FOLDING HANDLE)

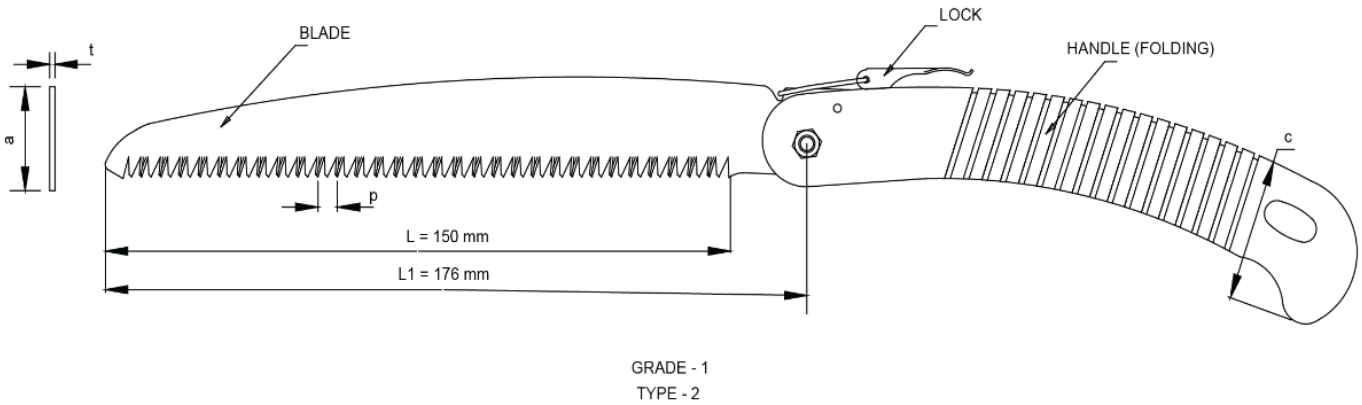


FIG. 2 TYPICAL EXAMPLE OF DOUBLE ACTION PRUNING SAW, GRADE - 1 (FOLDING HANDLE)

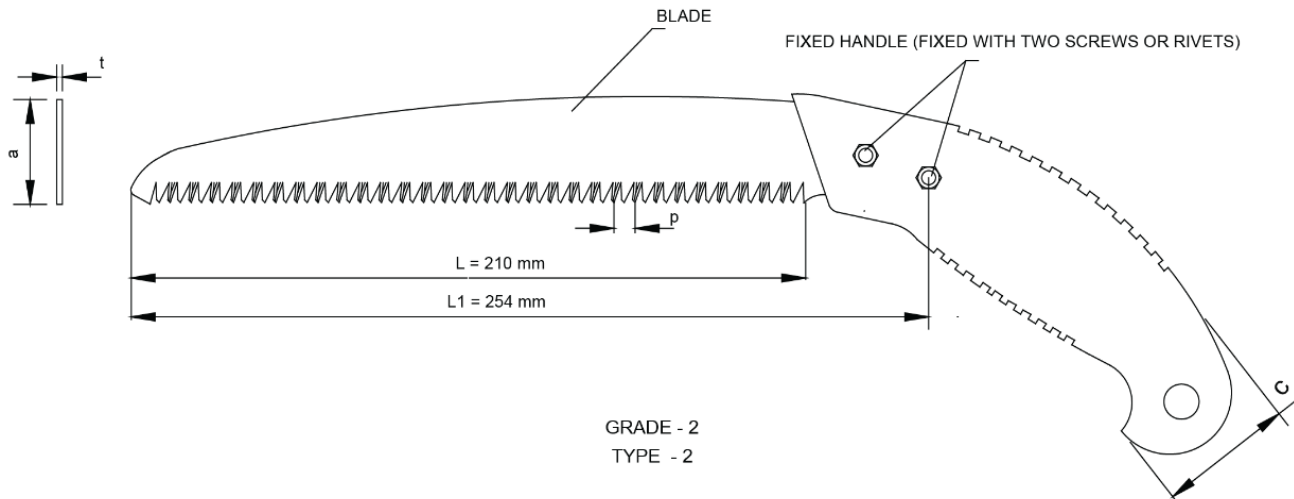


FIG. 3 TYPICAL EXAMPLE OF DOUBLE ACTION PRUNING SAW, GRADE - 2 (FIXED HANDLE)

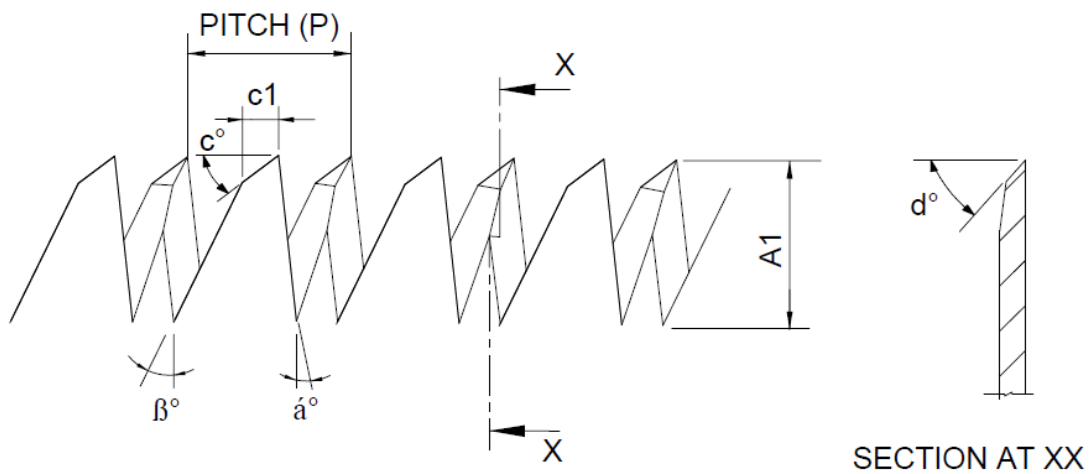


FIG. 4 DOUBLE ACTION PRUNING SAW WITH DETAIL TOOTH PROFILE.

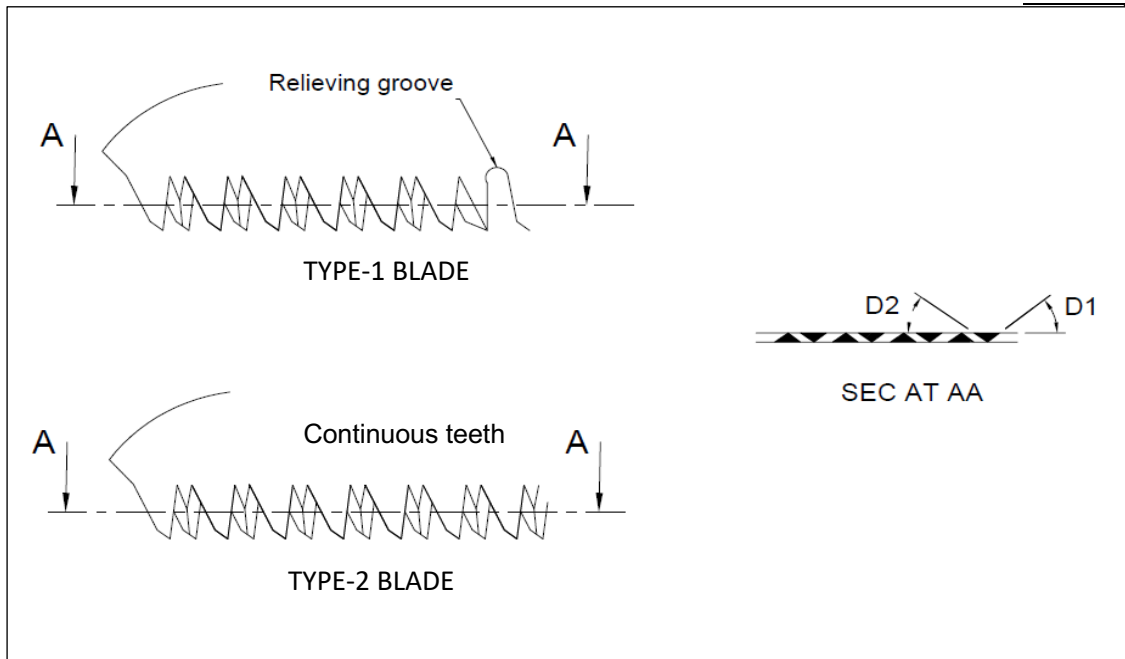


FIG. 5 TYPE-1 AND TYPE-2, DOUBLE ACTION PRUNING SAW WITH RELIEVING GROOVE AND CONTINUOUS TEETH

5 MATERIALS

5.1 Blade of Double Action Pruning Saw — For the double action pruning saw, the saw blades shall be manufactured from a suitable steel having a carbon content of not less than 0.7 percent. Suitable steels that may be used for this purpose are C70, C75, C80, C85 [see IS 1570 (Part 2/Sec 1)] or SK5 grade of steel with a maximum sulphur and phosphorus content of 0.05 percent each.

5.2 Handle — For the double action pruning saw, the saw handles shall be made of teak wood or mild steel handle with nylon/Plastic/PVC sleeve (see IS 9776) or plastic handle (see IS 15226). Suitable locking arrangement shall be provided for folding handle pruning saw.

6 HARDNESS

The saw blades shall be heat-treated to have a hardness in range of 48 to 55 HRC [see IS 1586 (Part 1)]. The hardness shall be measured anywhere on the surface, preferably as near to the sawing edge as possible.

7 DIMENSIONS

The main and critical dimensions of the double action pruning saws shall be as given in Table 1, Table 2 and Table 3. The connotations for the symbols used in the Tables are as per Figures.

Table 1 The Main Dimensions of the Double Action Pruning Saws (Grade- 1)
(All Dimensions are in mm)
(Clause 7)

| S.No. | Types | Nominal Size, L Grade-1 | Total Length of Blade, L1 Grade-1 | Width of Blade, a Grade-1 ± 3 | Width of Handle, c Grade-1 | Thickness, t Grade-1 ± 0.04 | Pitch, P | HANDLE FASTENING Grade - 1 1 screw, 1 lock pin | Referred Figures |
|-------|--------|-------------------------|-----------------------------------|-----------------------------------|----------------------------|---------------------------------|----------|--|------------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| i) | Type 1 | 205 | 220 | 36 | 38 | 1.0 | 5.0 | Yes | see Fig. 1A |
| ii) | | 290 | 314 | 44 | 48 | 1.0 | 5.0 | Yes | see Fig. 1B |
| iii) | Type 2 | 150 | 176 | 30 | 45 | 0.8 | 9.0 | Yes | see Fig. 2 |

Table 2 The Main Dimensions of the Double Action Pruning Saws (Grade- 2)
(All Dimensions are in mm)
(Clause 7)

| S.No. | Types | Nominal Size (L) Grade-2 | Total Length of Blade, L1 Grade-2 | Width of Blade, a Grade-2 ± 3 | Width of Handle, c Grade-2 | Thickness, t Grade-2 ± 0.04 | Pitch, P | HANDLE FASTENING Grade - 2 2 Screws | Referred Figures |
|-------|--------|--------------------------|-----------------------------------|-----------------------------------|----------------------------|---------------------------------|----------|-------------------------------------|------------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| i) | Type 2 | 210 | 254 | 35 | 40 | 0.8 | 9.0 | Yes | see Fig. 3 |

Table 3 Critical Dimensions for Double Action Pruning Saws
(All Dimensions are in mm)
(Clause 7)

| S. No. | Characteristics | MIN | MAX |
|--------|-----------------|-----|-----|
| (1) | (2) | (3) | (4) |
| i) | α° | 5.5 | 6.5 |
| ii) | A1 | 5 | 8 |
| iii) | β° | 15 | 16 |
| iv) | c° | 23 | 25 |
| v) | C1 | 1 | 2 |
| vi) | d° | 34 | -- |
| vii) | P | 5 | 9 |
| viii) | D1 | 45 | -- |
| ix) | D2 | 45 | -- |

8 OTHER REQUIREMENTS

8.1 The saw shall be stamped and annealed before cutting the teeth.

8.2 The teeth shall be alternatively set on either side of the blade.

8.3 The handle shall be centrally slit. The width of slot shall not be greater than necessary to receive the blade tang.

8.4 The steel handle is fixed with the blade using one screw or rivet and locking pin in case of folding handle pruning saw. In case of fixed handle pruning saw, the steel handle is fixed with the blade using two screws or rivets. Riveting is not required for PVC handle.

8.5 A blade cover made of rexin, canvass or plastics should be provided for safe handling of saw.

8.6 Teeth Grinding

Teeth profile should be ground on a suitable grinding machine with the help of special fixture or through some indigenously made special purpose machine.

8.6.1 Type-1, double action saw with relieving groove shall be formed by grinding as per Table 1 and Fig. 5.

8.6.2 Type-2, double action saw with continuous teeth shall be formed by grinding as per Table 2 and Fig. 5.

8.7 **Designation** — The saws shall be designated by

- a) commonly used name;
- b) grade and type; and
- c) nominal size.

Example: Grade 1, type-1 of double action saw of nominal size 200 mm shall be designated as:
Double action saw: DA – S1/10 - 200

9 TESTS

9.1 Cutting Test/Performance Test

9.1.1 The cutting edge of the pruning saw shall be tested by sawing 600 branches of 25 mm diameter or near about diameter of green wood. Upon completion of the test the saw teeth shall not show any sign of damage.

9.1.2 Each saw, when properly sharpened and set, should make clean and effortless cuts without bending when tested on well-seasoned Indian oak or an appropriate hardwood substitute. This applies to both cutting along and across the grain.

9.2 **Bend Test** — The entire length of the blade shall be made to lie on the periphery of a 150 mm radius segment and kept for one minute. The blade shall not show any sign of damage during test or take any permanent set when released.

9.3 **Straightness Test** —When checked with the aid of a straight edge, or any angle protector, blade shall be visually straight and free from twist.

10 WORKMANSHIP AND FINISH

10.1 The blade shall be ground flat.

10.2 The tooth edge shall be flat.

10.4 The components shall be free from cracks, pits splits and other visual defects.

10.5 The handle shall be finished smooth. It shall be suitably gripped tight to prevent slippage in operation.

10.6 The blade shall be smeared all over with a mineral jelly or with any other rust preventive paint (*see* IS 1153). The wooden handle may be varnished.

11 MARKING AND PACKING

11.1 Marking

The saw shall be marked clearly with the following information on its blade/handle:

- a) Manufacturer's name or recognized trademark, if any;
- b) Grade and type;
- c) Nominal size; and
- d) Batch or code number.

11.2 Packing

Because of highly sharp edges the exposed metallic parts shall be packed with proper thick paper or plastic sheet, such as blister type or pouch type of packing to prevent any accidental damage of the product or injury to any human being.

11.4 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

12 SAMPLING FOR LOT ACCEPTANCE

Unless otherwise agreed to between the purchaser and the supplier the sampling criteria for conformity of pruning saw shall be done in accordance as per IS 7201 (Part 1).