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भारतीय मानक मसौदा

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(आइ एस 10684 का पहला पुनरीक्षण)

Draft Indian Standard

TREE PRUNER — SPECIFICATION

(First Revision of IS 10684)

ICS 65.060.70

Agricultural Machinery and Equipment
Sectional Committee, FAD 11

Last date for Comments: **16 April 2024**

FOREWORD

(Formal clause will be added later)

A tree pruner is a hand tool used for removing unwanted branches/twigs of the tree for giving proper framework and aeration to the tree. Tree pruner can be used to remove the unwanted branches/twigs more conveniently with less effort and saving time. Nowadays long reach tree pruner is used to cut branches which are beyond the reach of human hand and is thus a more powerful tool for the modern gardener. The long reach tree pruner is fixed on the top of a bracket which is fixed with lightweight aluminium or fibre glass pipe, and the blade is actuated by a nylon strip/rope which returns to the original position with the help of tension spring. Height can be extended through telescopic pipe (optional) which is used for cutting of green limbs from far away branches of tree without using ladder. It can cut the branches at different angles also.

This standard was first published in 1983. The first revision of the standard incorporates the following changes:

- a) Types of tree pruner are briefly explained with the help of graphical representation and dimensional figures for guidance of users.
- b) Details of long reach tree pruner has been added.
- c) Hardness, size and dimensions of tree pruner has been modified as per current manufacturing practices.
- d) Raw material requirements of the tree pruner have been updated as per the current manufacturing practices.

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

In revision of this standard, considerable assistance has been derived from the technical 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 off 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
TREE PRUNER — SPECIFICATION
(First Revision)

1 SCOPE

1.1 This standard specifies material, dimensional and other requirements for tree pruner.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

<i>IS No.</i>	<i>Title</i>
IS 1285 : 2002	Wrought aluminium and aluminium alloys – Extruded round tube and hollow sections for general engineering purposes — Specification (<i>third revision</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 2062 : 2011	Hot rolled medium and high tensile structural steel — Specification (<i>seventh revision</i>)
IS 4454 (Part 1) : 2001	Steel wire for mechanical springs — Specification: Part 1 Cold drawn unalloyed steel wire (<i>third revision</i>)
IS 7201 (Part 1) : 1987	Methods of sampling for agricultural machinery and equipment: Part 1 Hand-tools and hand-operated / animal drawn equipment (<i>first revision</i>)
IS 13463 : 1992	Polyamide (Nylon 6) materials for moulding and extrusion — Specification
IS 6911 : 2017	Stainless steel plate, sheet and strip — Specification (<i>second revision</i>)

3 TYPES

3.1 Tree Pruner — A simple gardening equipment used by gardner/farmer to cut unwanted branches/twigs which are in reach of the human hand. The various parts of the tree pruner are given in Fig. 1 to Fig. 7.

3.2 Long Reach Tree Pruner — A tree pruner used to cut branches/twigs which are beyond the reach of human hand. The various parts of the long reach tree pruner are given in Fig. 8 and Fig. 9.

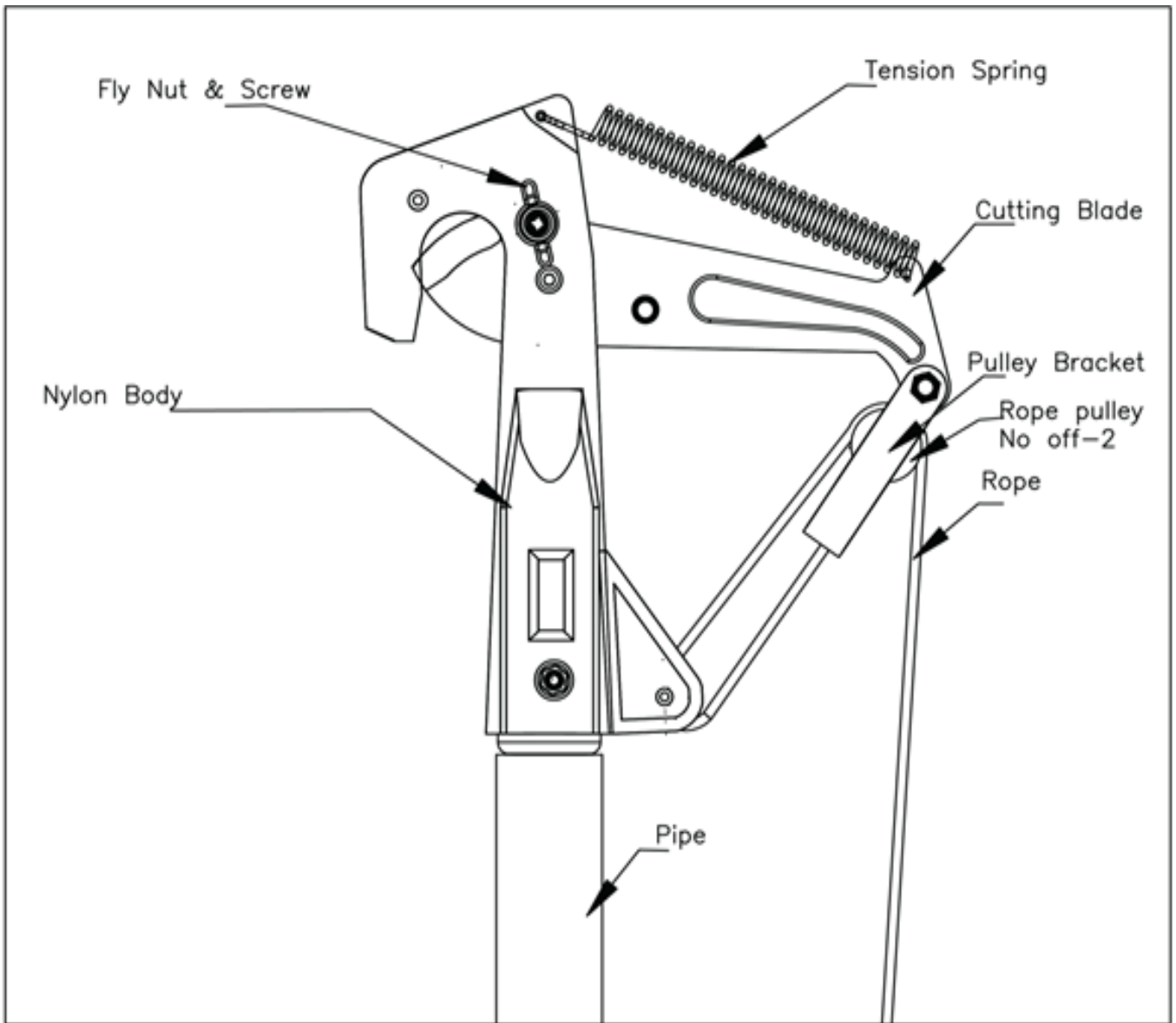


FIG. 1 TYPICAL EXAMPLE OF TREE PRUNER ASSEMBLY

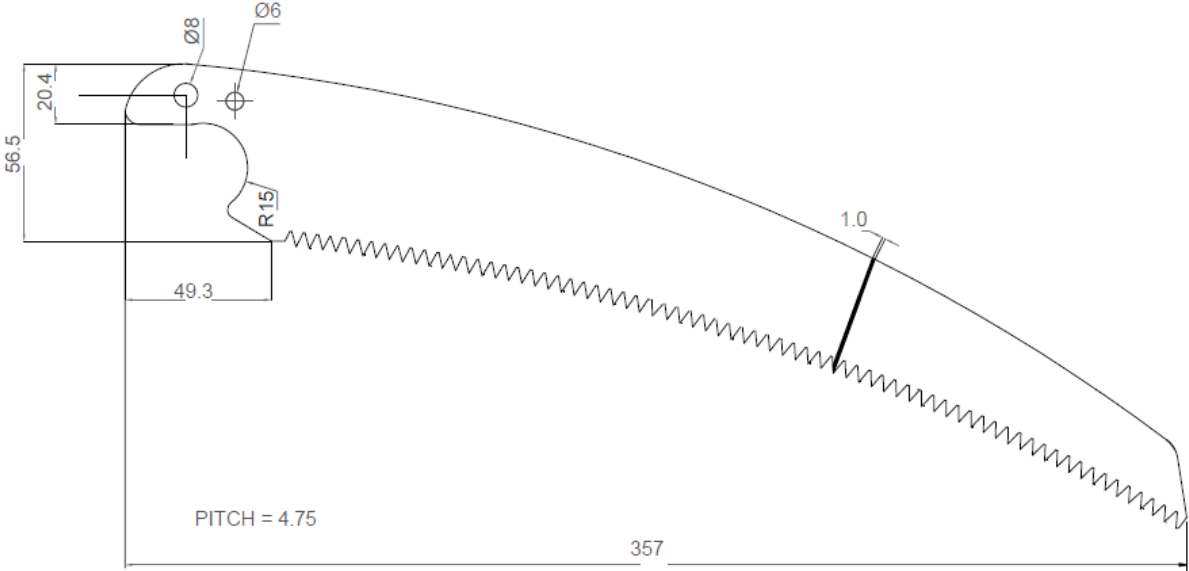


FIG. 2 TYPICAL DIMENSIONS OF CUTTING SAW FOR TREE PRUNER
(All dimensions are in mm unless stated otherwise)

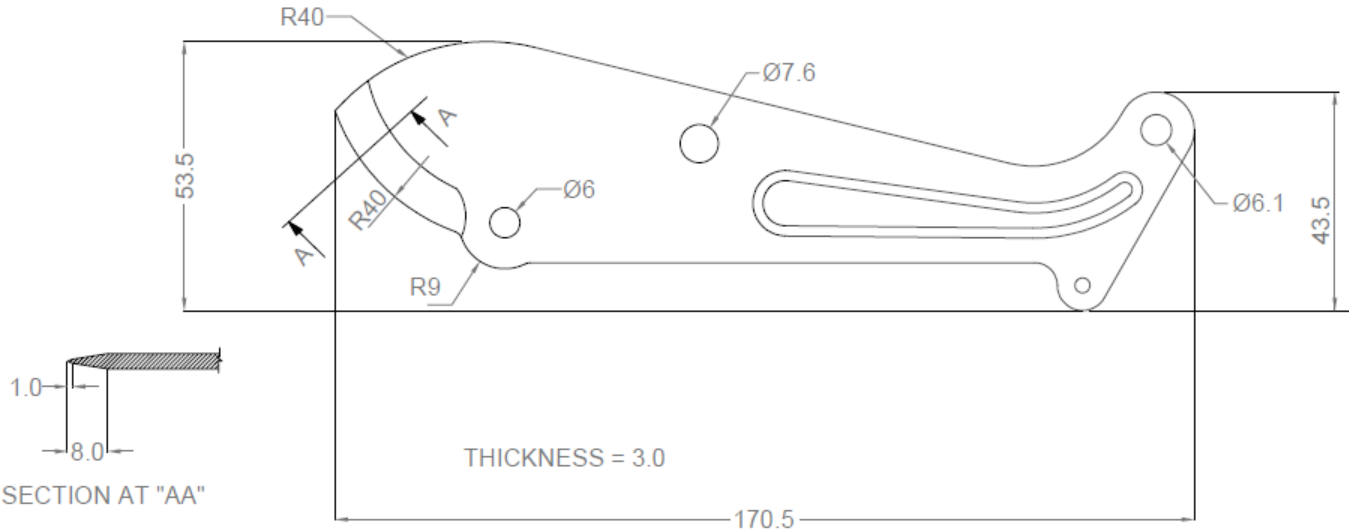


FIG. 3 TYPICAL DIMENSIONS OF CUTTING BLADE FOR TREE PRUNER
(All dimensions are in mm unless stated otherwise)

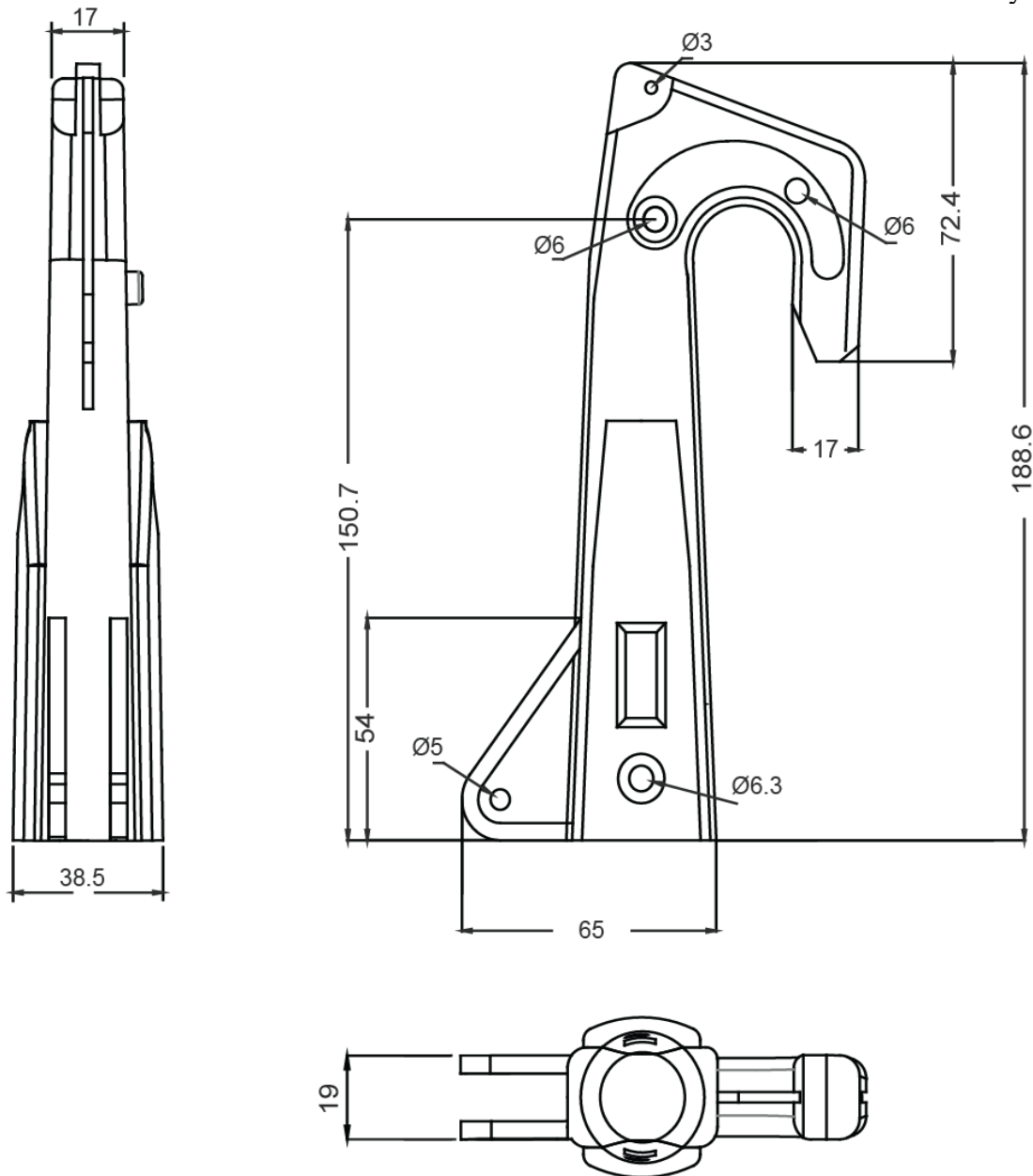


FIG. 4 TYPICAL DIMENSIONS OF BODY OF TREE PRUNER
(All dimensions are in mm unless stated otherwise)

4 MATERIALS

4.1 Blade – The blade of the tree pruner shall be manufactured from carbon steel[see IS 1570 (Part 2/Sec 1)] or stainless steel (see IS 6911).

4.1.1 The chemical composition of the carbon steel shall be as follows:

- | | | |
|---------------|---|------------------------|
| a) Carbon | — | 0.7 to 0.9 percent; |
| b) Silicon | — | 0.1 to 0.4 percent; |
| c) Manganese | — | 0.5 to 1.0 percent; |
| d) Sulphur | — | 0.05 percent, Max; and |
| e) Phosphorus | — | 0.05 percent; Max. |

4.1.1.1 Some of the examples of carbon steels that may be used are C70, C80 and C85 [see IS 1570 (Part 2/Sec 1)].

4.1.2 The chemical composition of stainless steel (see IS 6911) as:

- a) Carbon — 0.26 to 0.4 percent;
- b) Silicon — 1.0 percent, Max
- c) Manganese — 0.6 to 1.0 percent;
- d) Sulphur — 0.03 percent, Max;
- e) Phosphorus — 0.03 percent; Max; and
- f) Chromium — 12 to 14 percent.

4.2 Body Links — For body links mild steel (see IS 2062) should be used

4.3 Main Body — The following material shall be used for body:

- a) Nylon 6 (see IS 13463), or
- b) Teak wood body with steel bracket.

4.4 Spring - Spring steel wire [see IS 4454 (Part 1)] should be used.

4.5 Pipe – Pipe shall be made of aluminium alloy (see IS 1285) or light weight fibre glass.

4.6 Cutting Saw — The saw 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)]. It should be hardened and tempered.

4.6 Rope – It shall be made of nylon (see IS 13643).

5 HARDNESS

5.1 The blade shall be heat-treated to have a hardness in range of 48 to 55 HRC [see IS 1586 (Part 1)].

6 SIZE

6.1 The size (total length) shall be declared by the manufacturer. The size shall not differ by more than ± 15 mm from the declared value.

6.2 Sizes of various types of tree pruners for guidance of the user have been provided in Table 1.

Table 1 Sizes of Various Types of Tree Pruners
(Clause 6.2)

S.No.	Type	Length (mm)	
i)	Length (L1) of wooden body tree pruner without saw and handle, without top of the blade	445	see Fig. 6A
ii)	Length (L2) of wooden body tree pruner with saw, without handle	780	see Fig. 6B

iii)	Length (L3) of wooden body tree pruner without saw and handle, with top of the blade	530	see Fig. 6A
iv)	Length (L) of wooden body tree pruner with saw	2760 to 2810	see Fig. 6C
v)	Length (L) of wooden body tree pruner without saw	2425 to 2475	-
vi)	Length (L) of plastic body tree pruner with saw	2530 to 2580	see Fig. 5A
vii)	Length (L) of plastic body tree pruner without saw	2200 to 2250	see Fig. 5B
NOTE — The tolerance on various dimensions, unless specified otherwise, shall be ± 3 mm.			

7 DIMENSIONS

7.1 The dimensions of various components such as body, cutting saw and blade are given in given in Fig. 2, Fig. 3 and Fig. 4 for guidance of users. The tolerance on various dimensions, unless specified otherwise, shall be ± 5 percent.

7.2 Dimensions of aluminium and fibre glass handle (see Fig. 6C and Fig. 7) which is attached to tree pruners are given in Table 2:

Table 2 Dimension for Aluminium and Fibre Glass Handle
(Clause 7.2)

S.No.	Handle Type	Length (mm)	Diameter (mm)
(1)	(2)	(3)	(4)
i)	Aluminium pipe	2000 to 2050	25 to 30
ii)	Fibre Glass pipe	2000 to 2050	26.5 to 32

7.3 The diameter of wire for tension spring shall be minimum 1.4 mm for plastic body and 1.75 mm for wooden body. The spring shall have 25 and 27 coils respectively.

7.4 Details of long reach tree pruner are given in Fig. 8.

7.5 There shall be an operating nylon strip of 1.0 mm thick, 6.0 mm wide and of length as required for long reach tree pruner as shown in Fig. 8 and Fig 9. The tolerance on various dimensions, unless specified otherwise, shall be ± 3 percent.

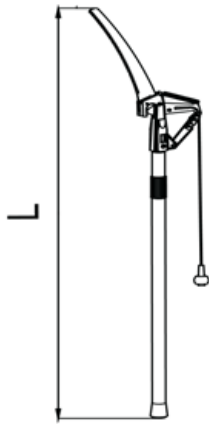


FIG. 5A TREE PRUNER (Plastic body)
WITH CUTTING SAW

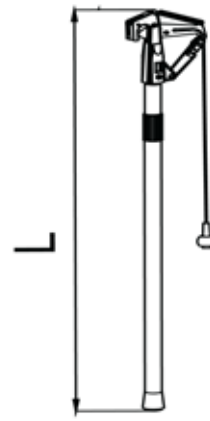


FIG. 5B TREE PRUNER (Plastic Body)
WITHOUT CUTTING SAW

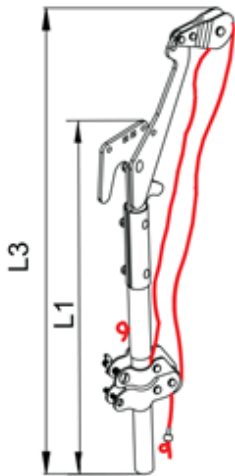


FIG. 6A TREE PRUNER (WOODEN
BODY) WITHOUT CUTTING SAW

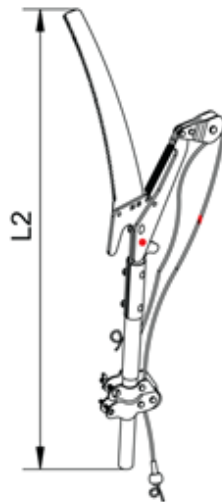


FIG. 6B TREE PRUNER
(WOODEN BODY) WITH
CUTTING SAW

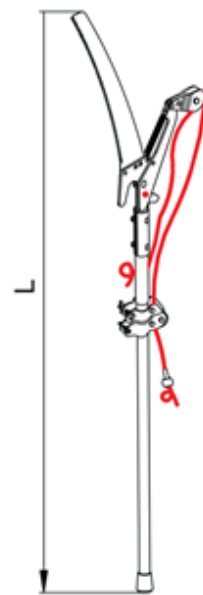


FIG. 6C TREE PRUNER (WOODEN BODY)
WITH CUTTING SAW ATTACHED WITH
ALUMINIUM/FIBRE GLASS HANDLE

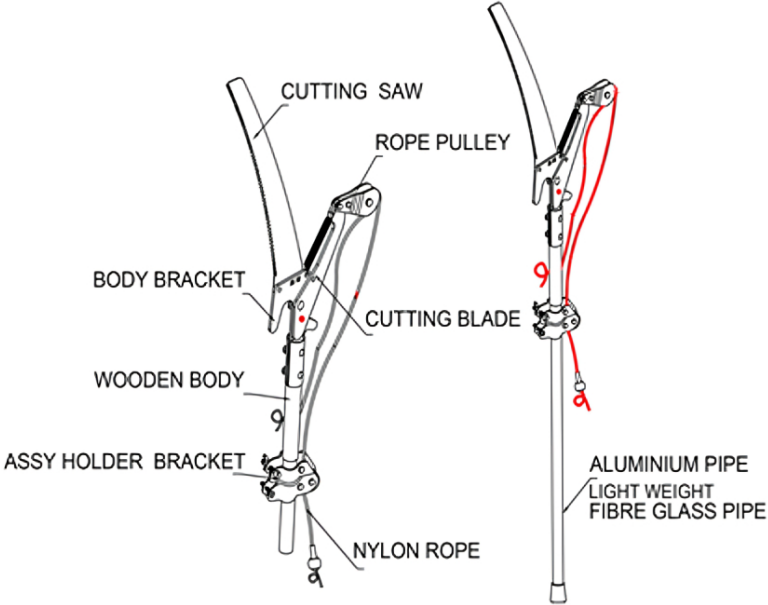


FIG. 7 A COMPLETE TREE PRUNER (WOODEN BODY) ATTACHED WITH OPTIONAL ALUMINIUM OR LIGHT WEIGHT FIBRE GLASS HANDLE

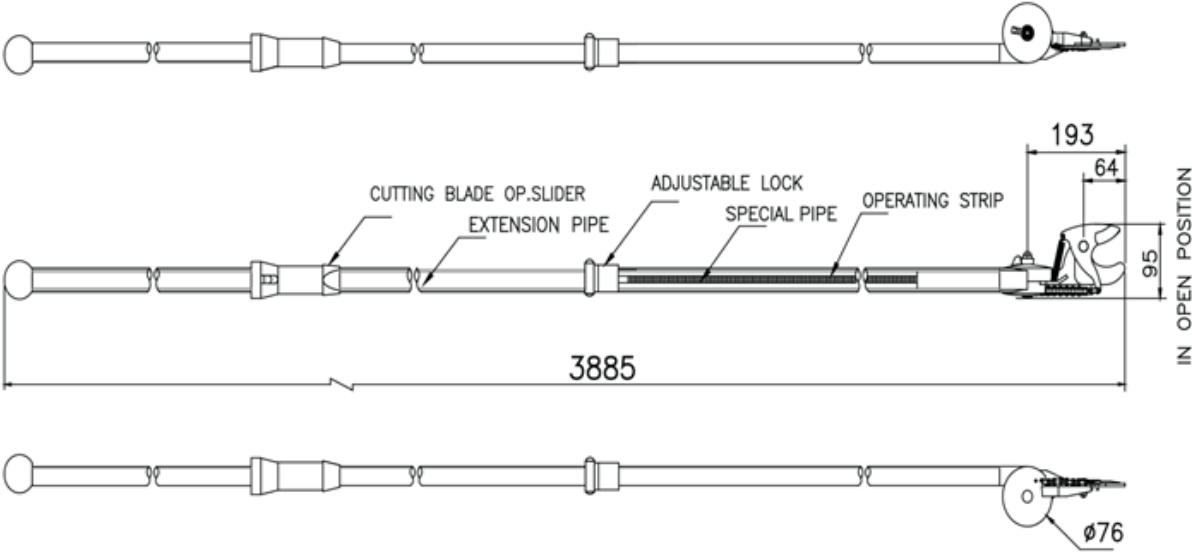


FIG. 8 TYPICAL EXAMPLE OF LONG REACH TREE PRUNER ATTACHED WITH TELESCOPIC ALUMINIUM OR LIGHT WEIGHT FIBRE GLASS PIPE
(All dimensions are in mm unless stated otherwise)

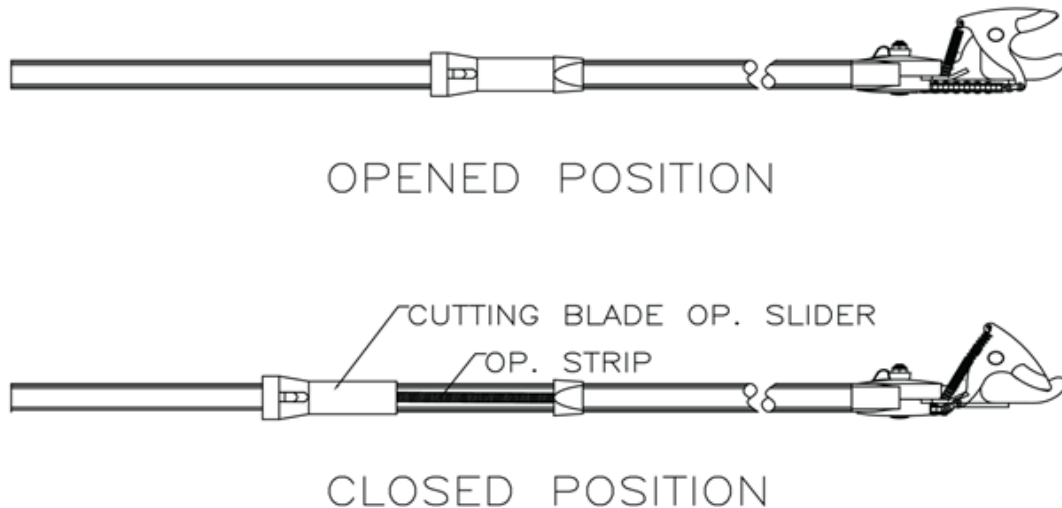


FIG. 9 TYPICAL EXAMPLE OF LONG REACH TREE PRUNER WITH CLOSED AND OPEN POSITION OF CUTTING BLADE

8 OTHER REQUIREMENTS

8.1 The blade of the pruner shall be made of sheet metal which shall be hardened and tempered. The edges are sufficiently sharpened by suitable grinding operation.

8.2 The blade shall be fitted in the body so that it can freely move when pulled with rope. The blade shall come back inside the body by the spring action.

8.3 In the closed position the cutting edge of the blade shall remain inside the body and shall not protrude.

8.4 A circular ring shall be provided for tying the rope with the pruner.

8.5 A hole shall be provided for proper fixing up of the handle with the socket of the body.

8.6 Apart from cutting blade a powerful hardened and tempered cutting saw shall be provided optionally as per requirement of the customer to cut higher diameter of branches easily and effectively.

8.7 Long reach tree pruner is a new kind of pruner that cuts the branches easily and effortlessly. It can be extended optionally as per requirement of the customer up to 4 m. Fig. 6 shows the closed and open position of cutting blade.

8.8 Cutting capacity of the pruner should be to cut branches of diameter 10 to 22 mm.

9 TESTS

9.1 The pruner shall be tested by cutting not less than 20 samples of grafts, not exceeding 15 mm in diameter of citrus, guava, mango or apple suitably prepared in green condition. The cut on the bark shall be clean.

9.2 The pruner with saw attachment shall be tested by cutting not less than 6 samples of hardwood, not exceeding 25 mm in diameter.

10 WORKMANSHIP AND FINISH

10.1 The cutting surface of the blade shall be ground in a direction, preferably, at right angle to the cutting edge. The blade shall be puffed to give a fine finish. The cutting edge shall be sharp enough for immediate use. All the sharp edges, except the cutting edge shall be rounded.

10.2 The blade shall be free from cracks, seams, pits, burrs and other visual defects.

11 MARKING AND PACKING

11.1 Marking – Each tree pruner shall be marked with the following particulars:

- a) Manufacturer's name or recognized trademark, if any;
- b) Size ;
- c) Batch or code number; and
- d) Any other markings required under the *Legal Metrology (Packaged Commodities) Rules, 2011* and any other statutory requirement.

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.

11.3 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

12.1 Unless otherwise agreed to between the purchaser and the supplier, sampling of the pruner for lot acceptance shall be as per IS 7201 (Part 1).