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Indian Standard

वानिकी उपकरण — पारिभाषिक शब्दावली

(पहला पुनरीक्षण)

Forestry Equipment — Glossary of Terms

(First Revision)

ICS 01.040.65

भारतीय मानक ब्यूरो
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Agricultural Machinery and Equipment Sectional Committee, FAD 11

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Agricultural Machinery and Equipment Sectional Committee had been approved by the Food and Agriculture Division Council.

With the increasing emphasis on forestry, a large number of forestry equipment are being manufactured and used in the country. A need was, therefore, felt for a glossary which would provide authentic definition of various terms associated with these equipment. It is hoped that this standard would fulfil this need.

This standard was published in 1986 deriving assistance from the following ISO standards:

ISO 6531 : 1982 Machinery for forestry — Portable chain saws — Vocabulary

ISO 6814 : 1983 Machinery for forestry — Mobile and self-propelled machinery — Identification vocabulary

ISO 7112 : 1982 Machinery for forestry — Portable brush saws — Vocabulary

The above ISO standards were later revised in 2017, 2009 and 2018 respectively as:

ISO 6531 : 2017 Machinery for forestry — Portable chain-saws — Vocabulary

ISO 6814 : 2009 Machinery for forestry — Mobile and self-propelled machinery — Terms, definitions and classification

ISO 7112 : 2018 Machinery for forestry — Portable brush-cutters and grass-trimmers — Vocabulary

The revision of this standard has been undertaken to align it with the latest ISO standards. The current revision of this standard incorporates the following modifications:

a) New terminologies for recoil starter, electric starter, nose sprocket, drive sprocket and brush saw have been added based on the latest ISO editions;

b) Definition for chipping, felling, stacking, kick back, debarker, yarder, chain oil flow adjuster, spark arrester, chain brake have been updated and definition of nose guard has been replaced with bar tip guard; and

c) The figures corresponding to different forestry operations have been updated.

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

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

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.

Indian Standard

FORESTRY EQUIPMENT — GLOSSARY OF TERMS

(First Revision)

1 SCOPE

This standard covers terms and the definitions used in relation to forestry equipment.

2 TERMINOLOGIES RELATED TO FUNCTIONS

The primary functions of the forestry equipment are defined in 2.1 to 2.26.

2.1 Bucking/Cross Cutting/Slashing — Cross cutting felled or uprooted trees or parts of trees, into lengths (*see also* Fig. 1).

2.2 Bunching — Gathering and arranging trees or parts of trees in bunches to facilitate loading and transportation.

2.3 Chipping — Converting logs or billets into small pieces for further processing or breaking down/slicing trees into small pieces of specified dimensions.

2.4 Clearing — Removing unwanted logging residues, shrubs, trees and stumps.

2.5 Conversion — Transformation of natural timber into any kind of product.

2.6 Debarking — Removing bark from trees or parts of trees (*see* Fig. 2).

2.7 Debranching/Delimbing — Removing branches from trees or parts of trees (*see* Fig. 3).

2.8 Dragging/Skidding — Moving trees or parts of trees from one place to other by dragging them.

2.9 Felling — Separation of a standing tree from its root system.

2.10 Forwarding — Moving trees or parts of trees out of the forest by carrying them.

2.11 Loading — Picking up trees or parts of trees from the ground or from a vehicle and transferring them to and piling them on another vehicle.

2.12 Logging — Operation comprising felling of trees, limbing, bucking and transportation of the resulting product out of the forest.

2.13 Lopping — Cutting of branches from a standing tree.

2.14 Mulching — Applying a layer of organic matter on the surface of the soil.

2.15 Planting — Putting small trees or seedlings into the ground at their growing positions.

2.16 Ploughing — A primary tillage operation which is performed to cut, break and invert the soil partially or completely.

2.17 Pollarding/Topping — Cutting off the top of a tree at a predetermined height.

2.18 Pruning — Removing of live or dead branches or multiple leaders from standing trees for the improvement of the tree.

2.19 Scarifying — Preparing a site for regeneration by scarring the ground surface to penetrate the covering material and expose the soil underneath.

2.20 Sliding — Downward transportation of timber along a predetermined path.

2.21 Sorting — Collecting similar items (for example, pieces of timber after bucking).

2.22 Splitting — Dividing trees or parts of trees longitudinally into pieces (*see* Fig. 4).

2.23 Stacking/Piling — Piling of timber in specified sizes or depositing trees or parts of trees in orderly piles.

2.24 Stump Lowering — Reducing the height of stumps.

2.25 Uprooting — Removing trees with the root systems from the ground.

2.26 Yarding — The operation of initial haul to a collecting point.

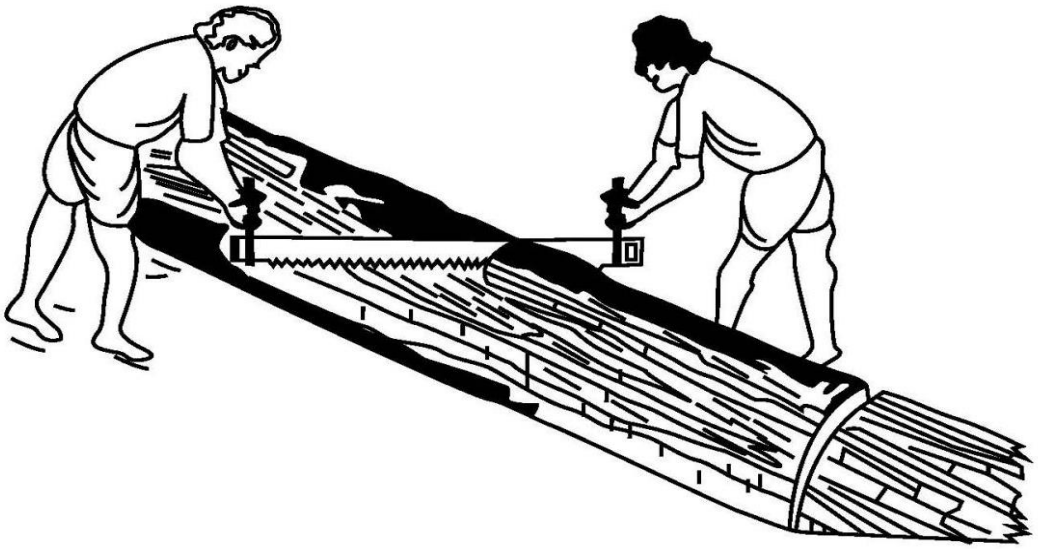

FIG. 1 BUCKING

FIG. 2 DEBARKING

FIG. 3 DELIMBING

FIG. 4 SPLITTING

3 TERMINOLOGIES RELATING TO MACHINE TYPES

3.1 Single Function Machines

3.1.1 *Skidder* — Self-propelled machine designed to transport trees or parts of trees by dragging.

3.1.1.1 *Cable skidder* — Skidder that uses winch cable(s) (rope) (usually with chokers) to assemble and hold its load.

3.1.1.2 *Grapple skidder* — Skidder that uses a suspended grapple or bottom opening jaws to assemble and hold its load.

3.1.1.3 *Clam bunk skidder* — Skidder that uses an integrally mounted loader to assemble the load into an inverted grapple or top-opening jaws to hold its load.

3.1.2 *Forwarder* — Self-propelled machine, usually self-loading, designed to move trees or parts of trees by carrying them completely off the ground.

Normally forwarders are used for off-road transportation.

3.1.3 *Feller* — Self-propelled machine designed to fell standing trees.

3.1.4 *Log Loader* — Self-propelled machine, with grapple and supporting structure designed to pick up and discharge trees or parts of trees for the purpose of piling or loading.

3.1.5 *Debarker* — Machine designed to remove bark or parts of trees.

3.1.6 *Delimber* — Machine designed to remove branches from trees.

3.1.7 *Chipper* — Machine designed to chip trees or parts of trees.

3.1.8 *Slasher* — Machine designed to cross cut felled trees to predetermined lengths.

3.1.9 *Yarder* — Cable yarder-machine designed to provide the power to transport trees or parts of trees by means of a cable system, usually with the use of a tower that may be integral to the machine or a separate structure.

3.2 Multi-Function Machines

3.2.1 *Processor* — A multi-function machine which does not fell trees but performs two or more subsequent functions.

3.2.2 *Harvester* — A self-propelled multi-function machine which combines felling with other processing functions.

3.2.3 *Feller-Buncher* — Self-propelled machine designed to fell standing trees and arrange them in bunches on the ground.

3.2.4 *Feller-Skidder* — Self-propelled machine designed to fell standing trees and transport them by dragging.

3.2.5 *Feller-Forwarder* — Self-propelled, self-loading machine designed to fell standing trees and move the felled trees by carrying them.

4 TERMINOLOGIES RELATING TO PORTABLE CHAIN SAW

4.1 Work Operations

4.1.1 *Chain Saw Position* — The work position of chain saw is shown in Fig. 5.

4.1.2 *Boring* — The process of cutting with the saw chain at the nose (tip) of the guide bar in order to make a hole. This is also known as straight-in-cut (*see* Fig. 6A and Fig. 6B).

4.1.3 *Kick-Back* — Rapid upward and backward motion of the saw which can occur when the moving saw-chain near the upper portion of the tip of the guide bar contacts an object such as a log or branch.

4.2 Control System

4.2.1 *Carburettor Setting*

4.2.1.1 *Idle speed adjuster* — Device, normally a screw, acting on the throttle, for adjusting the idle speed.

4.2.1.2 *Low speed mixer adjuster* — Device, normally a screw, for adjusting the fuel delivery at idling speed.

4.2.1.3 *High speed mixer adjuster* — Device, normally a screw, for adjusting the fuel delivery at full throttle.

4.2.2 *Chain Tension Adjuster* — Device acting on the guide bar for adjusting the chain tension.

4.2.3 *Choke* — Device for enriching the fuel air mixture in the carburettor, to aid starting.

4.2.4 *Decompression Valve* — Device for lowering the compression in the cylinder, to aid starting.

4.2.5 *Manual Oiler* — Manually operated pump delivering oil to the chain.

4.2.6 *Chain Oil Flow Adjuster* — Device for adjusting the delivery of chain oil from the chain oil pump to the guide bar.

4.2.7 *Ignition Switch* — Device for connecting and disconnecting the ignition system and thus allowing the engine to be started or stopped.

4.2.7.1 *On-off switch* — Device for connecting and disconnecting the electric current and thus allowing the motor to be started or stopped.

4.2.8 *Primer* — Device for supplying extra fuel to aid starting.

4.2.9 *Throttle Lock* — Device for temporarily setting the throttle in a partially open position, to aid starting.

4.2.10 *Throttle Trigger*[1)]*/Trigger*[2)] — Device, usually a lever activated by the operator's hand or finger, for controlling the engine speed.

4.2.11 *Recoil Starter* — Device for starting the engine by pulling a rewind rope which automatically rewinds when released.

4.2.12 *Electric Starter* — Device that rotates the engine crank shaft using external power, such as battery or mains, for starting.

4.3 Handles

4.3.1 *Front Handle* — Support handle located at or towards the front of the engine housing.

4.3.2 *Rear Handle* — Support handle located at or towards the rear of the engine housing.

4.3.3 *Wrap Round Handle* — Special type of front handle allowing the saw to be used also in the right-hand side up (RSU) position (*see* Fig. 5G).

4.4 Safety Devices

4.4.1 *Chain Brake* — Device for stopping or locking the saw-chain, activated manually or released automatically when kick back occurs.

4.4.2 *Front Hand Guard* — Guard between the front handle and the chain for protecting the hand from injuries and aiding in control of the saw if the hand slips off the handle. This guard is often used to activate the chain brake.

4.4.3 *Bar Tip Guard* — Shield that prevents contact with the saw-chain at the tip of the guide bar, which may be removable and replaceable, for reducing the incidence of rotational kickback.

4.4.4 *Chain Catcher* — Device for restraining the chain if it breaks or comes off the guide bar.

4.4.5 *Clutch Cover* — Protective cover on the clutch and the sprocket.

4.4.6 *Rear Hand Guard* — Extension on the lower part of the rear handle for protecting the hand from the chain if it breaks or comes off the guide bar.

4.4.7 *Throttle Trigger Lockout or Safety Trigger* — Device that prevents the accidental operation of the throttle trigger until manually released or without intentional manual intervention.

4.4.8 *Heated Handle* — Handle equipped with a device which allows it to be heated, for example, by exhaust gases or electricity.

4.4.9 *Guide Bar Cover* — Removable device for covering the guide bar and chain when the saw is not being used.

4.5 Cutting Equipment

4.5.1 *Chain Guides* — Plates or guides, fitted on one or both sides of the guide bar where the chain enters the groove, for assisting in guiding the chain between the sprocket and the guide bar.

4.5.2 *Saw-Chain* — Chain serving as a cutting tool, usually consisting of drive links, cutters and side links, held together by rivets.

4.5.3 *Chain Pitch* — The arithmetic mean of the two distances between three adjacent rivets.

4.5.4 *Guide Bar* — The part that supports and guides the saw chain.

4.5.5 *Usable Cutting Length*

4.5.5.1 *On saws with removable or without spiked bumpers* — The distance from the foremost edge of the machine housing along the guide bar axis to the outside edge of the cutting link, with the chain adjuster set at mid-position (*see* Fig. 7A).

[1)] Applicable to IC engine saws.
[2)] Applicable to electric engine saws.

4.5.5.2 *On saws with permanently fixed spiked bumper* — The distance from the root (base) of the spiked bumper along the guide bar axis to the outside edge of the cutting link, with the chain adjuster set at mid position (*see* Fig. 7B).

4.5.6 *Rim Sprocket* — Chain drive wheel with teeth, with rims on which the side and cutter links run.

4.5.7 *Spur Sprocket* — Chain drive wheel with teeth in which the drive links run and the side and cutter links are supported.

4.5.8 *Nose Sprocket* — Rotating part at the tip of the guide bar which supports the saw-chain around the tip.

4.5.9 *Drive Sprocket* — Part that transmits rotational motion from the chain-saw power source to the saw-chain.

4.6 Miscellaneous Terms

4.6.1 *Clutch* — Device for engaging and disengaging a driven member to and from a rotating source of power.

4.6.2 *Felling Sights* — Marks on the chain saw to aid felling a tree in-a desired direction.

4.6.3 *Muffler or Silencer* — Device for reducing engine exhaust noise and directing the exhaust gases.

4.6.4 *Spark Arrester* — Device through which the exhaust gases pass, intended to stop smouldering/burning particles.

4.6.5 *Spiked Bumper* — Device, fitted in front of the guide bar mounting point, acting as a pivot when in contact with a tree or log.

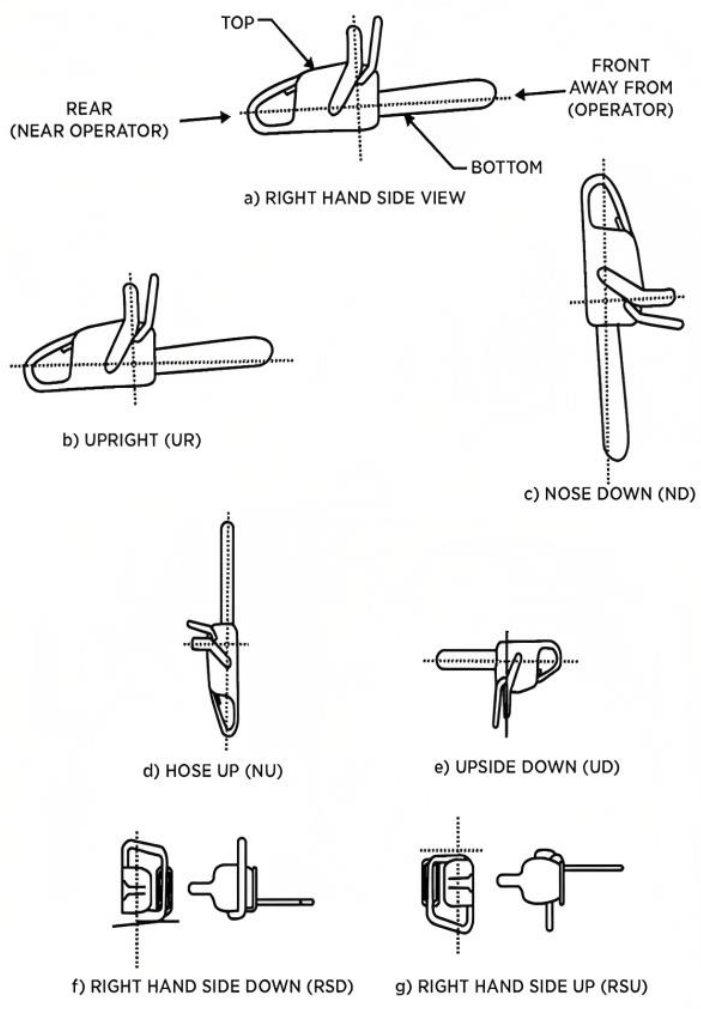

FIG. 5 CHAIN SAW POSITIONS

FIG. 6A STRAIGHT-IN-CUT

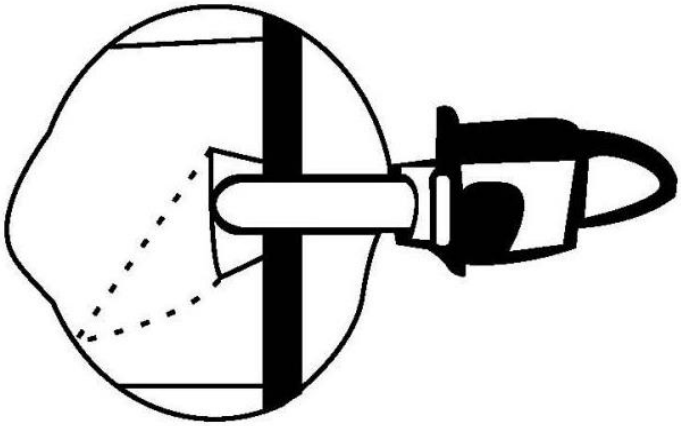

FIG. 6B STRAIGHT-IN-CUT (DETAILS)

5 TERMINOLOGIES RELATING TO PORTABLE BRUSH SAWS

5.1 Brush Saw — Brush-cutter fitted with a circular saw blade intended to cut small trees and saplings.

5.2 Saw Blade — Metal disc with peripheral cutting teeth.

5.3 Work Position — The work position of brush saw is shown in Fig. 8.

5.4 Kick-Back (Throw) — Uncontrolled (sudden and accidental) sideways or backward motion of the saw blade, which may occur when it contacts an object such as a sampling, tree stump, etc, especially

when the cutting force is directed towards the operator.

5.5 Control System Components — (*see* 4.2).

5.6 Harness — Adjustable straps of leather, plastic or other suitable material by means of which the saw is suspended from the operator.

5.7 Hip Pad — Strap or pad of leather, plastic or other suitable material fastened either to the saw or to the harness, to cushion the operator from impact and to reduce transmission of vibration.

5.8 Handles — Support handles for manoeuvring the saw (*see* Fig. 8).

5.9 Safety Devices

5.9.1 *Saw Blade Guard* — Device covering the rear part of the saw blade in order to protect the operator.

5.9.2 *Saw Blade Cover* — Removable cover completely shielding the saw blade teeth when the saw is not in use or during transportation.

5.9.3 *Quick Release Mechanism* — Device enabling the operator to free himself quickly from the saw in case of emergency.

5.10 Miscellaneous Terms

5.10.1 *Clutch* — (*see* 4.6.1).

5.10.2 *Power Transmission Shaft* — Shaft inside the shaft tube for transmitting the power from the engine to the saw blade.

5.10.3 *Shaft Tube* — Part of the saw body that provides a casing for the power transmission shaft.

5.10.4 *Angle Transmission* — Device for transmitting the power from the power transmission shaft to the saw blade.

5.10.5 *Muffler* — (*see* 4.6.3).

5.10.6 *Spark Arrester* — (*see* 4.6.4).

5.11 Suspension Eyelet — Ring or other fitting, fixed to the saw near its centre of gravity, to which the harness is attached (*see* Fig. 8).

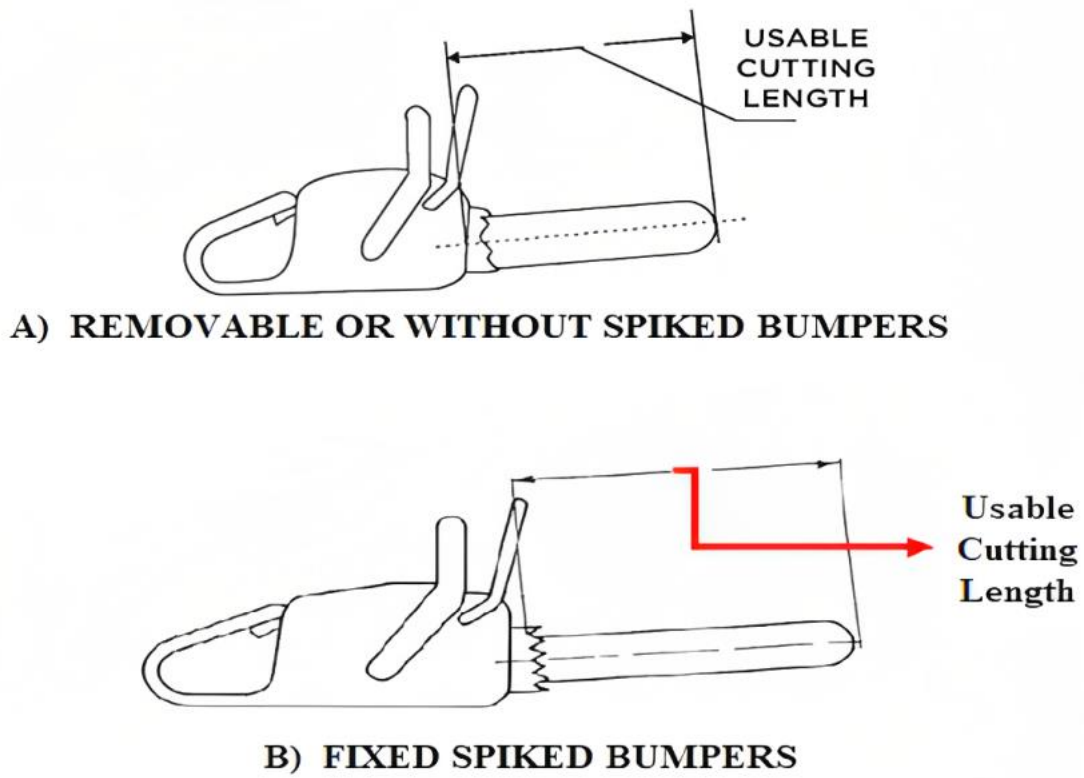

FIG. 7 CUTTING LENGTH

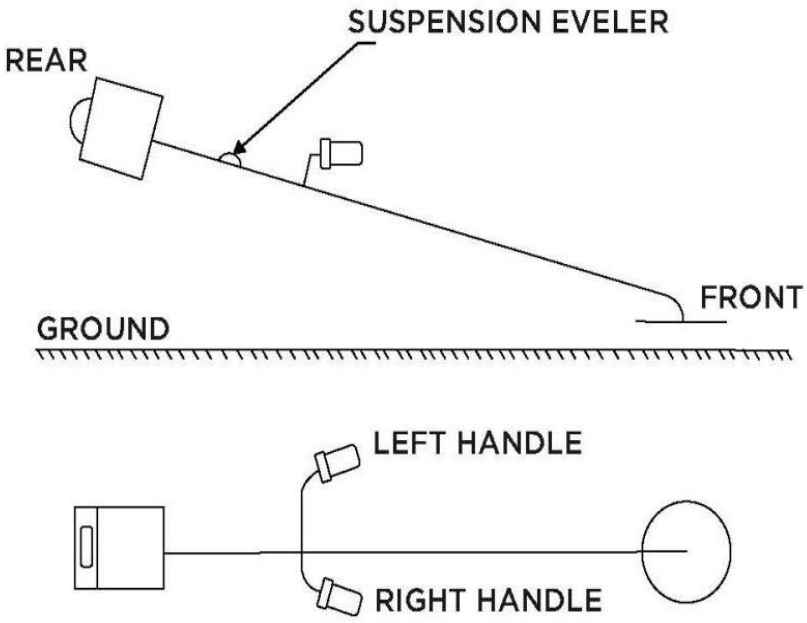

FIG. 8 BRUSH SAW DIRECTION

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Agriculture Machinery and Equipment Sectional Committee, FAD 11

Organization	*Representative(s)*
ICAR - Central Institute of Agricultural Engineering, Bhopal	DR C. R. MEHTA **(*Chairperson*)**
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