

BHUTAN STANDARD
Tractor– Basic Requirements (Part 1)



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Tractors- Basic Requirements

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FOREWORD

This Bhutan Standards for Tractors–Basic Requirement (Part 1) was developed by Bhutan Standards Bureau after the draft finalization by the Mechanical Engineering Technical Committee and endorsed by BSB Board.

This standard is subject to systematic review after five years to keep pace with the market trends, industrial and technological developments. Amendments are issued to standards as the need arises on the basis of comments.

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BHUTAN STANDARD

Tractor – Basic Requirements

1 Scope

This standard specifies the general requirements for tractors and shall apply to wheeled type tractors. It excludes the test methods of tractors.

2 Normative References

There are no normative reference in this standard.

3 Definitions

For the purposes of this standard, the definitions given in BTS XX:2021 and the following apply.

3.1 Four Wheel Tractor

A self-propelled agricultural vehicle having at least two axles and wheels, particularly designed to pull, push, carry and operate implements used for agricultural works.

3.2 Two-wheel drive

A two axled tractors with a drive train that allows two wheels to be driven.

3.3 Four-wheel drive

A two axled tractors with a drive train capable of providing torque to all of its wheels simultaneously.

3.4 Trailer

A tractor attachment which is supported by the axle, suitable and intended for coupling to an agricultural tractor for carrying load.

3.5 Tread distance

The distance between the two vertical planes passing through the centerline of ground contact of the tires parallel to the median plane of the tractor with the wheels in the straight-ahead position.

3.6 Wheelbase distance

The horizontal distance between the two vertical planes passing through the rotational centerlines of the wheels, where one plane is for the front wheels and other for the rear wheels.

3.7 Minimum turning diameter

The diameter of the circular path described by the center of tire contact with the surface of the test site of the wheel describing the largest circle when the tractor is executing its sharpest practicable turn.

3.8 Minimum clearance diameter

The diameter of the smallest circle which will enclose the outermost points of projection of the tractor and its equipment while executing its sharpest practicable turn.

3.9 Ground Clearance

The distance between the level ground to the lowest point on the axle.

3.10 Service brake

A device to reduce the speed of a moving tractor or to bring it to a halt.

3.11 Parking brake

A device which can maintain the tractor at rest even on a slope and in the absence of the operator.

3.12 Stopping distance

The distance travelled by a tractor between the points, at which the first movement of the braking device controls is made, and the point at which the tractor comes to a halt.

3.13 Maximum engine speed

The Engine speed at which the throttle control is at the maximum setting.

4 General standards for tractor

The general standards for tractor shall cover;

- 4.1 Safety requirements
- 4.2 Structure requirements
- 4.3 Requirement of operational performance
- 4.4 Test sample

4.1 Safety requirements

- 4.1.1 A durable protective shield in power take-off device shall be equipped when not in use.
- 4.1.2 There shall be safety guard for all moving parts and guard shall be placed in between the moving parts and operator at appropriate safe distance.
- 4.1.3 The guard shall have enough strength and durability under the normal operational condition and the guard which does not require to be removed, should be firmly fixed on the machine.
- 4.1.4 Safety signs and symbols must be illustrated clearly in English which are visible to operators.
- 4.1.5 The machine shall be equipped with instruction and operation manuals in English.
- 4.1.6 The hot parts of tractor should be placed at a safe distance from fuel system.

4.2 Structure requirements

- 4.2.1 The main components shall not be abnormal or broken.
- 4.2.2 There shall not be oil leakage.
- 4.2.3 The operator shall not have difficulty in controlling the components and mounting or dismounting implement of exchanging or adjusting parts.
- 4.2.4 There shall not be any defects that may affect the operator.
- 4.2.5 The tractor shall be equipped with roll over protection structure (ROPS).
- 4.2.6 The hydraulic control lever shall be equipped with the hydraulic lock.

4.3 Requirement of Operational Performance

- 4.3.1 Noise of tested tractor shall not exceed 100 dB(A) for continuously working for 2 hours.
- 4.3.2 Vibration of tested tractor shall not exceed 15 m/sec².
- 4.3.3 Tractor Service Brake performance shall be tested in condition of wind velocity and speed not exceeding 5m/s and 20km/h respectively without exceeding stopping distance of 5m with reference to position of braking.
- 4.3.4 shall be run inside water bin for continuously 2 hours @ 6km/h main speed and rotary to maximum and visual and crackling method shall be used to investigate the water proof performance.

4.4 Test sample

The test sample shall be new machine and it shall be adjusted as per the manufacturer's specification.

5 Bibliography

1. OECD Code 1-10, 2019 Standard code for the official Testing of Agricultural and Forestry Tractor Performance
2. ISO 789:1-13 : Test procedure of agriculture tractor
3. Test standard comparison review, Journal Bio-systems Engineering
4. IS 5994:1998; Agriculture Tractor Test Codes

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