

ICS 65.060.10

CCS B 90



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 16151.1-2008

Replacing GB 16151.1-1996

**Technical requirements for the operating safety of agricultural
machinery - Part 1: Tractors**

农业机械运行安全技术条件 第1部分：拖拉机

Issued on: July 4, 2008

Implemented on: January 1, 2009

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine;
Standardization Administration of the PRC**

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1 Scope

Part 1 of GB 16151 is the roadworthiness standard for tractors in China: the condition a machine must be in to be operated and to pass the periodic inspection. It goes system by system - the complete tractor, engine, transmission, frame and running gear, steering, brakes, lighting and signalling, hydraulic hitch and towing device, cab - and adds the limits on exhaust emissions and noise, with normative annexes on the braking test and on the aim of the headlight beam. It consolidates three 1996 standards covering wheeled, tracklaying and walking tractors into one. Issued on 4 July 2008, in force since 1 January 2009. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the edition it replaces are taken from there. The clause text, the tables and the numeric limits are not reproduced on this page - they are in the document itself, which is delivered in full in English translation.

This Part of GB 16151 specifies the basic technical requirements, for the operation safety, exhaust pollution control, noise control, on the complete tractor and its engine, drive train, walking system, steering system, braking system, lighting and signal devices, hydraulic suspension and traction devices, cab and other components. This Part applies to the safety

inspection of wheeled, crawler, walking tractors and tractor towing trailer for transportations, which are used in China. Other power machinery, which has tractor function AND used for agricultural operations, may make reference to this Part.

2 Normative references

The provisions in following documents become the provisions of this Part of

GB 16151 through reference in this Part. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Part; however, parties who reach an agreement based on this Part are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 3847-2005 Limits and measurement methods for exhaust smoke from C.I.E. (Compression Ignition Engine) and vehicle equipped with C.I.E.

GB/T 3871.3 Agricultural tractors - Test procedures - Part 3: Power tests for power take-off (GB/T 3871.3-2006, ISO 789-1:1990, MOD)

GB/T 3871.8 Agricultural tractors - Test procedures - Part 8: Noise measurement (GB/T 3871.8-2006, OECD R5:2002, MOD)

GB/T 4269.1 Tractors, machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays - Part 1: Common symbols (GB/T 4269.1-2000, idt ISO 3767-1:1991)

GB/T 4269.2 Tractors, machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other display - Part 2: Symbols for agricultural tractors and machine (GB/T 4269.2-2000, idt ISO 3767- 2:1991)

6 Driving system

6.1 The casing of the clutch, transmission, transfer case, drive axle, final drive, power take-off, starter transmission mechanism shall be free of cracks; there shall be no abnormal noise or abnormal temperature rise, during operation.

6.2 The clutch disengagement shall be thorough; the engagement shall be smooth. Its free stroke shall meet the requirements of product technical documents. For the clutch operating force:

- a) The pedal shall not exceed 350 N (double-acting clutch shall not exceed 400 N);
- b) The handle shall not exceed 100 N.

6.3 The gearbox shall not have disordered gear and automatic dislocation.

6.4 The differential lock of a tractor, which is equipped with a differential lock, shall be reliable; the operating handle or pedal shall return quickly, without jamming.

7 Frame and walking system

7.1 The frame shall be complete; there shall be no cracks, deformation, serious corrosion that affect safety; bolts and rivets shall not be missing and loose.

7.2 The front and rear axles shall not have deformation and cracks, which affect safety; the engine frame shall not have cracks.

7.3 The hub, rim, web, lock ring shall not have cracks or deformations, which affect safety; the nuts shall be complete and tightened according to the specified torque.

7.4 The model of tires shall comply with the provisions of the product technical documents. During transportation, driving wheels with smooth treads OR steering wheels with tread heights below

3.2 mm shall not be installed; the retreaded tires shall not be installed. The tire sidewall and tread shall not have exposed lines, or rupture and cut which have a length of more than 25 mm and depth enough to expose the ply.

7.5 The direction of the driving tire's tread shall not be reversed (except in the desert). The left and right tires, on the same axis, have the same tread pattern and roughly the same degree of wear.

7.6 The tractor towing trailer for transportation is not allowed to be equipped with high tread tires.

7.7 The tire pressure shall be consistent with the requirements of the product's technical documents.

7.8 The toe-in value of the front wheel shall comply with the requirements of the product's technical documents.

7.9 The front and rear wheels shall be provided with fenders, according to the requirements of the technical documents.

7.10 The length of the track buffer spring, after preloading, shall meet the requirements; the left and right shall be equal. The idler axle and its wishbones shall be able to move back and forth, without hindrance.

8 Steering system

8.1 The steering wheel shall be flexibly steered, easy to operate, free from blockage; its maximum free rotation shall not exceed 30°.

8.2 The steering of the tractor shall be provided with a steering limit device. The steering

system is not allowed to interfere with other components, in any operating position.

8.3 The steering system shall be light and flexible; there shall be no swing, jitter, deviation, or other abnormal phenomena, on flat, dry, hard pavements.

8.4 Steering wheel's operating force:

- a) The mechanical steering gear shall not exceed 250 N;
- b) When the full hydraulic steering gear fails, it shall not exceed 600 N.

8.5 Steering mechanism shall ensure smooth steering. The minimum steering circle's diameter shall meet the requirements of product technical documents.

8.6 For the steering vertical arm, the steering knuckle arm, the longitudinal and transverse tie rods between them, they are connected reliably and without deformation. The ball head clearance and the front wheel bearing clearance are appropriate; there shall be no looseness. The front wheel shall be free from noticeable swing, when driving along flat road, at high speed.

8.7 When the full hydraulic steering wheel is turned from the limit position at one side to the limit position at another side, the number of rotations of the steering wheel shall not exceed 5 turns.

8.8 The oil level of the hydraulic steering system shall be normal; there shall be no leakage everywhere; there is no air in the oil circuit.

8.9 The working stroke and free stroke of the steering lever of the crawler tractor shall meet the requirements of the product technical documents. The maximum operating force shall not be greater than 250 N. of the tractor, at a height of

1.2 m above the ground.

10.10 Sensitive and effective wipers shall be installed on the front windshield of the cab; sunshade devices shall be provided.

11 Hydraulic suspension and traction device

11.1 The hydraulic suspension mechanism shall rise and fall smoothly; there shall be a limit or locking device.

11.2 The positioning and return functions of the lifting control system of the split hydraulic system are normal.

11.3 The operating handle of the hydraulic system shall be positioned accurately; the operating conditions of the handle shall conform to the marked position.

11.4 The rods of the hydraulic suspension and traction device shall not have cracks, damage or deformation affecting safety. The limit chain, safety chain, all bolts and lock pins