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GB 16151.12-2008

Replacing GB 16151.12-1996

Technical Requirements of Operating Safety for Agricultural Machinery - Part 12: Grain Combine- harvester

农业机械运行安全技术条件 第 12 部分：谷物联合收割机

[Including 2009XG1]

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China.

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Foreword

In this Part, 3.1, 3.3, 3.9, 3.11 ~ 3.22, 4.2, 4.4, 4.5, 7.2 ~ 7.9, 9.1, 9.4, 9.5, 10.1, 10.2, 10.5, 11.1, 11.2, 12.2, 12.4 and 12.5 are mandatory, and the remaining clauses are recommended.

GB 16151 *Technical Requirements of Operating Safety for Agricultural Machinery* includes the following parts:

- Part 1: Tractor;
- Part 5: Trailer;
- Part 12: Grain Combine-harvester.

This is Part 12 of GB 16151.

This Part is an amendment of GB 16151.12-1996. In comparison with GB 16151.12-1996, the main technical content has the following differences:

- The requirements for the instructional manual, engine number and frame number are added;
- The requirements for the operator's operating position are added;
- The stipulations of the steering wheel, operating device and cab are added;
- The stipulations of the operating platform and seats are added;
- The stipulations of other types of ladders and platforms are added;
- The stipulations of safety signs for the grain tank are added;
- The requirements for the number plate holder are added;
- The requirements for warning signs for device failures are added;
- The technical requirements irrelevant to safety are deleted.

Starting from the date of implementation, this Part shall serve as a replacement of GB 16151.12-1996.

In this Part, Appendix A is informative.

This Part was proposed by the Ministry of Agriculture of the People's Republic of China.

This Part shall be under the jurisdiction of National Technical Committee on Agricultural Machinery of Standardization Administration of China.

Technical Requirements of Operating Safety for Agricultural Machinery - Part 12: Grain Combine- harvester

1 Scope

This Part of GB 16151 specifies the operating safety-related technical requirements for the complete machine of grain combine-harvester (hereinafter referred to as the harvester), and its engine, transmission system, steering system, braking system, frame and running system, header, threshing part, grain tank, grass collecting box, chaff collecting box, as well as stalk chopper, cab, outer cover, hydraulic system, lighting and signaling device.

This Part is applicable to the technical inspection of operating safety of the harvester.

2 Normative References

Through the reference in this Part of GB 16151, the clauses of the following documents become clauses of this Part. In terms of references with a specified date, all the subsequent modification sheets (excluding the corrected content) or revised versions are not applicable to this Part. However, the various parties that reach an agreement in accordance with this Part are encouraged to explore the possibility of adopting the latest version of these documents. In terms of references without a specified date, the latest version is applicable to this Part.

GB 4785 Prescription for Installation of the External Lighting and Light-signaling Devices for Motor Vehicles and Their Trailers (GB 4785-2007, ECE R48:2001, NEQ)

GB 10395.1 Tractors and Machinery for Agriculture and Forestry - Technical Means for Ensuring Safety - Part 1: General (GB 10395-2001, eqv ISO 4254-1:1989)

GB 10395.7 Tractors and Machinery for Agriculture and Forestry - Technical Means for Ensuring Safety - Part 7: Combine Harvesters; Forage and Cotton Harvesters (GB 10395.7-2006, ISO 4254-7:1995, MOD)

GB 10396 Tractors, Machinery for Agriculture and Forestry, Powered Lawn and Garden Equipment - Safety Signs and Hazard Pictorials - General Principles (GB 10396-2006, ISO 11684:1995, MOD)

3.16.1 The structure of the ladder shall not have any parts or protrusions that would cause injuries. The handrails and pedals of the ladder shall have a reliable strength; the surface of the pedals shall be non-slippery. The various parts shall be reliably fixed.

3.16.2 The height from the upper plane of the first step of the ladder to the ground shall be not greater than 550 mm; the interval among the pedals shall be not greater than 300 mm. Under special circumstances (rice harvester, crawler walking wheel or tilt compensation mechanism), the height of the lowest step of the ladder from the ground may be greater than 550 mm, but shall not exceed 700 mm.

3.16.3 The gradient of the ladder shall be such that when you descend from the ladder, you can see the outer edge of the next step of the ladder when you look down.

3.16.4 When the ladder moves upwards or downwards, it shall not cause squeezing, or impact the operator or the attendees.

3.16.5 The depth of ladder pedal (the interval between the front edge of the step and the adjacent parts): if there is a closed damper behind the ladder, then, the depth shall be not less than 150 mm; if there is no closed damper, then, the depth shall be not less than 200 mm. The depth of the steps of other get-on passages shall be not less than 150 mm.

3.16.6 The interval between the pedal of the ladder to the tyre shall be not less than 25 mm. The radial free clearance between the driving wheel and the upper part shall be not less than 60 mm.

3.16.7 Handrails shall be provided on both sides of the ladder, so as to maintain the operator in contact with the ladder at 3 points. The cross-sectional diameter of the handrails shall be between 25 mm ~ 35 mm; the height of the lowest end of the handrails from the ground shall be not greater than 1,600 mm. The rear side of the handrails shall have a minimum clearance of 50 mm. A gripper shall be set at a height of 1,000 mm from the highest step of the ladder; the length of the gripper shall be at least 150 mm.

3.17 The ladders and passages to access the maintenance platform shall comply with the requirements specified in 3.16. Under special circumstances (limited by height), the height of the handrail may be less than 1,000 mm, but shall not be less than 650 mm.

On the maintenance platform, a guardrail with a height of 1,000 mm shall be set, so as to prevent the staff from falling from the machine. Under special circumstances (limited by height), the height of the guardrail / handrail may be less than 1,000 mm, but shall not be less than 650 mm.

3.18 The parts where dangers would easily occur, shall be equipped with protective devices in accordance with the stipulations of GB 10395.1. In addition, safety signs shall be set up in obvious places.

than 30°.

6.2 On flat and dry roads, the steering shall be light and flexible; there shall be no swings, jitters, deviations or other abnormal phenomena.

6.3 The operating force of the steering wheel: for mechanical steering gear, the operating force shall be not greater than 250 N; for full hydraulic steering gear, the operating force shall be not greater than 15 N (when the engine is turned off, the gear pump stops running, and the manual steering pump is actuated, the operating force shall be not greater than 600 N).

6.4 When the full hydraulic directive wheel turns from one side of limiting position to the other side of limiting position, the number of turns of the steering wheel shall not exceed 5 turns.

6.5 The hydraulic steering system shall be normally working. During operation, the various hydraulic components and pipelines shall manifest no leakage.

7 Braking System

7.1 The brake pedal shall be non-slippery. The left and right pedals shall have a reliable interlocking device and positioning device.

7.2 The operation of the brakes shall be smooth, sensitive and reliable. The braking capacities of the brakes on both sides shall be basically the same; the pedal surfaces of the left and right pedals shall be on the same plane.

7.3 The free stroke of the brake pedal shall comply with the stipulations of the technical documents.

7.4 After the brake pedal or the handle generates the maximum braking effect, more than one fifth of the reserve stroke shall be left.

7.5 The oil level of the hydraulic braking system shall be normal; the oil shall be qualified; there shall be no oil leakage or air intake.

7.6 The operating force of the brake pedal shall be not greater than 600 N; the operating force of the brake handle shall be not greater than 400 N.

7.7 The parking brake shall ensure that the harvester can be reliably parked upwards or downwards on a longitudinal dry ramp with a gradient of 20% for the wheel type and a gradient of 25% for the chain type, for a duration of greater than 5 min.

7.8 When the wheel-type self-propelled harvester runs in the transportation state at a speed of 20 km/h (when it is lower than 20 km/h, the highest speed of the machine shall be subject to) on dry and flat concrete or asphalt roads, its braking distance S shall comply with the following stipulations:

device.

9.5 The bolts at the junction of the header or header trailer and the main engine shall have measures to prevent falling off.

10 Threshing Part

10.1 The grain rods and spokes of the roller shall manifest no cracks.

10.2 After A-shaped grain rod is installed, the head of the bolt shall not be higher than the convex pattern; the bolt of the grain rod shall be reliably fastened.

10.3 The roller shaft shall not be bent; the roller shall flexibly rotate, and without axial movement.

10.4 The connection between the grain carrier beater and the feeding wheel and the shaft shall be reliable, and the rotation shall be flexible. The spike tooth shall not be reversely installed; the blade shall not be deformed.

10.5 When the harvester is equipped with a chopper behind the grain carrier beater, a stalk clogging alarm shall be set.

11 Grain Tank, Grass Collecting Box, Chaff Collecting Box and Stalk Chopper

11.1 On the outlet side of the distribution screw conveyor of the grain tank, a grid-shaped protective shield shall be installed.

11.2 The moveable blade of the stalk chopper shall be reliably installed on the roller.

11.3 The power transmission system of the suspension type stalk chopper shall also be separated when the threshing mechanism is separated. There shall be a safety distance of at least 850 mm around the top of the blade. If the height of the lower edge of the protective device from the horizontal ground is less than 1,100 mm, the safety distance may be reduced to 550 mm.

12 Cab and Outer Cover

12.1 The cab shall ensure a good front vision. The included angle between the horizontal plane of the machine and the line connecting the eye position to the front end of the chopper shall be not less than 70°.

12.2 The minimum space size inside the cab shall comply with the stipulations of GB 10395.7.

GB 16151.12-2008 Technical Requirements of Operating Safety for Agricultural Machinery - Part 12: Grain Combine- harvester

National Standard No.1 Amendment Sheet (2009XG1)

This Amendment has been approved by the Standardization Administration of the People's Republic of China on June 10, 2009 and shall be implemented since July 1, 2009.

The modification of GB 16151.12-2008 *Technical Requirements of Operating Safety for Agricultural Machinery - Part 12: Grain Combine-harvester* is as follows:

1. In Foreword, "In this Part, 3.1, 3.3, 3.9, 3.11 ~ 3.22, 4.2, 4.4, 4.5, 7.2 ~ 7.9, 9.1, 9.4, 9.5, 10.1, 10.2, 10.5, 11.1, 11.2, 12.2, 12.4 and 12.5 are mandatory, and the remaining clauses are recommended." is modified into:

"In this Part, 3.1, 3.3, 3.9, 3.11 ~ 3.22, 4.2, 4.4, 4.5, 7.2 ~ 7.9, 9.1, 9.4, 9.5, 10.1, 10.2, 10.5, 11.1, 11.2, 12.2, 12.3, 12.4, 12.5, 12.8, 12.9 and 14.9 are mandatory, and the remaining clauses are recommended."

2. In Foreword, "The requirements for the instructional manual, engine number and frame number are added;" is modified into:

"The requirements for the printing of engine model, complete-machine model and exit-factory No. are added;"

3. In Chapter 2 Normative References, "NY 345.2 Combine Number Plate" is added.

4. In Clause 3.1, "The label shall indicate the trademark brand, harvester model, engine rated power, total mass, exit-factory No., exit-factory date (year and month) and manufacturer's name." is modified into:

"The label shall indicate the trademark or brand, harvester model, engine rated power, total mass, exit-factory No., manufacturing date (year and month) and manufacturer's name."

5. In Clause 3.1, "The complete-machine model and the exit-factory No. shall be printed on the frame. For those harvesters without a frame, they shall be printed on a component that cannot be dismantled and on the easily visible and rubbing part. In terms of the printed characters, the height shall be 10 mm and the depth

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