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JT/T 155-2004

Replacing JT/T 155-1994

Automobile lift

汽车举升机

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Foreword

This standard replaces JT/T 155-1994 “Specification for automobile lift”.

As compared with JT/T 155-1994 “Specification for automobile lift”, the main changes of this standard are as follows:

- In Chapter 3 “Terms and definitions”, ADD 3.1, 3.4, and 3.5;
- In Chapter 4 “Product classification”, CHANGE the product classification method;
- In Chapter 5 “Requirements”, ADD the product safety performance requirements of 5.1.1, 5.1.3.3, 5.5.1, 5.5.2.3, 5.5.2.4a), 5.5.2.6, and 5.5.3; CHANGE the 5.5 performance requirements of the whole machine;
- In Chapter 6 “Test methods”, CHANGE the item test method, ADD the test items of 6.3, 6.4.2, 6.4.3 and 6.5;
- In Chapter 8 “Marking, packaging, transportation and storage”, ADD the safety signs and graphics.

This standard was proposed by AND shall be under the jurisdiction of the National Standardization Committee for Automotive Maintenance (SAC/TC 247).

The responsible drafting organization of this standard: Institute of Highway Science, Ministry of Communications.

The participating drafting organizations of this standard: Hefei Wan’an Machinery Factory, Guangzhou Transit Auto Equipment Co., Ltd.

The main drafters of this standard: Ren Yahua, Han Xiaoning, Sheng Xiaowen, Liu Yuanpeng.

This standard was first published in 1994.

Automobile lift

1 Scope

This standard specifies the terms and definitions, product classification, requirements, test methods, inspection rules, and marking, packaging, transportation and storage of automobile lift.

This standard is applicable to all kinds of hydraulic transmission and mechanical transmission automobile lift having a rated lifting capacity of not more than 20000kg (hereinafter referred to as the lift).

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard 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/T 191 Packaging - Pictorial marking for handling of goods (eqv ISO 780)

GB/T 2681 Colors of insulted conductors used in electrical assembly devices

GB/T 2682 Colors of indicators and buttons used in electrical assembly devices

GB 2894-1996 Safety signs (neq ISO 3864:1984)

GB/T 3323 Methods for radiographic inspection and classification of radiographs for fusion welded butt joints in steel

GB/T 3765 Specification for bite type tube fittings

GB/T 3766 Hydraulic fluid power - General rules for the application of equipment to transmission and control system

GB/T 3768-1996 Acoustics - Determination of sound power levels of noise sources using sound pressure-survey method using an enveloping measurement surface over a reflecting plane (eqv ISO 3746)

GB/T 5653 Flared couplings - Specification

GB/T 5972 Wire ropes for cranes - Code of practice for examination and discard (eqv ISO 4309)

GB/T 6074 Leaf chains, clevises and sheaves

5.1.2.2 The dimension of the metal oil tube and the tube joints shall comply with the requirements of GB/T5653 and GB/T 3765.

5.1.3 Mechanical transmission portion

5.1.3.1 Wire Rope

5.1.3.1.1 The lifting wire rope shall comply with the requirements of GB/T 8918 and GB/T 5972 OR use the product of equivalent above quality, AND it is recommend using the wire contact wire rope, with the safety factor of more than 7 times the maximum static tensile force.

5.1.3.1.2 The breaking tensile force of the wire rope end and the wire rope end fixing device shall be more than 7 times the maximum static tensile force.

5.1.3.2 Chains

The chains used in the lift shall comply with the requirements of GB/T 6074 OR use the product of equivalent above quality, with the safety factor of more than 5 times the maximum static tensile force.

5.1.3.3 Pulley

5.1.3.3.1 The ratio of the diameter of the pulley to the diameter of the wire rope shall be more than 18.

5.1.3.3.2 The pulley shall have a means for preventing the wire rope from jumping out of the rope groove.

5.2 Welding

5.2.1 The welding surface shall be flat and uniform, it is not allowed to have such defects as cracks, welding penetration, loose weld, missed welding and so on, AND it shall comply with the requirements of JB/T 7949.

5.2.2 The bearing parts of the lift structural member AND the periphery of the column bottom of the single column lift and double column lift shall be subjected to photographic spot testing in accordance with the requirements of GB/T 3323.

5.3 Coating

5.3.1 Before coating, it shall conduct the decontamination, degreasing, and rust treatment against the metal surface.

5.3.2 The coating surface shall be uniform, smooth, and strongly adhesive, AND be free from base exposure, fracture, blisters, or apparent flow mark and orange peel.

5.4 Appearance

The appearance of the lift shall be clean AND free from such defects as crack, burr, metal surface exposure, and so on.

5.5 Whole machine performance

5.5.1 Synchronizer

The lift having more than two lifting platforms and brackets shall be equipped with the device to keep synchronous lifting, AND the asynchronism of lifting up and down of the lift within the effective working travel range shall be less than 3mm/10s.

5.5.2 Electrical systems

5.5.2.1 The electrical system of the lift shall be fitted with a circuit breaker in accordance with the size of the load, AND the motor control shall have overload and phase-loss protective device.

5.5.2.2 If the lift is equipped with lighting device, it shall use the safety voltage of less than 36V, AND its power shall be separated from the dynamical power.

5.5.2.3 The color of the indicators, buttons and conductors shall comply with the requirements of GB/T2681 and GB/T2682.

5.5.2.4 The operating device complies with the following requirements:

a) The operating device control power supply shall use the safety voltage of less than 36V;

b) It shall have automatic shutdown device which acts when the lifting platform or bracket is lifted up or down to the maximum travel positions;

c) As for the operating devices which are used to control the lifting up and down shall, in principle, adopt the working method of “stop running immediately after hand off”;

d) If the working method of “continue running after hand off” is used, when the lifting platform and bracket are at the lowest position and the maximum lifting height position, such continuous function shall be automatically relieved. Meanwhile, the equipment using the working method of “continue running after hand off” shall be equipped with emergency shutdown device.

5.5.2.5 The electrical system shall have good insulation properties, with insulation resistance not less than 5MΩ.

5.5.2.6 The electrical system shall have a reliable grounding device and a clear grounding mark, with the grounding resistance not greater than 4Ω.

5.5.3 Safety devices

MAKE the lifting platform and bracket at any position; USE the level to respectively set the millimeter level original position mark on the lifting platform, bracket, and column; USE the stopwatch for timekeeping; USE the scale plate to measure the lifting and descending distance of the lifting platform and bracket which is lifted up for 30s and down for 20s under the rated lifting capacity, AND the asynchronism value shall comply with the requirements of 5.5.1.

6.4 Electrical systems

6.4.1 Insulation resistance

USE the 500V insulation resistance meter to measure the insulation value between the two conductors which are separated by the insulation material, which shall comply with the provisions of 5.5.2.5.

6.4.2 Grounding resistance

USE the grounding resistance meter to measure the resistance between any conductor part of the external conductor terminal and lift AND the metal enclosure, which shall comply with the provisions of 5.5.2.6.

6.4.3 Operation device action

6.4.3.1 As for the inspection of the operation device of the “stop running immediately after hand off” operation method; after hand is moved off the operation device, CHECK whether the lift is able to stop lifting up and down operation automatically. When hand is not moved off the operation device, CHECK whether the lifting platform and bracket are able to stop running automatically after they reach to the lowest position and the lifting stroke.

6.4.3.2 As for the inspection of the operation device of the “continue running after hand off” operation method, when hand is not moved off the operation device, CHECK whether the lifting platform and bracket are able to be released of the continuous running state automatically after they reach to the lowest position and the lifting stroke. When hand is moved off the operation device, CONDUCT emergency shutdown operation and CHECK whether the lift can stop immediately.

6.5 Safety performance

In accordance with the requirements of 5.5.3, CONDUCT inspection and testing.

6.6 Lifting speed

At normal temperature, LIFT the rated lifting capacity; USE stopwatch to respectively measure the time required by the lift for the full stroke lifting and the full stroke descending, respectively, between the lowest position and the lifting stroke of the lifting platform and bracket; MAKE measurement for 3 times, AND the average value shall comply with the requirements of Table 1.

6.11.1.2 When the lifting platform and bracket are at the lifting stroke position under the rated lifting capacity and the 120% rated lifting capacity, respectively, MEASURE the inward (-), outward (+), forward (-) and backward (+) declination of the H_2 point (single column measurement), AND the results shall comply with all the requirements in Table 2.

6.11.2 The relative height difference between lifting platform and bracket ends

INSTALL the scale plate on which millimeter unit is distinguishable at the lifting platform and bracket ends; MAKE the lifting platform and bracket raise up to a height which facilitate measurement by the level; USE the level to measure the relative height difference between different bearing planes of the lift under no load, AND the results shall comply with the requirements in Table 2.

6.11.3 Relative descending volume of bracket bearing plane

FOLLOW the method of 6.11.2 to measure the relative descending volume of the bracket bearing plane farthest away from the column, AND the results shall comply with the requirements in Table 2.

6.11.4 Deflection value of longitudinal beam

At both ends of the two longitudinal beams AND 1/2 positions of both ends, respectively INSTALL the scale plate on which millimeter unit is distinguishable; MAKE the longitudinal beam raise up to a height which facilitates measurement by the level; USE the level to respectively measure the deflection value of the two longitudinal beams at no load, the rated lifting capacity, and the 120% rated lifting capacity, AND the results shall comply with the requirements of Table 2 (the measurement method and requirements of the auxiliary longitudinal beam for secondary lifting are same as those aforementioned).

6.11.5 Deflection value of beam

FOLLOW the method of 6.11.4 to measure the deflection value of the two beams (auxiliary beams for secondary lifting), AND the results shall comply with the requirements in Table 2.

6.11.6 Height difference between the four corners of the lifting platform surface

At the four corners of the lifting platform, respectively INSTALL the scale plate on which millimeter unit is distinguishable; MAKE the lifting platform raise up to a height which facilitates measurement by the level; USE the level to respectively measure the height difference between the four corners of the lifting platform at no load, the rated lifting capacity, and the 120% rated lifting capacity, AND the results shall comply with the requirements of Table 2.

6.11.7 Height difference between two ends of the lifting platform surface

a) Before the new product is put into production;

b) When the product design process and material are subject to significant changes;

c) When the product is transferred OR production restored after suspension for more than one year;

d) For the products of normal production, inspection shall be conducted once every two years OR the accumulation of 500 sets;

e) When the exit-factory inspection results are significantly different from the previous product type inspection results;

f) When quality supervision agencies propose the product type inspection requirements.

7.1.2 Sampling method for product type inspection

MAKE random sampling from the products which had passed the exit-factory inspection, with the sampling base number of not less than 5 sets.

7.1.3 The number of product to be inspected is one.

7.1.4 If disqualified items are found during product inspection, it shall double the number of the inspection products AND make them be subjected all item inspection again; if it is still disqualified, the type inspection of this product fails, AND it is not allowed for production.

7.2 Exit-factory inspection

The exit-factory inspection item shall be inspected in accordance with all the requirements other than 6.1.14 in Chapter 6 AND it shall comply with the relevant requirements in Chapter 5.

8 Marking, packaging, transportation and storage

8.1 Marking

8.1.1 Safety marking

In addition to the corresponding prohibition marking, warning marking and reminder marking as specified in GB 2894, the prohibition markings as required in Table 4 shall also be provided on the eye-catching position of the lift, AND such prohibition markings shall comply with the basic form requirements in 4.1.3 of GB 2894-1996.

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