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

JB/T 5948-1991

**Construction machinery caliper disc brake
Technical conditions
工程机械钳盘式制动器
技术条件**

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PROFESSIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

JB/T 5948-91

Construction machinery caliper disc brake Technical conditions

1 Subject contents and application scope

This Standard specifies the technical requirements, test methods, inspection rules, marking, packaging, transportation and storage for caliper disc brake of wheel type construction machinery traveling crane brake system.

This Standard applies to caliper disc brakes of loaders, scrapers, graders, dumpers and other wheel construction machinery traveling crane brake system (hereinafter referred to as the brake).

2 Normative references

- JB 3935 Automotive brake--Performance requirements
- JB/T 5937 Engineering machinery--General technical specifications for gray pig iron parts
- JB/T 5938 Engineering machinery--General technical specifications for ductile iron castings
- JB/T 5944 Engineering machinery--General technical specifications for heat-treated work pieces
- JB/T 5936 Engineering machinery--General technical specifications for mechanical processed parts
- JB/T 5945 Engineering machinery--General technical specifications for assembling
- GB 5763 Brake linings for automobiles
- GBn 257 Car brake lining (Supplement for shape, friction performance and impact strength)
- JB 2805 Trucks and buses—Brake—Bench test methods

JB 8	Product plates
JB/T 5947	Engineering machinery—General technical specifications
GB 2828	Sampling procedures and tables for lot-by-lot inspection by attributes (Apply to inspection of successive lots or batches)

3 Technical requirements

Brake products shall comply with the provisions of this Standard and be manufactured according to the product drawings and technical documents approved by specified procedures, if there is any special requirements, it shall be executed according to the agreement between the user and the manufacturer.

3.1 Performance requirements

3.1.1 The initial braking speed of brake for the first, second and third effective performance tests is 20km/h, when the brake line pressure is the maximum value specified by the manufacturer, the braking torque output by brake shall be no less than the rated value.

3.1.2 During the first, second and third effective performance tests, the difference of the braking torque output - BETWEEN the initial braking speed is 40km/h AND the initial speed is 20km/h - shall not be more than 10%, counted in percentage.

3.1.3 Other performance requirements for the brake shall be consistent with the relevant provisions of JB 3935, and the performance requirements are shown in Table 1.

3.2 Materials

The raw materials used by the brakes shall have a formal mark and a certification of the manufacturing plant. The manufacturer shall carry out random checks, and the brakes can only be used after the qualification is confirmed.

3.3 Supporting parts and purchased parts

The supporting parts and purchased parts used by the brake must have product certifications; spot check shall be conducted by the manufacturer and the parts can only be assembled after passing the check.

6.2.1 The product packaging shall comply with relevant requirements of JB/T 5947.

6.2.2 Products shall be completed with moisture-proof and rust-proof treatment when being packaged.

6.2.3 Inlet opening and deflating valve shall be equipped with oil proof plug and protective cover.

6.2.4 Each product shall be accompanied with the following technical documents when delivery:

- a. Product qualification certificate;
- b. Accessories and spare parts catalog.

6.2.5 The external surface of packing cases shall indicate following contents:

- a. Product model and name;
- b. Product factory serial number and factory date;
- c. Manufacturer name and address;
- d. Consignee organization and address;
- e. Gross weight/Net weight
- f. Names of the shipping and arrival station (port);
- g. Transportation and storage mark.

6.3 Transportation and storage

There shall be rain-proof and moisture-proof measures during transportation and storage of products.

7 Quality assurance periods

Under the premise of compliance with the requirements of storage and use by the users, within 12 months from the date of delivery from the manufacturer (subject to invoice date), for any damage or abnormal working indeed caused by defects in manufacturing quality or material, the manufacturer shall be responsible to promptly repair or return the products.

Annex A

The technical requirements of main positions of the major components

(Supplement)

A1 The technical requirements of main positions of major components are shown in Table A1.

Table A1

Component name	Item	Requirements	Remarks
Clamp body	1. Dimensional accuracy of hydraulic cylinder bore 2. Surface roughness of hydraulic cylinder bore 3. Perpendicularity between hydraulic cylinder bore and mounting surface 4. Dimensional accuracy of coupling hole of the fixed friction lining pad	Comply with drawing	Integral type clamp
Piston	1. Dimensional accuracy of piston diameter 2. Surface roughness of piston encircle R_a	IT7 0.8 μ m	-
Wheel cylinder cover	1. Dimensional accuracy of matching diameter of wheel cylinder cover and hydraulic cylinder 2. Dimensional accuracy of O-ring seal groove	IT7 In line with the drawing	Integral type clamp
Friction lining pad	Parallelism of two end surfaces of the friction lining pad	Not greater than 0.04 μ m	-

Annex B

Calculation method of rotational inertia

(Supplement)

B1 Calculation of rotational inertia

B1.1 When making brake test for double front wheels brake test at the same time, computational formula is as follows:

$$I_Q = G_1 \beta r^2 \dots\dots\dots (B1)$$

Where: I_Q — Rotational inertia when making brake test for double front wheels brake test at the same time, $N \cdot m^2$;

G_1 — Front axle load at empty-load transport position, N;

r — Rolling radius of tire, m;

β — Front axle load-transfer coefficient when empty-load braking.

B1.2 When Brake test is conducted for single front wheel, computational formula is as follows:

$$I_F = \frac{G_1 \beta r^2}{2} \dots\dots\dots (B2)$$

Where: I_F — Rotational inertia when making brake test for single front wheel, $N \cdot m^2$

$$\beta = 1 + \psi \frac{h_g}{b} \dots\dots\dots (B3)$$

Where ψ — Adhesion coefficient of road surface;

h_g — Height of center of gravity at empty-load transport position, m;

b — The distance between center of gravity and rear axle, m.

Annex C

Records and reports of bench test

(Reference)

C1 See JB 2805 Annex I for format of recording paper and format of drawing the various curves.

Table of Integral machine parameters and brake parameters

Vehicle model _____ Manufacturer _____ Exit-factory date _____

Machine quality at empty-load transport position _____ kg

Tire type _____ Rolling radius _____ m

Axle load distribution:

Empty-load transport position, front _____ N Rear _____ N

Full-load transport position, front _____ N Rear _____ N

Height of center of gravity: At empty-load transport position _____ m

At full-load transport position _____ m

Position of center of gravity: The distance from the rear axle at empty-load transport position _____ m

The distance from the rear axle at full-load transport position _____ m

Wheelbase _____ m Maximum speed _____ km/h

Brake type: Front _____ Rear _____

Brake manufacturing plant _____ Exit-factory date _____

Driving method of brake: Front _____ Rear _____

Diameter of brake wheel cylinder: Front _____ Rear _____

Maximum brake line pressure _____ MPa

Braking force ratio of front and rear axle _____

Rated braking torque: Front _____ N • m

Rear _____ N • m

Trademark of friction material _____ Manufacturer _____ Exit-factory date _____

The gap between friction lining pad and brake disc: Front _____ mm

Rear _____ mm

Trademark of brake fluid _____ Manufacturer _____ Exit-factory date _____

Additional explanation

This Standard is proposed and administered by Tianjin Research Institute of Construction Machinery of the Ministry of Machinery and Electronics Industry.

This Standard is drafted by Tianjin Construction Machinery Research Institute, Yingkou Construction Mechanical Clutch Factory and Xuzhou Construction Machinery Bridge Box Factory.

Main drafters of this Standard are: Yang Xiuwen, Chen Shurong, and Wang Zhongru.

References and Original Chinese Documents

[1] JB/T 5948 Construction Machinery caliper disc brakes technical conditions

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