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

GB/T 27546-2026

Replacing GB/T 27546-2011

Lifting appliances - Sheaves

起重机械 滑轮

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. This document replaces GB/T 27546-2011 "Pulleys for Lifting Machinery". Compared with GB/T 27546-2011, except for structural adjustments and rewriting... Aside from the logical changes, the main technical changes are as follows:

---Added terms and definitions (see Chapter 3);

---The nominal diameter values for some wire ropes in Table 1 have been changed (see Table 1, 2011 edition);

---The usage conditions have been changed (see 6.1, 5.7 of the 2011 version);

---The mechanical property requirements for pulley materials have been changed (see Table 3, 2011 edition);

---The requirements for welds have been changed, including the addition of a requirement for "non-destructive testing of critical welds" (see 6.3, 2011 edition). 5.2);

---The requirement for lifting holes in the pulley spokes has been added (see 6.4.7);

---The dimensional tolerances have been changed, namely, the pulley diameter range of

70mm to 160mm has been added (see Table 4, Table 4 in the.2011 edition);

---Increased requirements for pulley load-bearing capacity (see 6.7);

---The relevant content regarding scrapping has been removed (see section 5.8 of the.2011 edition);

---The pulley hardness requirement has been increased (see 6.8);

1 Scope

GB/T 27546-2026 is the Chinese national standard covering the rope sheave - the groove profile and radius that determine how fast the rope wears, the materials, the bearing arrangement and the discard criteria for a worn groove. It replaces GB/T 27546-2011 and has been in force since 1 September 2026. It was issued on 27 February 2026 and has been in force since 1 September 2026, replacing GB/T 27546-2011. The document is under the responsibility of the China Machinery Industry Federation. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document specifies the types and basic parameters of pulleys for lifting machinery, the selection and matching of diameter series, technical requirements, inspection rules, and standards. The document outlines the labeling, packaging, transportation, and storage procedures, and describes the corresponding test methods. This document applies to steel (iron) pulleys used in lifting machinery.

4 Types and Basic Parameters

4.1 Typical Structure A typical structure of a pulley for lifting machinery (hereinafter referred to as "pulley") is shown in Figure 1.

4.2 Type

4.2.1 According to the manufacturing process of pulleys, they are classified as follows, and a typical schematic diagram is shown in Figure 2.

- a) Cast pulleys;
- b) Welding pulleys;
- c) Double-width plate pressing pulley;
- d) Rolling pulleys.

4.2.2 According to the type of bearing used, they are classified as follows, and a typical structural diagram is shown in Figure 3.

4.3 Basic Parameters The basic dimensions of the pulley rope groove cross section should conform to the provisions of Table 1, and the schematic diagram is shown in Figure 2. The wheel hub size and other detailed dimensions are determined by the pulley manufacturer based on the shaft size, bearing type, and the force and strength of the pulley. The diameter of the pulley shaft should preferably be selected from the following range (in millimeters).
25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 90.
100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 220, 240.

6.1 Usage Conditions

6.1.1 The operating ambient temperature is -20°C to 60°C . Any temperature exceeding this range should be resolved through consultation between the user and the manufacturer.

6.1.2 The maximum skew angle when the wire rope enters or exits the pulley groove (i.e., the angle between the centerline of the wire rope and the plane perpendicular to the pulley axis). It should not exceed 5° .

6.2 Materials The mechanical properties of the pulley materials are shown in Table 3.

6.3 Welding and weld seams Welded pulleys and rolled pulleys shall meet the following requirements.

- a) The welding materials shall be compatible with the materials being welded and shall comply with the provisions of GB/T 5117;
- b) The weld bevel design shall conform to the requirements of GB/T 985.1 and GB/T 985.2;
- c) Welds shall be visually inspected and shall be free from craters, spatter, slag, severe undercut, and surface cracks that affect performance and appearance quality. Defects should be identified, and non-destructive testing of critical welds should be performed if necessary.

6.4 Appearance and Surface Treatment

6.4.1 The surface roughness of the pulley rope groove shall not be lower than R_a in GB/T 1031 for rope grooves manufactured by machining. $12.5\mu\text{m}$; for rope groove surfaces manufactured by rolling and pressing, the surface roughness should not be lower than $Ra25\mu\text{m}$ as specified in GB/T 1031; the surface roughness of the inner bore of the pulley mounting bearing should also be $12.5\mu\text{m}$. The surface roughness should not be lower than $Ra3.2\mu\text{m}$, and the roughness of other unprocessed surfaces should not be lower than $Ra25\mu\text{m}$ in GB/T 1031.

6.4.2 The machined surfaces of pulleys and exposed parts such as spacers should be coated with anti-rust oil, and non-machined surfaces should be painted.

6.4.3 Cast pulleys, welded pulleys and rolled pulleys shall be subjected to stress relief treatment.

6.4.4 The surface of the welded pulley rope groove should be free of scratches and oxide scale after rolling.

6.4.5 The pressing part of the double-width plate pressing pulley should be smooth, flat, and free of wrinkles, cracks and burrs.

6.4.6 The machined surfaces of castings shall be free from defects such as sand holes, porosity, shrinkage cavities, cracks, and looseness, and the non-machined surfaces shall be free from defects that affect strength. defect.

6.4.7 The spokes of the pulley should be provided with lifting holes for the pulley.

6.5 Assembly

6.5.1 The assembled pulleys should rotate freely.

6.5.2 The recommended tolerance for the fit between the pulley body and the bearing outer diameter is M7 or P7.

6.5.3 The limit deviation of the groove bottom radius r shall conform to the provisions of Table

1. For other dimensional limit deviations, h14 shall apply to cast pulleys, and h14 shall apply to other pulleys. It should comply with the provisions of Table 4.

6.6 Geometric Tolerances The geometric tolerances of the pulleys are shown in Table 5.

6.7 Load-bearing capacity The load-bearing capacity of a pulley should be matched with the maximum tension of the largest diameter wire rope to which it is adapted.

6.8 Pulley Hardness The hardness of the pulley should meet the design requirements.

7.1 Test Conditions

7.1.1 The ambient temperature is measured to be between -20°C and 60°C using a thermometer.

7.1.2 The angle between the center line of the wire rope and the plane perpendicular to the pulley axis shall not exceed 5°.

7.2 Visual inspection Visual inspection includes, but is not limited to, the following items.

- c) Appearance quality;
- d) Surface roughness;
- e) Assembly dimensions;
- f) Geometric tolerances are measured using geometric tolerance measuring instruments;
- g) Hardness was measured using a hardness tester.