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

GB/T 13333-2018

Replacing GB/T 13333-2004

Concrete pumps

混凝土泵

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1 Scope

China's national standard for concrete pumps - the piston machines that push wet concrete through a pipeline to where it is placed, and the equipment that made it possible to pour a high-rise floor or a large raft without a crane and a skip. It specifies the technical requirements, the working conditions, the test methods, the inspection rules, and the

marking, packaging, lifting and storage of concrete pumps, and it applies to piston concrete pumps with a theoretical output up to and including 200 cubic metres an hour. Pumping concrete is a harder problem than pumping a fluid, because concrete is not one: it is a suspension of aggregate in a paste that can segregate, that stiffens with time and temperature, and that will block a line irrecoverably if it does. Everything in the machine is arranged around that. The requirements therefore cover the pumping unit and its output and pressure - the two being traded against each other, since the same machine delivers a high volume at low pressure or a low volume at high pressure depending on how it is configured for the distance and height it has to reach - the S-valve or gate that transfers the flow between cylinders and is the most heavily worn part of the machine, the hopper and its agitator and grate, the hydraulic system, the drive, and the pipeline and couplings. To those are added the safety provisions, which on this machine are not incidental: the line is under very high pressure and a coupling that opens, or a blockage cleared carelessly, discharges concrete with enough energy to kill, so the guarding of the hopper, the pressure relief, the procedure-related requirements and the emergency stops all appear as requirements. The test clause sets how the output, the pressure, the efficiency and the reliability are established. Issued on 14 May 2018 and in force since 1 December 2018, it replaces GB/T 13333-2004.

4.2 Basic parameters The concrete pump takes the theoretical conveying quantity as the main parameter, and the basic parameters are shown in Table 2. Table

2 Basic parameters Project unit value Theoretical throughput m³/h 5, 10, 20, 30, 40, 50, 60, 80, 90, 100, 110, 120, 125, 150, 180, 200 Feeding height mm ≤1580 Pumping concrete aggregate particle size mm ≤

50 Pumping concrete pressures MPa 6, 8, 10, 13, 14, 16, 18, 20, 21, 22, 26, 28, 35, 40, 48, 50,

60 Concrete cylinder inner diameter mm 150, 180, (195), 200, (205), 220, 230, 250, 280

4.3 Model The model of the concrete pump consists of the group code, type code and main parameters, as shown in Figure 1. Figure

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article. Pieces. For undated references, the latest edition (including all amendments) applies to this document. General rules and safety requirements for

GB/T 3766 hydraulic drive systems and their components

GB/T 3797 electrical control equipment

GB 5226.1 Mechanical electrical safety machinery and electrical equipment - Part 1.

General technical conditions

GB/T 7920.4 Concrete machinery terminology

GB 11118.1 Hydraulic oil (L-HL, L-HM, L-HV, L-HS, L-HG) GB/T 13306 signage

GB/T 14039 hydraulic transmission oil solid particle pollution level code

GB/T 17626.3 Electromagnetic compatibility test and measurement technology RF electromagnetic field radiation immunity test

GB/T 17626.4 Electromagnetic compatibility test and measurement technology Electrical fast transient burst immunity test

GB/T 17626.5 Electromagnetic compatibility test and measurement technology Surge (impact) immunity test

GB/T 18209.2 Mechanical and electrical safety instructions, marking and operation - Part 2. Marking requirements

GB/T 19418 steel arc welding joint defect quality grading guide

GB/T 25638.1 Construction machinery and equipment - Concrete pumps - Part 1. Terminology and commercial specifications Safety requirements for

GB 28395 concrete and mortar conveying, spraying and pouring machinery

3 Terms and definitions

The following terms and definitions as defined in GB/T 7920.4 and GB/T 25638.1 apply to this document. For ease of use, the following Some terms and definitions in GB/T 7920.4 are listed repeatedly.

3.1 The concrete is continuously pressed through the pipe to the mechanical equipment at the pouring site. [GB/T 7920.4-2016, definition 2.4.1.1]

3.2 Concrete pump mounted on a fixed base. [GB/T 7920.4-2016, definition 2.4.1.1.1]

3.3 A concrete pump mounted on a towable undercarriage. [GB/T 7920.4-2016, definition 2.4.1.1.2]

3.4 Theoretical delivery quantity theoryalive The theoretical value of concrete pump volume delivered per hour by concrete pump. Calculated according to formula (1). $QT=VT \times nR$ (1) In the formula. QT

---the theoretical delivery volume, the unit is cubic meters per hour (m³/h); VT

---the theoretical volume of each working stroke of concrete pump, the unit is cubic meters (m³); nR

---The number of rated working strokes per hour of concrete pump, in units of hourly (h-1).

3.5 Pumping concrete pressure pumpingconcretepressure Concrete pressure at the concrete pump outlet during work. [GB/T 7920.4-2016, definition 2.4.3.1.5]

3.6 Pumping concrete pumpingconcrete Suitable for concrete pumped concrete.

3.7 Pumping concrete aggregate particle size aggregateiameterofpumpingconcrete The maximum diagonal size of the aggregate in the pumped concrete.

3.8 Pumping efficiency The actual measured amount of test concrete measured at the concrete pump outlet as a percentage of the theoretical delivery.

3.9 Anti-pump reversepumping The working condition of the concrete in the concrete conveying pipe is drawn back to the hopper.

3.10 Feeding height Filingheight The vertical distance between the ground and the rigid plane of the hopper inlet during the operation of the concrete pump. [GB/T 7920.4-2016, definition 2.4.3.1.7]

3.11 Pumping unit pumpingunit A system consisting of concrete hoppers, distribution valves, concrete cylinders, water tanks, propulsion units and control devices. [GB/T 7920.4-2016, definition 2.4.2.1.9]

3.12 Pumping performance curve pumpingperformancediagram The relationship between pumping pressure and pumping quantity under different loads when the concrete pump is pumping power. 4 type, basic parameters and models

4.1 type The concrete pump type is shown in Table 1. Table

5.1 General requirements

5.1.1 The working conditions of concrete pump should meet the following requirements.

- a) The working environment temperature is 0 °C ~ 40 °C, but the average temperature within 24h does not exceed 35 °C.
- b) The working environment should not exceed 2000m above sea level, otherwise it should be treated as a special case.
- c) Refer to Appendix A for pumping concrete. The pumping concrete slump should be 80mm~230mm; when pumping concrete The drop is 180mm~210mm, and the pumping efficiency of the concrete pump is not less than 85%.
- d) The fluctuation range of the power supply voltage is not more than $\pm 10\%$ of the rated voltage, and the fluctuation range of the frequency is not more than $\pm 2\%$ of the rated frequency.

5.1.2 When the concrete pump is working, the whole machine should be placed