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

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**Industrial valves - Gearbox for valves
(English Translation)**

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Table 1 Classification of work systems

Table 2 Minimum life requirements for part-turn gearboxes

Table 3 Minimum life requirements for multi-turn gearboxes

Table 4 Factory test and type test items

Table A.1 Comparison of structure numbers between this document and ISO 22109:2020

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting is required.

This document is modified to adopt ISO 22109:2020 "Gearboxes for industrial valves".

Compared with ISO 22109:2020, this document has many structural adjustments. The comparison table of structural number changes between the two documents is shown in Appendix A.

The technical differences between this document and ISO 22109:2020 and their reasons are as follows.

- a) The term and definition of "end of trip" in 3.3 of ISO 22109:2020 has been deleted as it is not used in the main text;
- b) The classification and life requirements of Class D continuously adjustable gearboxes in Tables 1 to 3 (see 5.1) have been deleted to meet the actual Needs in the application;
- c) The requirements for the limit screws of the gearbox are added (see 5.2) to meet the needs of my country in practical applications;
- d) Changed the working environment humidity requirement (see 5.5.1), changing "working environment humidity $\geq 90\%$ (25°C)" to "working environment humidity is not Greater than 90% (25°C)", to meet the needs of my country in practical applications;
- e) Deleted the altitude requirement in 5.5.2 of ISO 22109:2020 to meet the needs of my country in practical applications;
- f) IEC 60529 (see 5.5.2) is replaced by the normative reference GB/T 4208-2017 to meet the application needs of my country;
- g) The normative reference GB/T 30790.2 replaces Table 4 (see 5.5.3) in ISO 22109:2020 because the content in the table GB/T 30790.2 has been covered;
- h) ISO 5210 and ISO 5211 are replaced by the normative references GB/T 12222 and

GB/T 12223 (see 5.6 and 5.7).

Adapt to the application needs of our country;

- i) The noise value requirements (see 5.8.5) have been changed to meet the needs of my country in practical applications;
 - j) The requirement that each gearbox should be subjected to factory test has been added (see 7.3) to meet the needs of my country in actual applications;
 - k) The "design" and "documentation" items in Table 5 of ISO 22109:2020 have been deleted to meet the needs of my country in practical applications;
 - l) Added the "transmission ratio" marking requirements (see 8.1.1) to meet the needs of my country in practical applications;
 - m) Added the optional marking requirements of "mechanical efficiency" and "other agreed items" (see 8.1.2) to meet the actual application of my country.
- need;
- n) The documentation and packaging requirements (see 8.2) have been changed to meet the needs of my country in practical applications;
 - o) Added transportation and storage requirements (see 8.3) to meet the needs of my country in practical applications;
 - p) The "test temperature" requirement (see B.3) has been changed to meet the needs of my country in practical applications;
 - q) The "Acceptance Criteria" requirements (see B.5) have been changed to meet the needs of my country in practical applications.

This document has the following editorial changes compared to ISO 22109:2020.

--Added the description of the working environment under special working conditions in the form of notes (see 5.5.1);

--Added special form description of output connection of gearbox in the form of note (see 5.6.1);

-- Added special form description of gearbox input connection in the form of note (see 5.6.2).

1 Scope

This document specifies the classification, design requirements, optional accessories, output and other specifications of gearboxes for manual and automatic, on/off and regulating industrial valves.

Factory test and type test, marking, packaging, transportation and storage.

This document does not include gear units and subsea gearboxes that are integral to the valve design.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 4208-2017 Degrees of protection provided by enclosures (IP Code) (IEC 60529:2013, IDT) GB/T 12222 Connection of multi-turn valve drive devices (GB/T 12222-2023, ISO 5210:2017, MOD) GB/T 12223 Connections for part-turn valve actuators (GB/T 12223-2023, ISO 5211:2017, MOD) GB/T 30790.2 Paint and varnish protective coating systems for corrosion protection of steel structures Part 2: Classification of environments (GB/T 30790.2-2014, ISO 12944-2:1998, MOD)

3 Terms and definitions

The following terms and definitions apply to this document.

Gearbox

A gear device used to change torque (or thrust, speed, direction), which can be operated manually by a handwheel (or lever) and/or by a drive the actuator is automatically operated.

Ambient temperature

The temperature of the working environment of the gearbox (3.1).

Limit end stop

A mechanical device used to limit the travel position of the gearbox (3.1) transmission chain.

Lifespan endurance

The number of trouble-free cycles under specified conditions and passed the type test.

indicating arrangement A device capable of displaying the position of valve opening and closing parts.

Rated torque

The torque value given in the design is the maximum operating torque allowed by the gearbox (3.1).