ICS 17.140.20; 23.060.40; 25.040.40
CCS N 16

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 17213.14-2018

Industrial-process control valves -- Part 8-2: Noise considerations -- Laboratory measurement of noise generated by hydrodynamic flow through control valves

Issued on: July 13, 2018 **Implemented on: February 1, 2019**

Issued by: State Administration for Market Regulation, China National Standardization Administration

Table of Contents

Foreword

GB/T 17213 "Industrial Process Control Valve" is divided into the following parts.

--- Part 1. Terminology and general rules for control valves (GB/T 17213.1);

--- Part 2-1. Calculation formula of fluid flow under the conditions of flow capacity installation (GB/T 17213.2);

---Part 2-3. Flow capacity test procedure (GB/T 17213.9);

--- Part 2-4. Intrinsic flow characteristics and adjustable ratio of circulation capacity (GB/T 17213.10);

--- Part 2-5. Calculation formula for fluid flow through the interstage recovery multistage control valve (GB/T 17213.17);

--- Part 3-1. Dimensional two-way spherical straight-through control valve flange face distance and two-way spherical angle control valve flange center to flange

The spacing of the end faces (GB/T 17213.3);

---Part 3-2. Face spacing of dimensional angular stroke control valves (except butterfly valves) (GB/T 17213.11);

---Part 3-3. Terminal spacing of size butt welded two-way spherical straight-through control valve (GB/T 17213.12);

--- Part 4. Inspection and routine testing (GB/T 17213.4);

--- Part 5. Logo (GB/T 17213.5);

---Part 6-1. Installation details of the positioner and control valve actuators Installation of the positioner on the linear actuator

(GB/T 17213.6);

---Part 6-2. Installation details of the positioner and control valve actuators Installation of the positioner on the quarter-turn actuator

(GB/T 17213.13);

--- Part 7. Control valve data sheet (GB/T 17213.7);

--- Section 8-1. Noise considerations The measurement of the noise generated by the aerodynamic flow through the control valve in the laboratory (GB/T 17213.8);

---Part 8-2. Noise considerations The noise generated by the flow of hydraulic fluid through the control valve is measured in the laboratory (GB/T 17213.14);

---Part 8-3. Noise considerations Noise prediction method for aerodynamic flow through control valves (GB/T 17213.15);

--- Part 8-4. Noise considerations The method of predicting the noise generated by the flow of hydraulic fluid through the control valve (GB/T 17213.16);

--- Part 9. Test procedure for step input response measurement (GB/T 17213.18).

This part is part 8-2 of GB/T 17213.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 17213.14-2005 "Industrial process control valves - Part 8-2. Noise considerations

The noise generated by the flow through the control valve. Compared with GB/T 17213.14-2005, the main technical changes are as follows.

--- Added symbols (see Chapter 4);

--- Increased the requirements for measuring measurement errors caused by electronic recording devices and computer-aided devices in measuring sound pressure level meters (see 5.7);

--- Increased internal sound pressure measurement requirements (see Chapter 7).

This section uses the translation method equivalent to IEC 60534-8-2.2011 "Industrial Process Control Valves Part 8-2. Noise Considerations

The test chamber measures the noise generated by the flow of liquid through the control valve.

The documents of our country that have a consistent correspondence with the international documents referenced in this part are as follows.

---GB/T 3767-2016 Acoustic sound pressure method for the determination of noise source sound power level and sound energy level reflection surface above the approximate free field

Engineering method (ISO 3744.2010, IDT)

---GB/T 6882-2016 Acoustic sound pressure method for the determination of noise source sound power level and sound energy level anechoic chamber and semi-anechoic chamber

precision

Law (ISO 3745.2012, IDT)

---GB/T 17213.16-2015 Industrial Process Control Valves Part 8-4. Noise Considerations Hydrodynamic flow through control valves

Noise prediction method (IEC 60534-8-4.2005, IDT)

This part was proposed by the China Machinery Industry Federation.

This part is under the jurisdiction of the National Industrial Process Measurement Control and Automation Standardization Technical Committee (SAC/TC124).

This section drafted by. Shanghai Industrial Automation Instrumentation Research Institute Co., Ltd., Hangzhou Lianggong Valve Co., Ltd., Zhejiang Paiwo self-control instrument

Table Co., Ltd., Hangzhou Fuyang South Valve Co., Ltd., Zhejiang Yongsheng Instrument Co., Ltd., Zhejiang Sanfang Control Valve Co., Ltd., Chongqing

Sichuan Instrument Control Valve Co., Ltd., Emerson Process Management (Tianjin) Valve Co., Ltd., Tianjin Jingtong Control Instrument Technology Co., Ltd., Chongqing World

Zhuang Instrument Co., Ltd., Zhejiang Zhongde Automation Technology Co., Ltd., Jiangsu Yi Valve Group Co., Ltd., Hangzhou Canon Valve Co., Ltd.

Division, Wuxi Intelligent Automation Engineering Co., Ltd., Fujian Shangrun Precision Instrument Co., Ltd.

1 Scope

This part of GB/T 17213 specifies the measurement method of the sound pressure level generated by the flow of hydraulic fluid through the control valve and determines the determination due to cavitation.

A method that uses characteristics that cause an increase in noise. This section also specifies the requirements for measuring airborne noise in the laboratory to determine these characteristics.

Equipment, methods and procedures.

These two methods are mainly used to test the characteristics of noise generated by the control valve.

The first method is to measure the radiated noise generated by the control valve and associated test piping [including the fixed throttling device through which the test fluid (water) flows]

A unified approach to sound (see Note 1). The noise standard is expressed by determining the sound pressure level of the control valve under test.

The second method is to measure the sound pressure level in the upstream and downstream piping systems of the control valve under fixed operating conditions. Due to the elimination of the pipeline

Inaccuracy of transmission, this method should be preferred to evaluate the acoustic characteristics of the control valve.

The noise characteristics can be used for the following purposes.

a) determining the acoustic characteristics of the control valve and valve assembly and the characteristic differential pressure ratio coefficient of the control valve xFz;

b) predicting the noise of the control valve for a given process condition;

c) compare the performance of different control valves and various measurement results;

d) develop measures to extend working life and reduce noise;

e) determine the possible adverse effects on the measurement of the ultrasonic flowmeter;

f) Determine the size of the sound absorbing device.

Note 1. This section does not apply to test fluids other than water or control valves without downstream piping.

Note 2. The coefficient xFz is used for the noise prediction method described in IEC 60534-8-4.

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.

GB/T 3785.1-2010 Electroacoustic sound level meters - Part 1. Specification (IEC 61672-1.2002, IDT)

GB/T 17213.1-2015 Industrial process control valves - Part 1. Terminology and general rules for control valves (IEC 60534-1.2005, IDT)

GB/T 17213.9-2005 Industrial process control valves - Part 2-3. Circulation capacity test procedures (IEC 60534-2-3.

1997, IDT)

ISO 3744.1994 Acoustic sound pressure method for the determination of the approximate free field above the acoustic power level of the noise source (Acous-

tics-Determinationofsoundpowerlevelsofnoisesourcesusingsoundpressure-Engineering