

ICS 23.020.30

CCS Q 23



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

GB/T 33896-2017

Test method for cyclic pressure of membrane housings

分离膜外壳循环压力试验方法

Issued on: July 12, 2017

Implemented on: February 1, 2018

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine;
Standardization Administration of the PRC**

Table of Contents

- 1 Scope
- 2 Normative reference documents
- 3 Terms and definitions

Foreword

This standard is drafted in accordance with the rules given in GB/T 1.1-2009. This standard is proposed by the National Separation Membrane Standardization Technical Committee (SAC/TC382). The drafting of this standard. Harbin Le Pu Industrial Development Center, Tianjin Membrane Engineering Technology Co., Ltd., the State Oceanic Administration of Tianjin Seawater Institute of Desalination and Comprehensive Utilization, Harbin Institute of Technology. The main drafters of this standard. Li Youqing, Wang Qiyuan, Zhao Ying, Fan Yunshuang, Pan Xianhui, An Jingbo, Li Yucheng, Wang Rongguo, Xu Jie, Sun Qilei, Hao Jun, Yu . Test method for circulating pressure of separation membrane shell

1 Scope

China's national method for cyclic pressure testing of separation membrane housings. It specifies the principle, the specimen, the test equipment, the test conditions, the installation, the test and inspection procedure, the recording of results, the test report and the precautions, and it applies to fibre-reinforced polymer-matrix membrane housings. The housing is the pressure vessel that holds the membrane elements, and in a reverse osmosis plant it is the component whose failure is most consequential. It contains water at pressures that can exceed sixty bar in a seawater train, it is made of filament-wound composite rather than steel because the water inside is aggressively corrosive, and there are hundreds or thousands of them in a plant, each with removable end closures that are opened whenever elements are changed. The reason the test is cyclic rather than static is that the failure mode is fatigue: the housing is pressurised and depressurised with every start, stop and cleaning cycle, and a composite that holds its rated pressure indefinitely can still fail after some thousands of cycles.

This standard specifies the principle, sample, test equipment, test conditions, test equipment installation and test of the separation test method of separation membrane shell. Inspection procedures, results records, test reports and precautions. This standard applies to the fiber as a reinforced body, polymer-based separation membrane shell of the circulating pressure test.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article. For undated references, the latest edition (including all modifications) applies to this document.

GB/T 30300-2013 separation membrane housing JJG49 flexible element type precision pressure gauge and vacuum table verification procedures JJG882 pressure transmitter verification procedures

3 Terms and definitions

The following definitions and definitions of the following definitions and definitions apply to this document in GB/T 30300-2013.

3.1 Membrane housing membranehousing For holding the membrane element, can carry a certain pressure of the cylindrical shell. [GB/T 30300-2013, definition 3.1]

3.2 Cyclic pressure cyclic pressureure The reciprocating pressure is applied to the interior of the separation membrane housing from the minimum pressure to the design pressure and then to the minimum pressure.

3.3 Cyclic pressure frequency cyclic pressureurefrequency The number of periodic changes in the separation of the membrane shell from the minimum pressure to the design pressure and then to the minimum pressure.

3.4 Leakage Separate film shell under the action of water pressure, the test medium through the cracks and porosity spread to the shell, with bearing parts and sealing parts, etc. Other than the process.

3.5 The highest exhaust point of thehighestexhaustpoint The highest point of the high-pressure pipe connecting the separation membrane housing can effectively discharge the air mixed in the test system.

3.6 Minimum pressure minimumpressure The minimum pressure is the minimum pressure required during the cyclic pressure test, which is not greater than 20% of the design pressure and

0.27 MPa The smaller of the two.