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

GB/T 17189-2017

Replacing GB/T 17189-2007

**Code for field measurement of vibrations and pulsations in
hydraulic machines (turbines, storage pumps and
pump-turbines)**

水力机械（水轮机、蓄能泵和水泵水轮机）振动和脉动现场测试规程
(English Translation)

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 17189-2007 "hydraulic machinery (turbines, storage pumps and pump turbines) vibration and pulsation field test gauge Cheng ", compared with GB/T 17189-2007 main technical changes are as follows.

--- Modify the vibration measurement site and measuring point arrangement (see 6.2.2, 2007 edition of 6.2.1);

--- Revised the measurement of pressure pulsations and measuring point arrangement (see 6.2.4, 2007 version 6.2.3);

--- Vibration measurement frequency range has been adjusted, see Table 1 and Table 2. For the purpose of special diagnostic tests, should be selected on request Select the measurement equipment (such as Karman vortex caused by resonance, the frequency of the upper limit will exceed the frequency range specified above, should choose a higher frequency Upper limit of the sensor) (see 7.2.1 and 7.3, 2007 edition of 7.2.1 and 7.3);

--- Pressure pulse sensor installation has been adjusted from the original "after the probe should be flush with the inner wall of the runway," revised to "should the use of sensor probe flush with the inner wall of the flow channel to install the sensor, the sensor should be easy to disassemble. When conditions do not have Under the short straight tube leads to "(see 7.4.2, 2007 version 7.4.1.5);

--- A chapter on signal recording was revised to delete the original standard "graphics recorder" and "tape recorder" two sections, the original the "Digital Recorder" section of the standard has been refined and supplemented to form a new chapter for measurement data acquisition (see Chapter 9, 2007 edition of Chapter 9);

--- Modify the vibration and pulsation test peak-peak mixing amplitude value of the method (see 10.2.1).

This standard adopts the redrafted law to amend the use of IEC 60994:1991 "hydraulic machinery (water turbines, storage pumps and pump turbines) vibration and pulsating field measurement guidelines. " this standard compared with IEC 60994:1991 in the structure there are more adjustments, Appendix A lists the standards and IEC 60994:1991 Chapter number control list.

This standard compared with IEC 60994:1991 there are technical differences, Appendix B gives the corresponding technical differences and their causes Table.

This standard proposed by the China Electrical Equipment Industry Association.

This standard by the National Standardization Technical Committee turbine (SAC/TC175) centralized.

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1.1 Applications

1.1.1

This standard specifies the vibration, pulsation test methods, measurement methods and the number of tests of hydraulic machinery (hydraulic turbines, storage pumps and pump turbines) According to the method of treatment. This standard applies to the counterattack turbine, impulse turbine, reversible pump turbine, accumulator pump, also applies to the mechanical part of the connected generator or motor.

1.1.2

This standard applies to hydraulic machinery vibration and pulsation routine test, the test results can reflect the general vibration and pulsation of the unit Sex. It can be used to evaluate the vibration status of the unit and the change of vibration characteristics during the service life and the vibration level under normal operating conditions, to evaluate the design, manufacture and installation of hydraulic machinery to provide the technical basis for the proposed improvements to the operation of the unit, as well as fault diagnosis and Accident analysis to provide guidance. If the test found that some of the important

components of a strong local vibration (resonance), should be additionally used with Targeted test methods on the parts for more in-depth experimental study, the test should also refer to the principles of this standard.

1.1.3

Specific test content and measurement items should refer to this standard negotiated by the parties concerned. In the specific unit, the test content, measurement the amount of items, the location and amount of measuring points, etc., are dependent on the type of construction of the unit, the specific conditions and importance of the equipment and do not require that in each case Carry out the measurement of all items listed in this standard.

1.2 Purpose

To determine a unified vibration, pulsation test methods, measurement methods and test data processing methods, the measurement results in the same type of different models Hydraulic machinery is consistent and comparable.

1.3 Does not apply to the content

1.3.1

This standard does not apply to all kinds of purely commercial issues.

1.3.2

This standard does not apply to the purpose of research for the specific vibration and pulsation test.

1.3.3

This standard is generally not applicable to the laboratory model and the factory unassembled real machine vibration and pulsation test components. But when tested Prototype and model unit of certain similar parameters, the prototype and the model test relative parts should be as consistent as possible, and in line with this standard.

1.3.4

This standard does not apply to the vibration measurement of civil structure, nor does it apply to the motor (shaft, bearings and other mechanical parts excluded) electrical parameters the pulsation measurement.

1.3.5

This standard does not apply to determine the cause of vibration and vibration suggestions.

1.3.6

This standard does not apply to hydraulic machinery acoustic effects (noise) measurement and analysis.