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NB

**ENERGY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

NB/T 47038-2019

Replacing NB/T 47038-2013

Constant spring support and hanger

恒力弹簧支吊架

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Foreword

This document was issued on 4 November 2019 by the National Energy Administration of the PRC and takes effect on 1 May 2020.

It is a NB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 27.060, Chinese classification J 98.

It replaces NB/T 47038-2013, which is superseded.

This standard has been drafted in accordance with the rules given in GB/T 1.1-2009, Directives for standardization - Part 1: Structure and drafting of standards.

This standard replaces NB/T 47038-2013, Constant spring support and hanger.

Compared with NB/T 47038-2013, the main technical changes in this standard are the following.

Some values in Table 9 have been revised, as listed below.

Serial number 26, displacement 150: the original value 478 has been changed to 479.

Serial number 29, displacement 320: the original value 296 has been changed to 396.

Serial number 53, displacement 300: the original value 982 has been changed to 682.

Serial number 53, displacement 320: the original value 972 has been changed to 672.

Serial number 53, displacement 360: the original value 952 has been changed to 652.

Serial number 53, displacement 380: the original value 942 has been changed to 642.

Serial number 53, displacement 400: the original value 932 has been changed to 632.

Some values in Table 10 have been revised, as listed below.

Serial number 18, displacement 100: the original value 435 has been changed to 535.

Serial number 32, displacement 180: the original value 608 has been changed to 618.

In Table 12 the two duplicated rows for serial numbers 52 and 53 have been deleted.

In Table 17 the d0 value for serial numbers 19 to 23 has been changed from M10 to M16.

In Table 18 the data for serial number 62 at displacements 320, 340, 360, 380 and 400 have been revised, so that they are now identical with the data of serial number 63 at the same displacements.

Some values in Table 22 have been revised, as listed below.

Serial number 17, displacement 150: the original value 20 has been changed to 220.

Serial number 36, displacement 280: the original value 361 has been changed to 362.

Serial number 46, displacement 140: the original value 161 has been changed to 261.

Serial number 51, displacement 150: the original value 340 has been changed to 320.

Serial number 51, displacement 160: the original value 339 has been changed to 329.

In Table 26, serial number 44, displacement 380: the original value 88 has been changed to 883.

Some values in Table 27 have been revised, as listed below.

Serial number 36, displacement 280: the original value 361 has been changed to 362.

Serial number 51, displacement 160: the original value 339 has been changed to 329.

Some values in Table 28 have been revised, as listed below.

Serial number 16, displacement 300: the original value 975 has been changed to 974.

Serial number 30, displacement 320: the original value 1 389 has been changed to 1 384.

Serial number 38, displacement 140: the original value 1 581 has been changed to 1 586.

Some values in Table 29 have been revised, as listed below.

Serial number 36, displacement 280: the original value 361 has been changed to 362.

Serial number 46, displacement 140: the original value 161 has been changed to 261.

Serial number 51, displacement 160: the original value 339 has been changed to 329.

This standard was proposed by and is under the jurisdiction of the National Technical Committee on Boilers and Pressure Vessels of Standardization Administration of China (SAC/TC 262).

Drafting organizations of this standard: Dalian Spring Co., Ltd.; Harbin Boiler Company Limited; Shanghai Boiler Works Co., Ltd.; Shanghai Power Equipment Research Institute Co., Ltd.

Main drafters of this standard: Zhang Fujun, Yu Yingying, Tong Qiang, Guo Jianming, Sha Zhaogen, Shi Huihui.

The previous editions of the standard replaced by this standard are: JB/T 8130.1-1995, JB/T 8130.1-1999 and NB/T 47038-2013.

A further previous edition replaced by this standard is GB 10181-1988.

Introduction

The constant spring support and hanger is a supporting and hanging device for thermal piping and heated equipment, and its standardized production has a history of several decades in China. It is widely used for the steam and water piping of thermal power plants, for the boiler proper of power stations, and in industries such as oil refining and chemical processing.

When the thermal piping and equipment suspended or supported by a constant spring support and hanger undergo thermal displacement, the device still provides a constant hanging force or supporting force. Load transfer and the additional stresses arising from it are therefore not produced in the piping and equipment, so that unfavourable load transfer and dangerous bending stresses caused by thermal deformation of the piping system are avoided and the normal operation of the piping and equipment is ensured.

After long-term practical application the operating results have proved to be good. During the implementation of NB/T 47038-2013 it was found that part of the data in the standard was erroneous, and that some installation dimensions produced according to those data were incorrect. The present revision was initiated in order to make the data accurate and consistent.

1 Scope

NB/T 47038-2019 standardises constant force spring supports and hangers, replacing the 2013 edition. Hot pipework moves as it heats: a steam line can rise or fall by tens of

millimetres between cold and operating condition, and an ordinary spring hanger changes its load as it travels, pushing that variation back into the pipe and into the equipment nozzles at each end. A constant force unit uses a spring working through a cam or lever linkage so that the supporting force stays effectively unchanged across the whole travel, which is what lets a designer treat the support as a fixed load rather than a variable one. The standard fixes the basic structure of the units and the way a model is designated, the types available for hanging, bracing and supporting from below, and the complete series of load and displacement ratings with the dimensions of each size. It gives the materials for the spring, the casing and the load-bearing components, the permitted deviation of the supporting force across the travel, and the setting and locking of the unit at its cold position. Manufacture and inspection cover spring making and heat treatment, assembly, calibration against the nominal load, surface protection and marking, together with the type and routine tests. Selection, installation and adjustment on site close the document. It is used on power plant and process pipework in China.

1.1 This standard specifies the requirements for the terms and symbols, the structural types, the compilation of types, the series and dimensions, the manufacture and inspection, and the installation of constant spring supports and hangers.

1.2 This standard applies to constant spring supports and hangers with a displacement range of 50 mm to 400 mm and a load range of 123 N to 364 120 N (hereinafter referred to as supports and hangers).

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies to this document.

For undated references, the latest edition (including all amendments) of the referenced document applies to this document.

GB/T 1805, Spring terminology.

GB/T 23934, Hot coiled helical compression springs - Technical specifications.

3 Terms and symbols

3.1 Terms. The terms and definitions given in GB/T 1805 and the following apply to this standard. For ease of use, some of the terms and definitions of GB/T 1805 are repeated below.

3.1.1 Constant support hanger: a support and hanger used to carry the dead weight load of piping, the carrying force of which does not vary with the vertical displacement of the piping at the supporting or hanging point, that is, a support and hanger whose load remains essentially constant.