HCF-5T
Cam roller contact fatigue testing machine

Product

Proposal

Jinan Hengxu Testing Machine Technology Co., Ltd

Technical information, please do not disseminate

One. Product Introduction

The main structure of the testing machine is an electromechanical integrated structure, with the testing host on the left and the electrical cabinet controlled and displayed by the computer on the right. The whole machine is independently designed and practical to operate. As shown in the following figure

(The pictures are for reference only, subject to the actual product)

Two. Overview

The machine has a frictional form of rolling motion at room temperature under a certain contact pressure, and the required fluid medium for the friction pair can be added according to requirements.

Equipped with a stepless speed regulation system, it can be used to evaluate the friction and wear performance of different materials under low or high speed conditions. Its core function is the contact fatigue test of cam rollers, and the equipment has expanded its friction test function to perform friction and wear tests in the form of ring blocks.

This testing machine is an electromechanical integrated precision testing instrument. Using a stable loading mechanism to ensure accurate force values. The spindle motor is a servo integrated speed control system and motor developed independently, with stable speed, high torque, and adjustable speed

Wide speed range and low noise. The measurement parameters include test force, friction force, rotational speed, test time, and test cycle (spindle speed). For the five parameters, they can be pre-set according to the material being studied to achieve the best usage effect. When any parameter exceeds the preset value, the corresponding alarm light will light up and the spindle will stop rotating. All measurement axis results can be displayed in real-time on the computer screen, and the test curve can be recorded and saved.

Three.Main technical indicators

1. Test force

1.1 Max test force: 5KN (customizable)

1.2 Relative error of test force indication: ± 0.5%

1.3 Zero sensitivity of test force indication: ± 1.5N

1.4 Test force automatic loading rate: 300N/min (fully automatic adjustable)

1.5 Loading method: AC servo loading (can be programmed to load at any time segment)

1.6 Automatic holding of test force for a long time Relative error of indication: ± 1%

2. Friction torque

2.1 Max friction torque: 100N.m

2.2 Relative error of friction torque indication: ± 2%

2.3 Friction arm distance<70mm

3. Spindle continuously variable speed range

3.1 Single stage continuously variable transmission system: 1-1000rpm

3.2 Spindle speed error: ±10rpm

4. Test medium: Fluid lubricating media such as oil and water

5. Test machine running time: 1-9999min

6. Servo motor power: 2kW

7. Testing machine level: Level 0.5

8. Optional ring block module (lateral loading device)

Four. Introduction to the main mechanism of the testing machine

The testing machine consists of a main unit, a control cabinet, a computer control system, and accessories, as shown in the appearance diagram.

1. Host part

The host consists of a spindle drive system, flywheel shaft system, dynamic torque sensing, sample shaft system, friction pair special fixture, friction pair and loading bracket lifting system, loading system, and other parts. They are all installed in a frame with a welding machine base as the main body.

The lower part of the host is the electrical control system, and there are doors on the front, back, and sides of the machine base. When opened, the internal mechanism can be clearly seen for debugging and maintenance.

2. Spindle and its drive system

The spindle motor adopts a self-developed servo integrated speed control system and motor. The system uses high-precision servo motors produced in Taiwan, with a maximum speed range of 2000r/min, stepless constant torque, and high-speed accuracy of 0.2%. The maximum power of the motor is 2kW, and special multi wedge pulleys are installed on the main shaft and the upper part of the motor, respectively. The power of the

motor is transmitted to the main shaft through the multi wedge belt. Due to the application of constant torque servo motors and closed-loop speed control systems, it has high transmission torque at low speeds, completely changing the characteristic of the old continuously variable transmission system that the transmission force decreases exponentially at low speeds.

3.Friction pair part

The testing machine is typically equipped with two sets of friction pair specialized fixtures, one set for cam roller testing and the other set for customized ring block testing. After installing the sample according to the experimental requirements, the experiment can be carried out.

Five.Control system

The new model of friction and wear testing machine adopts the HTMS professional version control system, applies the latest control theory, optimizes the internal system of the software, and has a novel and elegant software interface, as shown below:

Main control interface

Six.Working conditions of the testing machine

Within the temperature range of 10℃-35℃, the relative humidity should not exceed 80%;

2. Install correctly on a stable foundation or workbench;

3. In a vibration free environment;

4. There is no corrosive medium around;

5. Power supply: three-phase 220V;

6. The fluctuation range of the power supply voltage should not exceed ± 10% of the rated voltage;

7. The power supply of the testing machine should be reliably grounded; The frequency fluctuation should not exceed 2% of the rated frequency;

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