



MUG-5Z High temperature vacuum friction and abrasion Testing machine specification

One.Product Description

MUG-5Z type testing machine is developed by our company to improve the design of the pin plate, end surface sliding friction form, At room temperature or high temperature, vacuum and change the lubrication state (no oil lubrication or oil immersion lubrication), load, speed, friction mate material, friction pair surface roughness, hardness and other parameters under various circumstances, the ring specimen to impose a higher end test force for testing. It is mainly used to evaluate the friction performance of engineering materials, powder metallurgy, alloy bearings and other materials under different conditions, and can be used in the selection of friction pair materials and the study of wear resistance of materials.



Reference picture of product appearance



Reference picture

Two、 Specification Data and Configurations

1. Test force working range: 10 ~ 5000 N (stepless adjustable, range optional)
2. The relative error of experimental force: $\pm 1\%$.
3. Friction force measurement range: 1-300 N
4. Relative error: $\pm 3\%$
5. Max Friction torque measurement: 10N.m
6. The relative error of frictional torque: $\pm 2\%$
7. Friction sensor: 200 N
8. Spindle speed range: 1 ~ 2000rpm
9. Speed control accuracy: $\pm 1\%$
10. Temperature control range: room temperature ~ 1000°C (optional)
11. Temperature control accuracy: $\pm 2^\circ\text{C}$
12. Test atmosphere: vacuum and gas (Ar, N₂, etc.) (optional)
13. Vacuum degree: 10⁻³ bar



14. Maximum friction diameter of the test disc: 100mm
15. Lubrication method: Circulating oil bath lubrication
16. Online wear measurement system: 0-10mm (accuracy $\pm 1\%$ FS)
17. Wear measurement resolution: 0.15 μ m
18. High temperature furnaces: double opening large furnaces with an inner diameter greater than 120mm
19. The maximum distance between the main shaft of the test machine and the lower auxiliary plate: > 75 mm
20. Time control range 10s ~ 9999min
21. Friction pairs: pin-on-disk wear and end face wear
22. Computer and data processing range special control computer control the whole machine and test process, display various parameters in real time, automatically record friction-time curve, friction-time curve, temperature-time curve and intermediate contour line.
23. External dimensions (L* W*H) :1200 * 870 * 1700 mm

Three. Functions and features

This model of high-temperature vacuum end-face friction and wear testing machine adopts new balanced loading technology, force retention technology and new control technology. The test force is applied smoothly and reliably, and the test force can be set by the operator on the computer interface; Parameters such as the speed, revolutions, test force, friction torque, friction pair temperature, test time and other parameters of the spindle are all controlled by a computer. Test data can be collected in real time and corresponding test curves can be drawn. Test data can be stored, read, and printed out at will. or curve. The spindle motor adopts imported AC servo integrated speed regulation system and motor. The spindle and motor are equipped with driven and active special arc-shaped toothed belt pulleys respectively. The driven pulley is designed with anti-torque and transmits the power of the motor to the spindle through the arc-toothed synchronous belt. On the spindle. Due to the application of the closed-loop speed control system, it has high transmission torque at low speed, which completely changes the characteristics of the SCR continuously variable transmission system that the transmission force decreases exponentially at low speed. The analysis of product advantages is as follows:



①. **Automatic loading method:** This type of testing machine is my company in the industry for the first time to introduce servo motor loading, controllable, Low failure rate, after years of continuous improvement, stable and reliable performance, including double floating bearing technology, no gap guidance technology and buffer cross balance technology are accurate and stable test force guarantee, reduce the system error, ensure the test force, friction real-time tracking measurement accuracy; Compared with the old hydraulic loading method, the advantages are as follows:

Number	Old hydraulic loading	Automatic loading
1	Loading noise, late maintenance trouble, high failure rate, poor reliability.	Basic maintenance-free, stable and reliable.
2	Indirect measurement of oil pressure sensor is affected by hydraulic oil temperature.	The test force is directly measured by a force sensor to ensure reliable accuracy.
3	Valve body or oil pump control cumbersome and prone to failure.	Program built-in multi-section rate loading mode, precise control of test force.
4	Noise, need oil source, is not conducive to energy saving and environmental protection.	No noise, oil pollution and other environmental pollution, energy saving and environmental protection.

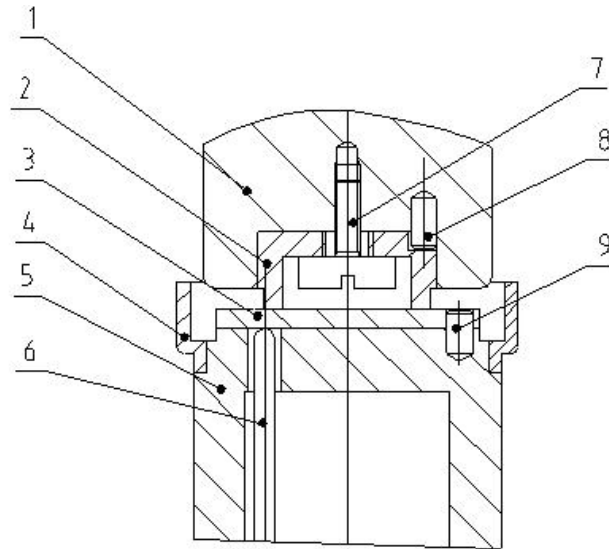
②. **the main structure:** the friction test should be as far as possible to reduce the impact of the vibration of the motor and ancillary components on the wear marks, so we use the overall main body, thickened the support plate, and the use of Taiwan TECO servo motor drive spindle, the relevant transmission components also use imported precision bearings;

③.**the electrical part:** the equipment uses an independent embedded industrial controller, industrial metal touch screen, acquisition of independent analysis module, a strong guarantee of high-speed or severe vibration of the equipment on the performance of the control part;



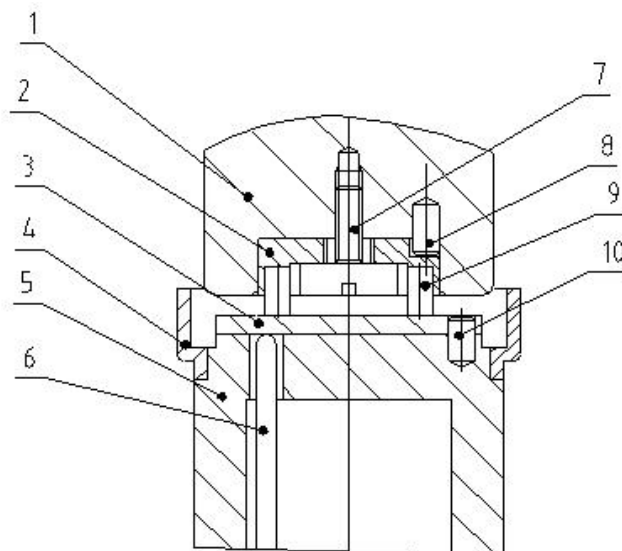
④. Introduction to Friction Attachment

The end face friction and wear testing machine comes standard with two types of friction pairs: end face friction pair and pin on disc friction pair. The friction forms are shown in the following figure:



1 主轴 2 上试样 3 下试样 4 挡屑盘 5 下试样座
6 测温热电偶 7 固定螺钉 8 上力矩销 9 下力矩销

End face friction pair



1. 主轴 2 上试样座 3 下试样 4 挡屑盘 5 下试样座
6 测温热电偶 7 固定螺钉 8 上力矩销 9 试样销 10 下力矩销

Pin on disc friction pair



Four. After-sales quality service

After the formal acceptance of the equipment, the equipment shall be regarded as a formal delivery. The warranty of the equipment is eighteen months from the date of formal delivery. During the warranty, the supplier timely and free repair service for all kinds of malfunctions of the equipment, and timely and free replacement of all kinds of parts caused by non-human. If the equipment exceeds the warranty period, it will fail during the operation. The supplier will serve the ordering party in time, and assist the ordering party to complete the maintenance task.

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