

KASON-BP300 High Temperature Rotary Bending Fatigue Testing Machine Testing Machine



(Picture just for reference)

1. Function

Rotary bending fatigue testing machine, with the following functions:

- Meet the requirements of four-point tensile test of cylindrical specimen of GB/T 4337-2015, and carry out the test;
- Can be tested at high temperature or normal temperature;
- Servo motor drive, speed stepless adjustment;
- Counting function, accurately record the number of sample rotation;
- Servo motor loading, force sensor to measure the loading force (moment);

- The test speed can be changed during operation;
- The loading force (bending moment) can be changed during operation;
- Automatically shut down after sample failure and save data;
- Calculate and process data, generate and print test reports.

2. Applicable standards:

(1)GB/T 4337-2015 "Rotating Bending Method for Fatigue test of Metal Materials"

(2)GB/T 2611-2007 "General Technical Requirements for Testing Machines"

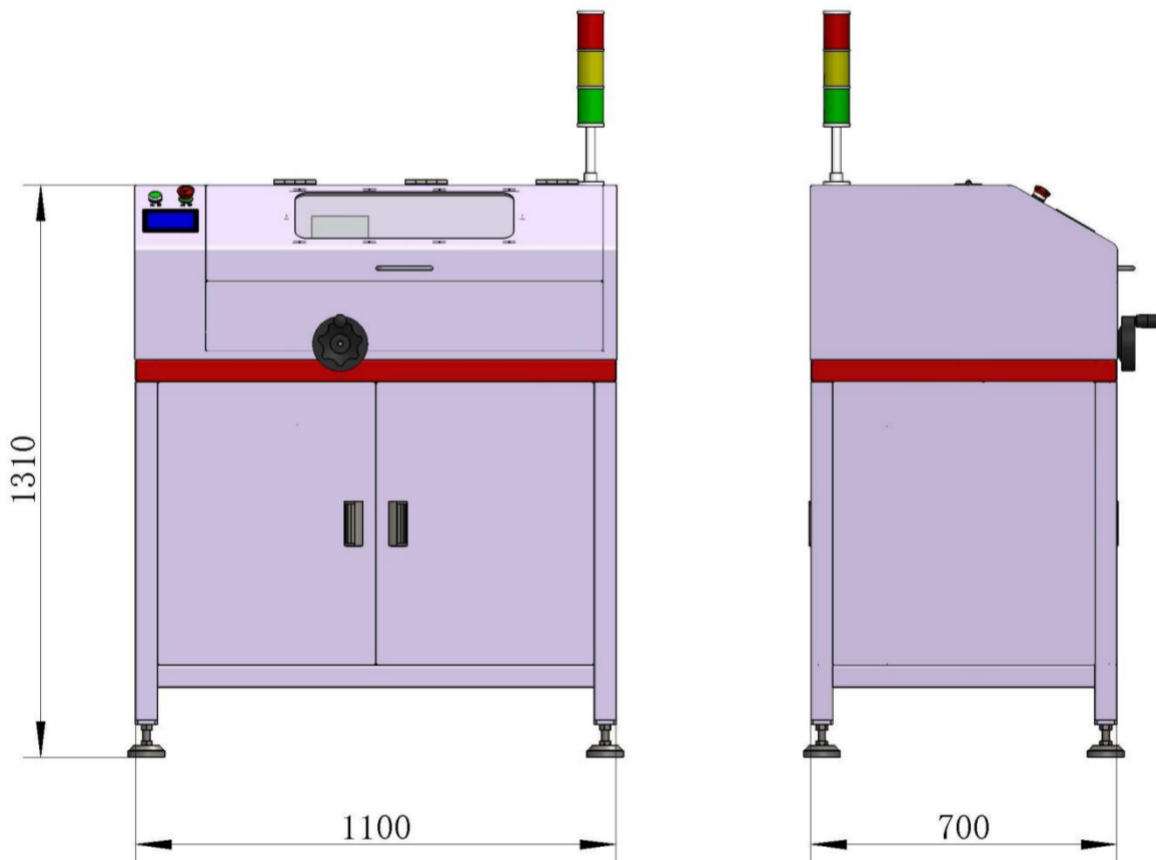
(3) HB5152-1996 "Metal Room Temperature Rotational Bending Fatigue Test Method"

(4) HB5153-1996 "Metal High Temperature Rotational Bending Fatigue Test Method"

3. Main technical parameter

MODEL	KASON-BP300
Maximum speed	6000r/min
Loading torque	100Nm
Loading lever	125mm
Loading force	80N ~ 800N
Loading force resolution	0.05N
Relative error of loading force	≤±0.5%
Force value variation during operation	≤±2%
Continuous operating Temperature range	200 ~ 800℃
Average temperate zone length	30mm
Temperature gradient	≤15℃
Power: Main rotary motor	850W
Loading motor	100W×2
Heating furnace	1kW
Voltage and frequency	220VAC,60Hz,Single Phase
Main machine dimensions (width × depth × height)	1100×700×1310mm

4. Machine Dimension:

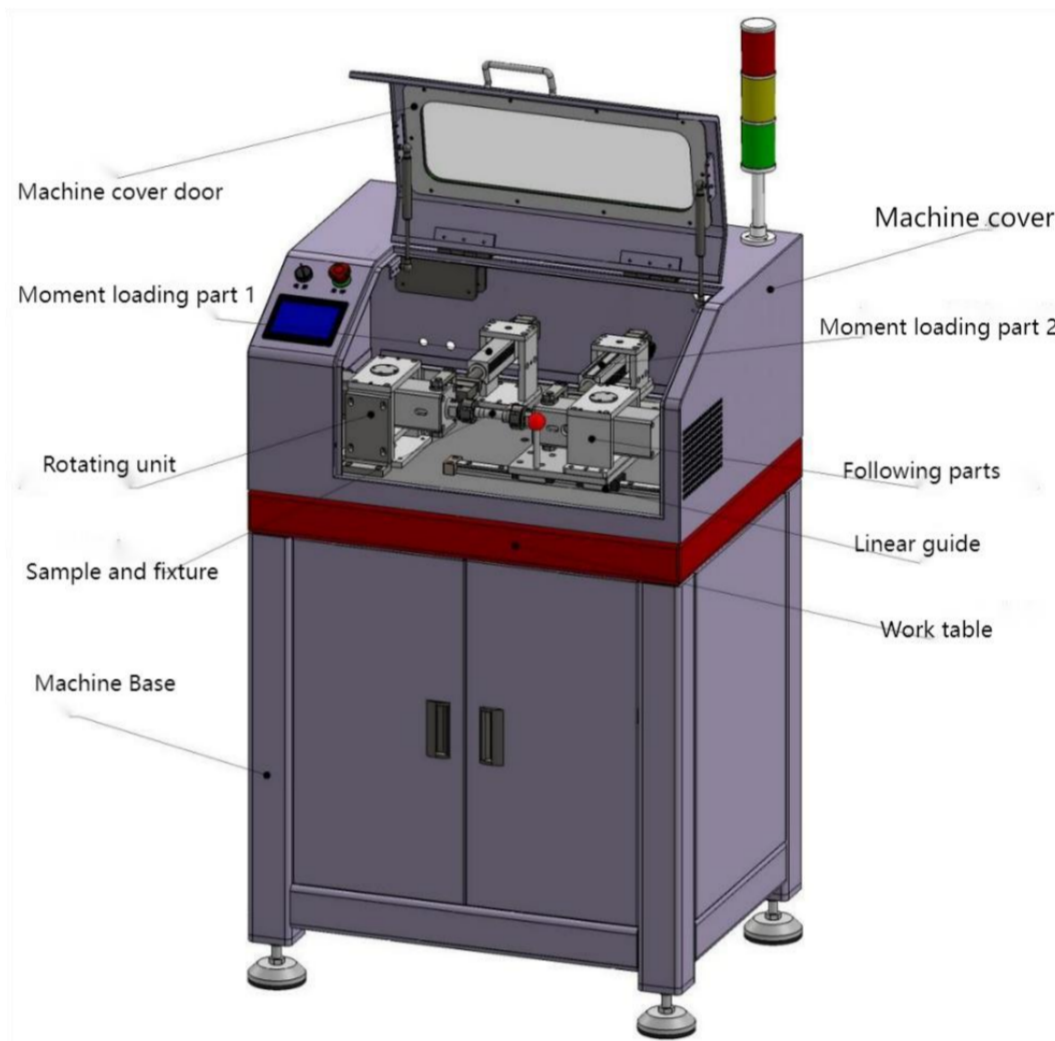


5. Main configuration:

ITEM	Name	Remark	Qty	Unit
1	Main frame	Main frame, platform, linear guide, cover, etc	1	Set
2	Rotating unit	German FESTO Servo motor, front seat, front spindle, chuck	1	Set
3	Follower unit	Back seat, rear spindle, chuck	1	Set
4	Add bending moment parts	American Transcell force sensor, Huizhou KT Electric cylinder, Japanese Yaskawa servo motor	2	Set
5	Normal temperature fixture	ER25 High precision elastic jacket: Diameters $\Phi 10$, $\Phi 12$, $\Phi 14$, $\Phi 16$	1	Set
	High temperature	High temperature fixture suitable for high temperature	1	Set

ITEM	Name	Remark	Qty	Unit
	Fixtures	specimens recommended by GB/T4337-2015		
6	Heating device	Heating furnace, guide rail, regulating device	1	Set
7	Electric	Taiwan Yonghong PLC, Shenzhen Wei Luntong touch screen, etc.	1	Set
8	Software	Special test software	1	Set
9	Computer	Brand	1	Set
10	Tool	Random tool	1	Set

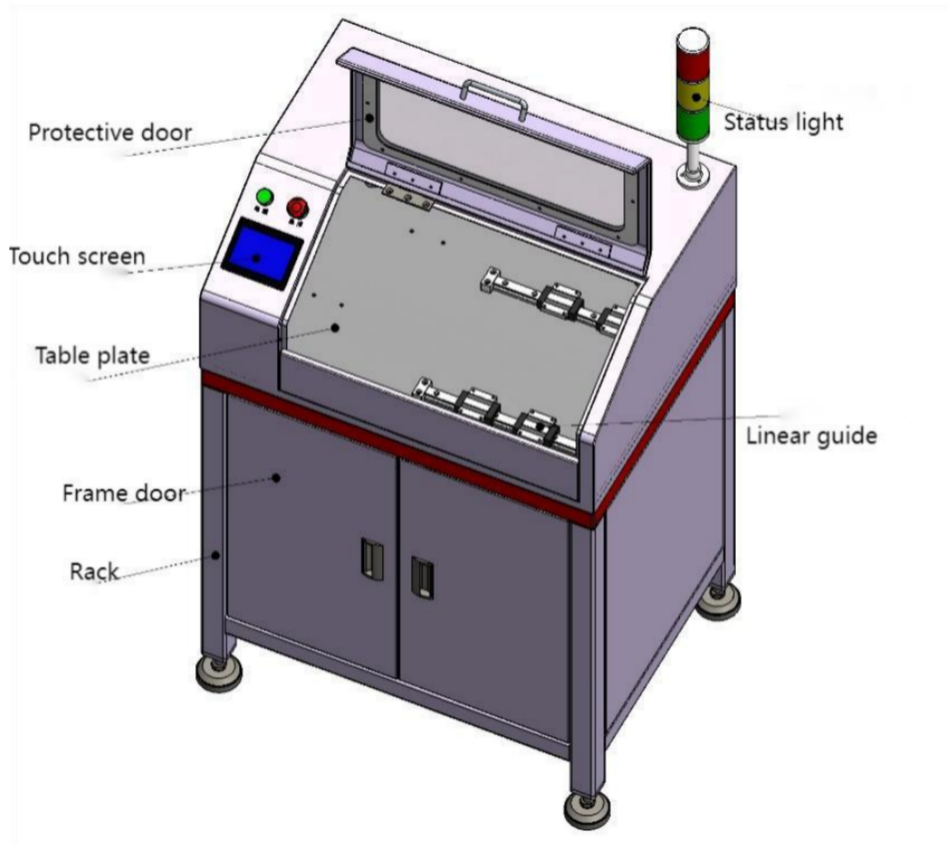
6. Equipment specification



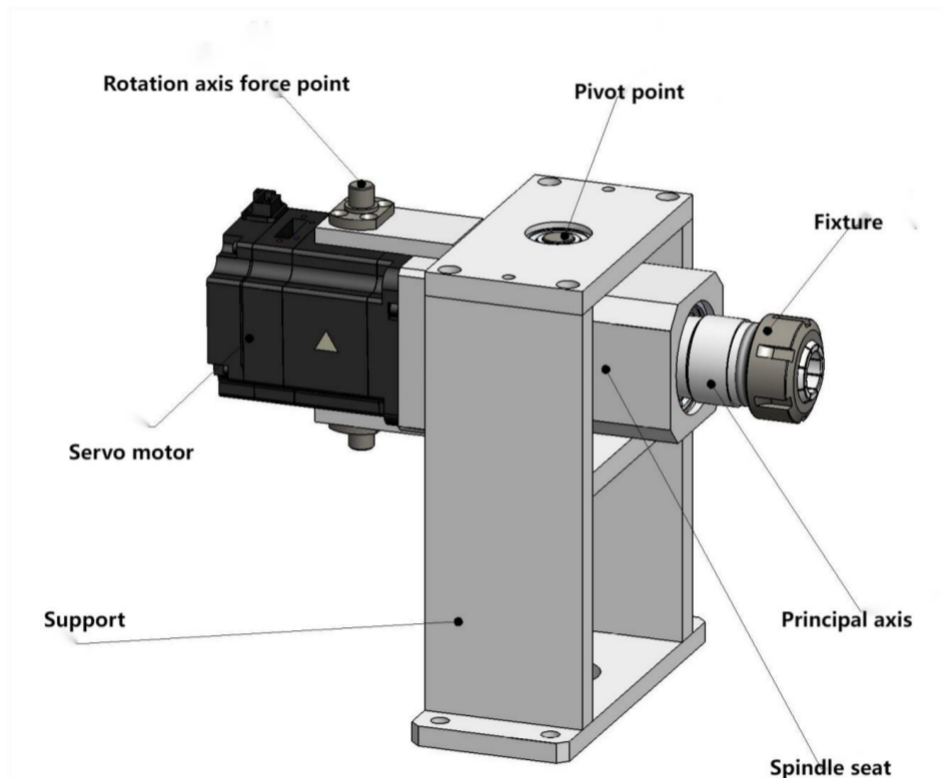
6.1 Mainframe

The main frame is composed of frame, bench, upper cover, linear guide rail, door, etc.

The platform plate is a thick steel plate, and the linear guide rail and other components are installed. It is a machined part to ensure the accuracy of the equipment.



6.2 Active seat



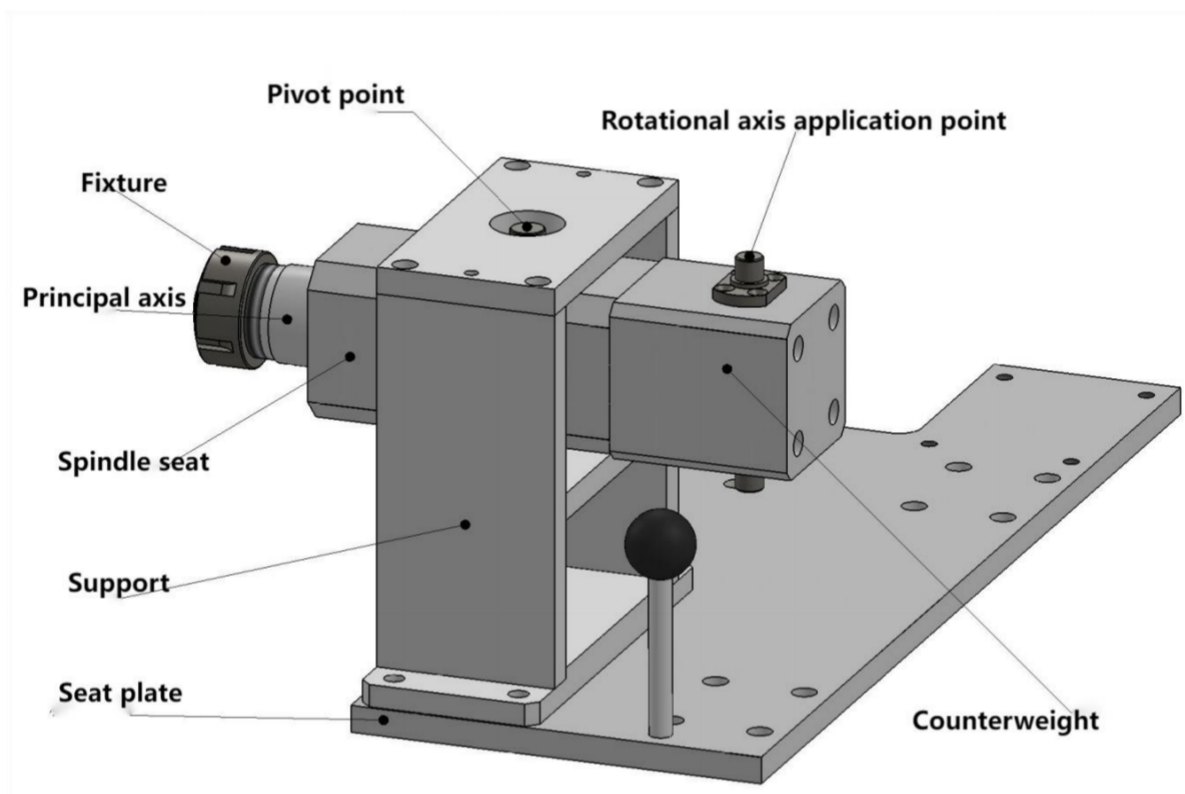
The active seat has two major functions: one is to drive the specimen to rotate, and the other is to apply bending moment to the specimen.

The servo motor is installed on the bearing sleeve, the servo motor shaft is directly inserted into the main shaft, and the flange at one end of the main shaft is installed with a fixture to drive the sample to rotate for testing.

Two rotating axes are installed on the bearing sleeve - a fulcrum and a force application point. When force is applied at the force application point, the servo motor, bearing sleeve, spindle, fixture, etc. can be deflected around the fulcrum, thereby applying a bending moment (moment) to the specimen.

The distance between the fulcrum and the applied force is 125mm.

6.3 Follower unit

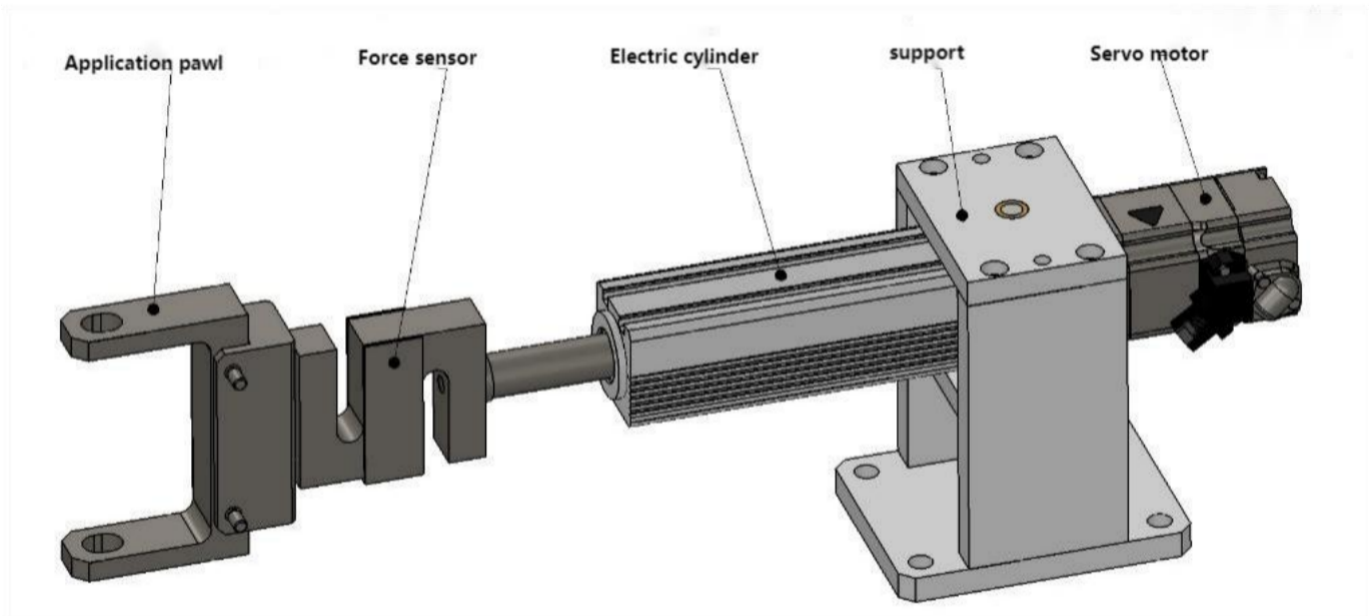


The follower seat is installed on the linear guide rail of the main frame and can slide along the guide rail.

The follower base is basically the same as the active base, except that it does not have a servo motor and is replaced by a counterweight.

The distance between the fulcrum and the force application is also 125mm.

6.4 Apply bending moments to components



This machine is a four-point bending testing machine, so there are two sets of force application devices, the output of the two sets of force application devices during the test is the same, and the moment (bending moment) acting on the sample is the same.

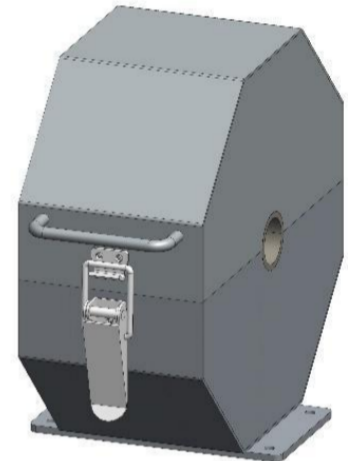
The force application device is composed of a support, a servo motor, an electric cylinder and a force sensor. The electric cylinder converts the rotary motion of the servo motor to the linear motion of the cylinder rod, and also converts the torque of the servo motor.

Force sensors are used to accurately measure test forces.

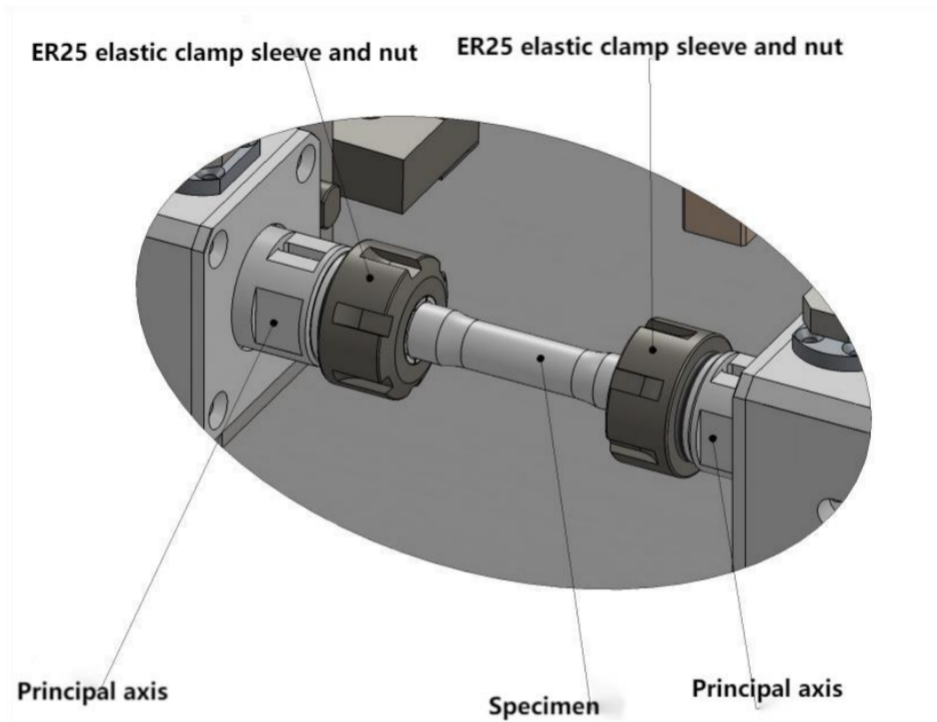
6.5 Heating device

Heating furnace adopts open-type structure, stainless steel shell, ceramic inner liner, heating wire;

The heating furnace is installed on the platform, and its position is adjusted by the platform.



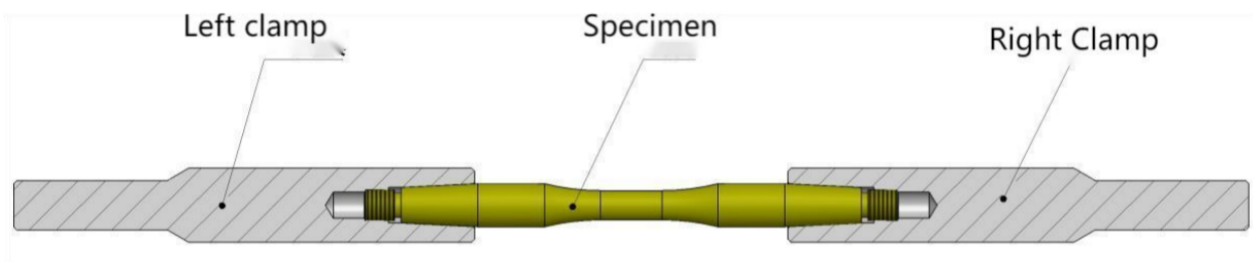
6.6 Normal temperature Fixture



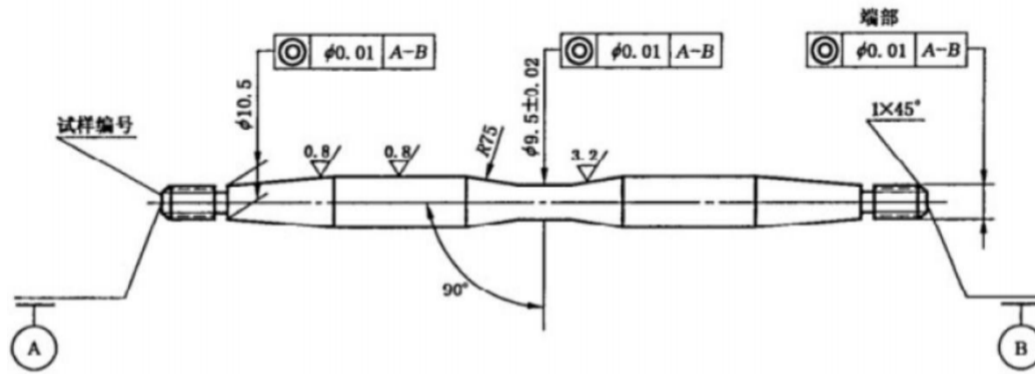
The sample should be processed into dumbbell shape according to the four-point bending sample stipulated in GB/T 4337-2015, and the diameter of the clamping end is: $\Phi 10$, $\Phi 12$, $\Phi 14$, $\Phi 16$ mm.

The fixture adopts the standard high-precision elastic jacket, the specification is ER25, and the inner holes are $\Phi 10$, $\Phi 12$, $\Phi 14$, $\Phi 16$ mm. The nut size is ER25.

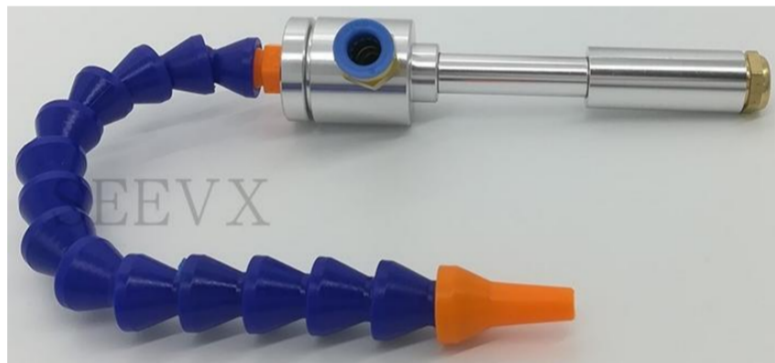
6.7 High temperature fixture



High-temperature specimens The high-temperature fixtures recommended by GB/T4337-2015 are as shown in the figure below.



6.7 Cooling device (optional)



Vortex tube is a kind of energy separation device with very simple structure, which is composed of nozzle, vortex chamber, separation hole plate and cold and hot two ends of the tube. During operation, the compressed gas rotates after the expansion and acceleration in the nozzle, and then enters the hot end of the vortex tube along the tangential direction at high speed. When the air is rotating at high speed in the vortex tube, it is separated into two parts of the air with unequal total temperature after the vortex transformation. The air temperature in the center of the vortex chamber is low, and the cold air is collected and discharged from the cold air through the generator center to form ultra-low temperature cold air. The airflow temperature in the outdoor layer of the vortex is high, and the proportion of cold and heat flow can be adjusted by adjusting the hot end valve, so that you can get a satisfactory cooling effect or heating effect.

Generally, the air temperature at the cold end will be 10-25 ° C lower than the air intake.

Description: The vortex tube may have a whistle when working.

6.8 Electrical

The equipment uses a PLC controller and is equipped with a touch screen as the human-machine operation interface. The main rotating motor realizes the rotation of the sample. The bending moment motor applies force (bending moment) through the electric cylinder. The size of the force (bending moment) is measured by a force sensor. This machine The length of the force arm is fixed at 0.1m, and the PLC calculates the bending moment; a

data interface is provided, and data can be exchanged with the PC through the RS232/RS485 port. Using the TestPilot software independently developed by our company, the control and parameter setting of the equipment can be realized, and The server can be uploaded through the network to realize laboratory data networking.

6.9 Test software

The application software of rotary bending fatigue testing machine is mainly used for the display of test data, the display of test graphics, the preservation of test data, the monitoring of test equipment status, and the emergency treatment during the test. Therefore, the test software has the following functions:

The software is dedicated software, with the following functions:

- (1) Setting -- setting the hardware parameters of the machine: servo motor parameters, deceleration ratio, etc., generally used by the company's personnel;
- (2) Calibration - mainly calibration of force sensor and cylinder displacement, speed, etc., only used on time at school;
- (3) Verification - mainly verification of force sensors and cylinder displacement, speed, etc., only used in verification;
- (4) Test - automatic test according to the set test plan;
- (5) Display -- display real-time test bending moment size, real-time drawing test bending moment-time curve;
- (6) Record - automatically record the parameters of the test for inquiry;
- (7) Test report - Print test report.

7. Features

- (1) servo loading, force sensor force measurement, avoiding the trouble of hanging weights and the hidden danger of hanging wrong weights;
- (2) The design principle avoids the bending moment (system error) caused by the gravity of each part on the sample;
- (3) The elastic jacket holds the sample firmly and reliably;
- (4) Suspend the test when the sample slides;
- (5) Fully enclosed structure, safe and reliable test;
- (6) The key components are made of brand-name high-quality products with high durability.

8. What the user needs to prepare before the equipment is delivered

- (1) Power supply: Voltage 220V, power 1kW
- (2) Computer desk
- (3) Reserve an area for equipment placement and use according to the equipment size diagram.

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