

5-Station High Temperature Creep Tester



(Picture just for reference)

1. Features

5 station high temperature creep test machine is mainly used for the determination of tensile creep of metal materials under constant high temperature state, using a main engine frame, 5 station high temperature furnace and loading mechanism. Each test station can be controlled separately and can work independently. Five stations can be measured at the same time, and different types of tests can be done

simultaneously.

2. In addition to the creep test, the test machine controller software can also complete the lasting test, stress relaxation test and cycle loading test (low weekly fatigue test). After the test software sets the test (test force / stress loading speed, test force / stress loading constant target value, test temperature) conditions, automatically record and save the test force / stress-time, deformation / stress-time, temperature-time curve.

3. Dual control system, with an independent large screen touch screen measurement controller, each machine can work independently, can also work online with the computer, the LCD touch screen durability is better than the push-button hand control box

4. The temperature can be set in real time on the touch screen and software, and can run automatically without pressing the temperature control table button. The test software automatically displays and records the temperature curve.

5. The GTC650 fully digital ARM measurement and control device and low noise sensor independently developed and produced by our company are adopted. The ARM chip adopts imported NXP chip from the Netherlands, and the system drift is very small, so it can fully meet the needs of creep and lasting long time test. The test software automatically records the test force / stress-time, deformation / stress-time, temperature-time curve.

6. The measuring controller and the computer form a distributed control system. All the functions of the test data, which can be online or disconnected from the computer at any time to receive or transmit data through the network interface; the data collection interval can be set according to time, deformation variation and test force variation. After the sampling starts, it has the function of deformation and zero password protection to prevent data loss caused by misoperation.

7. The controller can communicate with the temperature controller and control it to ensure that the whole experiment process is not disturbed by human beings, automatically heat up according to the experimental conditions, and automatically conduct the specified test when the set ambient temperature is reached.

8. Measures to ensure the long-term stable and reliable operation of the system (over 5000 hours) to overcome the drift of the side force sensor is the basis of electronic creep and lasting test machine. The strain force sensor is mainly affected by the creep of the internal elastomer of the sensor and the temperature of the sensor. We make the following treatment: The 50 KN creep and lasting test machine provided by our company uses 100 KN force sensor, which aims to minimize the impact of the creep of the sensor elastomer itself.

9. Unattended function. The test machine has automatic control, sensitive response and high accuracy. When beyond the adjustment range, alert the operator with sound and light alarm, and automatically stop, and no one needs to guard after the test starts.

10. The deformation measurement system first chooses the lead-out structure and adopts the bilateral grating ruler measurement to avoid the long time drift error of the strain extension meter.

11. Using Japan Panasonic drive system, stable and reliable.

12. The sensor sensor is used. High resolution, good linearity and high accuracy.

13. The high temperature temperature control table adopts Japan island power number display table or select configuration touch control temperature control screen, with high precision and good stability.

14. Test engine, measurement and control device, test software and high temperature furnace are independently developed and produced by our company, and the technology is mature and stable, and the after-sales service is guaranteed.

2. Test standard:

2.1. Manufacturing and inspection standards

All parts of the testing machine and the measurement units

of various instruments all adopt the International Unit (SI) standard.

The design, manufacture, inspection and use of the testing machine comply with national standards and relevant industry standards. The applicable standards are as follows:

JB/T9373 "Technical Conditions for Tensile Creep Testing Machine"

GB/T16491 "Electronic Universal Testing Machine"

GB2611 "General Technical Requirements for Testing Machines"

GB/T16825.2 "Inspection of Force Applied by Tensile Creep Testing Machine"

2.2 Applicable test method standards

GB/T2039 "Metal Tensile Creep and Endurance Test Method"

HB5151 "Test method for high temperature tensile creep of metals"

HB5150 "Test method for high temperature tensile endurance of metals"

ASTM E139 《Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials1》

ASTM E292 《 Standard Test Methods for Conducting Time-for-Rupture Notch Tension Tests of Materials》 ;

ISO 204-2006 《Metallic materials: Uniaxial creep testing in tension: Method of test》 ;

BS EN ISO 7500-2:2006 《Metallic materials-Verification of static uniaxial testing machines-part2: Tension creep testing machines - verification of applied force》 .

3. Main technical indicators:

Model	KASON RCW-50E-5
3.1 Mainframe	
Single station Maximum test load	50kN

Test range	1%~100%FS
Testing machine Accuracy	≤±0.5%
Test force measurement range	0.4%FS-100%FS
Relative error of test force indication	±0.5%
Test force resolution	1/500000 of maximum test force (resolution remains unchanged throughout the whole process)
Test force drift	4×10 ⁻⁴ yards/24h (under constant temperature conditions)
Test force control stability	±0.2%
Test speed range	0.005~50mm/min
Fixture coaxial	≤8%
tensile stroke	≥ 150mm
Displacement resolution	0.00025mm
Deformation resolution	0.001mm
Deformation error	±0.002mm
Displacement rate control accuracy	≤± 0.5%
Max Deformation range	10mm
Configuration fixture	Rebar M16 Parallel segment diameter 50mm
Introduction of rod configuration	Rebar M16 Parallel segment diameter 50mm
External dimensions of test machine	(width and depth): 2500,1000,2400mm
Machine weight	3200kg

3.2 Electric furnace and temperature control system

Equipped with high temperature furnace lifting beam, the beam has high temperature furnace fixed column, convenient for users to complete the switch of high temperature furnace, the operation height is ergonomic, reduce labor intensity

Electric furnace structure	open-type atmospheric furnace, heated by three-section electric furnace wire, controlled in sections.
Accuracy of the temperature control meter:	0.3℃
Working temperature range °C	300~1100℃
Effective equalizing zone length	150mm
Furnace tube and electric furnace size: furnace inner diameter	Φ90mm
Temperature fluctuation:	<900℃, ± 3℃; (900~1100)℃, ± 4℃
Temperature gradient	<900℃, ≤3℃; (900~1100)℃, ≤4℃
Heating rate:	0.7-2℃ / min
Furnace wire (electric heating element)	imported latest HREφ1.4mm fine furnace wire.
total power	5 station*5 kw (each station is 5kw)

4. Configuration:

No	Name	Models and Specifications	Qty.	Manufacturer
1	Host		1 Set	KASON
	Ball screw Set		2 PCS	Made in China
	Synchronous pulley		8 PCS	Made in China
	Precision electric motor		5 Sets	Made in China
	Servo motor and driver		5 Sets	Japan Panasonic
	1000°C high temperature ring furnace		5 Sets	Made in China
	Integrated high temperature temperature control cabinet system		5 Sets	Made in China
	7 inch LCD touch panel		5 PCS	KASON
	Load sensor		5 PCS	USA CELTRON
	GTC-650 fully digital measurement controller		5 PCS	Made in China
	Creep test software		1Set	KASON
	Computer		1Set	lenovo
	Configuration fixture	Rebar M16 Parallel segment diameter 50mm	1Set	
	Introduction of rod configuration	Rebar M16 Parallel segment diameter 50mm	1Set	
	Deformation grating ruler	(0-10mm)	10pcs	
	Tools		1Set	

5. Introduction of the host machine and the main machine and the parts

The test machine is mainly composed of high stiffness host, power system, full digital measuring control system, computer and test software, high temperature furnace, fixture, deformation measuring device and other components.

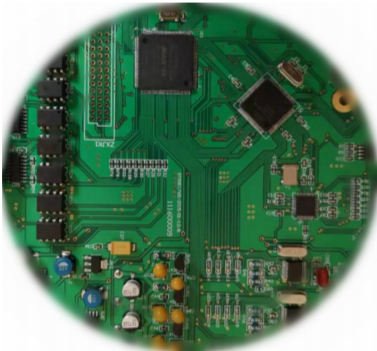
Host: the use of domestic six-pillar high stiffness host model, the product steel, high strength, can allow overload load 150%, mechanical system without damage. The frame structure is

stable, equipped with vibration damping footpad or a device with vibration damping function.

The ball wire adopts no pluss precision wire. The main engine table is equipped with emergency stop switch, and the moving beam is protected with travel limit switch.

Drive system: using the full digital AC servo motor and driver, high control precision, high transmission efficiency. Transmission balance noise is low, speed error is less than $\pm 0.2\%$, driver parameters set visual adjustment.

TT&C system: Full digital measurement controller: it has the preload protection function to prevent the damage to the measuring sensor. Full digital multi-channel controller, resolution up to ± 500000 yards, sampling frequency of 1000Hz, to obtain more accurate test data. The controller adopts network port and PC communication, with high transmission rate. Its service life, stability is also far greater than the PCI bus is a board card controller.



ARM on-chip controller



American CELTRON sensor



Japanese Panasonic drive system

Touchscreen Control System:

Equipped with a color touchscreen control panel, the industrial-grade touchscreen can be operated even when wearing gloves, offering a longer lifespan than button-type displays. It can operate the testing machine independently without using computer test software, and it can store test data to a USB drive via a USB interface, or it can be connected to a computer for online operation. The touchscreen control panel features interfaces for test settings, parameter adjustments, calibration, and more.

The test and analysis system

The test and analysis system independently developed by our company has high transmission rate, powerful function, simple operation and intuitive display. According to different industry users, different material characteristics, different test standards, can be flexibly set up a special test scheme. The test data include at least include temperature, load and deformation; the calculation data include creep increment, creep index and flexibility

increment, the test raw data can be exported in Text, Excel and other processing formats; the deformation-time curve of export (or drawing software) is smooth, without obvious jitter, without step rise or fall.

(1) Each machine has an independent large-screen touch-screen measuring controller. Each machine can work either independently or can work online with the computer.

(2) The use of digital measurement and control device and low noise sensor, the system drift is particularly small, so it can fully meet the needs of creep, lasting long time test needs.

(3) The measuring controller and the computer form a distributed control system. As the receiver, the measuring controller can store the test data, which can be online or disconnected from the computer at any time to receive or transmit data through the network interface; the data collection interval can be set according to practice, deformation variation and test force variation. After sampling, it has the function of deformation and zero password protection to prevent data loss caused by misoperation.

(4) The control system has strong expansion ability. Through network integration and other technologies, a master control computer and decentralized control system; the computer can remove the controller, the controller works independently; when the computer is online again, the controller automatically transmits data to the computer. The controller or the computer can set the test force, deformation and loading speed required for the test to complete the test control.

(5) The controller can communicate with the temperature controller and control it to ensure that the whole experimental process is not disturbed by human beings, automatically heat up according to the experimental conditions, and automatically test when the set ambient temperature is reached.

(6) Each test equipment can preset multiple PID parameters and power control parameters, which correspond to the temperature. When the test is conducted at different test temperatures during the test, the system will automatically select the corresponding PID parameters and power control parameters to avoid self-setting the furnace temperature when the test temperature is replaced.

(7) open data connection interface, can realize the test force, deformation closed loop control, in multi-step way control constant test force, constant deformation, test force rate, deformation rate, test speed, in the test process in two control mode between automatic switch, and can be converted by fixed rate charge without impact to fixed load or deformation control.

(8) It can be loaded periodically and can perform low weekly fatigue test.

(9) The measurement system (including force sensor and deformation sensor) can be dynamically adjusted through the digital measurement controller to ensure the accuracy of measurement and control.

(10) One computer can be used for group control or single control without loss of test data and affecting the test results.

(11) The controller is fixed on each machine, equipped with a large screen LCD touch screen, abandoning the traditional keyboard keys are easy to be damaged, and can be operated and controlled separately on site.

(12) The measurement controller adopts the SOC (system on chip) system imported from the United States. The system is based on the DSP (digital signal processing) technology of FPGA (high-density field programmable gate array), which has the characteristics of high speed processing, ultra-low noise and high anti-interference.

(13) The force sensor adopts the product of World Quan in the United States, which has high precision and good long-term stability.

(14) The measurement control system also has the following functions:

A. Automatic zero adjustment, automatic calibration and other functions.

B. Overload, overtravel, overpressure, overcurrent, overheating and other protection functions.

c. Automatic alarm function for sample fracture and equipment power failure.

D. The sample can be broken and protected, and the function of manual unloading can be manually unloaded after power failure. The working time before power failure and the working time after power failure can be accumulated to continue working.

e. Equipped with a timing device, the test load reaches the set value and starts timing and display. F. Unattended function. The test machine is automatically controlled with high sensitivity and accuracy. When it exceeds the adjustment range, the operator will be reminded by sound and light alarm and the machine will stop automatically. There is no need for human supervision after the test starts.

g. Measures to ensure the long-term stable and reliable operation of the system (over 5000 hours) to overcome the drift of the side force sensor is the basis of the electronic creep and lasting test machine. The strain force sensor is mainly affected by the creep of the internal elastomer of the sensor and the temperature of the sensor. We make the following treatment: The 50 KN creep and lasting test machine provided by our company uses 100 KN force sensor, which aims to minimize the impact of the creep of the sensor elastomer itself.

(15) Control application software can carry out conventional creep and lasting test, but also can carry out hydrobrittlement test, stress relaxation test, cycle loading test and other tests;

(16) The control software itself has the programming function, which can automatically control the test process in stages;

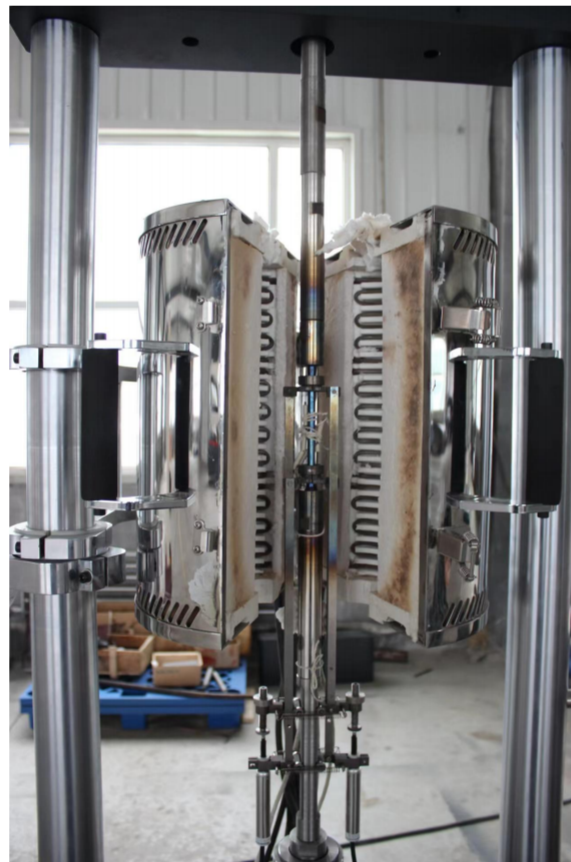
(17) The operating interface of the computer and the test machine controller is all in Chinese;

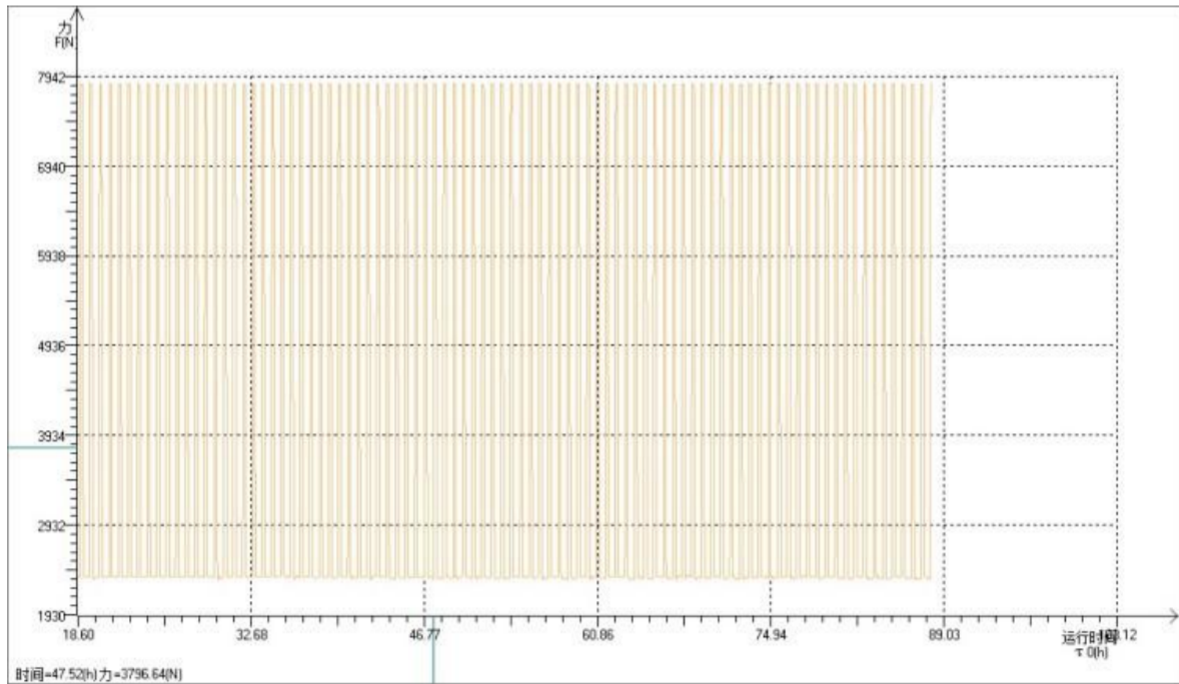
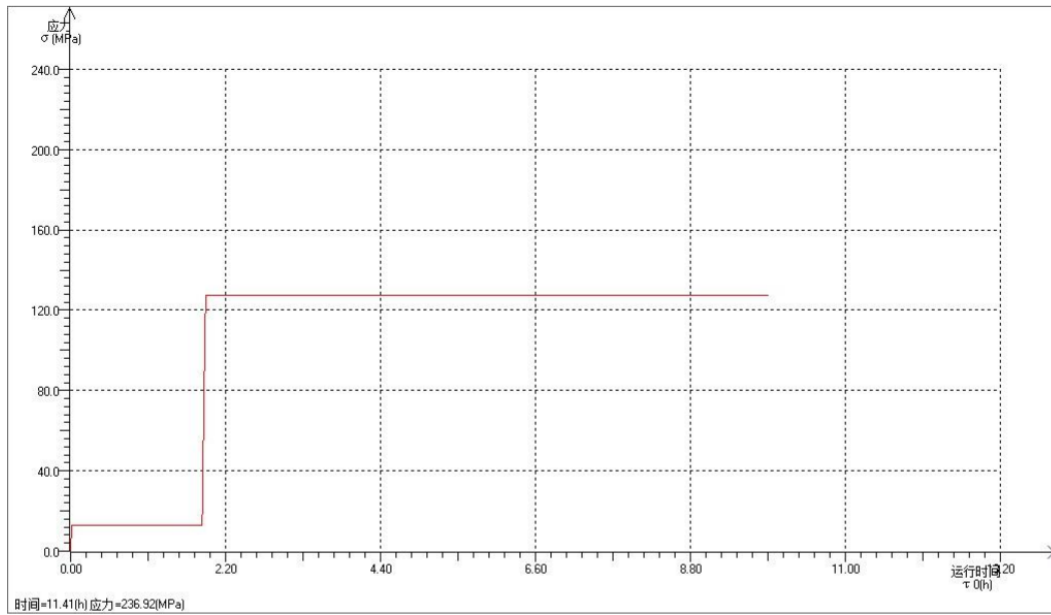
(18) All parameters are set by the standard unit stipulated by the state;

Deformation measuring device and fixture.

Deformation measurement system: the system contains 2 grating ruler measurement deformation and extension rod. Move the sample deformation to the high temperature box by the extension rod. The deformation was measured at room temperature. The effect of the specimen bending is avoided. The long-time stability of the grating ruler is much greater than that of the extension meter. The schematic diagram is as follows

The grating ruler range is configured according to the user requirements. The guide part of the extension rod has good stiffness and no friction resistance.







Authentication Certificate of Quality Management System

Registration No.19922Q01072R0S

This is to certify that

Jinan Kason Testing Equipment Co., Ltd.

Unified Social Credit Code: 9137010458994939X0

Registered/Production Address: No. 4715, Jingshi West Road,
Huaiyin District, Jinan City, Shandong Province

Office Address: Room 2-1108, Harmony Square, Huaiyin District, Jinan City

Is in conformity with :

GB/T 19001-2016/ISO 9001:2015

The certificate is valid for the following scope :

Assembly and sales of testing machines

This certificate should be used effectively with the legal requirements of the administrative license, qualification license, compulsory certification, which the certification scope involved.

In the case that the organization regularly receives surveillance assessments, the certificate shall be valid when used together with the Quick Response Code.

Date of Issue: 2022-07-19
Date of Expiry: 2025-07-18
Date of Initial Certification: 2022-07-19

General Manager



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MACHINERY DIRECTIVE ATTESTATION OF CONFORMITY

Technical file of the company mentioned below has been inspected and audit has been completed successfully.

2006/42/EC Machinery Directive Annex VIII has been taken as references for these processes.

Company Name : **Jinan Kason Testing Equipment Co., Ltd.**
 Company Address : No.4715, Jingshi West Road, Huaiyin District, Jinan, Shandong, China
 Related Directives and Annex : **2006/42/EC Machinery Directive/Annex VIII**
 Related Standards : **EN ISO 12100:2010; EN 60204-1:2018**
 Product Name : **Testing Machine**
 Report No and Date : TCF-JKTE230605-MD

Product Brand/Model/Type : WDS-1, WDS-2, WDS-3, WDS-5, WDS-10, WDS-20, WDS-30, WDS-50, WDS-100, WDS-200, WDS-300, WDW-1E, WDW-2E, WDW-3E, WDW-5E, WDW-10E, WDW-20E, WDW-30E, WDW-50E, WDW-100E, WDW-200E, WDW-300E, WDW-500E, WDW-600E, WDW-1000E, ETM103, ETM203, ETM303, ETM503, ETM104, ETM204, ETM304, ETM504, ETM105, WE-300D, WE-600D, WE-1000D, WE-2000D, HUT305S, HUT605S, HUT105S, HUT126S, WEW-300D, WEW-600D, WEW-1000D, WEW-1200D, WEW-2000D, WEW-3000D, HUT305E, HUT605E, HUT105E, HUT126E, HUT-A306E, HUT-A206E, WAW-300D, WAW-600D, WAW-1000D, WAW-1200E, WAW-2000E, WAW-3000, WAW-2000A, WAW-3000A, WAW-4000A, HUT-A206W, HUT-A306W, HUT-A406W, HUT305W, HUT605W, HUT105W, HUT126W, WAL, LAW, HUT-L, JB-300, JB-300B, JB-500B, JBS-300, JBS-500, JBW-300, JBW-500, JBDW-300, JBDW-500, CST-50, VU-2Y, VU-1S, DWC-40, DWC-60, DWC-80, DWC-100, DWC-196, YES-1000, YES-2000, YES-3000, YAW-1000, YAW-300, YAW-2000, YAW-3000, YAW-5000, NDS-200, NDS-500, NDS-1000, NDS-2000, NDW-200, NDW-500, NDW-1000, NDW-2000, NDW-3000, NDW-5000, NDW-10000, EZ-1, EZ-3, EZ-10, JWJ-10, TIS, TLW, HWS, PLS-20, PLS-50, PLS-100, PLS-300, PLS-500, PLS-1000, KASON-1, RDJ-10, RDJ-20, RDJ-50, RDJ-100, DWIT-20000, DWIT-30000, DWIT-40000, DWIT-50000, DWIT-80000, DWIT-100000, PIT-302, PIT-302M, PIT-502, PIT-502M, PIT-302T, PIT-502T, PIT-302W, PIT-302TW, PIT-502W, PIT-502TW, PIT302CW, PIT452CW, PIT602CW, PIT752CW, PIT302CT, PIT452CT, PIT602CT, PIT752CT, PTD302W, PTD502W, PTD302T, PTD502T, PTD302CW, PTD452CW, PTD452CT, PTD752CW, PTD752CT, PTD302G, HCT106, HCT206, HCT306, KSCM, HYJ, HEZ-3, HEZ-5, HEZ-10, HEZ-20, KSBT-10, KASON 370.02, KASON 370.05, KASON 370.10, KASON 370.25, KASON 370.50, MMW, GBW-60B, GBS-60B, HUT, ETM, XNR, GW-40, GW-50, MRS, MMU, MRH, GBW, GW, LSW, HBT, GLY, GCJ-1000, GWQ-1000, GNZ-1000, GQR-1000, GJR-300, GSS-1000, GMS-100, GTW-500, GQC-5, GGG-100, HR-150A, HRD-150, HRS-150, XHR, HB, HVS, HV, HBRV, W-20, HBA-1, LHT, Q-2A, MP-2, XQ-2B, XD-30M, 4XCE, 4XB, JSZ, MOPAO, MPT, P, MP, BG, LBG-32, MPJ-35, Q-Z, Q-100B, SQ, Q-3A, QG-4, LSQ, LDQ, GTQ-5000A, GTQ-5000B, DTQ, ZXQ, 4XC, HST, KASON, KS, KSCUT, HTR, HTPR, HTB, HSTR-455, HTV, HTMV, HTBRV, METRPRESS, MPJ

Certificate Number : **M.2023.206.C86313**
 Initial Assessment Date : 07.06.2023
 Registration Date : 08.06.2023
 Reissue Date/No : -
 Expiry Date : **07.06.2028**


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