



Product Datasheet  
Automotive High-Pressure Hot Water Spray Test System

# ISO 20653 IPX9K Test Chamber

For Automotive High-Pressure and High-Temperature Water Spray Testing

Designed for road vehicle electrical components and automotive parts requiring severe wash-down resistance evaluation. Supports IPX9K test conditions including 80-100 bar pressure, 80 +/-5 C water temperature, 14-16 L/min flow rate and 0 deg / 30 deg / 60 deg / 90 deg spray angles.



<b>Applicable Standards</b>	ISO 20653 / IEC 60529 / DIN 40050-9
<b>Pressure</b>	8-10 MPa / 80-100 bar
<b>Temperature</b>	80 +/-5 C
<b>Flow Rate</b>	14-16 L/min
<b>Spray Angles</b>	0 deg, 30 deg, 60 deg, 90 deg

## Product Overview

The KINGPO ISO 20653 IPX9K Test Chamber evaluates whether vehicle electrical components and enclosures can withstand high-pressure and high-temperature water spray. It is suitable for automotive lights, sensors, cameras, connectors, ECUs, control modules, battery enclosures, charging ports, inverters and high-voltage components.

IPX9K testing is more severe than ordinary rain spray or water jet testing. The chamber sprays hot water at high pressure from defined angles while the specimen rotates on the turntable. The test helps identify sealing weaknesses at housings, cable entries, connectors and enclosure joints before field use.

## Typical Applications

### Automotive Electrical Components

Headlights, taillights, sensors, cameras, connectors, ECUs and control modules.

### EV and High-Voltage Parts

Battery enclosures, charging ports, inverters and high-voltage electrical assemblies.

### Third-Party Laboratories

Repeatable IPX9K testing for laboratory validation, supplier qualification and customer testing.

### Wash-Down Resistant Products

Industrial enclosures and outdoor products exposed to high-pressure cleaning conditions.

## Technical Specifications

<b>Product Name</b>	ISO 20653 IPX9K Test Chamber
<b>Applicable Standards</b>	ISO 20653, IEC 60529 and DIN 40050-9 related IPX9K / IPX9 test applications
<b>Test Type</b>	High-pressure and high-temperature water spray testing
<b>Water Pressure</b>	8-10 MPa / 80-100 bar, adjustable
<b>Water Temperature</b>	80 +/-5 C
<b>Water Flow Rate</b>	14-16 L/min
<b>Spray Distance</b>	100-150 mm, adjustable according to the test setup
<b>Spray Angles</b>	0 deg, 30 deg, 60 deg and 90 deg
<b>Turntable</b>	Diameter 400 mm, 4-6 r/min, maximum load 100 kg
<b>Nozzle</b>	SUS304 stainless steel nozzle, designed according to IEC 60529 Figure 7 related requirements
<b>Control System</b>	PLC control with 7-inch color touchscreen
<b>Monitoring Parameters</b>	Pressure, flow rate, water temperature, test time and system status
<b>Water Pump</b>	High-pressure and high-temperature plunger pump
<b>Water Tank Capacity</b>	70 L
<b>Chamber Internal Size</b>	1100 x 800 x 1000 mm
<b>External Dimensions</b>	1850 x 1100 x 1950 mm
<b>Power Supply</b>	AC 380 V, 50 Hz, 25 kW
<b>Safety Protection</b>	Leakage protection, overload protection, short-circuit protection and door-open interlock

Note: Final configuration should be confirmed according to the required standard, sample size, sample weight, energized testing requirement, laboratory installation condition, water supply and documentation requirements.

## Testing Principle

During IPX9K testing, the specimen is mounted on the turntable inside the chamber. High-temperature water is sprayed toward the specimen at high pressure from the defined angles of 0 deg, 30 deg, 60 deg and 90 deg. The turntable rotates during the test to expose the sample in a controlled and repeatable manner.

The test result depends on the stability of pressure, flow rate, water temperature, nozzle distance, spray angle, turntable rotation and sample mounting. These parameters should be controlled and recorded for repeatable laboratory testing.

## Engineering Features

<b>Stainless Steel Chamber Structure</b>	Suitable for high-temperature water spray environments, with improved corrosion resistance and easier cleaning during long-term laboratory use.
<b>PLC Touchscreen Control</b>	Provides clear setup and monitoring of pressure, flow rate, water temperature, test time and system status.
<b>High-Pressure Hot Water System</b>	Supports the required IPX9K pressure, temperature and flow range when properly installed and verified.
<b>Turntable and Sample Positioning</b>	Controlled sample rotation helps improve repeatability. Customized fixtures can be reviewed for special samples.
<b>Safety Protection</b>	Includes leakage protection, overload protection, short-circuit protection and door-open interlock.

## Standard Scope and Application Boundary

<b>ISO 20653 IPX9K</b>	Mainly used for degrees of protection provided by enclosures of electrical equipment used in road vehicles. Commonly selected for automotive electrical components and wash-down resistant parts.
<b>IEC 60529 IPX9</b>	General ingress protection testing for electrical and electronic equipment enclosures. The target standard should be confirmed before testing or quotation.
<b>DIN 40050-9</b>	Historically associated with IP69K / IPX9K high-pressure and high-temperature water spray testing in vehicle and wash-down applications.

## Configuration and Quotation Support

- Target standard: ISO 20653, IEC 60529, DIN 40050-9 or customer-specific method
- Required test level: IPX9, IPX9K or IP69K
- Sample type, size, weight and mounting direction
- Energized testing requirement and functional monitoring method
- Required chamber size, turntable load and sample fixture
- Local power supply, water supply, drainage and installation condition
- Factory verification, third-party calibration or documentation requirement



## Verification and Documentation

Pressure, flow rate and water temperature are key parameters for IPX9K testing. Regular verification is recommended according to the laboratory quality system, test frequency and customer audit requirements. The nozzle should also be inspected periodically for wear, blockage, surface damage or abnormal spray output.

Factory verification documentation can be provided according to order requirements. If third-party calibration, special inspection documents or traceability records are required, please confirm the required scope before order confirmation.

## Related KINGPO IP Testing Equipment

<b>IPX9 Spray Nozzles</b>	IEC 60529 Figure 7 fan jet nozzles for IPX9 high-pressure water spray testing, replacement use and chamber integration.
<b>IPX5 IPX6 Water Jet Test Chamber</b>	Complete IEC 60529 IPX5/IPX6 water jet testing system with controlled flow and sample positioning.
<b>IPX5 IPX6 Test Nozzle</b>	Handheld IEC 60529 IPX5/IPX6 nozzle set with 6.3 mm and 12.5 mm nozzles.
<b>IPX7 IPX8 Water Immersion Test Chamber</b>	Water immersion test equipment for waterproof products and enclosures requiring immersion evaluation.

## Quotation Checklist

<b>1</b>	Confirm target standard: ISO 20653, IEC 60529, DIN 40050-9, IPX9, IPX9K or IP69K.
<b>2</b>	Provide sample size, sample weight, mounting direction and maximum test quantity.
<b>3</b>	Confirm energized testing requirement, voltage/current and functional monitoring method.
<b>4</b>	Confirm laboratory power supply, water supply, drainage and installation space.
<b>5</b>	Confirm required documentation, factory verification report or third-party calibration requirement.

### Contact KINGPO for IPX9K Test Chamber Configuration

Send your sample size, target standard, water spray requirement, power supply and documentation request. Our engineering team can help review the suitable chamber configuration before quotation.



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