NSW-152-RC RAIN TEST CHAMBER

Narang Scientific Works Pvt. Ltd. is the leading manufacturer with expertise's in design and engineering and end to end range of solutions and a penchant for customer service. NSW provides best-in class technology for customers worldwide.

The NSW India Rain Test Chamber Model RTC-1 is a fully automated and robust testing system designed to perform IPX3 and IPX4 ingress protection tests as per relevant standards. The chamber is constructed using high-quality Stainless Steel 304 with mono-block construction, ensuring superior corrosion resistance, durability, and leak-proof performance.

The system is equipped with a precision-engineered oscillating tube mechanism for uniform water spray distribution, along with a variable speed turntable to ensure complete and consistent exposure of the test specimen. The chamber includes an efficient water circulation system with controlled flow and pressure, ensuring accurate simulation of rain conditions.

A user-friendly touch screen based control system with advanced programmable features allows precise control and monitoring of all test parameters, including time, flow, pressure, and rotation speed. The system also supports data storage, report generation, and remote communication interfaces.

WHO GMP compliant company

CE Certified

NARANG SCIENTIFIC WORKS PVT. LTD.

(Manufacturers & Exporters)

Address: GI-111, Mayapuri Industrial Area, Phase-II, New Delhi-64

E-mail: gemsalesnsw@gmail.com

Phone: 9818868239

Fax: 91-11-28112608

Web: www.nsw-india.com

For safety and reliability, the equipment is integrated with comprehensive electrical protections, water level control systems, and automated water make-up features. Additionally, a tower lamp indication system provides clear visual status of operation.

The HC-2 model is ideal for laboratories and industries requiring reliable, repeatable, and standards-compliant rain testing for product quality and performance validation.

Rain Test Chamber (IPX3 & IPX4)

1. The Rain Test Chamber is designed to perform IPX3 and IPX4 testing by accurately simulating rainfall conditions through controlled water spray patterns, ensuring uniform distribution and repeatability of test conditions.
2. The complete chamber construction is made from single sheet Stainless Steel 304 for both interior and exterior surfaces, providing excellent corrosion resistance, durability, and long operational life in wet testing environments.
3. The chamber is built with a mono-block construction design using high corrosion resistant materials, minimizing joints and enhancing structural integrity, rigidity, and leak-proof performance.
4. The base structure of the chamber is fabricated using high-gauge Stainless Steel square tubes, ensuring robust support, vibration resistance, and stability during operation.
5. All joints and corners are precisely executed using high-quality TIG welding, followed by smooth finishing and buffing to eliminate sharp edges, improve aesthetics, and ensure long-term durability.
6. The chamber is equipped with a friction-free and water-tight door locking mechanism, designed to provide secure sealing and prevent any leakage during testing cycles.
7. The control system is designed with an ergonomically positioned and easily accessible control desk, allowing convenient operation, monitoring, and adjustment of test parameters.
8. The chamber can also be manufactured using advanced X-ray automated welding technology, ensuring warp-free construction, uniform weld quality, and enhanced structural reliability.
9. The entire chamber undergoes stringent quality checks including 100% air and water leak testing to ensure complete sealing integrity and reliable performance during testing.

Oscillating Tube Test (IPX3 & IPX4)

1. The oscillating tube assembly is installed inside the test chamber and designed with a diameter of 800 ± 50 mm, ensuring proper coverage of the test specimen as per standard requirements.
2. The oscillating tube is mechanically coupled with a precision gear motor and rotary joint, enabling smooth, continuous oscillatory motion and reliable water supply during operation.
3. The oscillating mechanism is designed with adjustable angular movement, allowing ±60° from vertical for IPX3 testing and ±180° from vertical for IPX4 testing, ensuring flexibility to meet both test conditions.
4. For IPX3 testing, the oscillating tube operates through an angular movement of approximately 120° (60° on either side of vertical), with one complete oscillation cycle completed in about 4 seconds, and the total test duration maintained at 5 minutes.

WHO GMP compliant company

CE Certified

NARANG SCIENTIFIC WORKS PVT. LTD.

(Manufacturers & Exporters)

Address: GI-111, Mayapuri Industrial Area, Phase-II, New Delhi-64

E-mail: gemsalesnsw@gmail.com

Phone: 9818868239

Fax: 91-11-28112608

Web: www.nsw-india.com

5. For IPX4 testing, the oscillating tube operates through an angular movement of approximately 360° (180° on either side of vertical), with one complete oscillation cycle completed in about 12 seconds, and the total test duration maintained at 10 minutes.
6. The system is designed with manual control for regulating water flow rate and pressure, allowing the operator to set and maintain the required testing conditions.
7. Spray nozzles are precisely positioned on the oscillating tube at a spacing of 50 mm ± 2 mm, ensuring uniform water distribution over the test specimen.
8. Each spray nozzle is manufactured with a diameter of 0.4 mm ± 0.1 mm, conforming to standard requirements for droplet formation and spray characteristics.
9. The water flow rate from each nozzle is maintained at 7 liters per minute with a tolerance of ±5%, in accordance with the requirements of IEC 60529, ensuring accurate simulation of specified rain test conditions.

Turn Table

1. The system is equipped with a vibration-free rotating turn table designed to ensure stable and uniform rotation of the test specimen during operation, with a variable speed control system ranging from 0 to 30 RPM for precise adjustment as per testing requirements.
2. The turn table is fabricated from Stainless Steel with a diameter of 500 ± 50 mm and is centrally positioned within the test chamber to ensure uniform exposure to water spray from all directions.
3. The turn table is designed to handle a loading capacity of 50 ± 5 kg, making it suitable for testing a wide range of specimens with different sizes and weights.
4. A Stainless-Steel joint-free feed-through shaft is provided, directly coupled between the gear motor and the turn table, ensuring smooth transmission, minimal maintenance, and leak-proof operation.
5. A manual height adjustment mechanism is incorporated to allow easy adjustment of the turn table height based on the size and positioning requirements of the test sample.

Water Circulation Pump System

1. The system incorporates an independent centrifugal mono-block pump for efficient and continuous circulation of water during testing operations.
2. The water circulation network is designed using CPVC piping, ensuring durability, corrosion resistance, and long service life under continuous water exposure conditions.
3. An inline water filter is provided within the piping system to remove impurities and protect spray nozzles from clogging, thereby maintaining consistent performance.
4. Regulating valves are installed in the pipeline to enable precise control and adjustment of water flow and pressure as required for different test conditions.
5. An analog flow meter is provided for real-time monitoring of water flow, along with an ON/OFF control mechanism to facilitate easy operation and control of the water circulation system.

Instrumentation & Control System (Automated)

1. The system is equipped with a fully automated, touch screen based, user-programmable control console designed to control and monitor all rain test parameters including test duration, sequence, and operating conditions with high accuracy and ease of use.

NARANG SCIENTIFIC WORKS PVT. LTD.

(Manufacturers & Exporters)

Address: GI-111, Mayapuri Industrial Area, Phase-II, New Delhi-64

E-mail: gemsalesnsw@gmail.com

Phone: 9818868239

Fax: 91-11-28112608

Web: www.nsw-india.com

WHO GMP compliant company

CE Certified

ISO 9001:2015 CERTIFIED CO.

ISO 13485:2016 CERTIFIED CO.

2. The control interface consists of a minimum 7-inch TFT colour display with LED backlight and active-matrix technology, supporting 32k/64k colours and resolution options of 480×272 or 800×480 pixels (WVGA), ensuring clear visibility and user-friendly operation.
3. A resistive analog touch screen interface is provided, enabling reliable operation even in wet or industrial environments.
4. The controller is equipped with dual serial communication ports including one RS-485 and one RS-232/RS-422/RS-485 port, allowing flexible connectivity with external devices and systems.
5. The system includes Ethernet and USB ports, enabling communication and data exchange, with the capability to support multiple communication protocols simultaneously.
6. All unit configuration settings and user-defined parameters are securely stored in non-volatile flash memory, ensuring data retention even during power failure.
7. The front panel of the controller is designed to meet NEMA 4 / IP65 protection standards, ensuring resistance against dust and water ingress in harsh environments.
8. The system operates on a stable power unit of 24V DC (±20%), ensuring safe and reliable performance of the control components.
9. Real-time indication of turn table RPM is integrated into the touch screen controller, allowing accurate monitoring and control of rotational speed during testing.
10. Digital 32 Bit measuringand control system 7'' Color Touch Panel which have inbuilt controller for operation , supporting 32k/64k colours and resolution options of 480×272 or 800×480 pixels (WVGA),, with/without the need of PC
11. Touch Panel: Color touch panel foroperation
12. The display shall provide information on the set and actual values of temperatureand relative humidity in graphical form and numerical form.
13. The temperature of the chamber shall be monitored by a temperature-sensing device suitably located in its working space. Provision for continuous display of set value and actual value of Temperature, Humidity and graphical representation of Temperature and Humidity with respect to time
14. Built-n Error diagnostic System to know about information on operating times and possible operatingfailures
15. USB and EthernetInterface
16. Program memory programs- 20
17. No of Segment in each Prog.: 20
18. Segments- Program controllers start parameters for programs: immediately, delayed, real time, pause.
19. Loops- special control algorithms defined according to test tasks.
20. Program cycles 250 (nested)
21. Password protection- Yes
22. Limit value monitoring system- max. 9999
23. Provision for selection of manual and automatic modes
24. Ethernet port for connection to a remote PC for programming and data logging

WHO GMP compliant company

CE Certified

NARANG SCIENTIFIC WORKS PVT. LTD.

(Manufacturers & Exporters)

Address: GI-111, Mayapuri Industrial Area, Phase-II, New Delhi-64

E-mail: gemsalesnsw@gmail.com

Phone: 9818868239

Fax: 91-11-28112608

Web: www.nsw-india.com

Safety and Control Features

1. The system is equipped with MPCB/MCB protection for all individual three-phase and single-phase electrical components, ensuring safe operation and protection against overloads and short circuits.
2. Comprehensive electrical protection is provided for the main input power, including single phase protection, phase reversal protection, under-voltage protection, and over-voltage protection, ensuring system safety under fluctuating power conditions.
3. The control circuit is designed with EMI (Electromagnetic Interference) protection to ensure stable and interference-free operation of sensitive electronic components.
4. A water level float switch is provided in the water reservoir tank to monitor and maintain appropriate water levels, preventing dry run conditions and ensuring continuous operation.
5. An automatic water make-up valve is integrated into the system to maintain the required water level in the reservoir, enabling uninterrupted testing and reducing manual intervention.

Tower Lamp

1. A high-intensity tower lamp is provided with the system to enable clear visual indication of equipment status from a distance, ensuring easy monitoring during operation.
2. The tower lamp is designed as a three-tier system comprising Red, Amber, and Green color indicators for distinct status identification.
3. The Red indicator is configured to signal fault conditions, alerting the operator in case of any abnormality or system error.
4. The Amber indicator is used to represent idle status, indicating that the equipment is powered but not in active operation.
5. The Green indicator signifies running condition, confirming that the system is operating under normal test conditions.

Power Supply

1. The system is designed to operate on a power supply of 415 VAC with a tolerance of ±5%, suitable for standard industrial electrical conditions.
2. The equipment is compatible with a 3-phase power supply operating at a frequency of 50/60 Hz, ensuring stable and efficient performance.
3. The electrical connection requires a 4-core wire along with a dedicated earthing wire, ensuring proper grounding and electrical safety during operation.

Controller Software, Data Storage, Reporting & Power Backup

1. The system is provided with a dedicated data operation, generation, and storage setup comprising a high-performance computer with Intel i7 processor, minimum 21-inch LCD monitor, 8 GB RAM, and 1 TB HDD, ensuring efficient handling of test data and system operations & Power Backup 3 KVA with minimum 1 hour backup only for the PC..
2. The computer system is equipped with the latest version of Windows 11 or higher operating system along with MS Office (latest version), enabling seamless data management, documentation, and reporting.

NARANG SCIENTIFIC WORKS PVT. LTD.

(Manufacturers & Exporters)

Address: GI-111, Mayapuri Industrial Area, Phase-II, New Delhi-64

E-mail: gemsalesnsw@gmail.com

Phone: 9818868239

Fax: 91-11-28112608

Web: www.nsw-india.com

WHO GMP compliant company

CE Certified

ISO 9001:2015 CERTIFIED CO. ISO 13485:2016 CERTIFIED CO.

3. Standard peripherals including optical mouse and keyboard are provided for user convenience and efficient system operation.
4. Communication interfaces such as RS-232 and RS-485 are integrated for remote operation and connectivity with the test chamber, along with USB ports for data transfer and external device integration.
5. The system includes a color report generation facility capable of producing detailed test reports in A3 size format, suitable for documentation and submission purposes.
6. A power backup system of 3 KVA capacity is provided, ensuring uninterrupted operation with a minimum backup duration of 1 hour or more in case of power failure.

BASIC OF DESIGN

Chamber Type	**Rain Test Chamber for IPX3 & IPX4 testing**
Construction	Mono-block structure with high corrosion resistant materials
Material (Interior & Exterior)	Stainless Steel 304 (Single Sheet)
Base Frame	High-gauge SS square tube
Welding & Finish	TIG welded joints with smooth buffed finish
Door	Water-tight, friction-free locking mechanism
Leak Protection	100% air-tight and water-tight tested
Oscillating Tube Diameter	800 ± 50 mm
Drive Mechanism	Gear motor with rotary joint
Oscillation Range	IPX3: ±60° (120° total), IPX4: ±180° (360° total)
Oscillation Speed	IPX3: ~4 sec/cycle, IPX4: ~12 sec/cycle
Test Duration	IPX3: 5 min, IPX4: 10 min
Nozzle Spacing	50 mm ± 2 mm
Nozzle Diameter	0.4 mm ± 0.1 mm
Flow Rate per Nozzle	7 L/min ±5% (as per IEC 60529)
Flow & Pressure Control	Manual
Turn Table Type	Vibration-free rotating turntable
Turn Table Speed	0 – 30 RPM (Variable)
Turn Table Diameter	500 ± 50 mm
Turn Table Material	Stainless Steel
Load Capacity	50 ± 5 kg
Drive System	Gear motor with SS joint-free shaft
Height Adjustment	Manual
Pump Type	Centrifugal mono-block pump
Piping	CPVC piping
Filtration	Inline water filter
Flow Control	Regulating valves
Flow Measurement	Analog flow meter with ON/OFF control

NARANG SCIENTIFIC WORKS PVT. LTD.

(Manufacturers & Exporters)

Address: GI-111, Mayapuri Industrial Area, Phase-II, New Delhi-64

E-mail: gemsalesnsw@gmail.com

Phone: 9818868239

Fax: 91-11-28112608

Web: www.nsw-india.com

WHO GMP compliant company

CE Certified

Controller Type	Touch screen based automated controller
Display	7-inch TFT colour (480×272 / 800×480 WVGA)
Touch Type	Resistive analog
Communication Ports	RS-485, RS-232/422/485, Ethernet, USB
Memory	Non-volatile flash memory
Indicators	3 LED indicators
Panel Protection	NEMA 4 / IP65
Control Power Supply	24 VDC ±20%
Programmability	Min. 20 programs × 20 segments each
Additional Features	RPM indication, user-defined profiles, by-pass valves
Electrical Protection	MPCB/MCB for all loads
Power Protection	Phase reversal, under/over voltage protection
EMI Protection	Provided
Water Level Control	Float switch in tank
Auto Water Make-up	Automatic valve system
Tower Lamp	3-tier (Red, Amber, Green)
Tower Lamp Indication	Red–Fault, Amber–Idle, Green–Running
Input Power	415 VAC ±5%, 3 Phase, 50/60 Hz
Wiring	4 Core + Earthing wire
Computer System	Intel i7, 21" LCD, 8GB RAM, 1TB HDD
Operating System	Windows 11 or higher with MS Office
Interfaces	RS-232, RS-485, USB
Peripherals	Keyboard & Optical Mouse
Report Generation	Colour A3 size reports

MODEL	SIZE(MM) W D H	LTRS
NSW-152- ATC-A	455 x 455 x 710	147
NSW-152- ATC-B	600 x 550 x 750	250
NSW-152- ATC-C	605 x 605 x 910	335
NSW-152- ATC-D	600 x 600 x 1200	450
NSW-152- ATC-E	600 x 650 x 1350	540
NSW-152- ATC-F	750 x 800 x 1000	600

WHO GMP
compliant company

CE
Certified

NARANG SCIENTIFIC WORKS PVT. LTD.

(Manufacturers & Exporters)

Address: GI-111, Mayapuri Industrial Area, Phase-II, New Delhi-64

E-mail: gemsalesnsw@gmail.com

Phone: 9818868239

Fax: 91-11-28112608

Web: www.nsw-india.com

MODEL	SIZE(MM) W D H	LTRS
NSW-152- ATC-G	800 x 800 x 1200	800
NSW-152- ATC-H	950 x 1000 x 1000	950
NSW-152- RTC -1	1000 x 1000 x 1000	1000
NSW-152- RTC -2	800 x 800 x 1800	1210
NSW-152- RTC -3	1000 x 1000 x 1300	1300
NSW-152- RTC -4	1000 x 1000 x 1500	1500
NSW-152- RTC-5	1600 x 800 x 1570	2000

WHO GMP compliant company

CE Certified

NARANG SCIENTIFIC WORKS PVT. LTD.

(Manufacturers & Exporters)

Address: GI-111, Mayapuri Industrial Area, Phase-II, New Delhi-64

E-mail: gemsalesnsw@gmail.com

Phone: 9818868239

Fax: 91-11-28112608

Web: www.nsw-india.com