

HYDRA-STORM Digital Rain System

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Introduction



Welcome to HYDRA-STORM®: Precision-Controlled Rain Effects for Stage and Screen

Thank you for choosing HYDRA-STORM®, a compact, DMX-controlled rain effect head designed to deliver controllable rainfall for stage, touring, TV and film environments. This manual provides guidance for the setup, operation, and maintenance of your HYDRA-STORM® unit, ensuring safe use and reliable performance.

HYDRA-STORM® is engineered as a standalone 1-metre rain head with an integrated water reservoir, internal fill system, onboard display and DMX control. Multiple HYDRA-STORM® units can be installed in series to produce a continuous rain curtain effect. Each unit can operate independently or in sync, depending on the desired application.

This manual includes technical details for water supply and control integration, DMX setup, safety considerations, and routine servicing. Whether you are deploying a single unit or configuring a larger installation with multiple heads, this document will assist in ensuring effective and consistent rain effects.

Please read all relevant sections carefully before operation.

General Information

ABOUT THESE OPERATING INSTRUCTIONS

Before operating the Luminous HYDRA-STORM® system for the first time — or if you are tasked with installing, configuring, or maintaining the product — you must read these Operating Instructions in full. Pay particular attention to the section titled **Safety Regulations**.

These instructions are designed to assist with the safe and effective use of the HYDRA-STORM® system, and to help familiarise operators and technicians with its intended functions.

Following these guidelines will assist in:

- Preventing injury or damage during installation and use
- Reducing downtime and repair costs
- Maximising product reliability and operational lifespan

These instructions must be read and understood by all individuals authorised to work with HYDRA-STORM® equipment.

In addition to the information contained in this document, relevant local regulations on safety, accident prevention, and environmental protection must be followed at the location where the system is used.

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Set-up

Setting up the HYDRA-STORM® rain system involves a series of clearly defined steps covering rigging, power, water supply, control integration, and safety checks. This section outlines the recommended procedure for correct and safe deployment.

1. Planning and Design

- **Layout Configuration:** Determine the number of HYDRA-STORM® units required and the positioning of each to achieve the desired rain coverage. Units are 1 metre long and can be placed in a linear array to form a rain curtain.
 - **Site Assessment:** Verify that overhead rigging structures (e.g. truss or scaff bars) can safely support the weight and configuration of the installed equipment. Ensure there is adequate provision for water supply lines, drainage or catchment below, and power access.
-

2. Installation of Rain Heads

- **Mounting HYDRA-STORM® Units:** Each unit is fitted with Omega brackets for use with standard hook clamps or half couplers. Securely mount each unit to the rigging bar and attach two independent safety bonds to the designated anchor points.
 - **Alignment:** Where multiple units are used, ensure they are evenly spaced and aligned to produce a consistent rain effect. Manual adjustment may be required after rigging.
-

3. Water Supply Setup

- **Water Connection:** Connect a clean water source to the inlet connector on each unit. Water should be filtered and free from biological contamination. A quick-release fitting is used for ease of connection.
 - **Internal Reservoir Management:** Each unit contains a 10-litre reservoir. Water is automatically admitted via an internal solenoid fill valve, regulated by a float switch. When water is low, the valve opens; it closes once the reservoir is full.
 - **Multiple Units:** For multi-unit setups, water lines may be daisy-chained using the 'thru' outlet. Ensure adequate flow and pressure are maintained and terminate the final unit's output with a closed valve or blank cap.
-

4. DMX and Control Configuration

- **DMX Addressing:** HYDRA-STORM® is controlled via DMX. Assign channels according to the control desk or lighting plot. A minimum of two channels is required per unit—one for *Arm* (typically held at 40–60%) and one for *Effect Intensity*.
 - **Signal Connection:** Use standard DMX cables (5-pin) to connect units in series. Observe proper termination at the final unit if required.
 - **Local Configuration:** Use the onboard LCD display and push-button interface to view status, configure address settings, LED indicators will show power, DMX status, arm state, and tank fill status.
-

5. Electrical and Safety Checks

- **Power Connection:** Connect to a 110–230VAC supply using the appropriate power connector (refer to model specification). Ensure RCD protection is in place and comply with local electrical regulations.
 - **Initial System Test:** With water connected and power on, confirm fill cycle operates correctly and check for leaks. Run a low-level effect via DMX to confirm valve operation and uniform droplet formation.
-

6. Final Setup and Operator Familiarisation

- **Programming and Integration:** Configure the effect intensity control via DMX as part of your show file or cue sequence. In Basic mode - Ramp values between 0–100% to vary droplet rate and density. Arm channel must remain between 40–60% for output to be active.
 - **Operator Briefing:** Provide a handover briefing to all operators, including startup/shutdown sequence, DMX channel behaviour, and safety measures.
-

7. Safety and Maintenance Protocols

- **Routine Checks:** Inspect rigging integrity, electrical connections, and water lines before each use. Drain and clean reservoirs periodically to prevent build-up.
 - **Emergency Shutdown:** In case of leak, electrical fault, or unexpected discharge, isolate the affected unit from power and water immediately.
-

HYDRA-STORM® Quick Start Guide

This section provides a streamlined overview for setting up and testing the HYDRA-STORM® unit(s) for basic operation.

Step 1: Unpack and Position Equipment

Lay out your HYDRA-STORM® units in the planned positions. If using multiple units, ensure they are orientated in the same direction with water inlets facing the designated supply route. Prepare clamps, safety bonds, and associated accessories.

Step 2: Rigging

Mount each HYDRA-STORM® unit to a truss or rigging bar using standard clamps affixed to the Omega bracket slots. Attach *two independent safety bonds per unit* to approved anchor points. Adjust alignment as needed to ensure consistent spacing and fall pattern.

Step 3: Water Supply Connection

Connect the water inlet of each unit to a clean water source. This may be a pressurised feed or pumped tank supply. Use the quick-release connector provided and ensure all hoses are secure. If multiple units are connected in series, link water outputs to the inlets of the next unit.

Note: *Ensure the water used is filtered and free from biological contaminants.*

Step 4: Electrical Connection

Connect each unit to mains power using a supply rated for 110–230VAC. Power connectors must be fully inserted and secure. Verify RCD protection is in place at the source.

Step 5: DMX Signal Connection

Connect DMX signal lines to each unit as required. Each HYDRA-STORM® unit requires two DMX channels in Basic Mode:

- **Arm Channel** (40–60% activates the unit)
- **Effect Intensity Channel** (0–100% controls rain density)

Chain DMX through to additional units if used in series. Ensure DMX termination is applied if required.

Step 6: Power On

Switch on each unit using the mains supply. The onboard display will illuminate and run a short self-check. LED indicators next to the display will show status for:

- Power
 - DMX presence
 - Enabled state
 - Tank Fill demand
-

Step 7: Water Fill Check

On first power-up with a water connection present, the internal fill valve will open (if required) and automatically fill the reservoir to 10L. Monitor the unit for leaks and confirm fill operation ceases when the float switch reaches full.

Step 8: DMX Setup and First Test

Following the instructions in the User Interface section, set the DMX personality to 'Basic', the enable address to 001, the start address to 002, and the mask address to 003. Using your control desk or console, bring the **Arm Channel** to 50%. Then increase the **Effect Intensity Channel** slowly to initiate the rain effect. You should observe droplet output increasing in randomness and density proportional to the DMX value.

At this stage, your HYDRA-STORM® unit(s) are operational and ready for programming into live cues or sequences.

System Overview

Overview of the HYDRA-STORM® Rain Head System



1. Design and Configuration

- **Standalone Functionality:** HYDRA-STORM® is a self-contained 1-metre rain effect head, designed for individual or grouped use. Each unit includes all necessary components for autonomous operation and can be installed singly or in arrays to create larger rain curtain effects.
- **Scalable Installations:** Multiple units can be installed side-by-side using standard rigging hardware to extend the rain coverage across a performance area.

2. Control and Operation

- **Onboard Interface and DMX Control:** Each unit features an LCD screen and control buttons for configuration and status feedback. HYDRA-STORM® is DMX-controllable, supporting an arm channel and an effect channel/s for live or pre-programmed operation.
- **Dynamic Rain Generation:** The internal processor controls 48 solenoid valves to generate varied rain effects. Intensity and randomness of droplet activation are controlled proportionally by the assigned DMX effect channel.

3. Construction and Installation

- **Mechanical Design:** The housing is fabricated from powder-coated steel, aluminium and stainless steel. Each unit includes a 10-litre internal reservoir, a float-controlled fill valve, and a filtered water inlet connection.
- **Rigging and Safety:** HYDRA-STORM® is fitted with Omega bracket mounts and accepts standard clamps for truss or bar mounting. Two independent safety bond points are provided and must be used at all times.

4. Features and Capabilities

- **Rain Effect Control:** The system creates a naturalistic rain appearance by opening valves in pseudo-random sequences, increasing frequency with DMX input. Effects can range from light drizzle to a dense downpour.
- **Lighting Compatibility:** The falling water can be illuminated or enhanced with traditional stage lighting. The system is fully compatible with standard lighting, projection, and visual effects environments.

5. Safety and Reliability

- **Automatic Water Control:** An internal float switch manages the fill valve, ensuring the reservoir remains at optimum level without risk of overflow.
- **Electrical Isolation and Control:** Each unit is powered via a single 110–230VAC input. All electronics are enclosed and isolated from the water system.

6. Accessories and Expansion

- **Peripheral Compatibility:** HYDRA-STORM® is compatible with external filters, water supply kits, catchment trays, and recirculation systems where needed.
- **Multiple Units:** Units can be daisy-chained for power, water supply, and signal where appropriate, with isolation options for stand-alone use or for groups with shared infrastructure.

7. Support and Documentation

- **Product Support:** This manual contains the core operating instructions, specifications, and safety guidelines. For further support, Luminous Show Technology offers direct technical assistance, training, and product consultation.
- **Maintenance Guidance:** Regular maintenance routines and troubleshooting steps are outlined later in this manual to support long-term system reliability.

GENERAL SAFETY REGULATIONS

PRINCIPLES

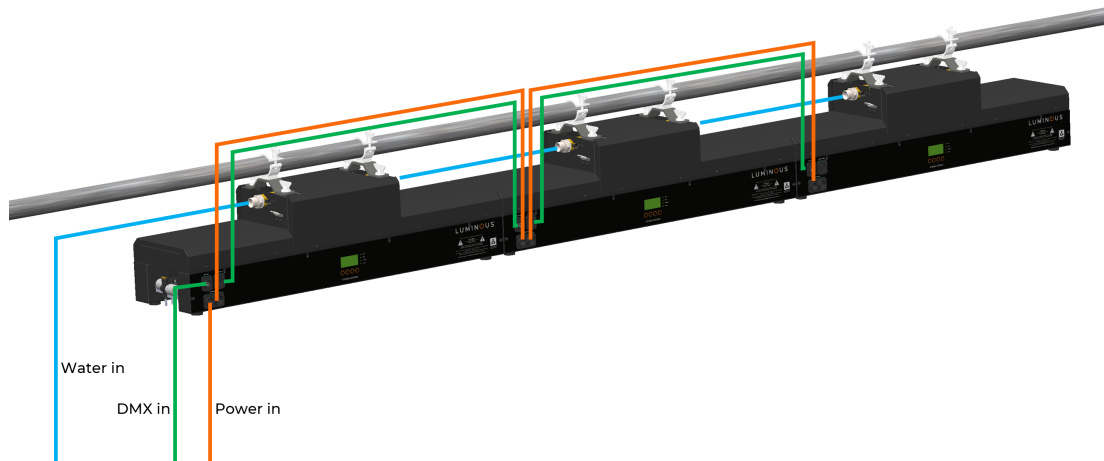
HYDRA-STORM® is designed to operate safely when installed, used, and maintained in accordance with the instructions contained in this manual. It is assumed that all work involving this equipment is carried out in environments that uphold safe working practices, with tasks risk assessed by a competent person.

The table below outlines key safety considerations relevant to the transport, handling, installation, and operation of the HYDRA-STORM® system:

Risk Title	Risk Short Description	Suggested Solution
Transporting Equipment	Risk of injury or equipment damage during transport due to improper handling or insufficient protection.	Use appropriate protective transport cases. Secure units to prevent movement during transit.
Lifting and Carrying	Manual handling may result in strains, sprains, or other injuries due to the weight or awkward shape.	Use lifting aids such as trolleys or hoists. Ensure staff are trained in manual handling techniques.
Rigging Overhead	Risk of the unit falling from overhead mounting, causing injury or damage.	Use only certified rigging hardware. Attach both primary fixings and two independent safety bonds. Regularly inspect all rigging points.
Working with Electricity and Water	Electrical risks due to proximity of mains voltage to water systems.	Ensure power connectors and cable joints are properly sealed and rated. Always use RCDs and comply with local electrical regulations.
Exposure to Weather Elements	Outdoor conditions may affect both operator safety and product integrity.	Monitor weather forecasts. Use covers and shelter to protect equipment and personnel. Ensure electrical equipment is appropriately rated for outdoor use if applicable.

Layout of System

Multiple HYDRA-STORM® units can be connected in series, to produce a seamless curtain of rain



The HYDRA-STORM® 1m Rain Head

The HYDRA-STORM® unit is a purpose-built, self-contained rain effect head designed for theatrical, film, and live event applications where controlled rainfall is required. It delivers realistic and controllable rain patterns with robust construction and straightforward integration.

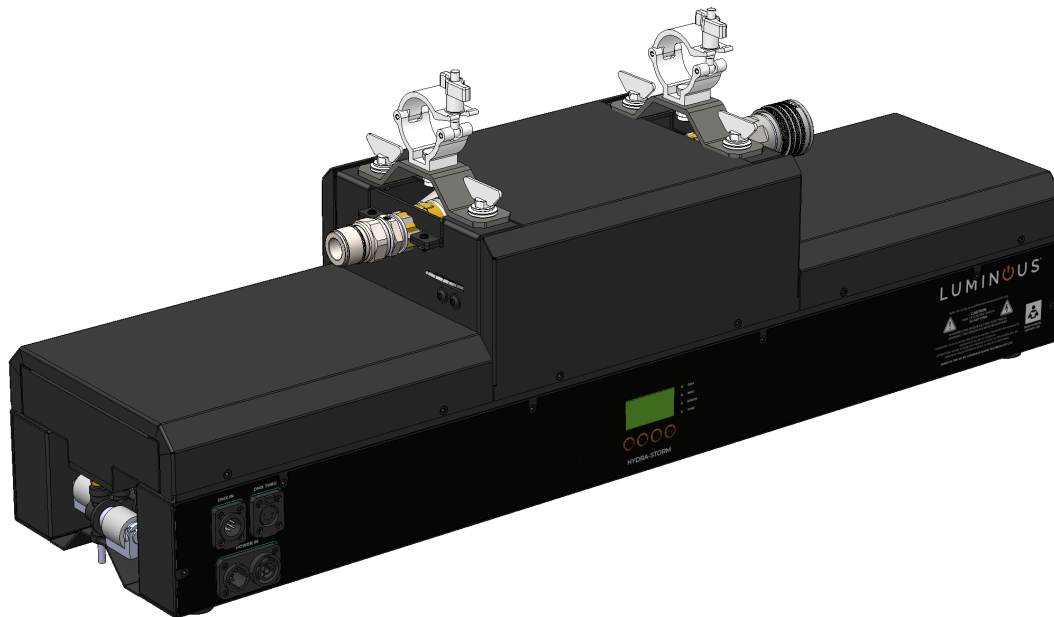
Design and Features

The HYDRA-STORM® head measures 1 metre in length and is engineered for durability, ease of use, and repeatable performance. The housing is constructed from black powder-coated steel and aluminium with a stainless steel tank, making it suitable for both fixed installations and touring use.

HYDRA-STORM® units are deployed as individual elements. However, multiple heads can be installed in parallel to form rain curtains of variable width, enabling flexible deployment across a range of venue types.

All core functions are managed internally, with DMX control allowing live or automated adjustment of the output effect.

The device is designed for standard overhead rigging and includes safety provisions for compliant use in professional environments.

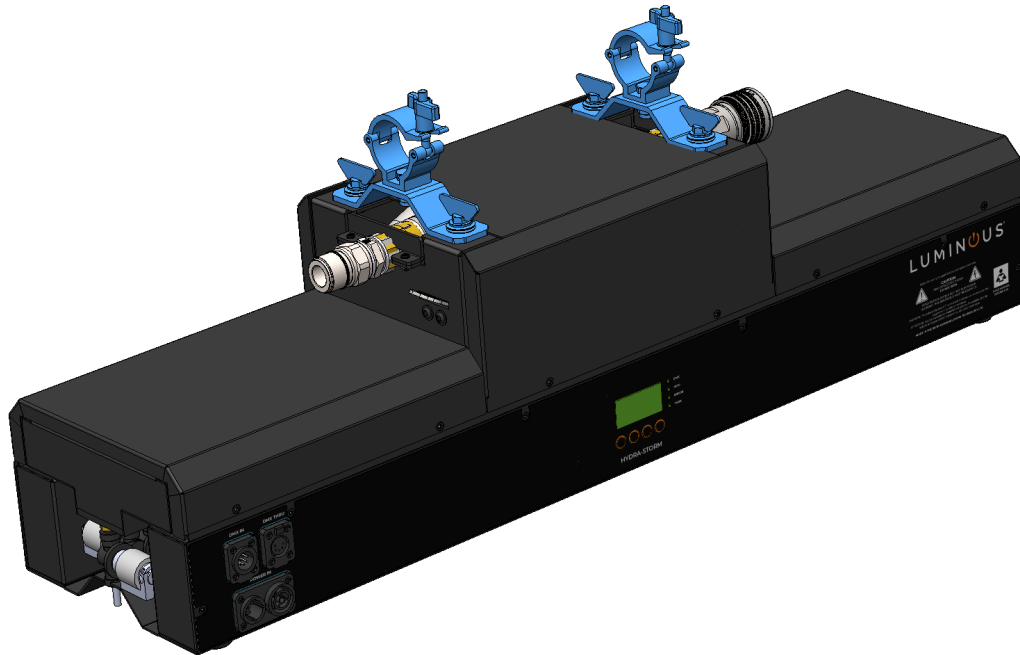


Key features

- **Rigging Points**

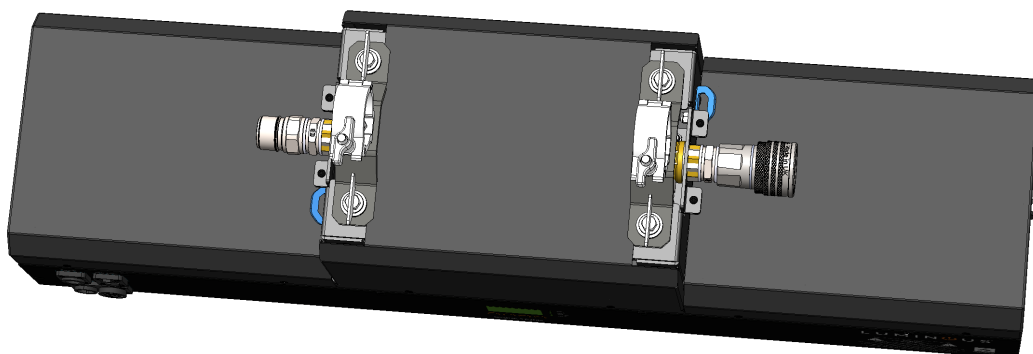
Integrated mounting locations designed for safe and stable suspension using standard rigging hardware.

Omega-style quick couplers, enabling fast and secure attachment to truss or scaffold.



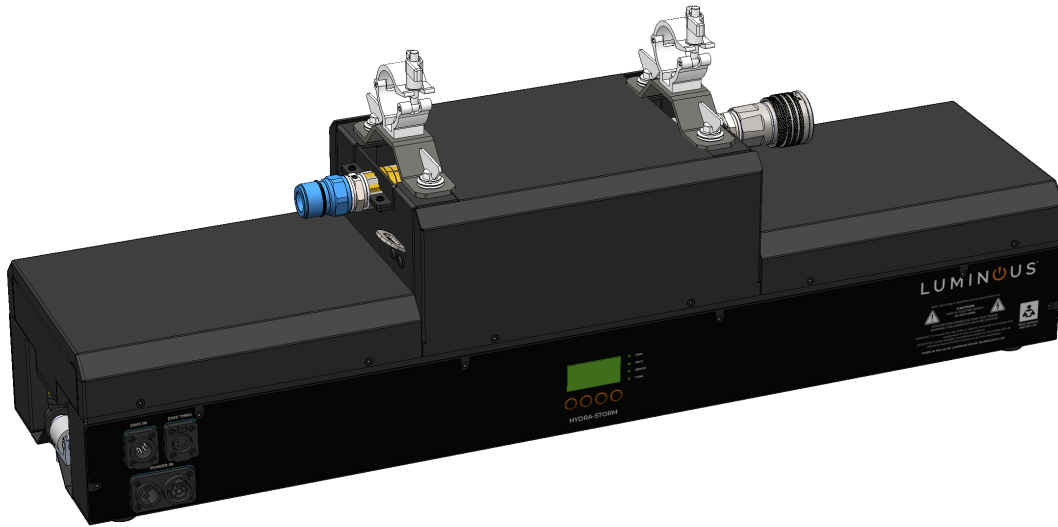
- **Safety Bond Points**

Two dedicated safety bond attachment points are provided. Both must be used during installation to comply with safety requirements.



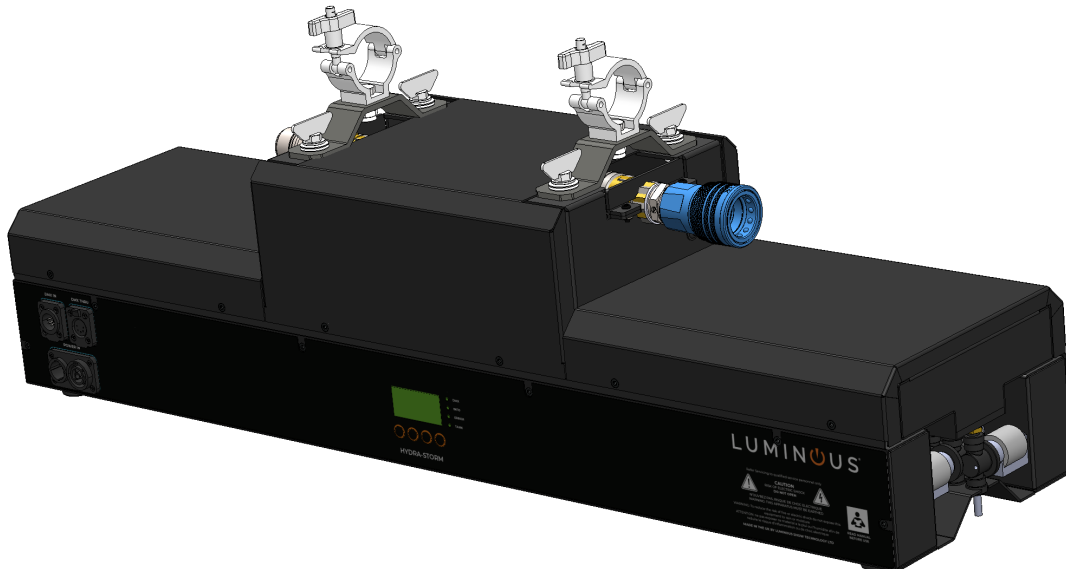
- **Water Inlet**

A quick-connect water inlet fitting allows for easy connection to a clean water supply. Internally filtered before reaching the reservoir.



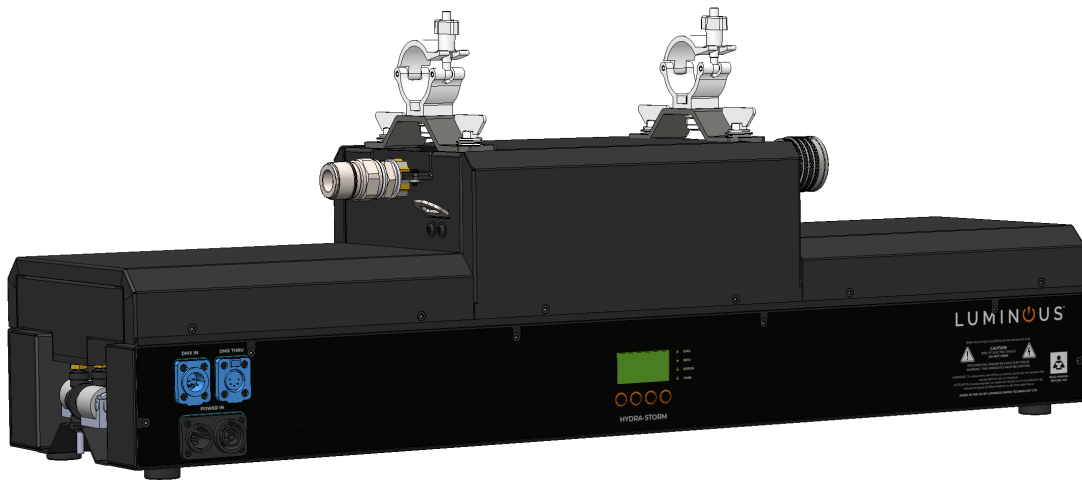
- **Water Outlet (Thru)**

Optional pass-through outlet for daisy-chaining multiple units. Can be capped off when not in use.



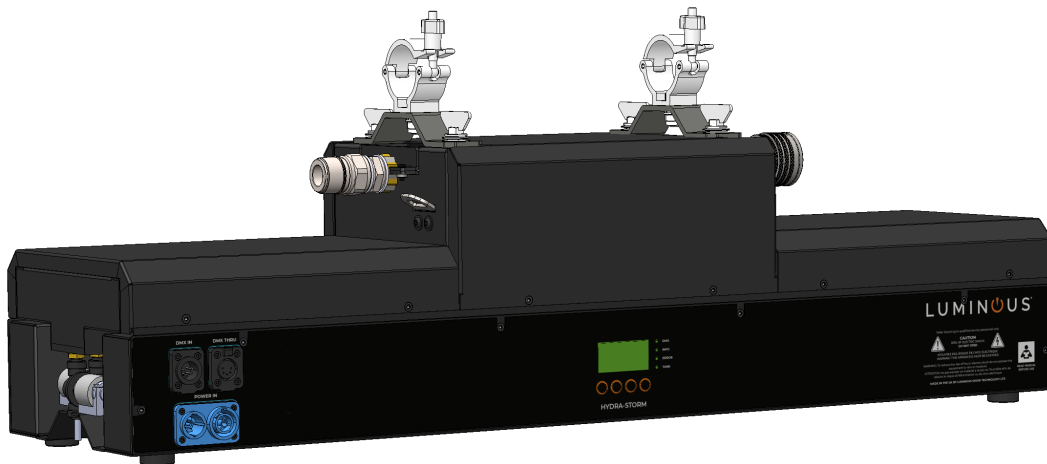
- **DMX Input and Output**

5-pin XLR connectors for DMX512 control signal. Enables chaining of multiple units within a single control line.



- **Power Input and Output**

Mains power input (110–230VAC) with loop-through output to power additional devices in series, where appropriate.



The HYDRA-STORM® User Interface

The HYDRA-STORM® unit incorporates an easy-to-use User Interface, allowing quick access to various control and operation settings.

Design and Features

The HYDRA-STORM® control interface consists of a 2.4 inch OLED display, 4 indicator LEDs, and 4 physical buttons.



OLED Display

The image on the display changes depending on which page of the User Interface is active. The lower part of the display indicates the function of each of the four buttons at any moment in time.

Indicator LEDs

The indicator LEDs provide a means of quickly displaying the status of key functions of the machine. From top to bottom, these lights indicate: power on, DMX presence, enabled status, and tank filling demand. The LEDs can be turned off if required in the 'Sys Settings' menu.

Buttons

The four buttons may change in function depending on the active menu page. However, generally speaking, the button functions are: escape (back), up, down, enter (save) - from left to right.

Menu tree

Standby mode (screen off)

The screen goes to sleep after 1 minute of inactivity. Press any button to wake.

Home Screen

Main menu

DMX Settings

Start Address

Enable Address

Mask Address

Personality

Information

Sys Settings

Global masking 1

Global masking 2

Global masking 3

Global masking 4

Global masking 5

Global masking 6

LED blackout

Home screen

Once the screen is woken from standby mode (by pressing any button), the home screen is displayed.



The home screen displays the name of the product, active DMX personality, relevant DMX addresses, and access button for the main menu.

The home screen varies slightly depending on the DMX personality selected. The top bar displays the active personality:



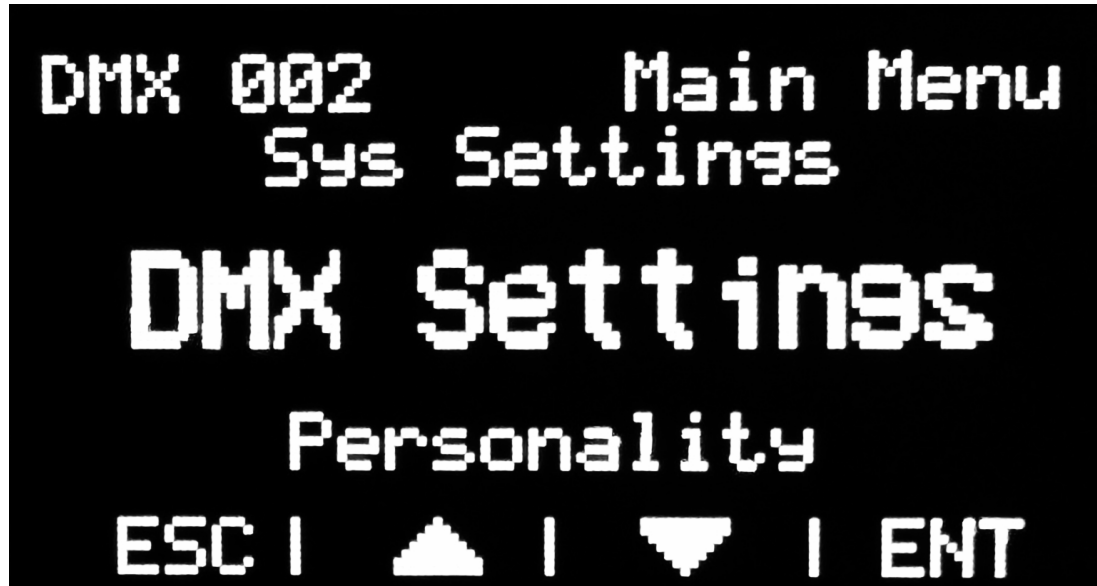
The DMX addresses shown also vary depending on the personality. The enable channel address and start channel address are always shown, but the mask address only displays in the relevant modes:

Enable:	Start:	
001	002	
		Menu

Enable:	Start:	Mask:
001	002	006
		Menu

Main Menu

From the home screen, pressing button 4 (far right) allows access to the Main Menu. The menu always opens on the 'DMX Settings' page.



When in the menu, the rain output is stopped and the system disabled. To re-enable the system, the enable channel needs to be reset (set to 0% and then returned to 50%).

The active DMX start channel is shown for reference at the top right of the screen, and the name of the current menu is shown in the top left.



The physical button functions are shown at the bottom of the screen. In this menu they follow the typical layout of escape (back), up, down, enter (save).



To select a sub-menu, scroll through the options on screen, using the up and down buttons. The highlighted option is shown in a larger font, with the previous and next options shown in smaller text.

To enter a menu, press the enter button. To exit the main menu and return to the home screen, press the escape button. Remember to re-enable the system if required.

DMX Settings

In the DMX settings sub-menu, the DMX start address, enable address, and masking address can be set.



Start address

This is the address at which the unit functions will start. For example, if this is set to channel 002 and the unit is in Basic Mode (1 channel), then channel 002 will control density. In modes with more channels, the first control channel will be set to 002, with the additional channels occupying the following DMX addresses as needed.

Enable address

This is the address of the enable channel. The enable channel reduces the risk of accidental activation of the rain system. It must be set at 50% ($\pm 10\%$) to enable the HYDRA-STORM® to function, regardless of the value of any other channels. The enable address can be set independently of the start address, so that multiple units may share the same enable address, in a system of more than one unit.

Masking start address

This is the start address for the four masking channels. Regardless of whether the unit is in 'Basic - with masking' or 'Advanced - with masking' mode, the masking channels from 1-4 are always:

1. Mask 1 start position (left to right, viewed from the non-screen side of the unit)
2. Mask 1 blanking length
3. Mask 2 start position
4. Mask 2 blanking length

Channel clashing

The system does not allow channels to overlap, as this would result in unexpected behaviour of the unit. If the user attempts to set a channel to an otherwise occupied channel, a warning message will be displayed and the previous values will be restored. The number of occupied channels varies depending on the active DMX personality, so some DMX value settings will be acceptable in basic mode, for example, but when switching to advanced mode, an error may be displayed. A good way to ensure no channels overlap when changing modes, is to set the addresses with a large gap in between, then change the personality and return to DMX settings to select the final desired addresses.

Basic operation with the supplied controller

For applications only requiring basic control, Luminous can provide a simple 6-channel DMX controller. In these scenarios, the enable channel should be set to channel 001, the start channel to 002, the masking channel to 003, and the unit may only be operated in 'Basic' or 'Basic - with masking' modes.

DMX Personality

In the personality settings sub-menu, there are options to set the active DMX personality (or mode).



The initial screen shows the active personality number and name, and the DMX footprint. The footprint is the number of DMX channels occupied by the control channels of the personality. It excludes the enable and masking channels. For personalities with masking enabled, the masking footprint is also shown in brackets.

Changing the personality

The initial screen in the personality sub-menu shows the currently-selected personality, but does not allow changes to this. To make changes, press the enter button.



The arrow keys are now displayed, indicating that the personality type can be modified using the middle two physical buttons. To select a personality, press enter. If this creates a channel clash, a warning message will be displayed, and you will first need to change the DMX address settings before changing the personality.

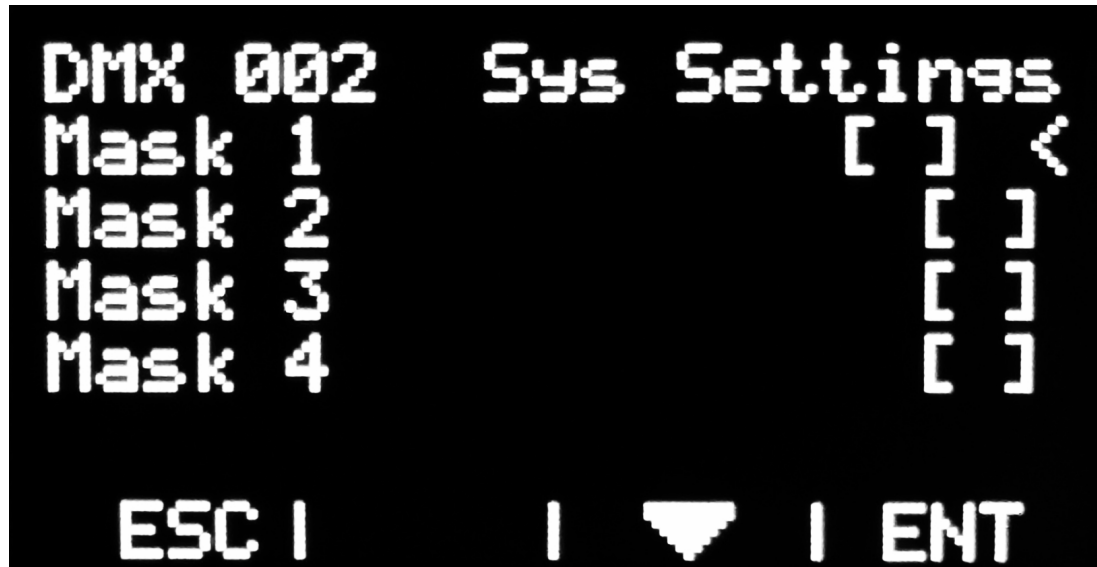
Information screen

The information screen (accessed via the main menu) shows the serial and product number for your machine, and software version you are currently using. This may be useful for product support in the future.

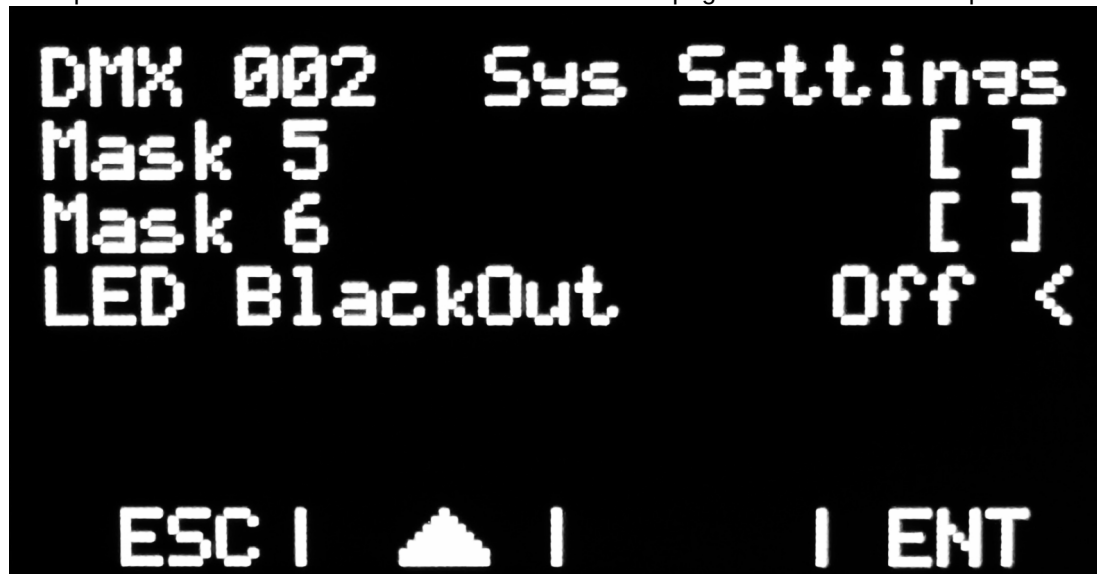


System Settings

This sub-menu contains additional settings for your HYDRA-STORM® unit.



The up and down buttons can be used to scroll down the page and reveal hidden options.



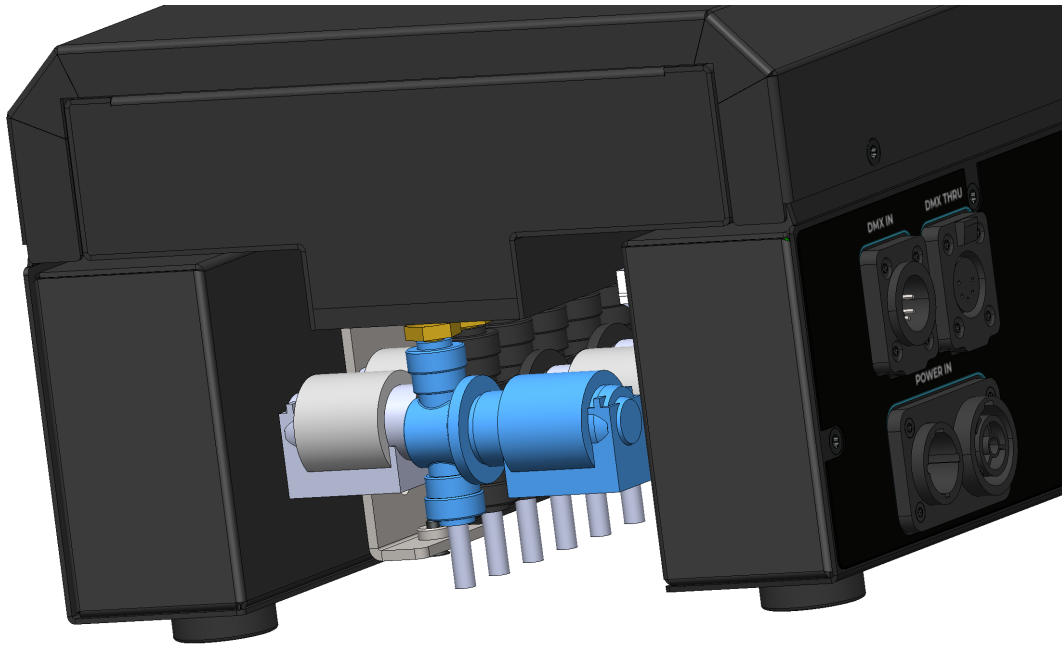
The Mask options are separate from the DMX masking feature, and will be applied before any DMX masking. For system masking, the unit is divided into 6 sections of 8 valves each. By pressing enter when a given masking section is highlighted, masking can be toggled on this section of valves (an 'X' denotes masking on). This can be useful for simple set ups where part of the rain system hangs above an area which must remain dry.

The 'LED BlackOut' feature enables the indication LEDs next to the display to be turned off, useful for productions where any unwanted light can negatively impact the show.

Valve Maintenance

Maintenance of Solenoid Valves in the HYDRA-STORM® System

Solenoid valves play a crucial role in the operation of the HYDRA-STORM® Digital Rain System by controlling the flow of water to the rain heads. Proper maintenance of these valves is essential to ensure reliable and efficient system performance. This section of the manual will guide you through the necessary steps to maintain, troubleshoot, and service the solenoid valves of your system.

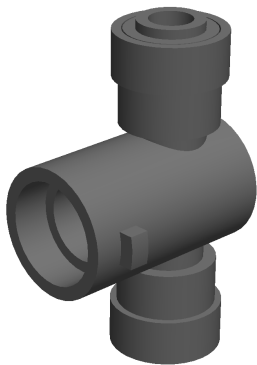


Valve Anatomy

Each solenoid valve in the HYDRA-STORM® system features a compact and robust design, suitable for precise control of water flow. Understanding the components of these valves is key to effectively maintaining them.

Each valve consists of a:

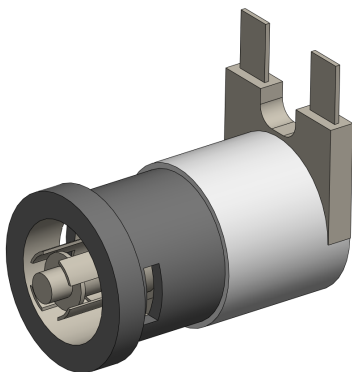
Valve Body



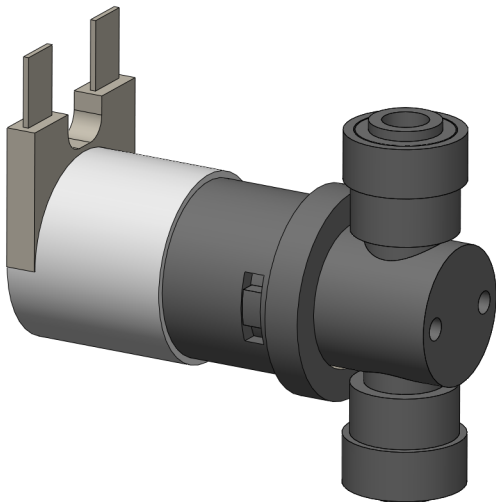
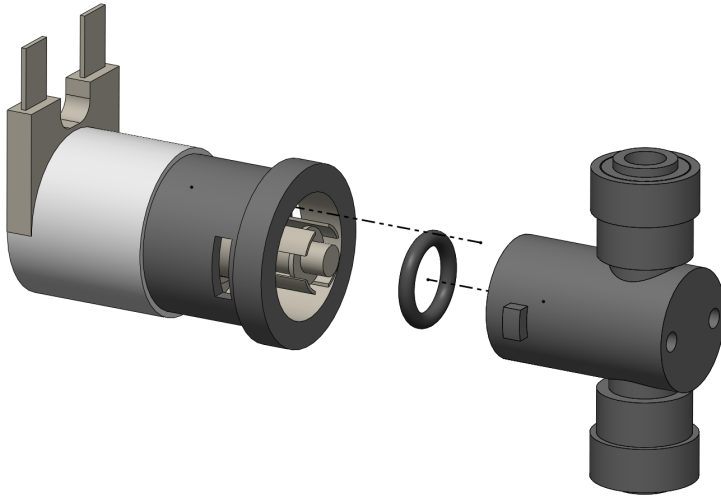
O Ring



Solenoid



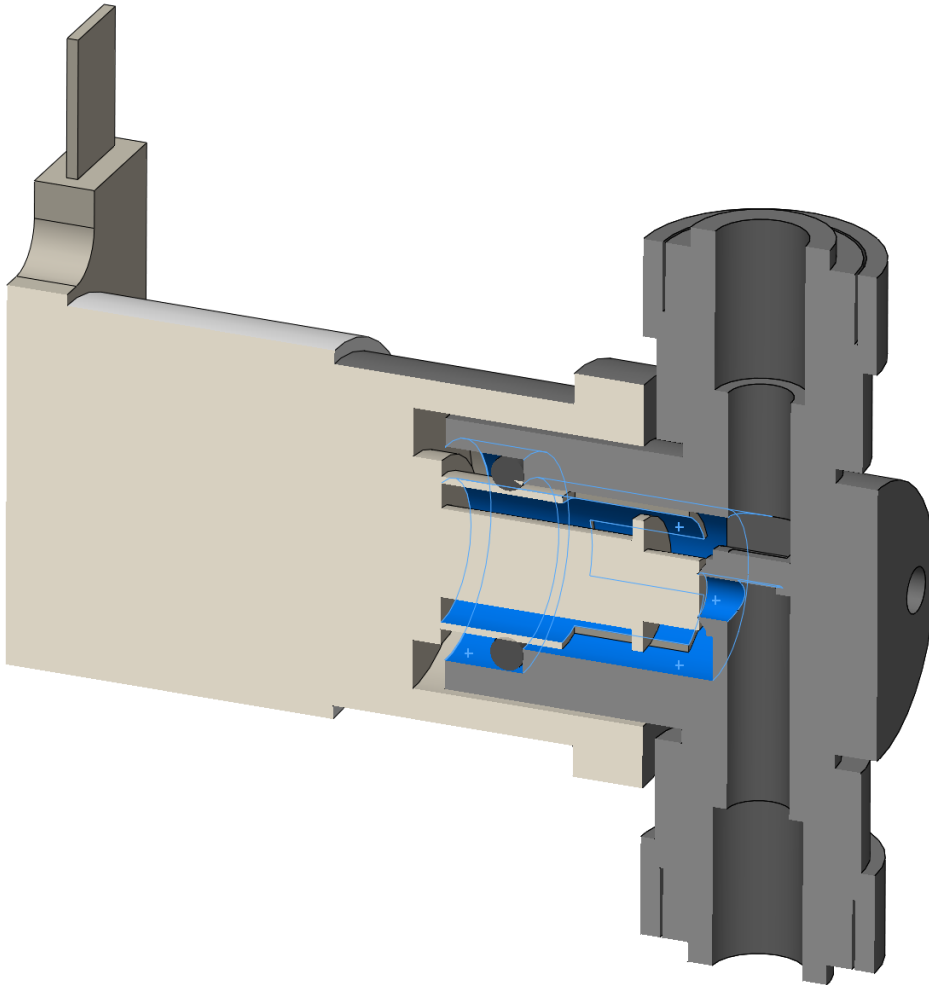
The solenoid can be removed without tools by turning anti-clockwise.



Causes of blockages and leaks

Blockages in solenoid valves often result from sediment, debris, or particulates in the water supply. These can impede the movement of the valve's internal components, affecting performance. Leaks are commonly caused by damaged or missing seals and damaged diaphragms within the valve assembly.

Debris can become lodged in the chamber indicated in Blue



This prevents the solenoid from fully closing and will result in a drip or leak.

To clear any blockages follow these steps:

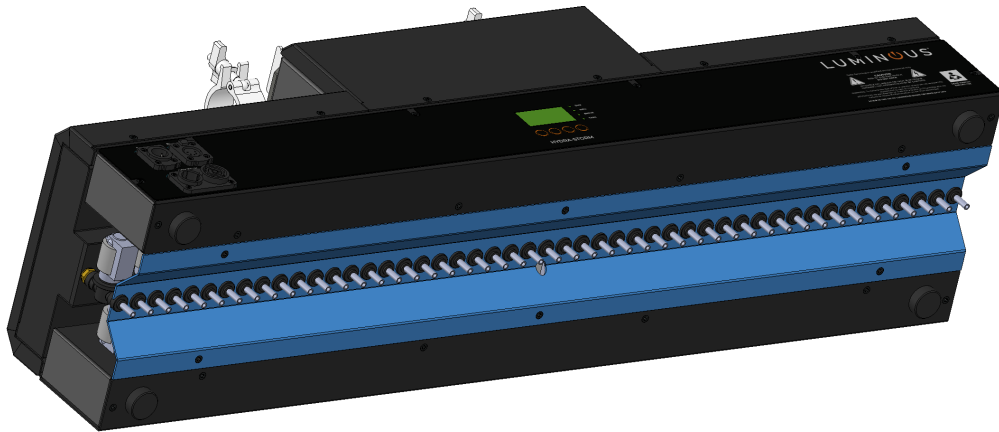
1. Drain the system of water
2. Gain access the solenoid valve (see Accessing Valves)
3. Twist the solenoid portion and remove completely from the valve body
4. Inspect the opening inside the valve with a torch.
5. Clear any blockages using tweezers or a suitable implement.
6. Check the solenoid for dirt or damage - clean as needed.
7. Ensure the o-ring is re-fitted to the solenoid part before closing the valve.
8. Re-fit the solenoid and test.

Note - Even quite fine dirt can cause a leak as it can prevent the valve from fully closing - in particular stranded materials (hair/PTFE tape/organic materials)

Accessing the valves

The solenoid valves are designed for easy access and maintenance. The body of each valve can be dismantled without tools.

The solenoids can be accessed via an underside panel. The panel can be removed using a T20 screwdriver when the unit is flown or if it is on its side on a work bench.



When re-fitting, ensure all valves are aligned through the guide holes. This is easiest when the unit is on its back but can be achieved with the unit flown.

Troubleshooting

Symptom	Cause	Remedy
DMX Conflict	DMX channels from the enable, control or masking features overlap on the selected DMX personality.	Go to DMX settings and adjust the DMX values so that they are sufficiently far apart. For reference, the enable channel is a single channel, the control channels start at the 'start' address and the footprint depends on the personality selected, and there are always 4 channels reserved for masking (if in a personality with masking enabled).
Only part of the rain system is working	Some valves are masked due to DMX masking or system masking.	Ensure all DMX masking channels are set to zero. In the 'System Settings' menu, ensure that the system masking zones 1-6 are all off (no 'X's in the checkboxes).
System will not enter enabled mode	Enable DMX channel is not correctly set	Check that the enable channel set on the HYDRA-STORM® matches the channel you are using for enable on your lighting desk. Ensure you set the enable channel to 50%, not 100%, to activate the unit.
Rain cannot be controlled	DMX error	Check the DMX cable is correctly connected. Swap to a new DMX cable in case of a broken conductor. Ensure the DMX channels set on the HYDRA-STORM® match your lighting desk.
Unit will not power on	Fuse has failed	Replace the fuse in the plug (if running from a 13A plug).
	Power cable fault	Replace the power cable to check if there is a broken conductor
	Internal fault	Contact manufacturer.
Leaking nozzles (or no output)	Blockage	Clear blockage by removing the lower panel and turning the valve body anticlockwise to open the valve. Clean using filtered water or compressed air. Replace valve and panel.
Inconsistent rain	Water tank is empty	Refill tank or check that recirculation system is working.

Technical Data

Designation	Value	Unit
Mass (Tank full)	42 / 93	kg / lbs
Mass (Empty)	32 / 71	kg / lbs
Length (Maximum)	1010 / 39.76	mm / in
Length (Nominal when in series)	1000 / 39.37	mm / in
Max. operating temperature	40 / 104	°C / °F
Input voltage	110-240	VAC
Frequency	47 – 63	Hz
Power (max.)	600	W



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