Doc DM88

DM PRO – SERIES S2VT
RV DUMP VALVE
INSTALLATION INSTRUCTIONS

- ✓ **Motor Coaches**
- ✓ **5th Wheels**
- ✓ **Travel Trailers**

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Companion Documents, where referenced in the content, are Hyperlinked to our website and appear in Blue - click to download.

DM PRO – SERIES S2VT VALVE INSTALLATION INSTRUCTIONS

PLEASE, BEFORE YOU TRY IT YOUR WAY – TRY IT OUR WAY
Our valves install differently than manual valves, please read instructions before you begin installation. **KEEP INSTRUCTIONS**

IMPORTANT Note on PLUMBING SIZING

3" Inch Applications: DM Valves are sized to drop fit into industry standard 3" fittings common on RV Black water tank plumbing. On exception, in some RVs, Grey and Galley tanks may also use 3" plumbing and fittings.
Follow installation steps as stated – nothing else is needed.

1 ½ " Inch Applications: DM Valves can equally be applied to 1 ½" plumbing more common on Grey and Galley tanks, however additional Reducer Kit DM PN 5205 is required between the 3" valve and 1 ½" fittings. *Some plumbing modifications and extra space will be required.* Doc DM 35 – 1½" Reducer Installation - will replace Step 5, Section 1 VALVE INSTALL INSTRUCTIONS, Page 2 of this Document. All other steps remain same.
Download DM35 and review to determine compliance. Questions? Call Toll Free 1 877 787 8833

WHAT YOU WILL NEED TO DO THIS INSTALLATION:

- Basic Mechanical and Electrical Knowledge
- 7/16' wrench/socket, Torque Driver
- Crimping tool

Each DM S2VT Valve kit, PN 5878 – DM10 – S2VT comprises

- S2VT Valve with 2 port controller & 2 pin male 12 V connector
- 2 pin female connector with pigtails for 12 VDC power
  OR Optional waterproof 2 pin 12 VDC Male / Female
- Seals
- Mounting nuts, bolts hardware
- Molykote 111 lubricant & instructions

DRAIN MASTER ITEMS THAT MAY BE INCLUDED IN YOUR KIT (Depends on Kit Configuration) or BOUGHT TOGETHER

OPTIONAL RECOMMENDED ITEMS OFTEN BOUGHT TOGETHER FROM DRAIN MASTER

Single Switch **PN 5787- DM30-SVT**	Double Switch Panel **PN 5847- RV Dbl SW PNL**	IP 66 Interface Cable/s, 20 Ft **PN 5846-IP66 20' Rnd. Cable** (or custom lengths if ordered)	12 VDC System Master Switch **PN 5890-DM30-20 Amp SW**	In-line Fuse Holder **PN 5891-DM-Fuse Holder**	Glass Fuse **PN 5892-DM-Glass Fuse-FB- -5, -10, -15**

ADDITIONAL REDUCER KIT NEEDED FOR 1 ½ INCH PLUMBING APPLICATION

3" Flexible Rubber Coupling w/SS Clamps **DM PN 5307**

1 ½" Reducer Kit **DM PN 5205**

OTHER ACCESSORY ITEMS YOU MAY NEED TO COMPLETE THE INSTALL

Automotive Split Sheathing	Tie Wraps	Clamps or P-Clips	Wires for 12 V DC supply Black and Green		Butt or Barrel Splice Connectors

Fig. 1- Kit items and Accessories

SPECIAL NOTES:

- Make sure you have good access to the manual override wherever you choose to install your valve.
- Installation is simple and can be accomplished in a short time.
- Never install the Drain Master with the motor/gear/gate housing down. Must be installed vertically (see Fig. 4 how to install)

PLEASE DO NOT OPERATE Drain Master valve prior to installation on the RV. The gate has a sharp edge and the motor is powerful and very fast. YOU COULD GET HURT. You assume liability for your actions.

- Valve comes supplied with 1/8" Allen wrench to operate manual override – located on back of valve
- Do not use any other lubricant than the Molykote 111 we have provided.
- Please follow installation instructions carefully.
- Do not place fingers in running area of valve.

1. VALVE INSTALL INSTRUCTIONS

Step 1: EMPTY AND FLUSH HOLDING TANKS!! This will make your installation an uneventful success.

Step 2: Remove the four bolts holding the existing manual dump valve to plumbing.
Step 3: Separate plumbing enough to remove existing dump valve.
Step 4: Remove the 2 seals from pipe flanges or from existing dump valve.
IMPORTANT ** the old seals will not work with your new valve. **
Step 5: Clean pipe flanges, check for cracks, replace flange if necessary.
*(**Note**: Step 5 is replaced by Doc DM 35 for 1st time 1 ½" Installation.)*
Remove caution card from gate area on new valve.
Step 6: Make sure S2VT valve is in the closed position before proceeding to next steps.
(Valve is shipped with the gate closed – if required use the manual override to bring it to closed position)
Step 7: Pay careful attention to the Optimum Install Zone shown in **Fig. 4** – the most ideal position is vertical with the motor up at the highest point.

Rubber couplings between the plumbing or tanks and the spigots and/or flanges allow both lateral and angular adjustments and provide a convenient way to attain optimum positioning - Examples are shown in **Fig. 2** and **3**

Rubber coupling

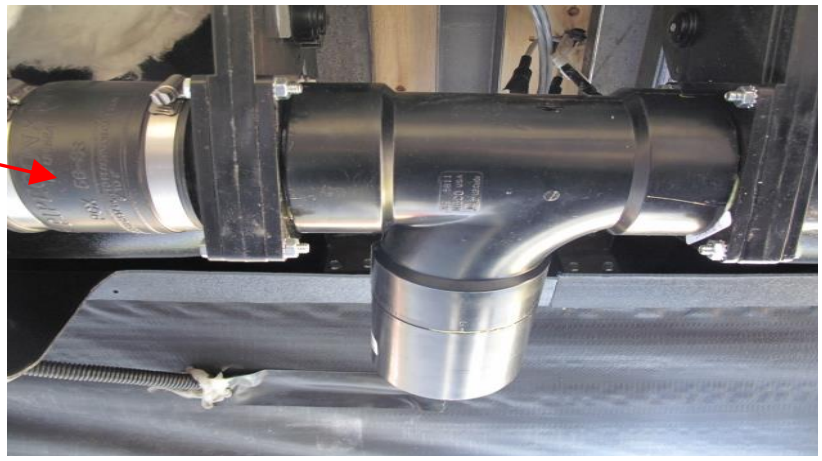
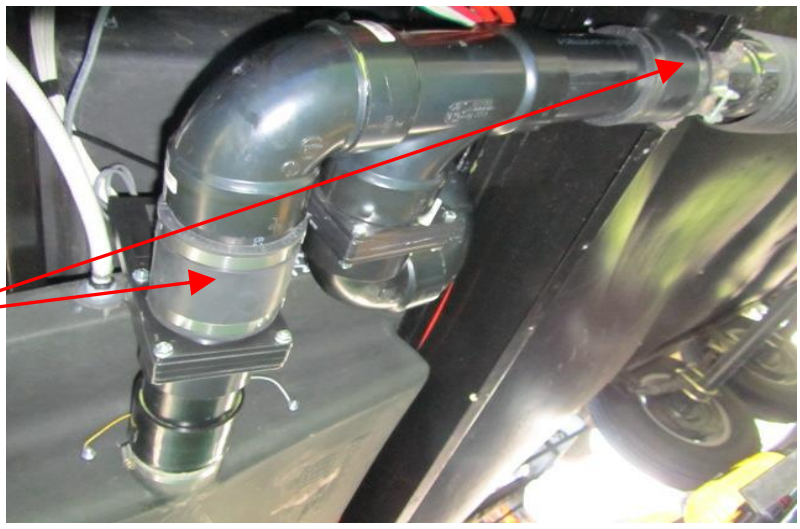


Fig. 2



Rubber couplings

Fig. 3

In case optimum install is not feasible, such as when replacing existing valves, or where flanges/ spigots are prefixed, or due to interference, then installing within the 30 deg. permissible zones, as shown, is the next acceptable option – in this case exercise more vigilance to the valve operation and functioning over time.

NEVER INSTALL WITH THE MOTOR DOWN

Due diligence and planning at this step will ensure years of reliable operation

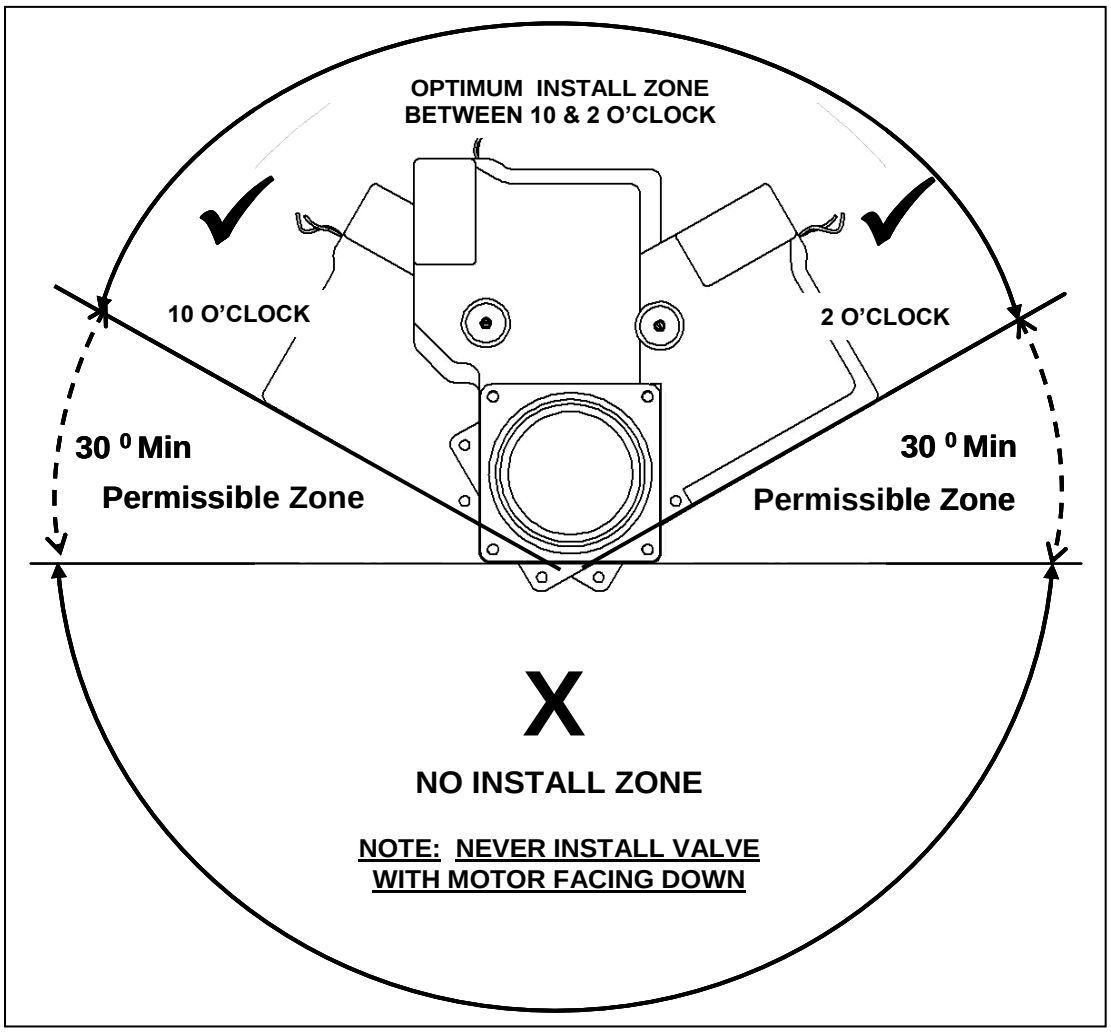


Fig.4

Ref to **Fig. 4**: The optimum install zone is between 10 O'clock and 2 O'clock and within this zone the most ideal orientation is vertical (90 Deg). If the optimum zone Installation is not feasible, installation within the 30 Deg Permissible zone is acceptable. Refer Step 7 above.

X marks the **NO INSTALL ZONE.**

For all other orientations or positions or if you have questions or need help with an install, please call us toll free.

DRAIN MASTER
877-787-8833
www.drainmaster.com

Step 8: Once the positioning has been properly pre-planned you are ready to install the new valve.
IMPORTANT! Use the seals that came with your new valve.

Ref. **Fig 5:** Place the seals over the flange lip which is located on existing plumbing.
DO NOT PLACE SEALS ON VALVE ******* VERY IMPORTANT STEP**********

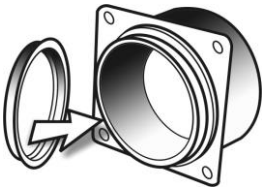


Fig. 5

Ref. **Fig. 6 and Fig. 7:** With gate closed apply a thin even coat of supplied lubricant (Molykote 111) to entire surfaces on both sides of gate. DO NOT OVERLUBE. The packet is good for a repeat application - save in a sealed plastic bag.

Fig. 6

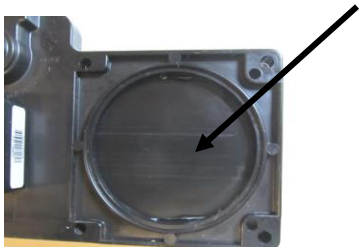
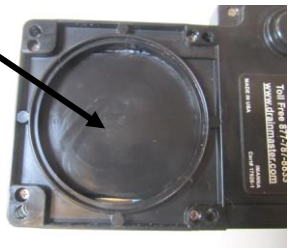


Fig. 7



Step 9: Ref **Fig. 8**: Separate pipe flanges and insert Drain Master **with gate closed** making sure the seals are in their correct position **on the flanges.** See Step 7. Rotate the valve to align the four bolt holes with the flange holes and insert the four new bolts and nuts. :

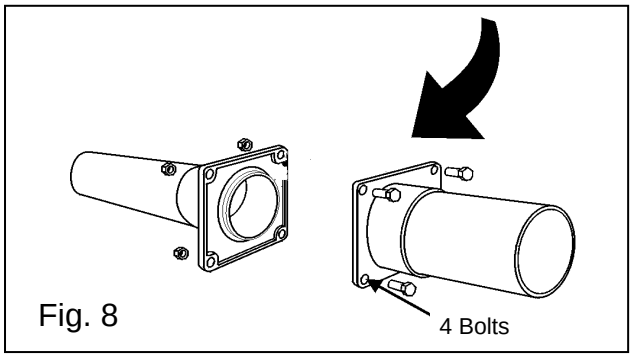


Fig. 8

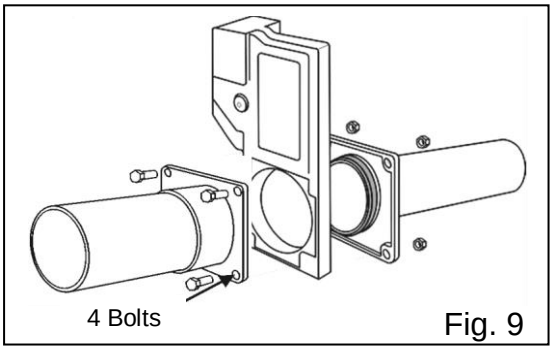


Fig. 9

Step 10: Ref **Fig. 9**: Install four bolts and nuts and **hand tighten till the valve is seated snug with no gap between the body and the flanges**. Use 7/16" Sockets/ spanners - **a Torque wrench is highly recommended**. **Torque from nuts side only,** ¼ turn at a time, in a crisscross pattern. Progressively increase Torque to **10 Inch Lbs**.
Max. Permissible is 15 Inch Lbs if required to prevent leaks **(Step 11**). Do not exceed - components are plastic and may stress and/or crack.

As a generic guideline 1 turn beyond finger tight equates to approx 10 inch. Lbs and 1 ½ turns approx. 15 Inch Lbs – tightening beyond that risks stressing and /or cracking.

Step 11: Add water to holding tank and check for leaks.
If leakage persists even at max. 15 Inch Lbs torque (Step 10), call Drain Master 1 877 787 8833 for advice.

2. OPERATOR SWITCH INSTALLATION

DOCUMENT DOC DM89 - S2VT SWITCH AND IP66 INTERCONNECT WIRE MOUNTING INSTRUCTIONS.
THIS COVERS SINGLE SWITCH AND DOUBLE SWITCH PANEL AS WELL AS IP 66 WIRING.

Your Kit may have come preconfigured with the essential items (**Fig.1**) or you may have ordered separate items to your application with a view to later expansion.

Doc DM90 is a S2VT Valve Configuration Guide that provides PNs of Kits and items that work together in a system. It can be downloaded from: http://drainmaster.com/rv/product-manuals

A combination of single switches and double switch panel may be used. Install switches in a convenient location in your RV. For the ultimate in user convenience, a second switch can optionally be mounted in another location, typically inside the RV.

Single Switch DM PN 5787- DM30 - SVT:

- Single Switch used to operate 1 valve and is front sealed, IP 66 rated. Each switch requires an IP 66 interface cable **DM PN 5846-IP66 20' Rnd. Cable Ass.**

- Switch may be installed directly to the panel. If the correct opening pre-exists in the panel the switch will simply snap into place; if not, a panel cutout will need to be made. Optionally the switch may be mounted using the supplied dress plate which requires a larger opening but permits easier switch removal for service. Cut out dimensions and Max. Panel thickness is shown in companion document Doc DM89 and conforms to industry standards.

Double Switch Panel DM PN 5847- RV Dbl SW PNL:

- Provides an elegant approach to operating 2 valves –'Black' and 'Gray'. Panel graphics are UV and wear resistant. Double Switch Panel should be installed in an enclosed /covered area or inside the RV.

- Requires 2 x 20 Ft IP 66 Cables, **DM PN 5846-IP66 20' Rnd. Cable Ass.**

- Double switch panel cutout and install is covered under companion document Doc DM89

3. IMPORTANT: CONNECTING to 12 V SOURCE.

- 12 V DC Power is supplied via a 2-pin Female connector and pigtail making the system "plug and play" and easy to disconnect and reconnect for service. The standard 2-pin power connector should be secured away from water exposure**. A waterproof 2 pin power connector is available as an optional extra for exposed locations.**

- The pigtails ends may be spliced to the 12 VDC wires with insulated crimp-on butt or barrel connectors **[Fig. 11a]**. For exposed locations use waterproof style butt or barrel connectors **[Fig. 11 b]**. Alternately cover the splice butt ends with marine silicone for water protection.

Fig.11a Standard Butt Connector

Ensuring the reliability of the 12 V DC supply connections under given application conditions is user's responsibility.

Check with Drain Master if you have questions on your install conditions

Fig. 11b- waterproof style butt connector

- **Fig 12: Butt Splicing:** *Black lead on connector pigtail is positive (+) 12VDC; Green lead is negative (ground).*

Black: +ve 12 V

Green: -ve12 V (Ground)

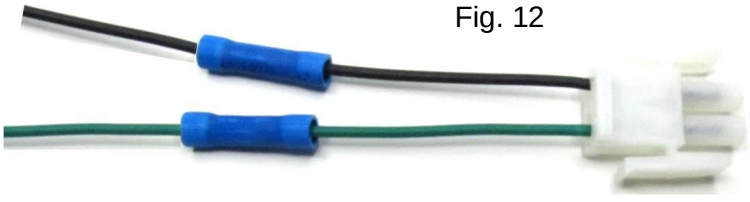


Fig. 12

- When connected to the 12 V DC source according to the color code above, the Green Power-On Led on the valve controller lights up. **Fig 13. Inset (dotted) area enlarged shows location of Power - On LED**

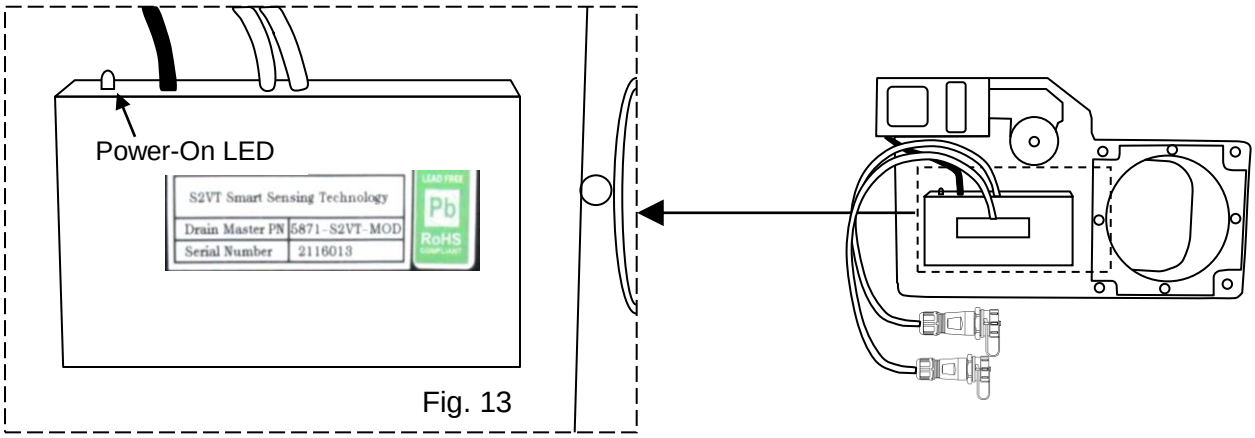


Fig. 13

THE SYSTEM FEATURES LOSSLESS REVERSE POLARITY PROTECTION CIRCUITRY.
IF THE GREEN POWER- ON LED DOES NOT LIGHT, RECHECK YOUR 12V POWER CONNECTIONS AND POLARITY.

- A system enable/disable switch is recommended to be included in the +12 V supply line. A switch rated at 12 V, 20 Amp DC or more , such as **DM 5890-DM30-20Amp SW,** will handle the peak current demand for up to 3 valves driven from a common 12 V DC supply line. Use the switch to disable the system when the RV is motion and enable it after the hose is hooked up. **It also ensures the valve/s home to their 'safe' closed position at power up.**

  Refer Doc DM91 S2VT Wiring Diagram and Doc DM93 System Master Switch Install

- **12 V supply source: Fig. 14** Use a spare fused slot on the RV DC distribution panel if available to provide the +12 V supply line. Label the slot 'Electric Valves'. Ground (–ve12V) can be connected as shown below in **Fig. 16** or directly to the battery.

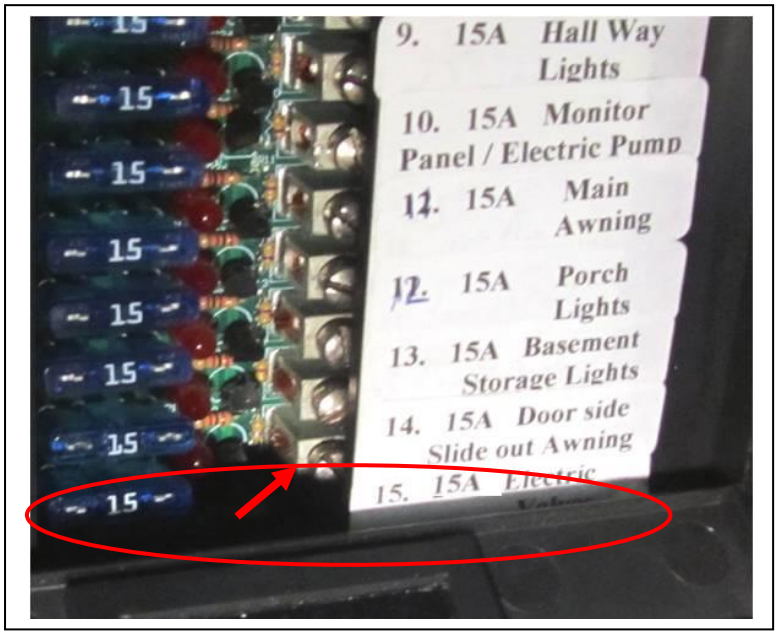


Fig. 14 – Arrow shows the spare (lowest) slot assigned to Electric valves

- If a spare slot is not available connect directly to12 battery terminals. A distribution bus bar and grounding lugs with direct connections to the battery terminals are convenient to obtain the +12 V **(Fig. 15)** and Ground (-12V) **(Fig. 16)** connections.

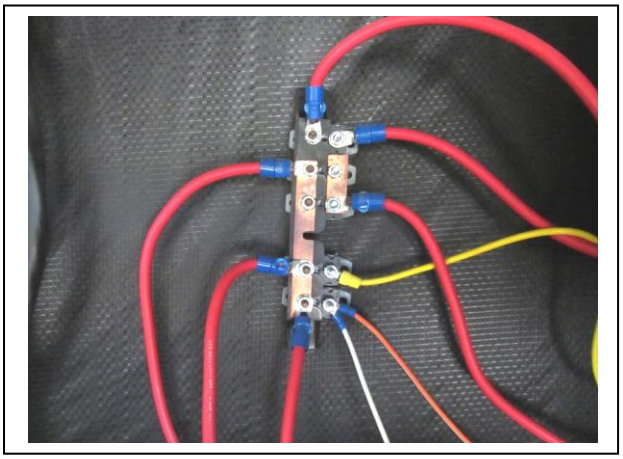


Fig.15. Tie to + 12V Bus Bar connected to battery +ve terminal

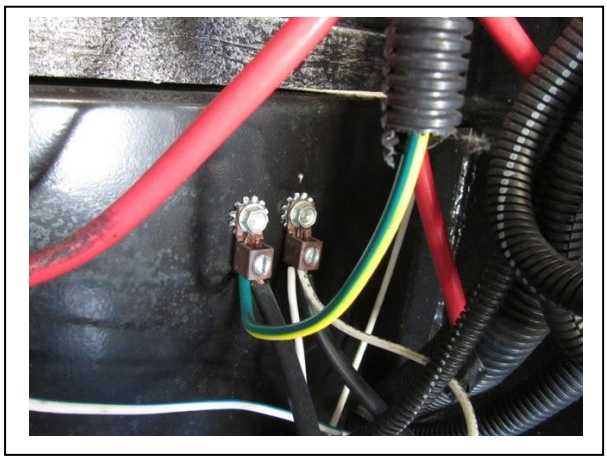


Fig. 16 Tie to Ground lug (-12V) connected to battery –ve terminal

Fig. 17 Pig Tail Connections

4. IMPORTANT: FUSE and FUSE RATINGS.

- If a spare DC distribution panel slot is used it will have a built-in fuse holder.

  If the supply is taken from the battery or 12V bus-bar, add an in-line style fuse holder (**DM PN 5891-DM-Fuse Holder** or similar) in the +12 V line. (Refer to Doc DM91 for wiring details)

- Fuse Ratings: A Fast Acting fuse is required, 5 Amp per valve. Valves may be individually fused (preferred)
  Alternatively a common fuse may be used on the +12 V power line feeding valves :
  1 valve connected use a 5 Amp fuse, for 2 Valves use a 10 Amp and for 3 valves use 15 Amp .

Document Doc DM91 S2VT Wiring Diagram provides detailed Wiring Schemes and applicable Fuse ratings.

5. Manual Override.

- The valve features a Double-sided manual override with hex head. Make sure you install your valve with easy approach to the manual override. Be knowledgeable about the access and rotational direction for opening and closing.
- 1/8" Allen wrench is provided with the valve – secured on the back of the valve. Know its location – **Fig. 18**
- Should you ever lose 12 V power, you can open/close the valve manually. Engage the provided Allen wrench in the hex head opening. It can be approached from either side of the valve.

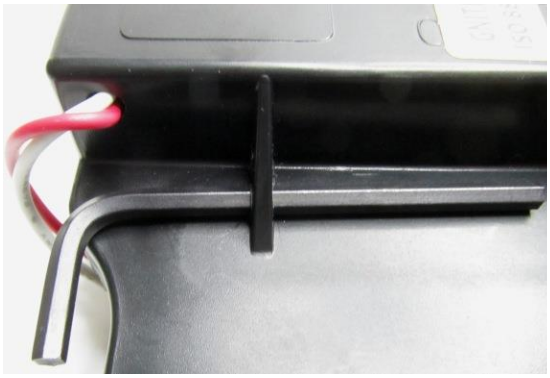


Fig. 18 Key Location (wires moved for clarity)

Fig 19 – Manual override directions

- Follow the embossed words and directional arrows showing which way to turn for 'open' and 'close' - **Fig 19**

- There will be resistance felt when turning as you are overriding a safety clutch. Turn only until shaft stops.
  Do not force beyond the end stop.

A STRIPPED OVERRIDE CAUSED BY EXCESSIVE USE/FORCE IS NOT COVERED UNDER WARRANTY.
Document DM23 - Manual Override Procedure - provides detailed steps relevant to the above.

6. OPERATION

Congratulations on your purchase of a quality product from Drain Master. Your new Drain Master S2VT valve is extremely easy to use. After installation according to these instructions you are ready to operate the Drain Master S2VT Valve for the first time.

At power up the Green LED on the Controller lights up and the valve/s will home to 'safe' closed position. You may hear some sound during power up - this is normal. The GREEN LED in the switch lights up when the valve is fully closed.

Ensure that the switch GREEN LED is lit (valve closed) prior to disabling the system and connecting or disconnecting the drain hose.

With the drain hose properly hooked up, push the operator switch. The controller opens the valve in approx. half a second. The switch RED LED lights up when the valve reaches open position. To close, push the switch again - the controller closes the valve and the switch GREEN LED lights up. The movement is independent of the switch pressing time. The controller drives the motor and turns it off once the target gate position is reached, typically around 0.5 -0.6 seconds. As an active safety measure, a back -up internal timer prevents motor drive beyond 0.75 – 0.8 seconds. Using Solid State, contact-less technology provides precise sensing and control of the valve position with vastly improved operational reliability and precision.

We are here to answer questions, please call us at 1 877 787 8833 toll free or email us: info@drainmaster.com

S2VT Pro- Series Drain Master Electric Valve
MANUFACTURER'S FIVE (5) YEAR LIMITED PRORATED WARRANTY

Drain Master RV & Marine Inc. (henceforth referred to as Drain Master Inc.) warrants its S2VT Pro-Series Drain Master Valves to be free of defects in materials and workmanship under normal use and service for a period of five years (60 months) from the original ship date. Units determined by Drain Master Inc. to be defective under this warranty shall be replaced for a reduced replacement cost calculated as follows:

0-24 mos. or less the valve is replaced free of charge.
Greater than 24 mos. to less than 36 mos., the valve is replaced at 80% off of the current retail cost.
Greater than 36 mos. to less than or equal to 48 mos., valve is replaced at 40% off of the current retail cost.
Greater than 48 mos. to less than or equal to 60 mos., the valve is replaced at 20% off of the current retail cost.

If the valve was purchased as part of a kit, the current replacement valve cost will be used in the equation. The replacement cost does not include the cost of shipping and any taxes. These costs are the responsibility of the customer. This warranty covers S2VT Pro-Series Drain Master electric valves only. Accessories such as switches or extension cables carry a 1 year warranty for defects in materials and workmanship. Fuses and fuse holders are not covered under warranty.

To submit a warranty claim, an RMA number must be obtained by contacting the company. The product must be shipped (at the customer's expense) within 15 days of obtaining the RMA number. Upon return a series of tests will be performed to determine the issue. THE REPLACEMENT VALVE CANNOT BE SHIPPED UNTIL THE ORIGINAL PRODUCT IS RETURNED TO DRAIN MASTER INC. AND THE TESTING IS PERFORMED. Every effort will be made to complete this in a timely manner. REPLACEMENT IS THE ONLY REMEDY AVAILABLE UNDER THIS WARRANTY.
The replacement valve carries its own brand new warranty.

Specifically excluded from this warranty are (1) labor and installation and (2) use of improper voltage and (3) damage due to negligent or abusive use or normal wear and tear, including, but not limited to, those items on Schedule A (following). Negligent, abusive, and other improper use of the valve voids this warranty.

IN NO EVENT SHALL DRAIN MASTER RV & MARINE INC. BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, FOR LOSS OF PRODUCT OR TIME, OR FOR ANY DELAY IN PERFORMANCE UNDER THIS WARRANTY. Drain Master Inc. MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY. THIS WARRANTY SUPERCEDES AND/OR REPLACES ANY PRIOR WARRANTIES, IF ANY, ON SAME PRODUCTS.

The validity, construction and enforcement of, and the remedies under, this limited warranty shall be governed by the laws of the State of California.

>Please send the product to: Drain Master, Inc. ● 400 Park Center Dr. Ste. 6 ● Hollister, CA 95023
>If requested email photos to: admin@drainmaster.com

SCHEDULE A

Following are descriptions of typical situations where this warranty does not apply. Exclusion is not limited to these situations.

EXAMPLES OF NEGLIGENT OR ABUSIVE USE: Broken, kinked or melted cables, evidence of physical damage to the module, overstressing the manual override, stripping the gear due to aggressive stress, incorrect mounting- not following install zones. Damage from exposure to excessive heat. Exposure to chemicals such as solvents, petrochemicals, paints, acids, alkaline materials or other substances which cause damage. Over torqueing the mounting hardware. Use of seals other than those provided. Use of incorrect lubricant. Any physical damage to switch or any kind of mechanical damage or alteration to the switch. Use of the valve with other types of operating devices, such as touch panels, pdm's, etc. without the approval of Drain Master Inc.

COMPANION DOCUMENTS

Download or view S2VT companion documents in PDF format
from 'Product Manuals' at our website

- DM89 S2VT Switch and IP 66 cable installation
- DM90 S2VT Valve configuration guide
- DM91 S2VT Wiring Diagram
- DM93 System Master Switch Installation
- DM35 1 ½" Reducer Kit Installation
- DM23 Manual Override Procedure

Help improve our documents
Please give your feedback

Toll free 1 877 787 8833
Email: admin@drainmaster.com