

Installation, Operation and Maintenance Manual

6-Way Diverting Valve Panel 731 / 732



⚠ WARNING



**THINK
SAFETY
FIRST**

Please read carefully before proceeding with installation. Your failure to follow any attached instructions or operating parameters may lead to the product's failure.
Keep this Manual for future reference.

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Introduction

The 6-Way Diverting Valve Panel receives flow from an air-to-water or water-to-water heat pump and directs the flow in a 4-pipe hydronic heating and cooling system to either the hot or cold buffer tanks. The panel is normally heating and changes to cooling operation when a cooling signal is received.

Important Safety Information

⚠ WARNING

It is your responsibility to ensure that this equipment is safely installed according to all applicable codes and standards. tekmar® is not responsible for damages resulting from improper installation and/or maintenance.

To avoid serious personal injury and damage to the equipment:



- Read Manual and all product labels BEFORE using the equipment. Do not use unless you know the safe and proper operation of this equipment.



- Keep this Manual available for easy access by all users.
- Replacement Manuals are available at tekmarControls.com



This is a safety-alert symbol. The safety alert symbol is shown alone or used with a signal word (DANGER, WARNING, or CAUTION), a pictorial and/or a safety message to identify hazards.

When you see this symbol alone or with a signal word on your equipment or in this Manual, be alert to the potential for death or serious personal injury.



This pictorial alerts you to electricity, electrocution, and shock hazards.



Double insulated.

⚠ WARNING

This symbol identifies hazards which, if not avoided, could result in death or serious injury.

⚠ CAUTION

This symbol identifies hazards which, if not avoided, could result in minor or moderate injury.

NOTICE

This symbol identifies practices, actions, or failure to act which could result in property damage or damage to the equipment.

⚠ WARNING

- It is the installer's responsibility to ensure that this control is safely installed according to all applicable codes and standards.
- Improper installation and operation of this control could result in damage to the equipment and possibly even personal injury or death.
- This control is not intended for use as a primary limit control. Other controls that are intended and certified as safety limits must be placed into the control circuit.

NOTICE

Do not attempt to service the control. There are no user serviceable parts inside the control. Attempting to do so voids warranty.

⚠ WARNING

Do not insert fingers into the valve ports when powered. The rotation of the valve ball has enough torque to sever fingers.

Installation

Tools Required

- Two pipe wrenches
- Philips screwdriver

Materials Required

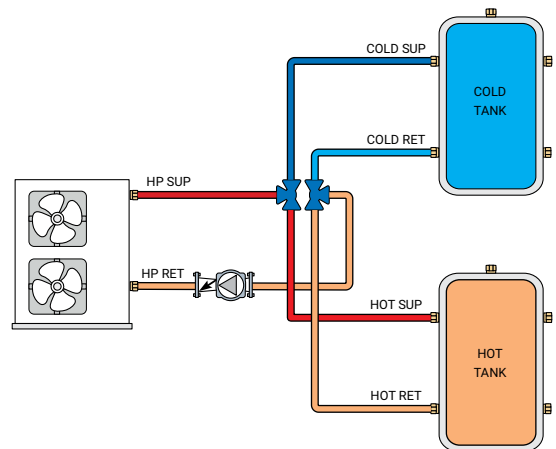
- Male NPT adapter or threaded nipple
- Teflon tape
- Pipe thread sealant
- 24 V(ac), 30 VA or greater transformer

Piping

Install pipe adapters or threaded nipples to each valve port. Use pipe clamps to mount the panel to slotted steel strut channels. Use wood or masonry screws to fasten the assembly to a supporting wall. Alternatively, pipe hangers may be installed to provide support from a ceiling.

Factory Default Valve Positions

The panel ships from the factory with the following valve port configuration.

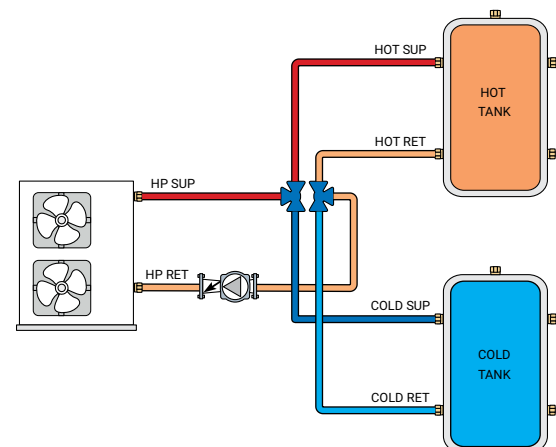


Field Reversed Valve Positions

The valve may be piped in the following reversed valve positions.

If field reversing the ports:

- Reverse the Molex plugs as described in the electrical section.
- Remove the factory default valve position labels A1 and A2 and replace with the field reversed valve position labels A1 and A2.



NOTICE

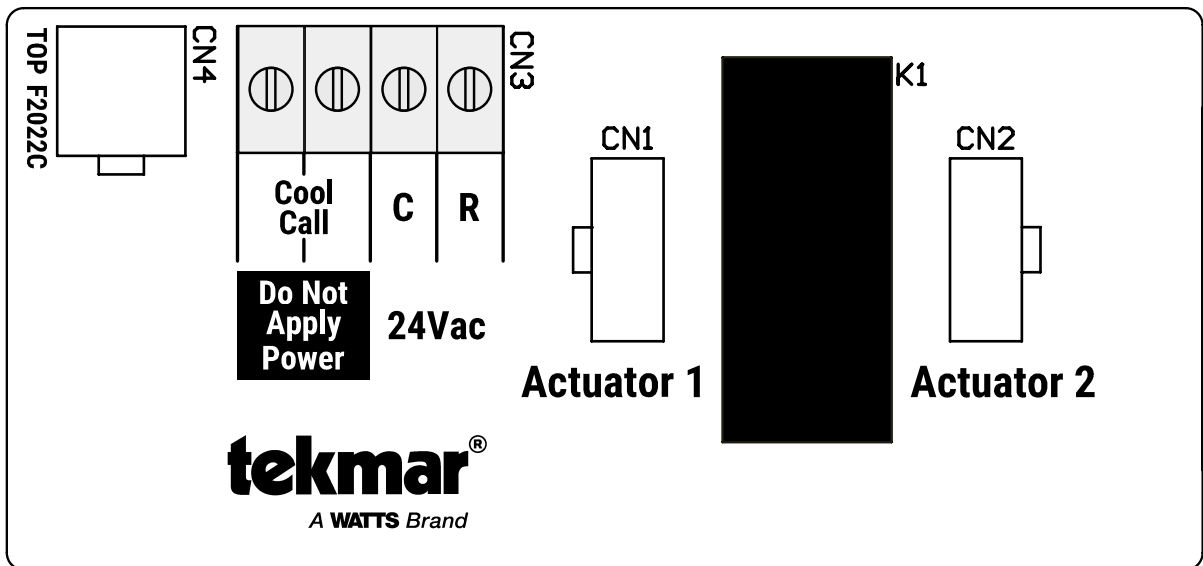
The middle port of each 3-way valve must be piped to the heat pump. This cannot be changed.

Wiring Schematic

This section provides a wiring schematic for the control.

⚠ WARNING

- Before wiring, ensure all power is turned off and take all necessary precautions.
- Strip all wiring to a length of $\frac{3}{8}$ in. or 10 mm for all terminals.
- A circuit breaker or power disconnect that provides power to the control should be located nearby and clearly labeled.
- Refer to the current and voltage ratings at the back of this brochure before connecting devices to this control.
- Only qualified personnel should install or service the control.



Wiring Instructions

This section explains how to wire the diverting valve panel to control.

Cool Call

- Connect the cool call terminals to the diverting valve terminals on the system control.
- When open the diverting valve panel is in heating mode.
- When closed the diverting valve panel is in cooling mode.

Input Power (R & C)

A 24 V(ac), 30 VA, Class 2 transformer is required.

- Connect the power supply R
- Connect the C to the power source common C

Factory Default Valve Position

- Leave Actuator 1 Molex connector connected to Actuator 1 socket
- Leave Actuator 2 Molex connector connected to Actuator 2 socket

Field Reverse Valve Position

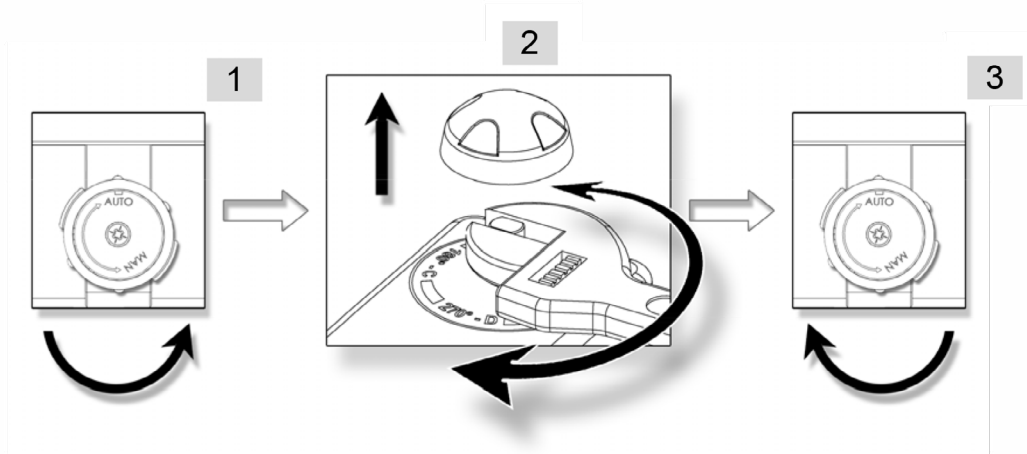
- Unplug Actuator 1 and 2 Molex connectors from their respective sockets
- Plug Actuator 1 Molex connector to Actuator 2 socket
- Plug Actuator 2 Molex connector to Actuator 1 socket
- Remove the factory default valve position labels A1 and A2 and replace with the field reversed valve position labels A1 and A2.

Testing and Troubleshooting

Manual Override

The actuator motors include a manual override:

1. Turn the knob to position MAN (counter-clockwise) and hold it in position.
2. Turn the outgoing drive shaft of the actuator with the help of an adjustable wrench.
3. To re-engage automatic operation, release the knob (spring return).



Note: The valve may be stiff when first installed or after an extended period of non operation. Power cycle the valve to loosen to be able to move the valve position manually.

Sequence of Operation

The diverting valve panel is factory shipped in normally heating operation. When the cool call is shorted together, the actuators rotate 90 degrees for cooling operation.

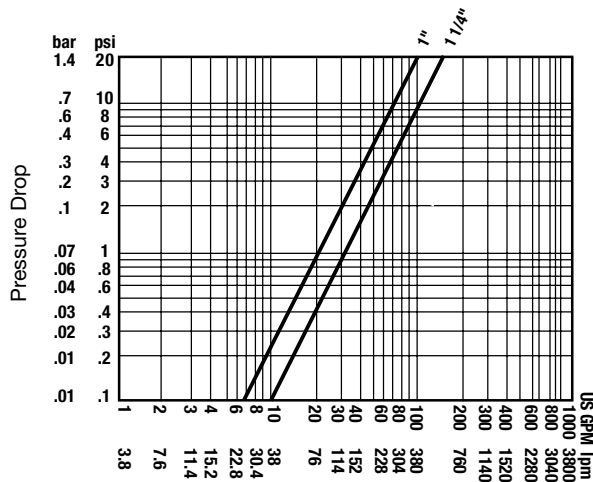
Technical Data

Call customer service if you need assistance with technical details.

Valve Torque Rating

PRODUCT	SIZE	RATING	OPERATING TORQUE	
			in./lbs.	N-m
731	1"	21	200	22.6
732	1 1/4"	33	250	28.2

Pressure Drop vs. Flow



Pressure – Temperature

Temperature Range: 0°F - 350°F (-18°C – 177°C) @ 50psi (3.5 bar)

Maximum Working Pressure: 400psi (28 bar) WOG non-shock at 100°F (38°C); 125psi (8.6 bar) WSP

	6-Way Diverting Valve Panel 731	6-Way Diverting Valve Panel 732
Literature	IOM-T-73X, ES-T-731	IOM-T-73X, ES-T-732
Packaged weight	14.4 lbs (6.52 kg)	18.2 lbs (8.26 kg)
Dimensions	11 ⁹ / ₁₀ " H x 11 ⁸ / ₁₀ " W x 8 ⁷ / ₁₀ " D (295 x 300 x 208 mm)	12 ³ / ₁₀ " H x 11 ⁹ / ₁₀ " W x 8 ⁷ / ₁₀ " D (312 x 300 x 208 mm)
Enclosure	ABS plastic, NEMA type 1	ABS plastic, NEMA type 1
Fitting	1" Female NPT	1-1/4" Female NPT
Ambient conditions	Indoor use only, 32 to 122°F (0 to 50°C), < 90% RH non-condensing	Indoor use only, 32 to 122°F (0 to 50°C), < 90% RH non-condensing
Power supply	24V (ac) ±10%, 60 Hz	24V (ac) ±10%, 60 Hz
Power consumption	30VA	30VA
Control signal input	24V (ac), floating action	24V (ac), floating action
Motor speed	11s (1/4 turn)	11s (1/4 turn)
Rated torque (actuator)	7.3 ft-lbs (10 Nm)	7.3 ft-lbs (10 Nm)
CV (valve)	21	33
Sound level	61 dB	61 dB
Warranty	Limited 3 Year	Limited 3 Year

Limited Warranty and Product Return Procedure

Limited Warranty *The liability of tekmar under this warranty is limited. The Purchaser, by taking receipt of any tekmar product ("Product"), acknowledges the terms of the Limited Warranty in effect at the time of such Product sale and acknowledges that it has read and understands same.*

The tekmar Limited Warranty to the Purchaser on the Products sold hereunder is a manufacturer's pass-through warranty which the Purchaser is authorized to pass through to its customers. Under the Limited Warranty, each tekmar Product is warranted against defects in workmanship and materials if the Product is installed and used in compliance with tekmar's instructions, ordinary wear and tear excepted. The pass-through warranty period is for a period of twenty-four (24) months from the production date if the Product is not installed during that period, or twelve (12) months from the documented date of installation if installed within twenty-four (24) months from the production date.

The liability of tekmar under the Limited Warranty shall be limited to, at tekmar's sole discretion either (a) the cost of parts and labor provided by tekmar to repair defects in materials and workmanship of the defective product; or (b) to the exchange of the defective product for a warranty replacement product; or (c) to the granting of credit limited to the original cost of the defective product. Such repair, exchange, or credit shall be the sole remedy available from tekmar, and, without limiting the foregoing in any way, tekmar is not responsible, in contract, tort, or strict product liability, for any other losses, costs, expenses, inconveniences, or damages, whether direct, indirect, special, secondary, incidental, punitive, or consequential, arising from ownership or use of the product, or from defects in workmanship or materials, including any liability for fundamental breach of contract.

The pass-through Limited Warranty applies only to those defective Products returned to tekmar during the warranty period. This Limited Warranty does not cover the cost of the parts or labor to remove or transport the defective Product, or to reinstall the repaired or replacement Product, all such costs and expenses being subject to Purchaser's agreement and warranty with its customers.

Any representations or warranties about the Products made by Purchaser to its customers which are different from or in excess of the tekmar Limited Warranty are the Purchaser's sole responsibility and obligation. Purchaser

shall indemnify and hold tekmar harmless from and against any and all claims, liabilities and damages of any kind or nature which arise out of or are related to any such representations or warranties by Purchaser to its customers.

The pass-through Limited Warranty does not apply if the returned Product has been damaged by negligence by persons other than tekmar, accident, fire, Act of God, abuse or misuse; or has been damaged by modifications, alterations or attachments made subsequent to purchase which have not been authorized by tekmar; or if the Product was not installed in compliance with tekmar's instructions and/or the local codes and ordinances; or if due to defective installation of the Product; or if the Product was not used in compliance with tekmar's instructions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHICH THE GOVERNING LAW ALLOWS PARTIES TO CONTRACTUALLY EXCLUDE, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, DURABILITY OR DESCRIPTION OF THE PRODUCT, ITS NON-INFRINGEMENT OF ANY RELEVANT PATENTS OR TRADEMARKS, and ITS COMPLIANCE WITH OR NON-VIOLATION OF ANY APPLICABLE ENVIRONMENTAL, HEALTH OR SAFETY LEGISLATION; THE TERM OF ANY OTHER WARRANTY NOT HEREBY CONTRACTUALLY EXCLUDED IS LIMITED SUCH THAT IT SHALL NOT EXTEND BEYOND TWENTY-FOUR (24) MONTHS FROM THE PRODUCTION DATE, TO THE EXTENT THAT SUCH LIMITATION IS ALLOWED BY THE GOVERNING LAW.

Product Warranty Return Procedure All Products that are believed to have defects in workmanship or materials must be returned, together with a written description of the defect, to the tekmar Representative assigned to the territory in which such Product is located. If tekmar receives an inquiry from someone other than a tekmar Representative, including an inquiry from Purchaser (if not a tekmar Representative) or Purchaser's customers, regarding a potential warranty claim, tekmar's sole obligation shall be to provide the address and other contact information regarding the appropriate Representative.

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IOM-T-73X 2616

All specifications are subject to change without notice

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