

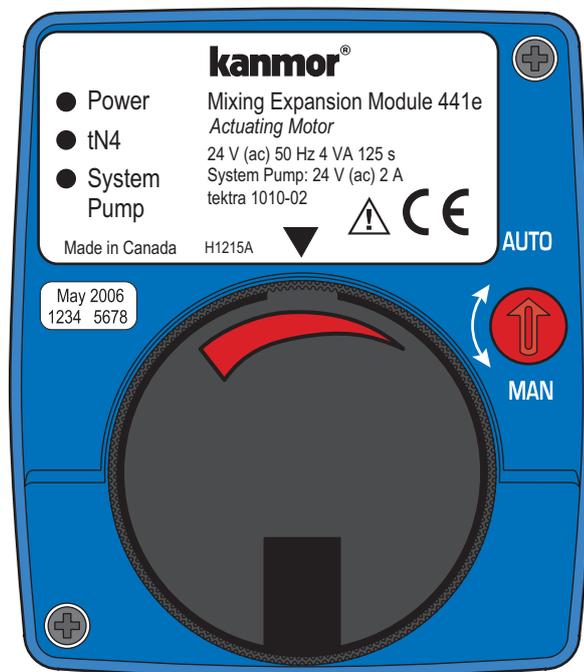
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Introduction

The Mixing Expansion Module 441e is designed to operate many common 3-way and 4-way brass mixing valves. The 441e provides 6 N•m (53 in•lbs) of torque over a 90° rotation. The 441e is controlled through digital communication on tekmarNet®4 systems. The 441e requires the use of a tN4 System Control that includes a mix temperature bus.

Features

- tN4 Compatible
- Actuates many common Mixing Valves
- System Pump Signal
- CE Approved



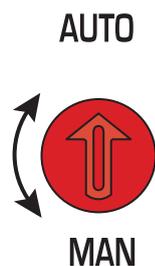
Sequence of Operation

Automatic Operation

Automatic operation of the mixing valve requires the red dial on the front of the 441e to be set to the "AUTO" position.

The tN4 System Control determines the target mix supply water temperature based on its settings and the requirements of the tN4 thermostats and tN4 setpoint devices on the mix tN4 bus. The 441e uses the Mix Supply sensor to measure the water temperature and then operates the mixing valve to maintain the target water temperature. The 441e powers the system pump output with 24 V (ac) whenever a tN4 thermostat or tN4 setpoint control calls for heat on the tN4 mix bus and that tN4 device's Heat 1 Pump (or Heat 2 Pump) setting is set to On.

The position of the mixing valve is indicated by the red stripe on the hand wheel.

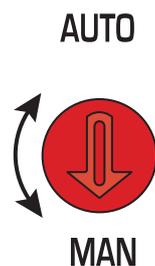


Manual Operation

Manual operation of the mixing valve requires the red dial on the front of the 441e to be set to the "MAN" position.

To change the mixing position, rotate the hand wheel of the 441e.

The position of the mixing valve is indicated by the red stripe on the hand wheel.



DIP Switch Setting

The 441e has a DIP switch located inside the wiring enclosure.

Step 1: Remove the hand wheel.

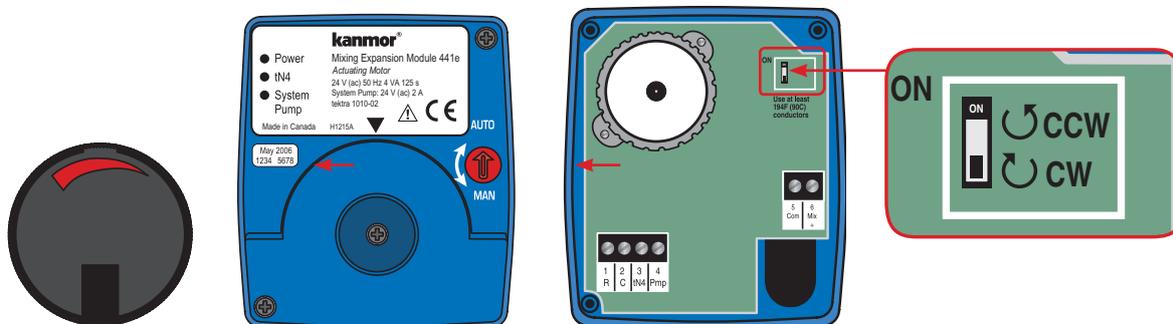
Step 2: Remove the two screws.

Step 3: Remove the front cover.

The DIP switch selects the direction of rotation to open the mixing valve.

In the OFF position, the actuator moves in the clockwise direction to open the valve.

In the ON position, the actuator moves in the counterclockwise direction to open the valve.



LED Status Indicators

Power LED

- **Green:** Normal operation.
- **Off:** No power to the Mixing Expansion Module.

tN4 LED

- **Solid Green:** The Mixing Expansion Module established tN4 communication to a tN4 System Control.
- **Flashing Green:** Attempting to establish communication with tN4 System Control. This is normal for the first 3 minutes after power is turned on.
- **Off:** There is no tN4 communication to a tN4 system control.

System Pump LED

- **Green:** The system pump relay is on.
- **Off:** The system pump relay is off.

Mixing Expansion Module 441e

- Power
- tN4
- System Pump

Application

The 441e Actuating Motor is designed to accept a mixing signal from a tekmarNet®4 system control. It is mounted on a 3-way or 4-way valve to provide control of the mix supply temperature. This motor will operate a variety of common valves. The following chart is a partial list of compatible valves and lists which mounting parts to use for the specific valve.

441e Compatible Valves Make / Model	Coupler Arrow Colour	Anti-rotation bolts	Valve type
Ivar 011, 012, 013, 021, 022, 031, 032	White	Small	3-way
Ivar 111, 112, 113, 121, 122, 131, 132	Red	Small	4-way
Ivar 041, 051	White	Large	3-way
Ivar 141, 151	Red	Large	4-way
Danfoss,Esbe 3MG	White	Small	3-way
Danfoss,Esbe 4MG	Red	Small	4-way
Danfoss,Esbe G1 series	White	Large	3-way
Danfoss,Esbe G4 series	Red	Large	4-way

Error Messages

Power LED	tN4 LED	Error Condition
ON	OFF	tN4 Bus open or short circuit. <ul style="list-style-type: none"> • Check wiring for loose or broken wires. • Check for a short circuit between tN4 and C. • Check polarity on the R and C wires.
ON	FLASHING	Flashing tN4 LED is normal on power up. If flashing tN4 LED continues for more than 3 minutes: <ul style="list-style-type: none"> • Ensure there is a tN4 System Control on the tN4 bus. • Ensure the Mixing Expansion Module is on a mix tN4 bus and NOT on a boiler tN4 bus. • Ensure there are not multiple Mixing Expansion Modules on the same mix tN4 bus. • tN4 System Control will display error message. See tN4 System Control and literature for troubleshooting.

Cleaning the Control

The control's exterior can be cleaned using a damp cloth. Moisten the cloth with water and wring out prior to wiping the control. Do not use solvents or cleaning solutions.

Limited Warranty and Product Return Procedure

Limited Warranty *The liability of kanmor under this warranty is limited. The Purchaser, by taking receipt of any kanmor 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 kanmor 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 kanmor Product is warranted against defects in workmanship and materials if the Product is installed and used in compliance with kanmor'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 kanmor under the Limited Warranty shall be limited to, at kanmor's sole discretion: the cost of parts and labor provided by kanmor to repair defects in materials and / or workmanship of the defective product; or to the exchange of the defective product for a warranty replacement product; or to the granting of credit limited to the original cost of the defective product, and such repair, exchange or credit shall be the sole remedy available from kanmor, and, without limiting the foregoing in any way, kanmor 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 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 kanmor 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 kanmor Limited Warranty are the Purchaser's sole responsibility and obligation. Purchaser shall indemnify and hold kanmor 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.

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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 kanmor Representative assigned to the territory in which such Product is located. If kanmor receives an inquiry from someone other than a kanmor Representative, including an inquiry from Purchaser (if not a kanmor Representative) or Purchaser's customers, regarding a potential warranty claim, kanmor's sole obligation shall be to provide the address and other contact information regarding the appropriate Representative.



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