Taco 0018e ECM High Efficiency Circulator Featuring Bluetooth Communication Instruction Manual

0018e
Instruction Sheet
0018e ECM High-Efficiency Circulator
Featuring Bluetooth® Communication
SUPERSEDES: August 16, 2021
Plant ID No. 001-5061
EFFECTIVE: October 5, 2023

Contents

1 DESCRIPTION:
2 APPLICATION:
3 FEATURES:
4 INSTALLATION:
5 Typical Variable Speed Applications:
6 0018e® PERFORMANCE CURVES
7 LIMITED WARRANTY STATEMENT
8 Documents / Resources
8.1 References

DESCRIPTION:

The 00e* series 0018e* circulator is a variable speed wet rotor circulator with an ECM, permanent magnet motor. Operating modes include infinitely variable fixed speed, constant pressure, proportional pressure, and TacoAdapt™ self-adjusting proportional pressure. Adjust the operating mode with the dial or the Taco 0018e® ECM Circulator Mobile App using Bluetooth” connectivity on your smartphone or tablet. The ECM high-efficiency motor reduces power consumption by up to 85% compared to equivalent AC permanent split capacitor circulators.

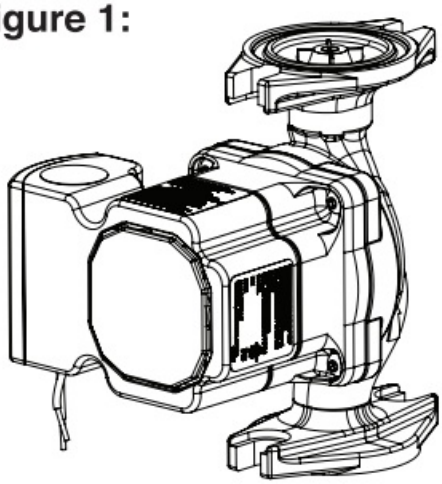
APPLICATION:

- Maximum operating pressure: 125 psi (8.6 bar)
- Maximum water temperature: 230°F (110°C)
- Electrical specifications:
  Voltage: 110-120V, 50/60 Hz, single phase
  Maximum operating power: 44W
  Maximum amp rating: 0.54
- Equipped with a cast iron casing and should be used for closed loop systems only
- Not suitable for open loop potable water or chilled water systems
- Taco circulator pumps are for indoor use only — employer uniquement a l’interieur
- Acceptable for use with water or maximum of 50% water/glycol solution

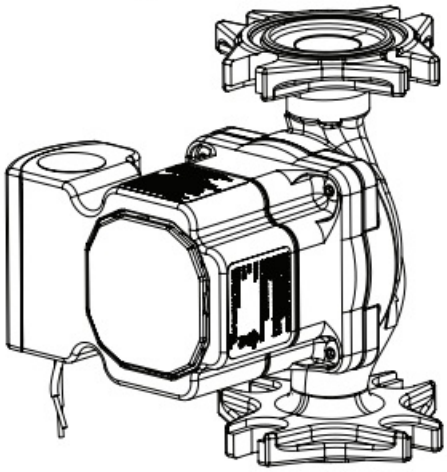
FEATURES:

- 3 operating modes in dial activation:
  – Proportional pressure (TRV – Panel Radiator), variable speed – 2 variable pressure differential settings (Med or High)
  – Constant pressure (ZV – Zone Valve), variable speed – 2 constant pressure differential settings (Med or High)
  – Fixed speed (ZONE CIRC – zoning with circulators) – infinitely adjustable MIN/MAX settings
  * 4 operating modes in 0018e™ Mobile App activation:
  – Fixed Speed – infinitely adjustable MIN/MAX settings
  – Constant Pressure – variable speed – 9 constant pressure differential settings
  – Proportional Pressure – variable speed – 9 variable pressure differential settings
  – TacoAdapt™ – Designed for constant circulation systems. Automatically adjusts to system conditions
- Multi-color LED display showing operating mode and error code diagnostics
- Use with a Taco ZVC Zone Valve Control or SR Switching Relay for ON/OFF operation
- Nut capture feature on flanges for easier fit up
- Dual electrical knockouts and 6” stranded wire leads for easy wiring
- Double insulated – no ground-wire required
- Whisper quiet operation
- BIO Barrier® protects the pump from system contaminants
- SureStart® – automatic unblocking and air purging mode
- Optional 2-way flange model for easy fit-up to any flange orientation
- Integral Flow Check (IFC*) included – Field installed

Figure 1:



Standard flange model: 0018e-F2

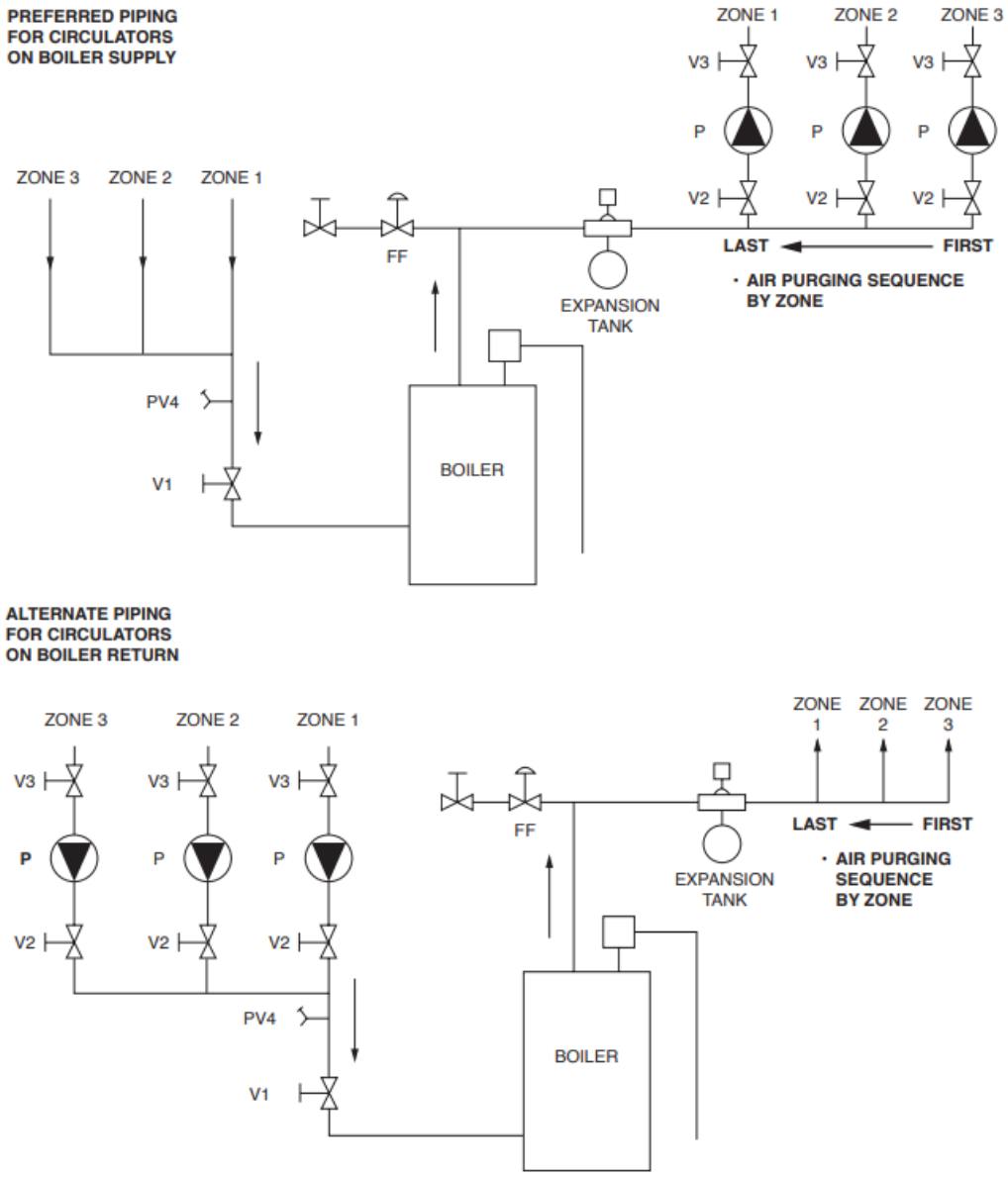


Optional 2-way flange model: 0018e-F4

INSTALLATION:

WARNING: Do not use in swimming pool or spa areas. Pump has not been investigated for these applications.
CAUTION: The addition of petroleum based fluids or certain chemical additives to systems using TACO equipment voids the warranty. Consult factory for fluid compatibility.
CAUTION: Installations at elevations over 5000 feet must have higher fill pressure of 20 psi minimum to prevent pump cavitation and flashing. Premature failure may result. Adjust expansion tank pressure to equal fill pressure. A larger size expansion tank may be required.

Figure 2:



KEY:
VI, V2, V3 = SHUT-OFF ISOLATION VALVE
P = TACO CIRCULATOR WITH IFC
FF = FAST FILL BOILER FEED VALVE
PV4 = PURGE VALVE

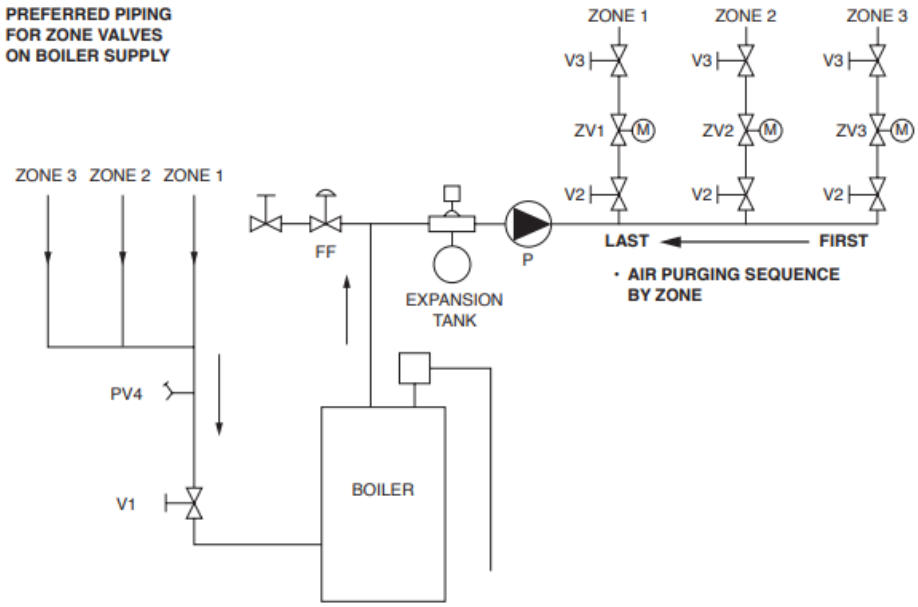
RECOMMENDED PURGING STEPS:

1. CLOSE V1, PV4, V2
2. OPEN V3
3. OPEN FF VALVE
4. OPEN V2, PV4, TO PURGE LAST ZONE FIRST (ZONE 3)
5. CLOSE FF VALVE
6. CLOSE V2, PV4
7. REPEAT STEPS 1 TO 6 FOR EACH ADDITIONAL ZONE, PURGE ZONE 1 LAST
8. OPEN V1 WHEN ALL ZONES ARE PURGED
9. ADJUST SYSTEM TO DESIRED OPERATING FILL PRESSURE IF REQUIRED

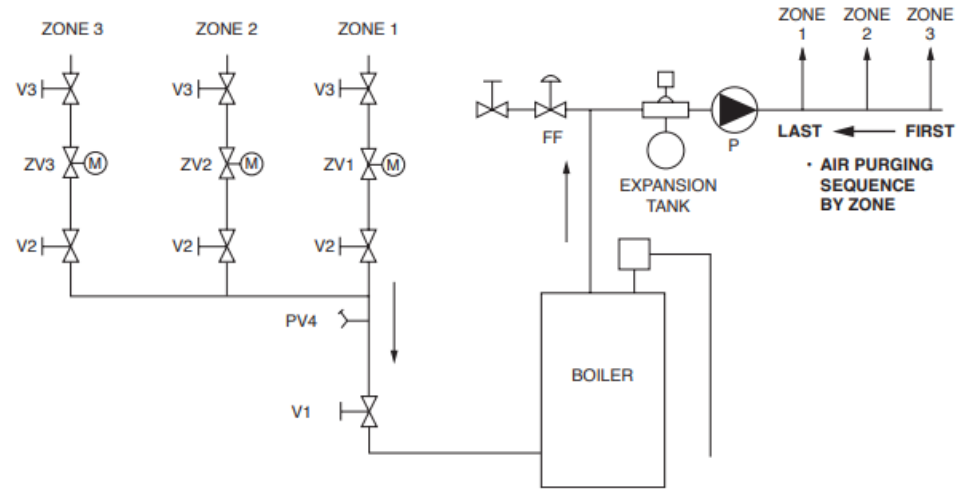
Figure 3:

MULTI-SPEED OR VARIABLE SPEED MODES

PREFERRED PIPING FOR ZONE VALVES ON BOILER SUPPLY



ALTERNATE PIPING FOR ZONE VALVES ON BOILER RETURN



KEY:
Vi, V2, V3 = SHUT-OFF ISOLATION VALVE
P = TACO CIRCULATOR WITHOUT IFC INSTALLED
FF = FAST FILL BOILER FEED VALVE
PV4 = PURGE VALVE
ZV = ZONE VALVE

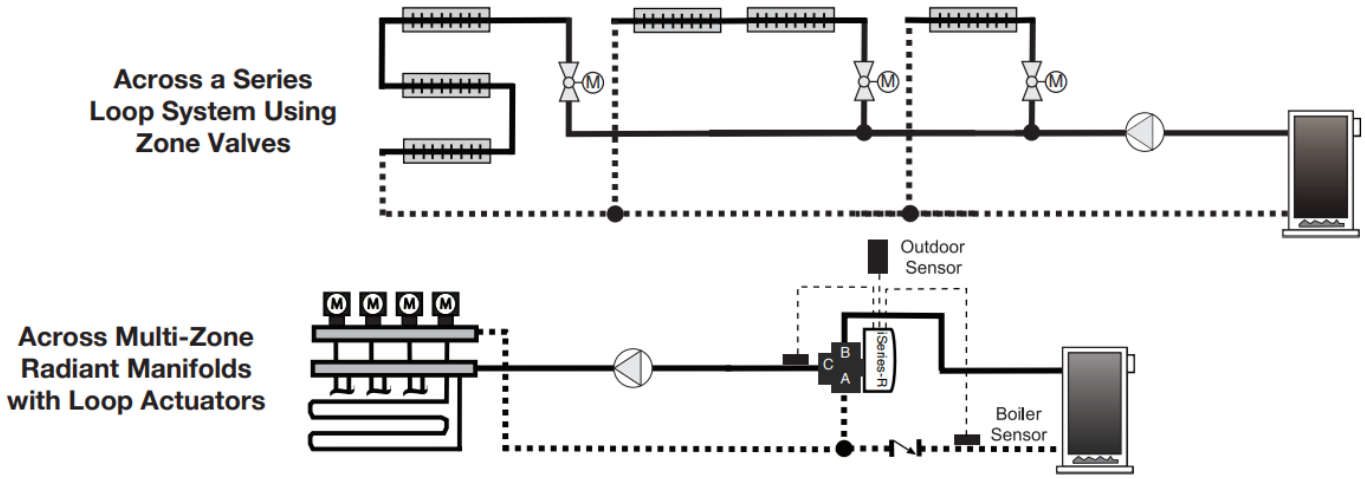
RECOMMENDED PURGING STEPS:

1. CLOSE V1, PV4, V2
2. OPEN V3 AND ZV3
3. OPEN FF VALVE
4. OPEN V2, PV4, TO PURGE LAST ZONE FIRST (ZONE 3)
5. CLOSE FF VALVE
6. CLOSE V2, PV4
7. REPEAT STEPS 1 TO 6 FOR EACH ADDITIONAL ZONE, PURGE ZONE 1 LAST
8. OPEN V1 WHEN ALL ZONES ARE PURGED
9. ADJUST SYSTEM TO DESIRED OPERATING FILL PRESSURE IF REQUIRED

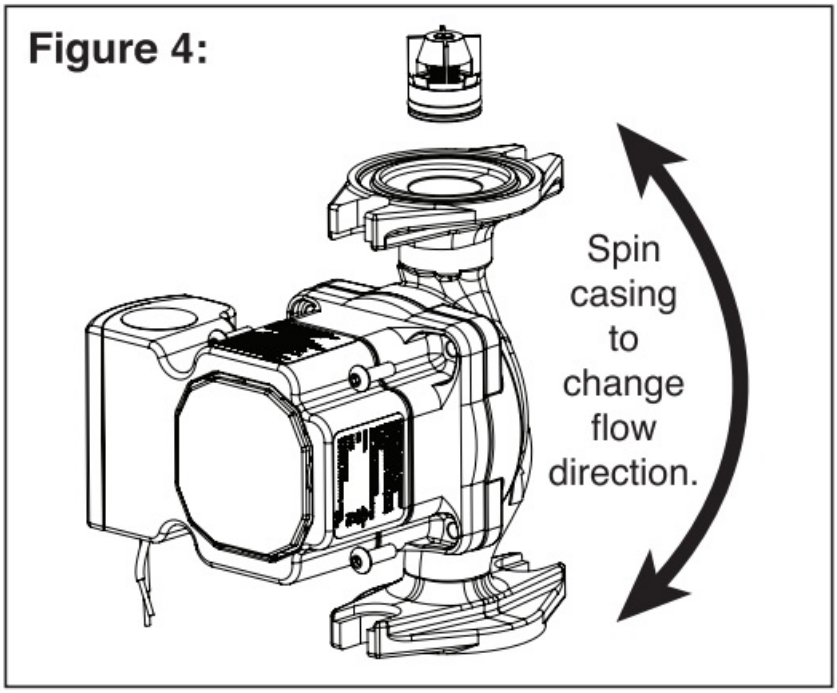
10. MOVE ALL ZV TO CLOSED/AUTOMATIC POSITION

Typical Variable Speed Applications:

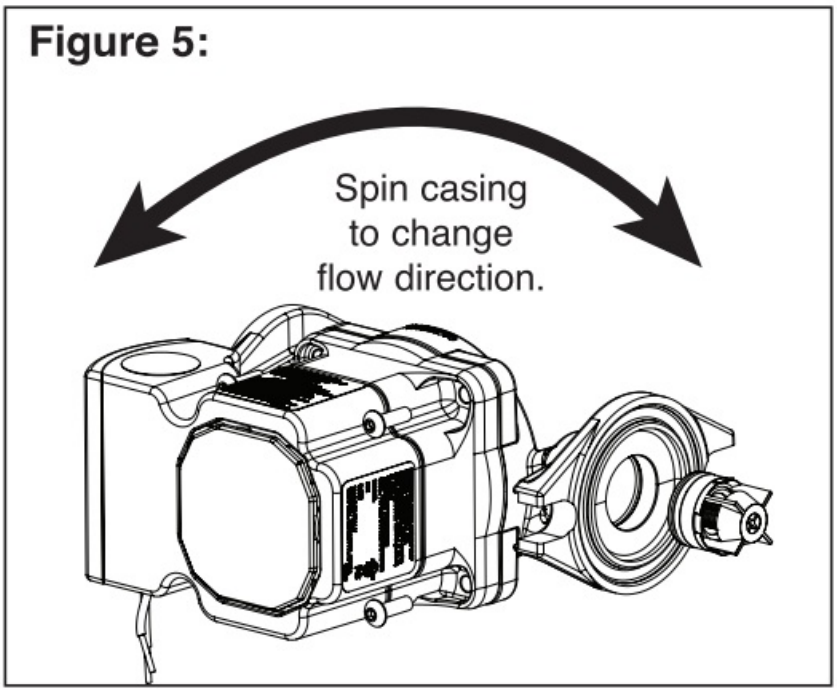
- Zone Valves
- Panel Radiation with Thermostatic Valves
- Radiant Loops with Actuators
  – Varies speed to maintain proportional or constant pressure differential (AP, Δ(8P)



1. Location: The circulator can be installed on the supply or return side of the boiler but for best system performance, it should always pump away from the expansion tank. See piping diagrams in Figure 2 and Figure 3.
2. Mounting position: Circulator must be mounted with the motor in the horizontal position. See diagrams below for acceptable motor mounting orientations.
   CAUTION: Do not use flat rubber gaskets. Only use O-ring gaskets provided or leaks may result. Warranty will be void.
   ACCEPTABLE MOTOR MOUNTING POSITIONS
   Always install with motor in horizontal orientation. Position electrical junction box at 9 o'clock for best viewing orientation. Pump casing may be rotated to change flow direction. Locate the arrow on the casing body to determine flow direction.

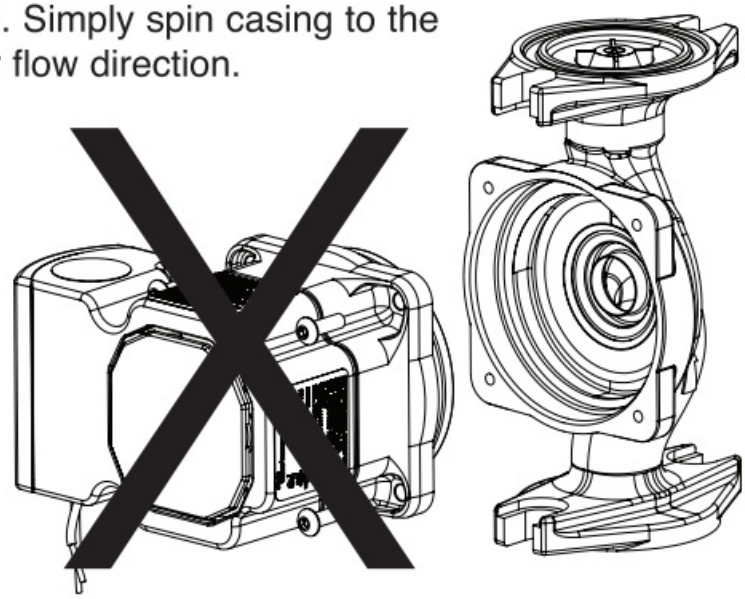


To rotate the pump casing, remove the 4 motor screws. motor housing from the casing. Damage to the casing proper flow direction desired as shown in Figure 4 and Figure Be sure motor is positioned correctly and is seated evenly screws evenly to 25-38 in-lbs torque.



CASING ROTATION

Figure 6: Do not detach motor frame from pump casing. Simply spin casing to the proper flow direction.



When rotating pump casing position, DO NOT detach O-ring and leakage may result. Simply spin casing to theFigure 5. Reattach the 4 screws (%" allens wrench required). evenly to prevent leakage or damage to O-ring. Tighten motorIntegral Flow Check (IFC®) option – An IFC® is included in the carton. If required, press IFC into machined discharge port with plunger and o-ring facing in, until it snaps into place. Before installing, press IFC plunger to be sure it moves freely. See diagram above.

CAUTION: To reduce the possibility of noise transmission, be sure to add vibration dampeners to piping when mounting circulator to wall or floor joists.

3. Filling the system: Fill the system with tap water or a maximum of 50% propylene-glycol and water solution. The system must be filled before operating the circulator. The bearings are water lubricated and should not be allowed to operate dry. Filling the system will result in immediate lubrication of the bearings. It is always good practice to flush a new system of foreign matter before startin the circulator.

   WARNING: Risk of electric shock. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded, grounding-type receptacle. Follow all local electrical and plumbing codes.

   WARNING: Use supply wires suitable for 90°C.

   WARNING: Disconnect power when servicing. ‘

   CAUTION: Use flexible conduit only. Not for use with rigid conduit.

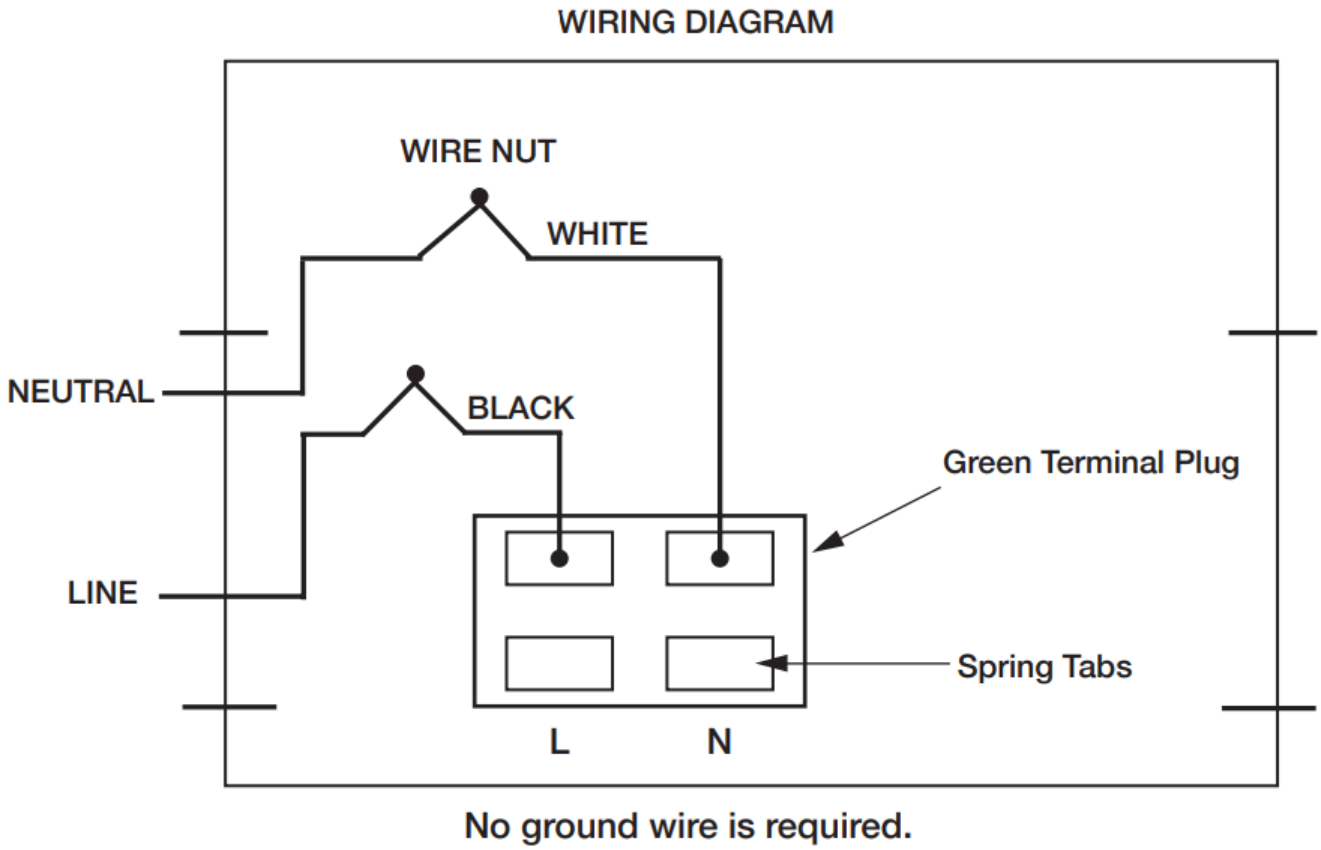
   WARNING: SERVICING OF DOUBLE-INSULATED APPLIANCES. A double-insulated appliance is marked with one or more of the following: The words “DOUBLE INSULATION” or “DOUBLE INSULATED” or the double insulation symbol (square within a square). In a double-in- sulated appliance, two systems of insulation are provided instead of grounding. No grounding means is provided on a double-insulated appliance, nor should a means for grounding be added. Ser g a double-insulated appliance requires extreme care and knowledge of the system, and should be done by qualified service personnel. Replacement parts for a double-insulated appliance must be identical to the parts they replace.

4. Wiring the circulator: Disconnect AC power supply. Remove terminal box cover. Attach a wiring connector into knockout hole.

   Use flexible con-duit only. Connect Line/Hot power to the black lead, Neutral to the white lead. See wiring diagram.

Note:

If pigtail leads provided are not used, be sure to trim field wire to a strip length of .25″ (+/- .025″) to prevent exposed wire causing a short at the terminal plug. Connect line and neutral to green terminal plug as shown in diagram. Depress the spring tab with a small screwdriver to insert wire into plug. Release tabs to complete connection. The 0018e is a double insulated circulator, no grounding wire is necessary. Replace terminal box cover.



5. Start the circulator: When purging the system, it is recommended to run the circulator at manual full speed operation long enough to remove remaining air from the bearing chamber. To do this, turn the dial clockwise to the ZONE CIRC – MAX position. This is especially important when installing the circulator in the off-season.

   Full Speed Operation:

   To run the pump at full speed during the fast fill, start-up and purge process, rotate dial clockwise to MAX speed setting. To return to the normal operating mode, turn dial to desired fixed speed, constant pressure, or proportional pressure setting.

   CAUTION: Never run the circulator dry or permanent damage may result.

6. Programming your 0018e° circulator:

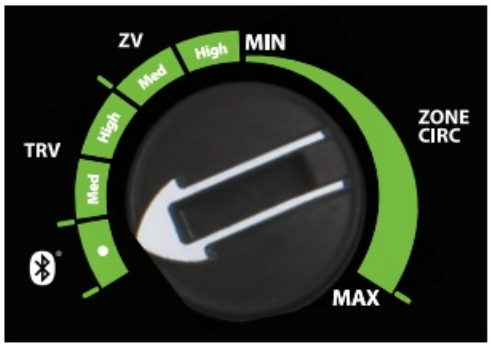
   a. Taco 0018e ECM Circulator Mobile App – www.TacoComfort.com/0018e_UserManual

   1. Search for Taco 0018e ECM Circulator mobile app within the App Store or Google 0018 Play on your mobile device.

   2. Download the Taco 0018e ECM Circulator mobile app for free and install it on your mobile device.

   3. Once complete, you are able to start using the app. Additional operating instructions can be found on the app itself.

Turn the selector dial counter-clockwise to the Bluetooth® setting icon for 2-way (read/write) communication & control using the 0018e mobile app. This will enable wireless mode selection control, performance diagnosis & reporting. In this dial postion, SureStart® capability is disabled. When the selector dial is turned to any other position the 0018e mobile app can be used for 1-way (read only) communication, providing performance diagnosis & reporting.



Minimum software requirements:

– iOS version 10 (BLE compatible)

– Android version 4.4 (BLE compatible)

b. Manual Dial

Note: The 0018e is factory-programmed for maximum speed operating mode. A Blue LED will appear when first powered on.

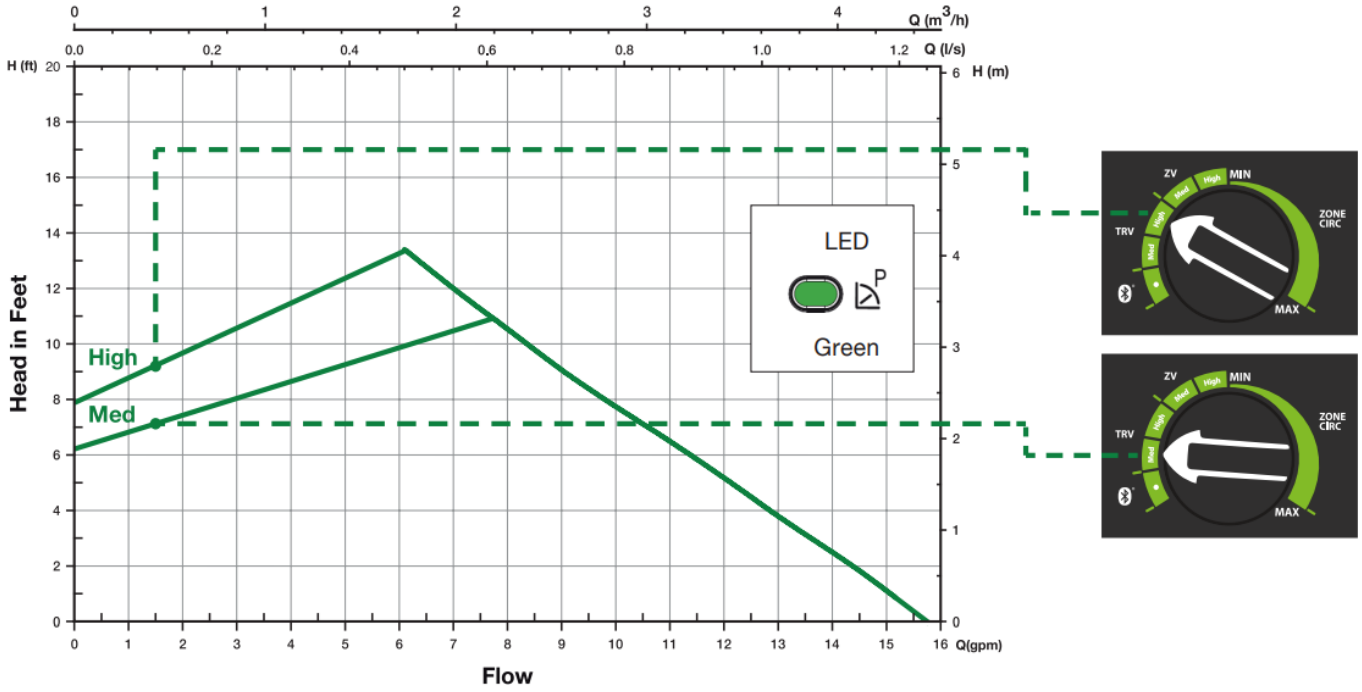
If this is your desired operating mode, no programming changes are required.

The 0018e has 3 Operating Modes on the Selector Dial:

- Proportional Pressure (TRV) – Varies speed to maintain a proportional/variable pressure differential.
- Constant Pressure (ZV) – Varies speed to maintain a constant pressure differential.
- Fixed Speed (ZONE CIRC) – Infinitely adjustable settings (MIN-MAX).

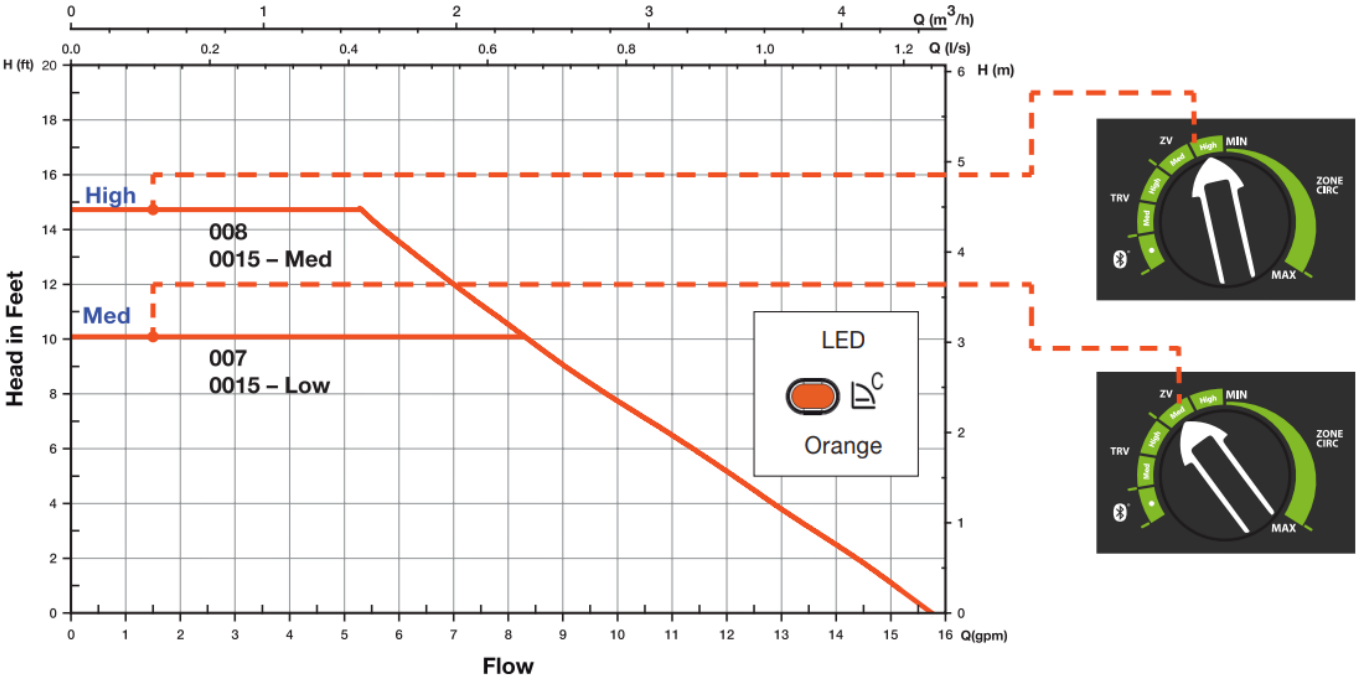
0018e® PERFORMANCE CURVES

TRV - PANEL RADIATOR MODE
Variable Speed

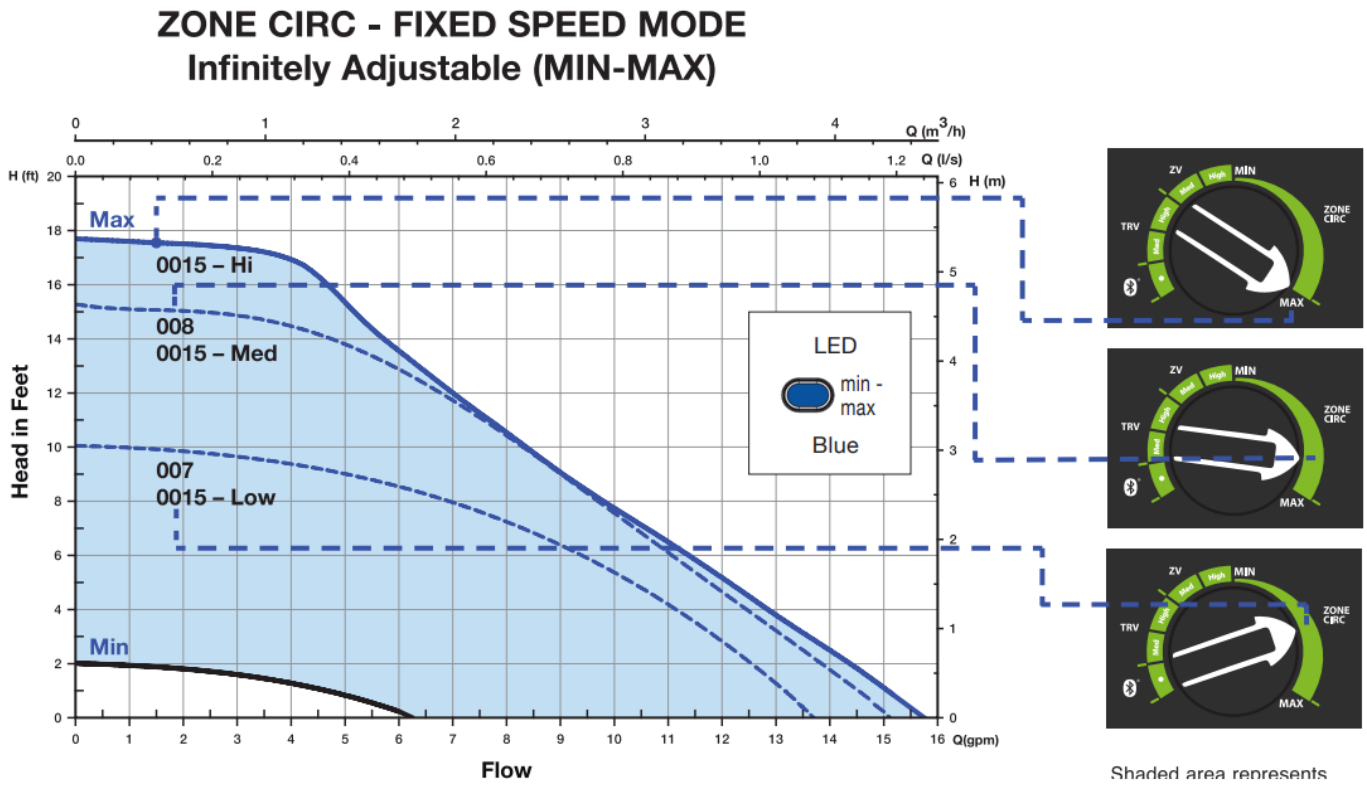


In TRV – Panel Radiator, Proportional pressure mode, the circulator maintains a proportional pressure differential (Ap-v) as heating load increases or decreases. Flow will change in relationship to the change in pres- sure differential. Selection options are Medium or High. If unsure on proper setting, select Medium and adjust as needed.

ZV - ZONE VALVE SYSTEM MODE
Variable Speed



In Zone Valve – Constant pressure mode, the circulator maintains a constant pressure differential (Ap- c) in the system as heating load increases or decreases. Selection options are Medium or High. See chart to left for equivalent 00 model at each setting.



ZONE CIRC – Fixed speed mode allows the installer to fine tune the circulator flow rate to precisely match design load conditions. It is infinitely variable between MIN/MAX settings. See chart to left for equivalent 00 model at each variable speed setting.

CAUTION: Do not attempt to remove LED panel from circulator. Serious damage to circulator electronics may result.

7. Troubleshooting the error codes: Listed below are potential diagnostic error codes which will appear on the LED display in case of a malfunction.

CONTROL FAULTS PANEL		**CAUSES**	**REMEDIES**
The circulator is noisy	LED on	Suction pressure is insufficient – cavitation	Increase the system suction pressure within the permissible range.
	LED on	Presence of foreign bodies in the impeller	Disassemble the motor and clean the impeller.
Loud noises of water circulation	Flashing white LED	Air in the system	Vent the system. Repeat fill and purge steps.
	LED on	The flow is too high	Reduce the pump speed.
Circulator is not running although the electrical power supply is switched on	LED off	Lack of power supply	Verify voltage value of the electric plant. Verify the connection of the motor.
		One fuse in the installation is blown	Verify the fuses of the pump.
		The circulator is defective	Replace the pump.
		Overheating	Let the pump cool down for some minutes. Then try to re-start it. Verify that the water and ambient temperature are within the indicated temperature ranges.
	LED red	The rotor is blocked	Disassemble the motor and clean the impeller. See unblocking procedure below.
		Insufficient supply voltage	Verify that the power supply matches the data on the name plate.
Building does not get warm.	**LED** on	The circulator performance is too low	Increase the suction head. Increase speed or Δ P setting.

Unblocking Procedure:
A red light in the LED indicates the circulator rotor is blocked or sticking. Turn the selector to the position MAX, disconnect and connect power supply to start the automatic release process. The circulator makes 100 attempts to restart (process lasts approximately 15 minutes). Every restart is signalled by a short flash of white LED light. If the blocking is not removed through the automatic release process after 100 attempts to restart, the circulator goes into standby and the LED remains solid red.
Perform the manual unblocking steps described below.

1. Disconnect power supply – the warning light switches off.
2. Close both isolating valves and allow cooling. If there are no shut-off devices, drain the system so that the fluid

level is beneath that of the circulator.

3. Loosen 4 motor bolts. Remove motor from casing. Carefully pull the rotor/impeller from the motor.
4. Remove impurities and deposits from the impeller and casing.
5. Reinsert the rotor/impeller into the motor.
6. Set the dial to the MAX position.
7. Connect power supply. Check for impeller rotation.
8. If the circulator still doesn't run it will need to be replaced.

Replacement Parts List

198-213 RP	Casing 0-ring
198-214 RP	Wiring plug connector (green)
198-215 RP	Terminal box cover (black)
198-217 RP	Terminal box cover screws (5 per bag)
0010-025 RP	Integral Flow Check (IFG9
007-007 RP	Flange gasket set

0018e Pump Cross Reference (Fixed Speed Mode):

SPEED	TACO	GRUNDFOS	WILO	B & G/XYLEM	ARMSTRONG
Minimum	3 006^{00}	-Alpha 15-55 (Low)	–	– Eco-Vario (Low)	Compass (1)
Medium	007 008 0015 (Low) 001 5 (Med)	UP-15-42 UPS-15- 58 (Low UPS-15-5 8 (Med) Alpha 15-5 5 (Med)	Star S-21 (1) Star S-21 (2)	NRF-25 (1) NRF-25 (2) Eco-Vario (Med)	Astro 230 (1) Astro 230 (2) Compass (2)
Maximum	0015 (Hi)	UPS-15-58 (Hi) Al pha 15-55 (Hi)	Star S-21 (3)	NRF-25 (3) Eco-Vario (Hi)	Astro 230 (3) Compass (3)

0018e Pump Cross Reference (Variable Speed Mode):

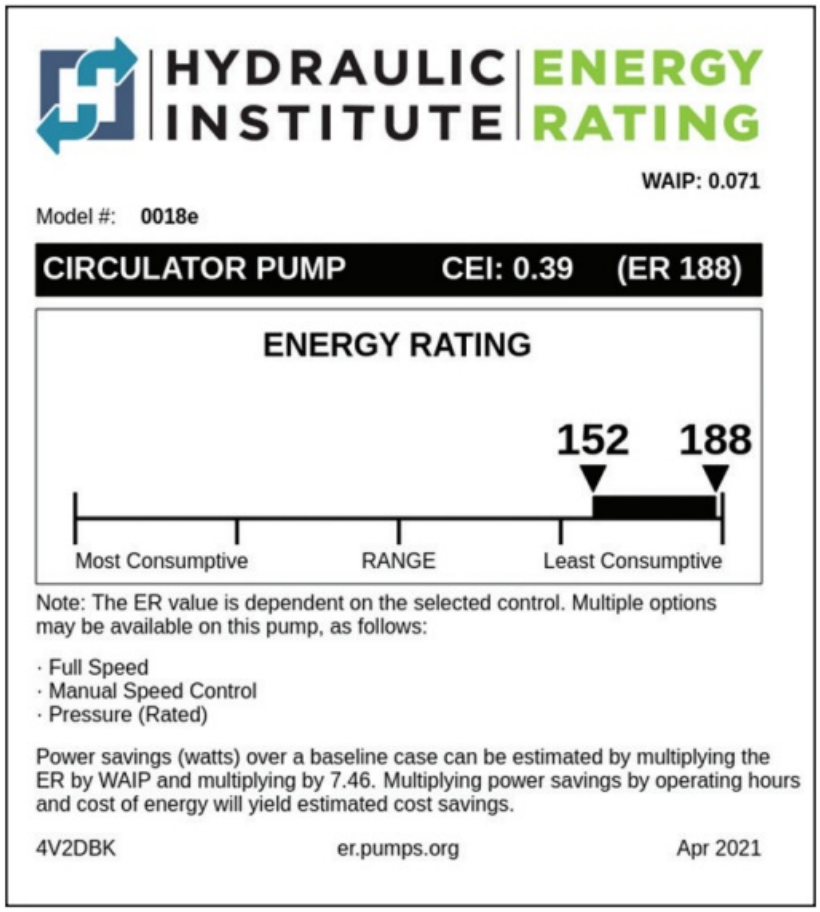
TACO	GRUNDFOS	WILO	B & G/XYLEM	ARMSTRONG
VR1816 0015e3 007e	Alpha 15-55	Stratos Eco	Eco-Auto	Compass 20-20

CAUTION

This equipment has been tested and found to comply with the limits for aClass B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not oceur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions:
(1) This device may not cause interference, and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.
Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and s gain should be s0 chosen that the equivalent isotropically radiated power (e.i.rp.) is not more than that necessary for successful communication.
To comply with FCC and Industry Canada RF radiation exposure limits for general population, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and all persons at all times and must not be co-located or operating in conjunction with any other antenna or transmitter.



LIMITED WARRANTY STATEMENT

Taco, Inc. will repair o replace without charge (at the company's option) any Taco High Efficiency circulator or circulator part which is proven defective under normal use within three (3) years from the date code.

In order to obtain service under this warranty, it is the responsibility of the purchaser to promptly notify the local Taco stocking distributor or Taco in writing and promptly deliver the subject product or part, delivery prepaid, to the stocking distributor. For assistance on warranty returns, the purchaser may either contact the local Taco stocking distributor or Taco. If the subject prod- uct or part contains no defect as covered in this warranty, the purchaser will be billed for parts and labor charges in effect at time of factory examination and repair.

Any Taco product or part not installed or operated in conformity with Taco instructions or which has been subject to misuse, misapplication, the addition of petroleum-based fluids or certain chemical additives to the systems, or other abuse, will not be covered by this warranty.

If in doubt s to whether a particular substance is suitable for use with a Taco product or part, or for any application restrictions, consult the applicable Taco instruction sheets or contact Taco at (401-942-8000).

Taco reserves the right to provide replacement products and parts which are substantially similar in design and functionally equivalent to the defective product or part. Taco reserves the right to make changes in details of design, construction, or arrangement of materials of its products without notification.

TACO OFFERS THIS WARRANTY IN LIEU OF ALL OTHER EXPRESS WARRANTIES. ANY WARRANTY IMPLIED BY LAW INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS IS IN EFFECT ONLY FOR THE DURATION OF THE EXPRESS WARRANTY SET FORTH IN THE FIRST PARAGRAPH ABOVE.

THE ABOVE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR STATUTORY, OR ANY OTHER WARRANTYOBLIGATION ON THE PART OF TACO. TACO WILL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR

CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF ITS PRODUCTS OR ANY INCIDENTAL COSTS OF REMOVING OR REPLACING DEFECTIVE PRODUCTS.

This warranty gives the purchaser specific rights, and the purchaser may have other rights which vary from state to state. Some states do not allow limitations on how long an implied warranty lasts or on the exclusion of incidental or consequential damages, so these limitations or exclusions may not apply to you.

ATaco Family Company
Taco, Inc., 1160 Cranston Street, Cranston, RI 02920 | Tel: (401) 942-8000
Taco (Canada), Ltd., 8450 Lawson Road, Suite #3, Milton, Ontario LT 0J8 | Tel: (905) 564-9422
Visit our web site: www.TacoComfort.com

Documents / Resources

	**Taco 0018e ECM High Efficiency Circulator Featuring Bluetooth Communication** [pdf] Instruction Manual 0018e ECM High Efficiency Circulator Featuring Bluetooth Communication, 0018e, ECM High Efficiency Circulator Featuring Bluetooth Communication, High Efficiency Circulator Featuring Bluetooth Communication, Circulator Featuring Bluetooth Communication, Featuring Bluetooth Communication, ECM High Efficiency Circulator, High Efficiency Circulator, Circulator

References

- **User Manual**