

Plumb n' Plug "00" Series Cartridge Circulators

SUPERSEDES: 06/01/2014

EFFECTIVE: 08/09/2024

Plant I.D. 001-4222

Application:

The Taco Plumb n' Plug (PNP) "00" Series circulators are designed to increase comfort and conserve water and energy by decreasing the delivery time of hot water to outlet fixtures. An average residence can save up to 25 gallons of water per day, 12,000 gallons a year. A 6 foot line cord is pre-wired on all PNP models providing an easy installation. Simply plumb-it-in then plug-it-in.

Pump Control Options:

1. The basic PNP with line cord is designed for constant circulation where the pump runs 24 hours a day.
2. An optional aquastat kit (#563-2) can be added to control pump operation to maintain water temperature between 95°F – 115°F. Two automatic timer options are available to control pump operation and increase total energy savings.
3. A 24 hour/15 minute interval analog timer controls pump operation for the same time settings every day, usually early morning and early evening.
4. The easy-to-use 7-day digital plug-in timer offers 28 different on/off settings. It can automatically adjust for daylight savings time, and stores settings for up to 3-months with replaceable battery backup.

Benefits:

- Water Conservation: The average residence can save up to 25 gallons of water per day, 9000 gallons per year.
- Comfort and Convenience: Hot water is always available in seconds.
- Efficiency: 24 hour analog timer can be set to control daily pump operation and increase energy savings. 7 day digital timer allows for different settings each day to match homeowner's weekly schedule, for even greater convenience and savings.
- Reliability: Unique cartridge design runs quietly and is easy to replace.

Sizing:

- 003-PNP should be used when the total run of pipe (supply and return) is under 200 feet of ¾" pipe.
- 006-PNP should be used when the total run of pipe (supply and return) is from 200 to 400 feet of ¾" pipe

WARNING: Do not use in swimming pool or spa areas; pump has not been investigated for this application.

WARNING: In the event the retaining screws have been pulled out of the housing, DO NOT replace them. Use of any other screw may short out the stator windings, creating a risk of electrical shock.

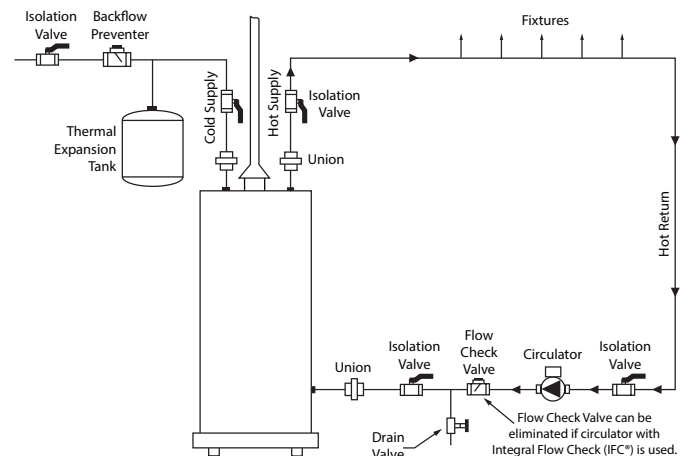
CAUTION: When installing electrical connections, do not apply mechanical loads to the capacitor box; otherwise, retaining screws may be pulled out of the housing, making circulator unusable.

CAUTION: 1. The addition of petroleum based fluids or certain chemical additives to systems utilizing TACO equipment voids the warranty.
2. Use supply wires suitable for 90°C – ATTENTION: Employer des fils d'alimentation adéquats pour 90°C.

Suggested Plumbing Installation Procedure:

1. Install the PNP circulator and plumbing components as indicated in the Installation Diagram. **DO NOT PLUG IN CIRCULATOR UNTIL SYSTEM IS FILLED WITH WATER AND PURGED.**

WARNING: Do not run the circulator dry! Premature failure of circulator may result. Before starting the circulator, be sure to fill the system completely with water and fully purge all air from the lines.





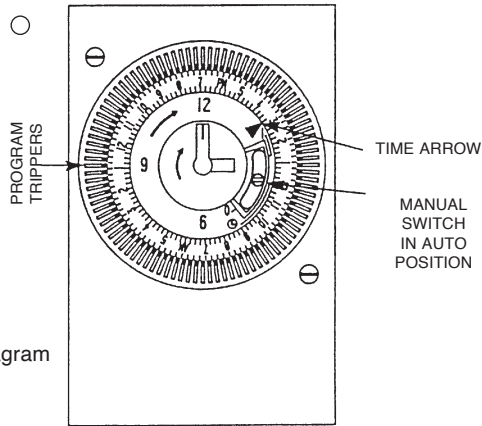
2. Open cold water supply and fill system completely. Open fixture at highest system point to purge air from the lines.
3. When system is filled and purged, close all fixtures and close isolation valve between the water heater and the circulator.
4. Open drain cock valve between the water heater and the circulator. Drain water to a bucket or floor drain until all air is purged and water is clear. Close drain cock valve.
5. Plug in the PNP circulator and set Manual Operation switch to ON (I). Run circulator for 10 minutes to fully purge the circulator cartridge of air and ensure bearings are lubricated.
6. Use the following programming instructions to set the clock timer.

Analog 24 Hour Timer Programming:

1. Set clock to the exact time of day by turning the outer black ring clockwise to move the hour/minute hands to the correct position. Pay special attention to the white arrow pointing to the correct AM/PM time in the 24 hour outer ring.
2. Set the desired ON/OFF times by pushing the trippers away from the clock face for ON operation. Leave the trippers toward the clock face for OFF operation. Each tripper represents a 15 minute interval.
3. Set switch in the middle position for automatic operation. ⌚

Analog Timer Manual Switch Settings:

1. Up = On, Constant Circulation I
2. Middle = Automatic Operation 
3. Down = Off 



Analog Timer Diagram

RISK OF FIRE OR ELECTRICAL SHOCK

WARNING: Risk of injury or death. Always plug three-prong plug into a properly grounded outlet. Never attempt to defeat this safety feature.

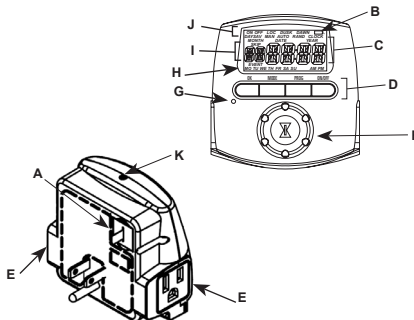
WARNING: Do not use timer to control devices that could have dangerous consequences due to inaccurate timing, such as sun lamps, sauna, heaters, crock pots, etc.

WARNING: Unplug timer before replacing batteries.

NOTICE: Follow local electrical codes during use. Dispose of used batteries promptly per local regulations.

Timer Overview

Item	Description
A	Battery Holder
B	Low battery indicator
C	Time of Day display
D	Control buttons (4)
E	Grounded outlet (2)
F	Selector knob
G	Reset button
H	Day of Week display
I	Event display
J	Mode display
K	ON/OFF indicator light
L	Battery Pull Tab



Input: 102-132 VAC 60 Hz, 2.5W max.

Output: 15A output, 1800W resistive and 12A inductive, 8.3A, 1000W tungsten, 1/2 HP

Enable Battery

1. Remove Pull Tab (L) (Fig. 1) from battery holder if present.
2. Display shows 12:00. If no display see troubleshooting guide.
3. For your convenience timer may be set while unplugged. Display turns OFF after 1 minute to save battery. Press any button to turn display back ON.

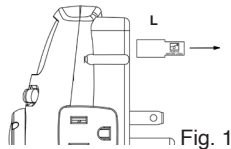


Fig. 1

Set The Time, Date and Location

1. If necessary, press MODE to display CLOCK in the top right corner of the screen, then press OK. Hours digits flash.
2. Turn the selector knob to set the current hour (AM/PM) and press OK.
3. Turn the selector knob to set the current minute and press OK.

4. Turn the knob to set the desired year and press OK. (Fig. 3)

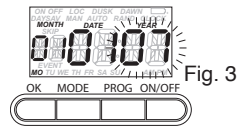


Fig. 3

5. Turn the knob to set the desired month and press OK.
6. Turn the knob to set the correct date and press OK. The screen displays DAY SAV and flashing AUTO (Meaning AUTOMATIC DAYLIGHT SAVING Time adjustment is enabled).

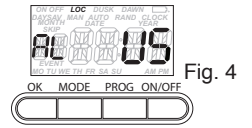


Fig. 4

7. To accept AUTO Daylight Saving Time adjustment press OK and proceed to the next step. To disable Daylight Saving Adjustment (For example, in Arizona or Hawaii) turn knob to display flashing MAN then press OK. LOC will show on top of display. (Fig. 4)
8. Turn the knob to select the desired state or province (if in Canada) or MEX for Mexico and press OK.
9. Turn the knob to select the region of the state or province and press OK.
10. Turn the knob to select the time zone and press OK. The Dawn time flashes.

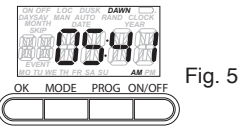


Fig. 5

11. Press OK to skip Dawn Time, otherwise turn the knob to adjust the Dawn Time, (Fig. 5) and press OK.

12. Press OK to skip Dusk Time, otherwise turn the knob to adjust the Dusk Time, (Fig. 6) and press OK. Display shows MAN, and Time of Day.

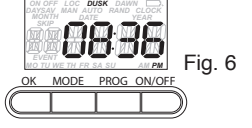


Fig. 6

To Set an ON/OFF Program

1. From the MAN, AUTO or RAND screen, press PROG. The screen displays a flashing 01. Press PROG.
2. Turn the knob until ON flashes. Press PROG.
3. Turn the knob to select the required days for the fixed time ON and press PROG.
4. Turn the knob to select the desired ON hour and press PROG.
5. Turn the knob to select the desired ON minute and press PROG. The screen displays a flashing 02. Press PROG again.
6. Turn the knob until OFF flashes and 12:00 AM appears and press PROG.
7. Turn the knob to select the desired days of the week for the fixed time OFF to occur and press PROG.
8. Turn the knob to select the desired OFF hour and press PROG.
9. Turn the knob to select the desired OFF minute and press PROG.
10. Repeat steps 2-12 for additional (higher numbered) ON/OFF events or press OK to return to the AUTO screen.

To Review/Revise Calendar Settings

1. Press MODE repeatedly until CLOCK is displayed.
2. Press OK repeatedly to step through all settings until Time of Day and MAN is displayed.
3. Use selector knob to revise and OK button to save changes.
4. Use MODE button to select MAN, AUTO or RAND operation.

To Review/Revise ON/OFF Settings

1. Press PROG button.
2. Turn selected knob to view all 28 possible settings.
3. Revise per setting procedure.
4. Press OK to return to AUTO mode.
5. Use MODE button to select MAN, AUTO, or RAND operation.

To Reset Device

1. Press and hold the ON/OFF button.
2. While holding ON/OFF button, press and release the reset button (G) with a blunt object. Continue holding ON/OFF button for five seconds until the display shows "CLR".
3. Release ON/OFF button. The screen displays 12:00 AM, with 12 flashing. (Fig. 2)



Fig. 2

Select Operating Mode

1. PRESS MODE button to select:
 - a. AUTO (Timer follows your program)
 - b. RAND (Timer follows your program with daily RANDOM variations in ON/OFF times.
 - c. MAN (Timer saves but ignores your program. Use ON/OFF to switch the load).

Changing Daylight Savings Time

1. The timer is factory-set to the US Daylight Saving rules effective from the year 2007 forward. The display will show ON DAY SAV, flashing 03, and WK 02, meaning timer will adjust forward on 2nd Sunday in March. Proceed to step 9 if you need to change the factory settings or press OK repeatedly to accept the factory settings until LOC appears on top of display and proceed to step 8. (Fig. 4)
2. Turn the knob to change the flashing 03 to the required new month (01-06) for the spring adjustment, then press OK.
3. Turn the knob to change the flashing 02 to the required new week (01-02-03-04-L) for the spring adjustment, then press OK. ("L" means Last week of month).
4. Turn the knob to change the flashing 11 to the required new month (07-12) for the autumn adjustment, then press OK.
5. Turn the knob to change the flashing 01 to the required new week (01-02-03-04-L) for the autumn adjustment, then press OK. LOC shows at top of display. (Fig. 3)

About the Batteries

The battery voltage is continuously monitored. If a low voltage is detected, the low battery indicator will be displayed. (Fig. 9).

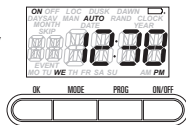


Fig. 9

- The timer requires two LR44 batteries to keep time up to three months without power.
- Replace the batteries as soon possible after the low battery indicator appears.
- Change the batteries within one minute of unplugging in order to keep the time and date settings. Afterwards, if the display is wrong or flashes "12:00 AM", reset the time and date. All other settings (your ON and OFF programming) remain in memory indefinitely without battery or AC power.
- While the batteries are removed, the timer will turn off the display to conserve power.
- Dispose of the used batteries promptly according to local regulations. Keep batteries away from children.

Replacing the Batteries

- Unplug timer before replacing batteries. To remove the batteries, carefully pry the battery holder up with a small flat screwdriver. Install the new batteries as shown in Fig. 10. Firmly place the battery holder into the switch.

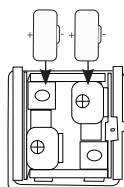


Fig. 10

Troubleshooting Guide

Observed Problem	Possible Cause	What to Do
Battery symbol always shows in the upper right of display when plugged in or no display at all when unplugged and buttons are pressed. (Note: battery display takes 1 minute to recognize installed or removed batteries.)	Low, missing, or backwards batteries, pull tab not removed, or poor contact in battery holder.	Remove pull tab. Verify correct battery direction per outline on inside or "+/-" on outside of holder. Bend contacts of battery holder to touch the batteries firmly. Replace both batteries. Use 2 type LR44 or A76.
Digital timer does not switch on/off but display looks normal.	Digital timer is not set in AUTO, RANDom, or MANual mode.	Press MODE to select the operational mode you want to use; or make sure an ON/OFF schedule is set.
Digital timer won't enter AUTO or RANDom mode when you press MODE.	The time of day or timer settings have not been set.	Make sure the time of day and at least one scheduled activity have been set.
Digital timer switches at incorrect times or skips some of the programmed times.	Programmed schedule(s) are incorrect.	Press PROG to review the settings and revise them as necessary. See instructions.
	Digital timer is in RANDom mode, which varies switching times up to ±30 minutes (to give your home a "lived-in" look).	If you don't want to keep the timer in RANDom mode, press MODE to change to AUTO mode.
	The Astronomic and exact switching times are in conflict. For example, you've set on to DUSK and off at 8 pm, and due to seasonal changes, DUSK has advanced to 8:30 pm. NOTE: Your timer automatically skips any conflicting ON event as summer approaches to prevent unwanted operation of lights or other controlled devices. See "What to Do" if you want to identify and remove conflicting settings.	1. Complete the steps for setting the Time and Date, then temporarily change the date to June 21st. 2. Review the DAWN and DUSK settings by pushing the PROG button. 3. Make sure the specific ON or OFF time settings won't interfere with these DAWN and DUSK times. Make changes as necessary. 4. When finished, change the Date setting back to today's date.
The circulator or controlled devices don't match the programmed on/off status immediately after setting the time or programming a schedule.	Digital timer does not "catch up" automatically to the programmed load state. The status of the timer will remain as is until it comes to the next programmed on/off time.	After programming your events or the time, then returning to the AUTO mode, push the ON/OFF button to change the load state if necessary.
Timer shows ON but the circulator or other controlled device is off.	The circulator or controlled device itself may have no power. The circulator may be on and running but you may not hear it.	Make sure the circulator is plugged in. Check if there is hot water at the faucet during a scheduled ON time. If being used with any other device, make sure it is plugged in and turned on.

LIMITED WARRANTY STATEMENT

Taco, Inc. will repair or replace without charge (at the company's option) any Taco 00 Series circulator or circulator part which is proven defective under normal use within three (3) years from the date of manufacture.

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 product 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 as 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

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