Plumb n' Plug "00" Series Cartridge Circulators

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 out-let fixtures. An average residence can save up to 25 gallons of water per day, 9,000 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 digital 7 day programmable timer can be set for up to 8 different on/off and day/time settings to match homeowners' weekly schedules and maximize energy savings.

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.

Suggested Plumbing Installation Procedure:

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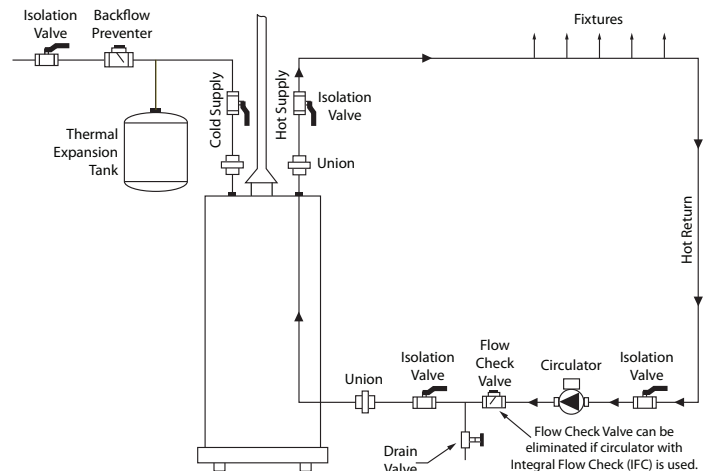
> **CAUTION: When installing electrical connections, do not apply mechanical loads to the capacitor box; otherwise, retaining screws may be pulled out of the housing, making circulator unusable.**

> **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 adequats pour 90°C.**

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.**

Installation Diagram

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.

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A Taco resource – saving product

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.

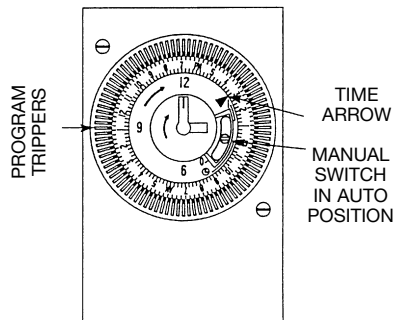> **NOTE:** To run Digital Timer in Manual **ON** (I) mode, press the (R) Reset key first.

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   O

PROGRAM TRIPPERS

TIME ARROW

MANUAL SWITCH IN AUTO POSITION

Analog Timer Diagram
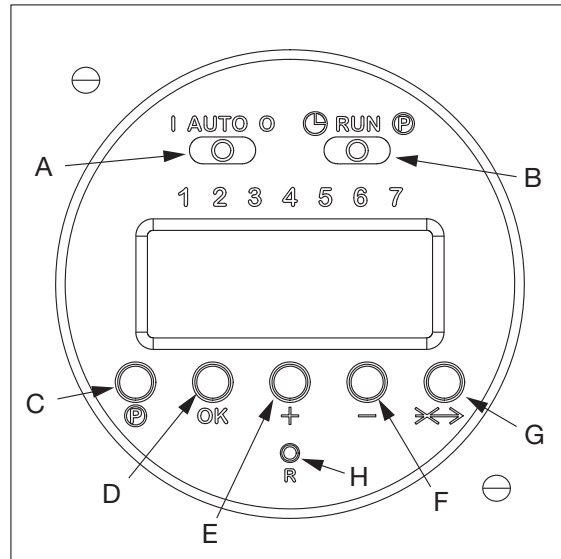
Digital 7 Day Programmable Timer:

The Plumb n' Plug (PNP) digital timer features a large LCD display with user friendly keys for setting time and run programs. An internal re-chargeable battery holds programmed settings for up to 4 days during power outages.

Note: Although the Plumb n' Plug digital timer contains some degree of spike and electrical noise protection, as with all electronic devices, these units can be affected by electrical noise. It is recommended that they be powered from a voltage source that has no switching devices or inductive loads connected.

Technical Data:

Programs: 8 **ON** settings, odd numbered 1-15
             8 **OFF** settings, even numbered 2-16

Daylight time changeover: Manual

Manual 3-way override switch: On-Auto-Off

Reserve Battery Charge: - 4 days
                        - Full recharge in 48 hours

Input Voltage rating: 125V, 60Hz, 15A

Clock Face Description:

Function Switches:

A. Manual Operation Switch: (I) ON, (AUTO) Automatic, (O) OFF

B. Programming Switch: ⏲ to set current time, (RUN) run mode, (P) to program timer

Key Pad Selectors:

C. (P) Program Selection

D. (OK) to confirm setting and advance to next program

E. (+) Week, Hr, Minute, Second – forward 1 unit at a time, press & hold to scroll rapidly

F. (-) Week, Hr, Minute, Second – reverse 1 unit at a time, press & hold to scroll rapidly

G. (⤨) Skip key, to change to next screen

H. (R) To RESET timer and erase all programs

Programs:

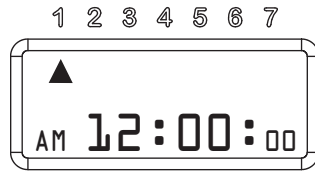The PNP digital timer will accept up to 8 **ON** and 8 **OFF** programs. A program consists of:

1- **ON** or **OFF** setting

1- Time of Day setting (Hour, Minute & Second)

1- Day(s) of Operation setting

Note: Each ON setting must be matched with a corresponding OFF setting.

Programming your Digital Timer:

A. Setting the current time on the LCD display

1. Move Programming Switch to 🕐

2. Press the (R) Reset key. Clock face will display "AM 12:00".

   ```
   1 2 3 4 5 6 7
   ▲
   AM 12:00:00
   ```
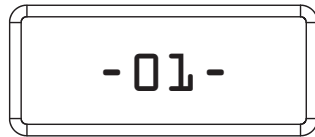
3. DAY arrow will flash below the number 1 (Monday). Press the (+) or (-) key to move arrow to the correct day (1= Mon, 2= Tues, 7= Sun, etc), then press (OK). HOUR will flash.

4. Press (+) or (-) to change HOUR to current time, be sure the AM/PM symbol is correct, then press (OK). MINUTE will flash.

5. Press(+) or (-) to change MINUTES to correct time, then press (OK). SECONDS will flash.

6. Since SECONDS will not be used, simply press (OK). Your current time is set.

7. Move Programming Switch to RUN.
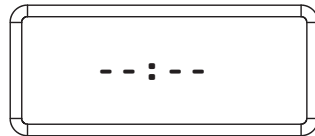
B. Programming the Digital Timer ON/OFF settings

   NOTE: It is helpful to write out the program timer schedules before beginning programming. See last page for an example.
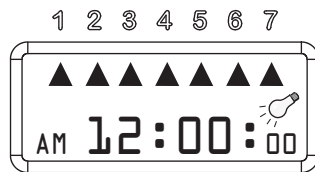
   To program timer for ON operation

1. Move Programming Switch to (P), display will show "-01-". This is your first ON setting.

   ```
   -01-
   ```

2. Press (P) Program Selection Key. Display will read "--:--".

   ```
   --:--
   ```

3. Press (+) key. Display will show a flashing arrow below the numbers 1-7 (Monday-Sunday), the time will read "AM 12:00:00" and a light

   ```
   1 2 3 4 5 6 7
   ▲ ▲ ▲ ▲ ▲ ▲ ▲
   AM 12:00:00 💡
   ```

   bulb will appear to the right of the time, signifying an ON time setting. Press the (+) or (-) key to move the arrow through the DAY selection options:

DISPLAY ARROW INDICATOR	DAYS
1	MONDAY
2	TUESDAY
3	WEDNESDAY
4	THURSDAY
5	FRIDAY
6	SATURDAY
7	SUNDAY
1 2 3 4 5	MON - FRI
6 7	SAT - SUN
1 2 3 4 5 6	MON - SAT
1 2 3 4 5 6 7	MON - SUN

4. When correct DAY(S) setting is selected, press (OK), HOUR time will flash.

5. Press (+) or (-) key to set HOUR to the desired time. Be sure the "AM/PM" symbol is correct. Then press (OK), MINUTES time will flash.

6. Press (+) or (-) key to set MINUTES to desired time. Then press (OK), SECONDS will flash.

7. Since SECONDS are not necessary, simply press (OK). Your first ON time is set.

8. Press (P) Program Selection key to finish.

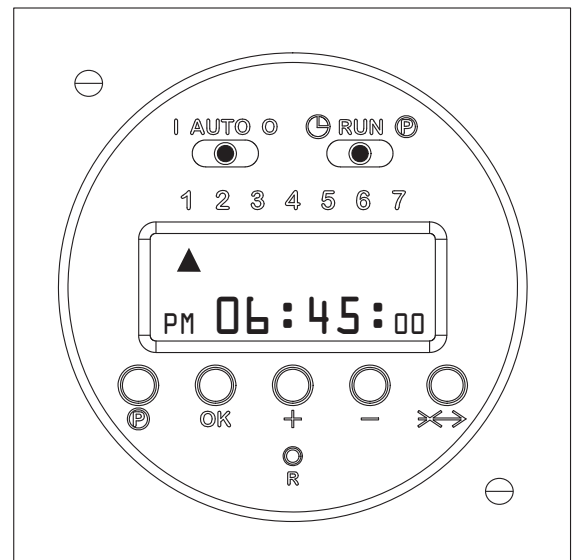   Display will show "-02-". Timer is now ready for an OFF timer program.

   ```
   -02-
   ```

To program timer for OFF operation

1. Repeat steps 2 thru 8 to complete OFF time setting. For OFF settings, no light bulb will appear on the clock face.

Repeat the above procedure to program each ON (odd number) and OFF (even number) desired time setting, in sequential order. Refer to Timer Schedule on back page.

To finish and set digital timer to AUTO operation

1. When all programs are completed, move Programming Switch (P) to RUN position.

2. Move Manual Operation switch to AUTO. Timer will now operate ON/OFF according to programmed settings.

```
I AUTO O    🕐 RUN Ⓟ
  ●             ●

1 2 3 4 5 6 7
▲
PM 06:45:00

Ⓟ   OK   +   −   ⤢
        Ⓡ
```

PNP Digital Timer Program Schedules (Example)

PROGRAM	ON/OFF	DAYS	HOUR	MINUTE
01	ON	MON, TUE, WED, THURS, FRI	6 AM	00
02	OFF	MON, TUE, WED, THURS, FRI	8 AM	00
03	ON	MON, TUE, WED, THURS, FRI	4 PM	30
04	OFF	MON, TUE, WED, THURS, FRI	8 PM	00
05	ON	SATURDAY and SUNDAY	7 AM	00
06	OFF	SATURDAY and SUNDAY	9 AM	00
07	ON	SATURDAY and SUNDAY	4 PM	30
08	OFF	SATURDAY and SUNDAY	7 PM	30

Notes:

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 ONLY FOR THE DURA-TION 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 WARRANTY OBLIGATION 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.