

# Troubleshooting Guide

<http://waterheatertimer.org/Intermatic-timers-and-manuals.html#ej500>

Observed Problem	Possible Cause	What to Do
Timer is blank until any button is pushed, and display changes between ON and OFF when pressing door, but light stays OFF.	Bulb is missing, loose, disconnected or burned out.	Make sure bulb is good and that there are no other switches, photo controls, etc., in the circuit controlling the bulb.
	"Air Gap" switch at upper edge of timer is switched off.	Make sure "Air Gap" switch is in it's ON position (slid to the left with slider in center of slot).
	No power (fuse or circuit breaker blown)	Make sure fuse is good or circuit breaker is on.
Timer does not switch but display is normal.	Timer not in AUTO, AUTO RAND(om), or MAN(ual) mode.	Press <b>MODE</b> to select the desired operating mode.
Timer works manually but does not follow scheduled program.	Timer not in AUTO or AUTO RAND(om) mode.	Press <b>MODE</b> to select AUTO or AUTO RAND.
Timer won't enter the AUTO or AUTO RAND modes when MODE button is pushed.	Time of day and/or switching times are not programmed.	Make sure time of day and at least one scheduled activity are programmed.
Timer switches at incorrect times or skips some switching times.	Programmed schedule(s) are incorrect.	Review ALL 7 ON/OFF switching time pairs by repeatedly pushing <b>NEXT/ON/OFF</b> while in PGM mode and revise as necessary.
	Timer is in AUTO RAND(om) mode (varies switching times up to ±15 minutes).	Press <b>MODE</b> to select AUTO mode.
When using a combination of Astronomic and Specific switching times, the timer switches at unexpected times or doesn't switch when expected.	There are conflicting Astronomic and Specific switching time settings. Your timer automatically skips any conflicting ON EVENTS as summer approaches to prevent unwanted operation of lights. See the next column if you wish to identify and remove conflicting settings.	<ol style="list-style-type: none"> <li>Complete the steps under "Setting the Calendar."</li> <li>Temporarily change your timer's calendar setting to June 21st.</li> <li>Review the SUNUP and SNET times by pushing the <b>NEXT/ON/OFF</b> button.</li> <li>Make sure your specific ON or OFF time settings won't interfere with these Astronomic switching times.</li> <li>Be sure to change the date back to today's date when you're done.</li> </ol>
Load state doesn't match programmed state immediately after programming the time or schedule.	The timer does not "catch up" to the programmed load state. Instead, the load will remain in its current state prior to entering the PGM mode. The timer will then begin following the scheduled program at the next contrary ON/OFF time.	After entering your schedules or the time, then returning to the AUTO modes, push <b>NEXT/ON/OFF</b> to change the load state if necessary.
Load only operates when the remote (3-way) switch is in one position or timer ignores the remote switch.	Remote switch is wired incorrectly.	Recheck wiring, especially for the jumper, per "2-Install the Switch Timer".
Timer ignores remote (3-way) switch even though it is wired correctly.	Excessive length of wire (greater than 100 feet) or buried wiring to the remote switch.	Eliminate condition by replacing the buried cable or doing without the remote switch. Consult factory for other options.
	Remote switch is defective or worn out.	Replace the remote switch.
Load turns off immediately after being turned on.	Remote switch or timer wired incorrectly, excessive length of wire (greater than 100') or buried wiring to remote switch, or defective timer.	If the problem persists with the timer's red wire disconnected or with a remote switch temporarily connected right at the timer, replace the defective timer. Otherwise try the above remedies.
Battery holder is difficult to snap in place.	Batteries not seated in holder, holder misaligned, or contact tabs of holder are bent.	Seat the batteries, then install the holder with the notch facing down.

## LIMITED ONE-YEAR WARRANTY

If within one (1) year from the date of purchase, this product fails due to a defect in material or workmanship, Intermatic Incorporated will repair or replace it, at its sole option, free of charge. This warranty is extended to the original household purchaser only and is not transferable. This warranty does not apply to: (a) damage to units caused by accident, dropping or abuse in handling, acts of God or any negligent use; (b) units which have been subject to unauthorized repair, opened, taken apart or otherwise modified; (c) units not used in accordance with instructions; (d) damages exceeding the cost of the product; (e) sealed lamps and/or lamp bulbs, LED's and batteries; (f) the finish on any portion of the product, such as surface and/or weathering, as this is considered normal wear and tear; (g) transit damage, initial installation costs, removal costs, or reinstallation costs.

INTERMATIC INCORPORATED WILL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES. ALL IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY MODIFIED TO EXIST ONLY AS CONTAINED IN THIS LIMITED WARRANTY, AND SHALL BE OF THE SAME DURATION AS THE WARRANTY PERIOD STATED ABOVE. SOME STATES DO NOT ALLOW LIMITATIONS ON THE DURATION OF AN IMPLIED WARRANTY, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

This warranty service is available by either (a) returning the product to the dealer from whom the unit was purchased, or (b) mailing the product, along with proof of purchase, postage prepaid to the authorized service center listed below. This warranty is made by: Intermatic Incorporated/After Sales Service/7777 Winn Rd., Spring Grove, Illinois 60081-9698/815-675-7000 <http://www.intermatic.com> Please be sure to wrap the product securely to avoid shipping damage.

INTERMATIC INCORPORATED, SPRING GROVE, ILLINOIS 60081-9698

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# INTERMATIC® MODEL EJ500

## Installation and User Instructions

### Ratings

- 500W single gang or 2 gang installations (40W minimum)
- 4 Amp Tungsten (*incandescent*)
- 120 VAC, 60 Hz
- Operating Temperature: 32°F (0°C) to 104°F (40°C)

### WARNING

- **Electrical shock hazard. Risk of injury or death. Remove electrical power at service panel before installing.**
- **Risk of fire and burns. Do not recharge, disassemble, heat above 212°F (100°C), crush, or incinerate the alkaline battery. Keep out of reach of children.**
- **Risk of fire. 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.**

### NOTICE

- Follow local electrical codes during installation.
- Risk of timer damage due to leakage if weak battery is not replaced promptly.
- Dispose of used battery promptly per local regulations.
- Do not use with PAR or "R"-type outdoor flood lamps larger than 150 watts.
- Do not use with mercury vapor lights, appliances, radios TVs, stereos, etc.
- Do not use in combination with separate dimmers or photoelectric switches.

### 1 – Before Installing Switch Timer, Install and Check Battery

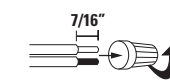
Before installing the switch timer into the wall, make sure the supplied batteries are installed and working.

1. Open the access door to reveal the battery tray, located below the keypad.
2. Remove the tab to connect the installed batteries. Make sure battery tray is pushed fully into place.
3. The display will initialize itself then flash "12:00 AM" in MANual mode.

**NOTE:** If display doesn't flash "12:00 am", the battery may be dead. Replace the battery before installing the switch timer.

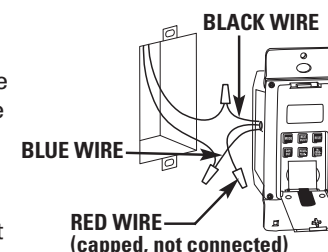
### 2 – Install the Switch Timer

1. Turn off power at the service panel by REMOVING FUSE or TURNING THE CIRCUIT BREAKER OFF.
2. Remove the existing wall switch.
3. Trim building wires to 7/16" as shown.



#### For Single-Switch Installations:

- a. Connect one of the two wires from the wall to the BLACK wire from the switch timer, using the twist connectors provided.
- b. Connect the other wire from the wall to the BLUE wire from the switch timer, using the twist connectors provided.



**NOTE:** The RED wire is not used in single-switch installations. Cap with a twist connector.

- a. Connect the ground wire from the box to the BARE COPPER wire on the switch timer. If there is no ground wire, ground the switch timer to the box. If the box is plastic, connect the bare copper wire to ground as supplied or contact an electrician.
- b. Make sure all twist connectors are tight.

# Self-Adjusting Indoor Wall Switch Timer

- c. Tuck wires into wall box(s) leaving room for the device(s).
- d. Using screws provided, mount the switch timer into the wall box, then install the wall plate.
- e. Turn power back on at the service panel.

**You are ready to set the DATE and TIME—Proceed to Section 3.**

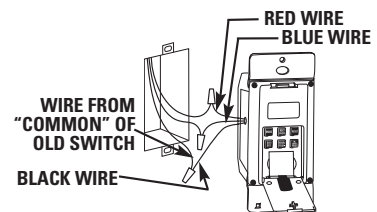
#### For 3-way Switch and Other Multiple Switch Setups:

**NOTES:** When installing the EJ500 switch timer in circuits with two or more switches:

- The wiring is different when using the EJ500 switch timer than when using conventional toggle switches. Read the following installation instructions carefully.
- The distance between switch timer and remote switches must not exceed 100 feet, and wiring to the remote switches must not be buried underground.
- Used remote switches from a previous conventional installation may not function reliably with an electronic timer. Try a brand new remote switch if function is intermittent.

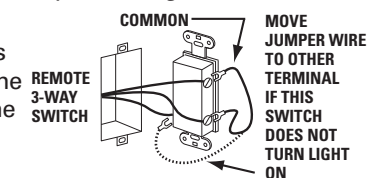
#### For Existing 2-Switch (3-way) Installations:

1. Locate the COMMON wire connected to first old switch. It might be attached to a different colored screw, or find markings on old switch.
2. Connect BLACK wire from switch timer to COMMON wire, using a twist connector.
3. Connect the other two wires from the old switch to either the BLUE and RED wires from the switch timer.
4. Connect the ground wire from the box to the BARE COPPER wire on the switch timer. If there is no ground wire, ground the switch timer to the box. If the box is plastic, connect the bare copper wire to ground as supplied or contact an electrician.
5. Locate the COMMON on the second old switch of the 3-way pair.
6. Connect jumper wire (supplied) from the COMMON terminal to either of the other terminals on the remote 3-way switch.
7. Make sure all twist connectors are tight.
8. Tuck wires into wall boxes leaving room for the devices.
9. Mount the devices into the wall boxes, then install the wall plates.
10. Turn power back on at the service panel.
11. Make sure the switch timer displays "MAN" mode. Do the following test with the remote switch in each of its 2 positions:



**Press the NEXT ON/OFF button on the switch timer several times. Each time that you push the NEXT ON/OFF button, the switch controlled light or device (the "load") should turn on or off. If so, proceed to Section 3.**

- If the timer display changes between ON and OFF but the load does not operate, re-check your wiring and make sure the load is functional.
- If the timer display changes between ON and OFF but the load only operates when the remote switch is in one of its 2 positions, you need to turn off the power at the service panel, change the jumper wire to the other terminal. Then turn power back on at the service panel and repeat **Step 11**.

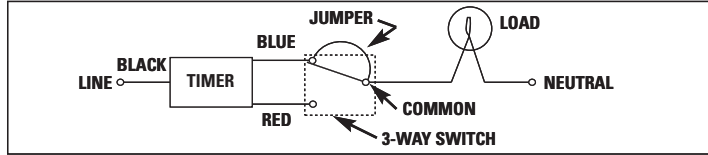


**You are ready to set the DATE and TIME—Proceed to Section 3.**



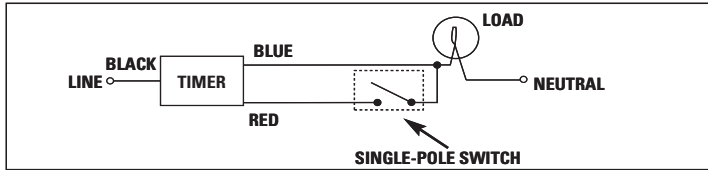
### Wiring Diagrams for Multiple Switch Timer Setups:

For a two-switch setup (3-way) when reusing the existing 3-way remote switch:

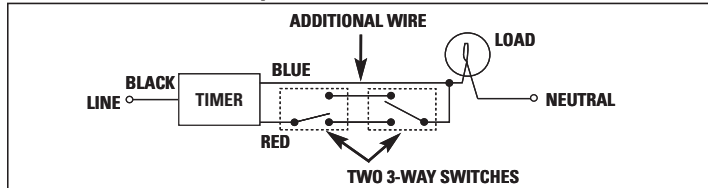


**NOTE:** For new construction or to replace a dimmer switch, a lighted switch, or a 3-way switch without screw terminals, a single-pole switch can be used at the remote location, as shown below.

For a two-switch setup (3-way) using single-pole remote switch:



For a three-switch setup:



For four or more switch setups:

Use the preceding 3-switch installation diagram and wire 4-way switches between the two 3-way switches.

### 3 – Intro to Programming: Read Before You Begin

- As you press the buttons to program, it will be helpful to have an overview of how they are organized. Press the **MODE** button to rotate through the switch timer's modes: CALendar, CLock, ProGraM, AUTO, AUTORANDom, and MANual.
- Within each mode, menus "loop", so they repeat when you get to the end.
- You must set the CALendar and CLock before programming ON/OFF times.
- If you're interrupted during programming, your work to that point is automatically saved after 5 minutes.

### 4 – Clear Any Existing Programming

It's unlikely that the new switch timer has any existing programming but to make sure, use this procedure *before setting the time*.

- Open the front cover.
- Press the **RESET** button while holding down the **NEXT ON/OFF** button.
- Release the **RESET** button. The screen will initialize, then flash "12:00 am" in MANual mode.
- Release the **NEXT ON/OFF** button.

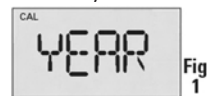
All previous settings are now deleted.

### 5 – Set the Date and Time

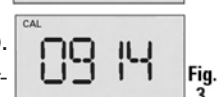
In order for the switch timer to automatically adjust for seasonal changes in sunrise and sunset, and change back and forth to Daylight Saving Time, the CALENDAR must be set correctly.

**NOTE:** If you go too far, keep pressing the button to loop back around. For Year and Hour, you can also press the **YEAR- / HOUR-** button to back up.

- Press **MODE** to display CAL and the year. The first time, the word YEAR and a number will flash (Fig. 1).
- Press **YEAR+** to stop the flashing. Press again as necessary to display the correct year.



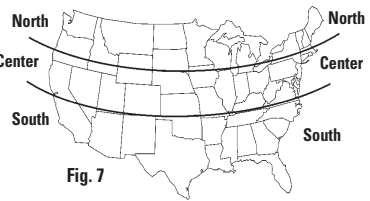
- Press **NEXT ON/OFF** to display the date. The word DATE and a number will be flashing (Fig. 2).
- Press **M+** to stop the flashing. Press again as necessary to display the correct month (Fig. 3).
- Press **DAY/DST** as necessary to display the correct date (Fig. 3). The correct day of the week is shown as well.



- Press **NEXT ON/OFF** to set Daylight Saving Time (DST). The display flashes between DST and AUTO (Fig. 4).
- Press **DAY/DST** to stop the flashing. Press again to toggle between AUTO and MAN for whether you want to adjust automatically for DST.
  - If your area uses DST, select AUTO (Fig. 5).
  - If your area does not use DST, select MAN.



- Press **NEXT ON/OFF** to set your ZONE. The display flashes between ZONE and CENTr (Fig. 6). This feature tracks changes in sunrise and sunset times.
- Press **ZONE+** to stop the flashing. Press again to toggle between SOUTH, NORTH, and CENTr. Use the map (Fig. 7) to determine your zone.

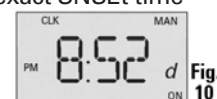


- Press **NEXT ON/OFF** to set exact sunup and sunset times. The display flashes between SUNUp and an AM time (Fig. 8). Find the exact times in your area in your newspaper or online.
  - If you **DO NOT** want to set exact Sunup and Sunset times:
    - Press **NEXT ON/OFF** to advance to SNSEt.
  - If you **DO** want to set exact Sunup and Sunset times:
    - Press **HOUR+** as necessary to set the correct SUNUp hour (Fig. 9).



**NOTE:** The small letter "d" tells you that Daylight Saving Time is in effect.

- Press **M+** as necessary to set the correct minute.
- Press **NEXT ON/OFF** to advance to setting exact SNSEt time (Fig. 10).
- Press **HOUR+** as necessary to set the correct SNSEt hour.
- Press **M+** as necessary to set the correct SNSEt minute.



Setting the Calendar is complete. Now set Time of Day.

- Press **MODE** to display CLK (clock) and a time. The first time, 12:00 am will flash (Fig. 11).
- Press **HOUR+** to stop the flashing.
- Press **HOUR+** and **M+** to set the correct time.

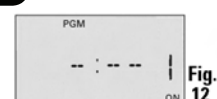


**NOTE:** Make sure AM or PM is correct.

Time and Date are now set. You can program ON/OFF settings.

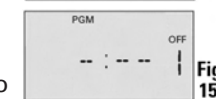
### 6a – Set an ON/OFF Program at Specific Times

- Press **MODE** until the screen displays PGM with blanks for time (Fig. 12).
- Press **DAY/DST** as many times as necessary to display 12:00 a.m. and the day(s) you want the program to activate. Choices are:
  - everyday
  - weekdays only (Fig. 13)
  - weekends only
  - a specific day



**NOTE:** If you go too far, keep pressing **DAY/DST** to loop back around again.

- Press **HOUR+** to set the hour you want the program to turn ON.
- Press **M+** to set the minutes you want the program to turn ON (Fig. 14).
- Press **DAY/DST** as many times as necessary to display 12:00 a.m. and the day(s) you want the program to activate (Fig. 16).
- Press **NEXT ON/OFF** to set the OFF time for the program. The screen again displays blanks (Fig. 15).



**NOTE:** Since you're setting an OFF time for an ON event already programmed, choose the same days as in the ON event.

- Press **HOUR+** to set the hour you want the program to turn OFF.
- Press **M+** to set the minutes you want the program to turn OFF (Fig. 17).
- At this point you have two choices:
  - Press **MODE** if you are finished to exit from programming.
  - Press **NEXT ON/OFF** to set another program. Repeat from Step 2 above.



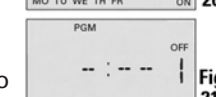
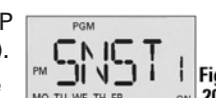
### 6b – Set an ON/OFF Program for Sunrise/Sunset

- Press **MODE** until the screen displays PGM with blanks for time (Fig. 18).
- Press **DAY/DST** as many times as necessary to display 12:00 a.m. and the day(s) you want the program to activate. Choices are:
  - everyday
  - weekdays only (Fig. 19)
  - weekends only
  - a specific day



**NOTE:** If you go too far, keep pressing **DAY/DST** to loop back around again.

- Press **HOUR+** to select SNST (sunset) or SNUP (sunup) for turning the program ON (Fig. 20).
- Press **DAY/DST** as many times as necessary to display 12:00 a.m. and the day(s) you want the program to activate (Fig. 22).



**NOTE:** Since you're setting an OFF time for an ON event already programmed, choose the same days as in the ON event.

- Press **HOUR+** to select SNST (sunset) or SNUP (sunup) for turning the program OFF (Fig. 23).
- At this point you have two choices:
  - Press **MODE** if you are finished to exit from programming.
  - Press **NEXT ON/OFF** to set another program. Repeat from Step 2 above.



### 6c – Setting Sunset ON/Specific Time OFF

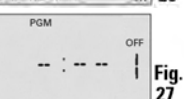
Sunset ON / Specific Time OFF is the most common setting for the switch timer. As a convenience, here is the full step-by-step.

- Press **MODE** until the screen displays PGM with blanks for time (Fig. 24).
- Press **DAY/DST** as many times as necessary to display 12:00 a.m. and the day(s) you want the program to activate. Choices are:
  - everyday
  - weekdays only (Fig. 25)
  - weekends only
  - a specific day



**NOTE:** If you go too far, keep pressing **DAY/DST** to loop back around again.

- Press **HOUR+** to select SNST (sunset) for turning the program ON (Fig. 26).
- Press **DAY/DST** as many times as necessary to display 12:00 a.m. and the day(s) you want the program to activate (Fig. 28).



**NOTE:** Since you're setting an OFF time for an ON event already programmed, choose the same days as in the ON event.

- Press **HOUR+** to set the hour you want the program to turn OFF.
- Press **M+** to set the minutes you want the program to turn OFF (Fig. 29).
- At this point you have two choices:
  - Press **MODE** if you are finished to exit from programming.
  - Press **NEXT ON/OFF** to set another program. Repeat from Step 2 above.



### 7 – Selecting AUTO, AUTO RANDom, or MANual Operation

Once set up, you have three choices for using the switch timer. To make a selection, open the front cover and press the **MODE** button until you see your choice of the following options:

- AUTO** — uses the timer settings you have programmed.
- AUTO RANDom** — gives your home a "lived-in" look by varying your settings by a random amount of  $\pm 20$  minutes or so.
- MANual** — maintains your settings but operates the switch timer like a standard ON/OFF. Press on the door of the switch timer for ON, press again for OFF.

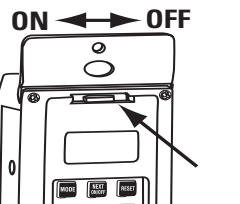
### Manual Override

To override a program (ON/OFF time) till its next schedules time:

- Press on the control cover (over the programming buttons)
- Open the control cover and press the **NEXT ON/OFF** button.

### The "Air Gap" Switch

The manual "air gap" switch at the top edge of the switch timer is designed to turn power off for routine maintenance (e.g., repairs, removing broken bulbs, etc.). Using this switch for normal ON/OFF operation will shorten battery life.



### About the Battery

- The two LR44/SR44 alkaline batteries maintain calendar and time settings during power interruptions for up to 3 months of accumulated interruptions. **All other settings remain in memory indefinitely without batteries or AC power.**
- Remove batteries if the switch timer will be without AC power for an extended time.
- Replace the batteries if the display is dim or displays "lobAT".
- Batteries may be changed without removing AC power.
- If AC power is removed, swap batteries within 15 seconds to avoid losing time-of-day and calendar settings.
- Remove the battery holder by prying left and right of the holder with the tip of a flat screwdriver, then pry the battery holder up.
- Install new batteries in the battery holder as marked, then place it back into the switch timer with notch down.
- If the display flashes "12:00," reset time and check the date.