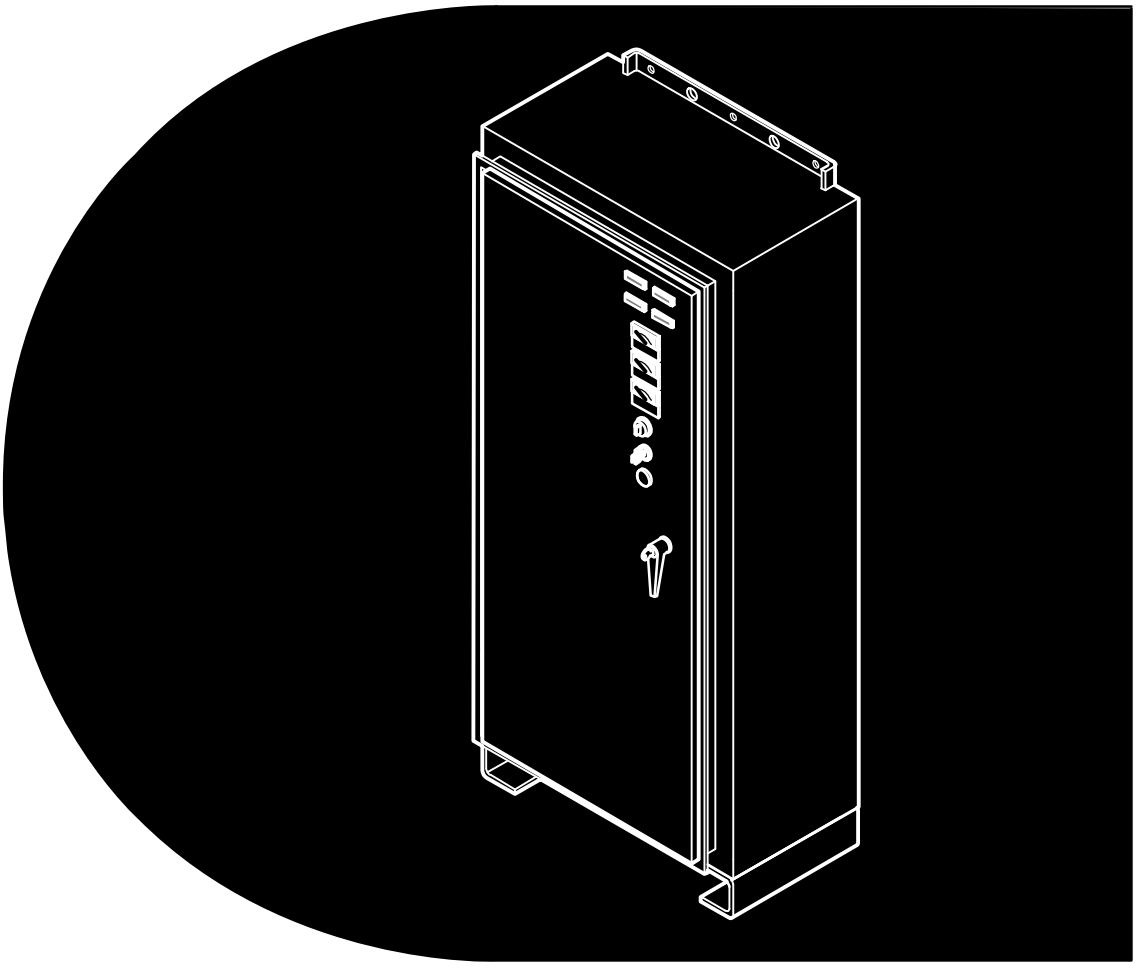
Power Generation

Service Manual

OT III
Transfer Switch
1200 to 3000 Amperes



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NEW EXERCISER/CHANGE-OVER CLOCK

The clock is used as an exerciser clock in **utility-to-genset applications** The clock is set to start and run the generator set at programmable intervals and for selected durations.

In **genset-to-genset applications,** the clock is used as a change-over clock to initiate generator set changeover at programmable intervals. When programming for a changeover, the program is set only long enough to allow the genset to start. (As an example, if the clock is programmed to come ON once each week for five minutes, a changeover will occur between the generator sets at that time.)

The clock is a 7-day, 24-hour clock that can store and execute up to four start/stop programs per day (one minute minimum duration). The clock also has a test feature that can be used to initiate a genset start and run cycle.

Programming the exerciser/change-over clock requires setting the time of day and entering the start and stop times as described in the following sections.

The clock has backup power for a minimum of six hours. (When the clock is running on backup power the segments around the display will flash on and off). After loss of backup power, the day and time will have to be reset. Exerciser/change-over programs will not be lost during a power outage (programs are stored in EEPROM).

To Reset The Clock:

Resetting the clock erases all existing day, time and program settings.

Depress and hold the arrow, plus and set buttons (→) (**+**) (◗) simultaneously. Release the plus and set buttons while continuing to hold the arrow button. When all aspects of the LCD display appear, release the arrow button.

To Set The Day And Time:

1. With the clock powered, press all three buttons simultaneously to reset the time. The time display area will show (- - : - -) and a small clock symbol will appear in the upper left-corner of the display. Refer to Figure 1.

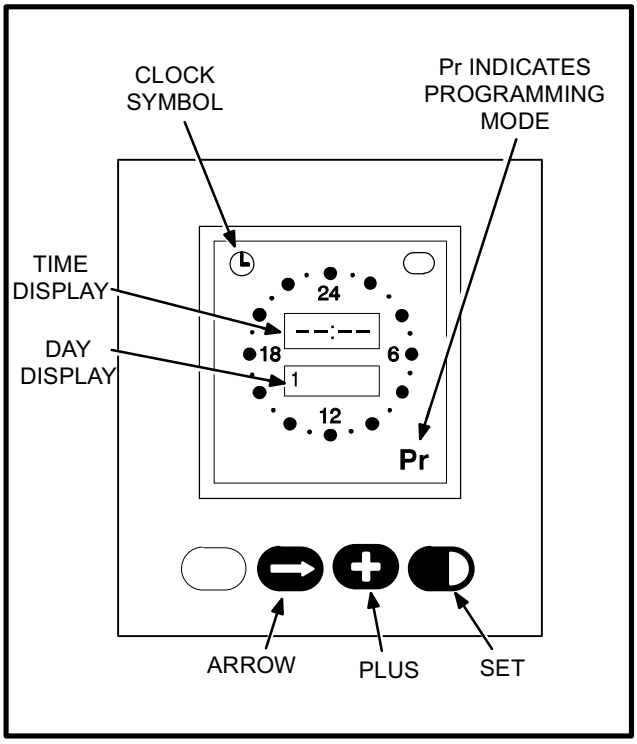

FIGURE 1. EXERCISER/CHANGEOVER CLOCK

2. Press the arrow (→) button once to set the day-of-week. The clock symbol will begin flashing to indicate the clock is being programmed and the display will show midnight (0:00).
3. Press the plus (**+**) button as many times as necessary until the current day-of-week is displayed.
   Example: 1 = Monday, 2 = Tuesday, etc.
4. Press the arrow (→) button again to set the hour of the day. The clock uses 24-hour (military) time.
5. Press the plus (**+**) button until the current hour is displayed.
   Example: 2:00 PM is 14:00.
6. Press the arrow (→) button again to set the minutes.
7. Press the plus (**+**) button until the current minutes are displayed.
   Note that by holding the plus (**+**) button down, the minutes will increment in 5 minute intervals.
8. To set or change the exerciser/change-over program, press the arrow (→) button again and go to step two in the following section. To return to the normal operating mode, press the arrow (→) button eight times (clock symbol appears in the display).

To Set The Exerciser Start and Stop Time:

1. Press the arrow (→) button four times to start the programming mode.
2. The letters **Pr** will appear in the lower right hand corner of the display when the programing mode is reached (**Pr** will be flashing if there are no existing programs).
   Press the arrow (→) button as many times as necessary to advance to the day to be programmed.
   To clear an existing program for the day selected, press the plus and set (**+**) (◗) buttons at the same time.
3. Press the plus (**+**) button to increment the **Start** time of the exercise program. The display will show midnight (0:00). Note that by holding the (**+**) button down, the minutes will increment in 15 minute intervals. When the **Start** time is reached, press the set (◗) button (On Mode is indicated, Figure 2).
   Then increment the time with the plus (**+**) button to the desired **Stop** time. When the **Stop** time is reached, press the set (◗) button (Off Mode is indicated, Figure 2).
   Example to exercise the genset one hour:
   Set Start at 7:00 PM (19:00)
   Set Stop at 8:00 PM (20:00)
   Note that the exercise time is indicated by a band of segments illuminated around the outer ring of the clock from the start to the stop time (Figure 2).

   To clear the program, press the plus and set (**+**) (◗) buttons at the same time.
4. Pressing the arrow (→) button advances to the next day. The program will be copied to the next day if the next day does not have an existing program.

   To change or clear the program, press the plus and set (**+**) (◗) buttons at the same time.

   Double check the program setting for each day. Press the arrow (→) button repeatedly until the clock mode is passed and the program mode (Pr) is reached. Carefully check each days program and clear any unwanted programs.
5. When finished programming, press the arrow (→) button until the clock appears in the upper left corner of the display.

During the exercise period, the ON mode is indicated in the ellipse in the upper right corner of the display (Figure 2).

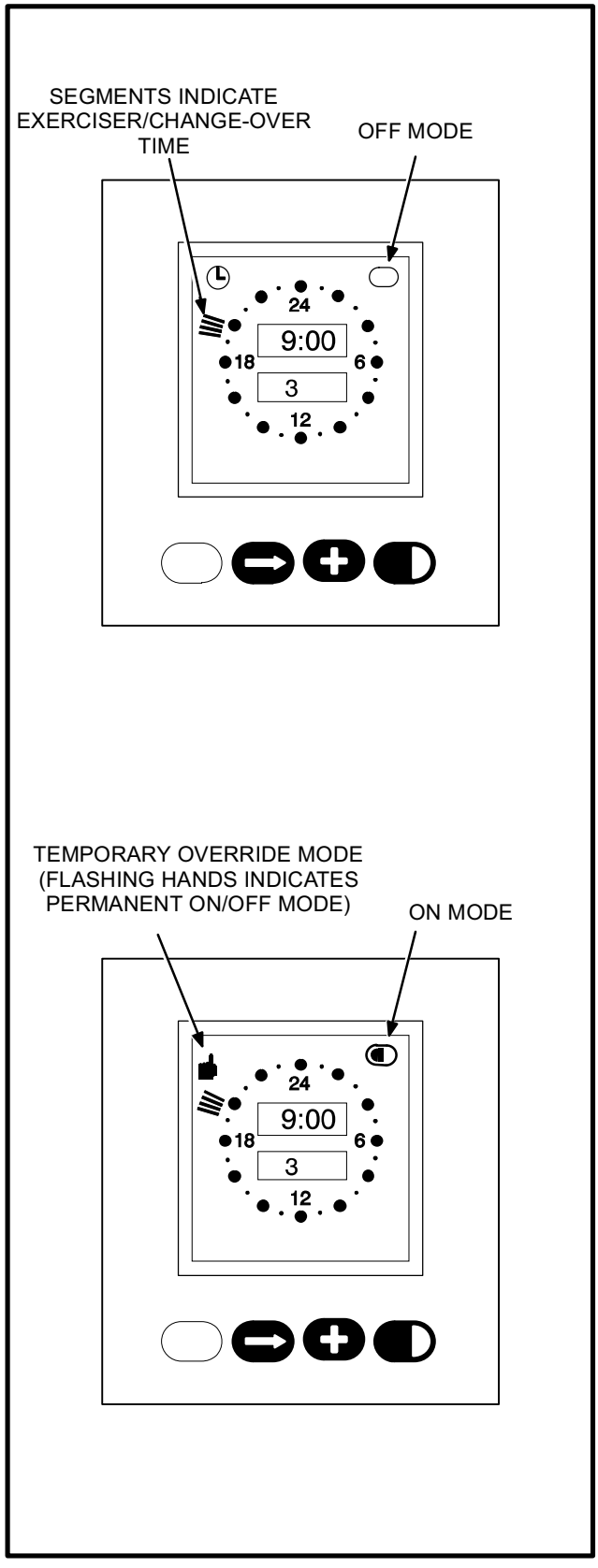

FIGURE 2. CLOCK ON/OFF MODE

To Set The Change-Over Time:

1. Press the arrow (→) button four times to start the programming mode.
2. The letters **Pr** will appear in the lower right hand corner of the display when the programing mode is reached (**Pr** will be flashing if there are no existing programs).
   Press the arrow (→) button as many times as necessary to advance to the day to be programmed.
   To clear an existing program for the day selected, press the plus and set (**+**) (◗) buttons at the same time.
3. Press the plus (**+**) button to increment the **Start** time of the change-over program. The display will show midnight (0:00). When the **Start** time is reached, press the set (◗) button (On Mode is indicated, Figure 2).
   Then increment the time with the plus (**+**) button to the desired **Stop** time. When the **Stop** time is reached, press the set (◗) button (Off Mode is indicated, Figure 2).
   Example to change-over the genset at 7:00 PM:
   Set Start at 7:00 PM (19:00)
   Set Stop at 7:05 PM (19:05)
   Note that the change-over time is indicated by a segment illuminated around the outer ring of the clock from the start to the stop time (Figure 2). Note also that the genset will start and continue to run after the five minute ON time expires until the next program ON time.

   To clear the program, press the plus and set (**+**) (◗) buttons at the same time.
4. Pressing the arrow (→) button advances to the next day. The program will be copied to the next day if the next day does not have an existing program.

   To change or clear the program, press the plus and set (**+**) (◗) buttons at the same time.

   Double check the program setting for each day. Press the arrow (→) button repeatedly until the clock mode is passed and the program mode (Pr) is reached. Carefully check each days program and clear any unwanted programs.
5. When finished programming, press the arrow (→) button until the clock appears in the upper left corner of the display.

During the change-over period, the ON mode is indicated in the ellipse in the upper right corner of the display (Figure 2).

To Check The Programs:

Push the arrow (→) button to review each setting.

To Erase (Clear) A Program:

Press the arrow (→) button until the program mode (Pr) is reached. Press the arrow (→) button again to select the desired day. To clear the program for the day selected, press the plus and set (**+**) (◗) buttons at the same time.

To Initiate Or Override An Exerciser/Change-over Program:

The clock has a built-in test feature. Once the clock time has been set, the set button (◗) can be used to initiate an exercise test/changeover or to cancel an exercise test/changeover in progress.

Exercise Applications: The Load/No Load switch, on the control circuit board can be set to test the genset with or without load, as desired.

With the normal source connected and available, pressing the set (◗) button once will initiate an exercise test. A hand will be displayed in the upper left corner of the display and the On mode will be indicated inside the ellipse in upper right corner of the display (Figure 2). Pressing the set (◗) button again will stop the exercise test and the ellipse will indicate the OFF mode.

To temporarily override an activated exercise program, *momentarily* press the set (◗) button. A small hand will appear in the upper left corner of the display (Figure 2). The current program will be overridden and the clock will automatically set for the next program. Momentarily pressing the set (◗) button again will return to the current program.

Changeover Applications: Pressing the set (◗) button once will initiate a changeover. A hand will be displayed in the upper left corner of the display and the On mode will be indicated inside the ellipse in upper right corner of the display (Figure 2). Press the set (◗) button again after the genset is running and the changeover will continue. The ellipse will indicate the OFF mode. Repeat this procedure to change back to the original genset.

Permanent On/Off Mode:

Note this feature is not used for any current applications. It is described here to help recognize and get out of this mode.

Holding the set (◗) button down until a *flashing hand appears* in the upper left corner of the display initiates the permanent On/Off mode (Figure 2). The On mode is indicated by a continuous band of segments illuminated around the clock. The Off mode is indicated by all of the segments around the clock being off. Pressing the set (◗) button momentarily toggles between the permanent On and permanent Off modes. Holding the set (◗) button down until the clock symbol returns to the upper left corner of the display, ends the continuous On/Off mode and returns to the normal program mode.

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⚠WARNING

INCORRECT SERVICE OR REPLACEMENT OF PARTS CAN RESULT IN DEATH, SEVERE PERSONAL INJURY, AND/OR EQUIPMENT DAMAGE. SERVICE PERSONNEL MUST BE QUALIFIED TO PERFORM ELECTRICAL AND/OR MECHANICAL SERVICE.

Safety Precautions

GENERAL

This manual covers models produced under the Cummins®/Onan® and Cummins Power Generation brand names.

This manual includes the following symbols to indicate potentially dangerous conditions. Read the manual carefully and know when these conditions exist. Then take the necessary steps to protect personnel and the equipment.

⚠ DANGER ***This symbol warns of immediate hazards that will result in severe personal injury or death.***

⚠ WARNING ***This symbol refers to a hazard or unsafe practice that can result in severe personal injury or death.***

⚠ CAUTION ***This symbol refers to a hazard or unsafe practice that can result in personal injury or product or property damage.***

AC and DC voltages in the transfer switch components present serious shock hazards that can result in severe personal injury or death. Read and follow these instructions.

Keep the transfer switch cabinet closed and locked. Make sure only authorized personnel have the cabinet and operational keys.

Due to the serious shock hazard from high voltages within the cabinet, all service and adjustments to the transfer switch must be performed only by an electrician or authorized service representative.

If the cabinet must be opened for any reason:

1. Move the operation selector switch on the generator set to Stop.
2. Disconnect the starting batteries of the generator set. (Remove the negative [-] lead first to prevent arcing from igniting explosive battery gas.)
3. Remove AC power to the automatic transfer switch. If the instructions require otherwise, use extreme caution due to the danger of shock hazard.

Place rubber insulative mats on dry wood platforms over metal or concrete floors when working on any electrical equipment. Do not wear damp clothing (particularly wet shoes) or allow skin surfaces to be damp when handling any electrical equipment.

Jewelry is a good conductor of electricity and should be removed before working on the electrical equipment.

Do not work on this equipment when mentally or physically fatigued, or after consuming alcohol or any drug that makes the operation of equipment unsafe.