CONTROL PANEL

Figure 3-5 shows the control panel on the cabinet door. The control features are divided into three groups:

- Control Function LEDs
- ATS Status LEDs
- Membrane Pushbuttons

Control Function LEDs

The control panel (see Figure 3-5) includes eight LEDs that display codes that indicate various control functions that can be configured. The first five LEDs display the function code and the last three LEDs display the value code for the displayed function. For information on configuring these functions, see *Section 5*.

With the exception of the first LED (Test), normally these LEDs are off and are only lit when in Configuration Mode. The Test LED is also used to notify the user of test periods.

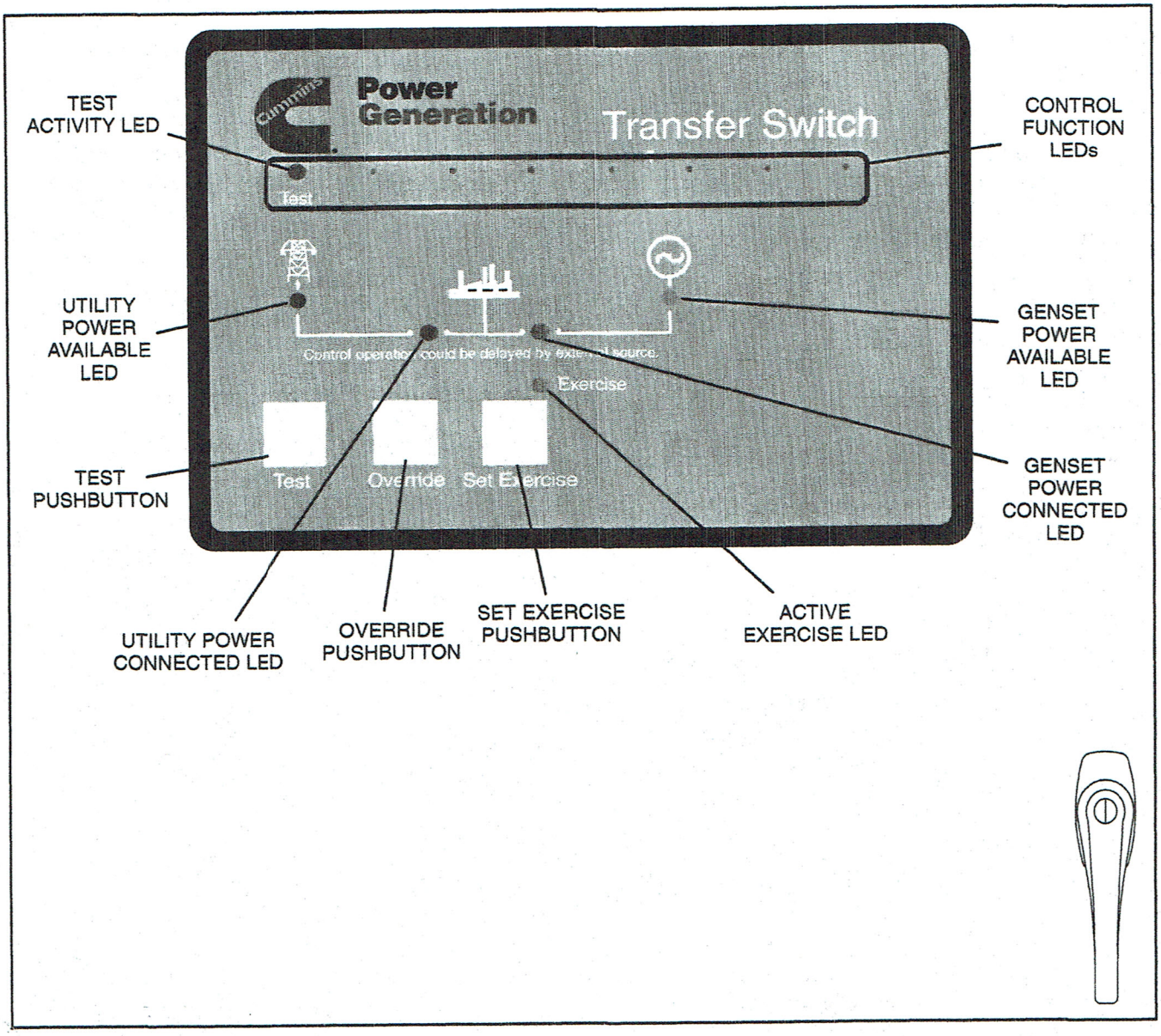

FIGURE 3-5. CABINET DOOR

ATS Status LEDs

The control panel includes six LEDs that provide Automatic Transfer Switch (ATS) status information.

Utility Power Available – This green LED is lit when the utility power source has acceptable output voltage.

Genset Power Available – This amber LED is lit when the genset power source has acceptable output voltage and frequency.

Both power source LEDs can be lit simultaneously.

Utility Power Connected – This green LED is lit when utility power is supplying power to the load.

This LED flashes once per second if there is a failure to connect to or disconnect from utility power, when commanded. The control makes five attempts (there is ten seconds between each attempt) to connect to or disconnect from utility power before it flashes the failure.

Genset Power Connected – This amber LED is lit when the genset is supplying power to the load.

This LED flashes once per second if there is a failure to connect to or disconnect from the genset, when commanded. The control makes five attempts (there is ten seconds between each attempt) to connect to or disconnect from the genset before it flashes the failure.

Test – This amber LED is lit when there is an active test period. This LED flashes twice per second when the Test pushbutton is pressed to set or cancel a test period.

Exercise – This amber LED lights when repeat exercise periods have been set. This LED flashes twice per second when the Set Exercise pushbutton is pressed to set or cancel an exercise. This LED flashes once per second during an active exercise period.

Membrane Pushbuttons

The control panel includes three membrane pushbuttons.

Test – The Test pushbutton is used to set or cancel a test period. The control can be configured to test the genset with or without load. For more information, see *Section 4*.

The Test pushbutton is also used in the Configuration Mode to step through the function codes (see *Section 5*).

Override – The Override pushbutton is used to terminate or bypass some time delays, to stop the Power Connected LEDs from flashing as a result of a failure to connect to or disconnect from a power source, and to cancel an active exercise period. For more information, see *Section 4*.

The Override pushbutton is also used in the Configuration Mode to step through the value codes (see *Section 5*).

Set Exercise – The Set Exercise pushbutton is used to set or cancel repeat exercise periods using the integrated exerciser. For more information, see "Integrated Exercises" on page 4-8.

PUSHBUTTON OPERATION

The following describes operation of the three pushbuttons located on the control panel.

Test Pushbutton

The Test pushbutton is used to:

- Start a genset test. The Exercise LED flashes if the Test pushbutton is pressed and held for two seconds.
- Terminate a genset test. The Exercise LED goes out if the Test pushbutton is momentarily pressed.

More information on testing is included on the following pages.

Override Pushbutton

The Override pushbutton is used to:

- Terminate the following system time delays:
  - Time Delay Engine Start (TDES)
  - Time Delay Normal to Emergency (TDNE)
  - Time Delay Emergency to Normal (TDEN)
- Bypass the TDNE timer and transfer the load immediately during an active Transfer Inhibit input.
- Bypass the TDEN timer and retransfer the load immediately during an active Retransfer Inhibit input.
- Stop the Utility Power Connected LED from flashing as a result of a failure to connect to or disconnect from the utility when commanded.
- Stop the Genset Power Connected LED from flashing as a result of a failure to connect to or disconnect from the genset when commanded.
- Cancel an active exercise period.

The Program Transition (TDPT), Elevator signal (TDEL), and Engine Cool Down (TDEC) time delays are not affected by pressing this pushbutton.

Set Exercise Pushbutton

This pushbutton is only used with the integrated exerciser and only functions if the External Exercise function is disabled (set to Off). Information on configuring the control panel is included in *Section 5*.

The Set Exercise pushbutton is used to:

- Set a delayed repeat exercise period when the pushbutton is pressed and held for five seconds.
- Start an immediate exercise period (that also repeats) if the pushbutton is pressed momentarily within ten seconds of starting the delayed exercise period.
- Cancel a repeatable exercise period if the pushbutton is pressed and held for five seconds.

More information on using the integrated exerciser is included on page 4-8.

GENERATOR SET EXERCISER

Run the generator at least once each week with at least 50 percent load (if possible). If you do not want to use the exerciser, use the Test pushbutton, as described earlier in this section, to test the generator set each week.

The control panel includes an integrated exerciser that is set by pressing the Set Exercise pushbutton. In addition, there may also be an optional fully programmable external exerciser clock installed and wired to a control input (see page 4-10).

If both types of exercisers are available, only one exerciser can operate at a time. The control panel must be configured for the type of exerciser being used. This is done by setting the External Exerciser function On or Off. If the integrated exerciser is used, the External Exercise On/Off function must be set to Off. If the external exerciser is used, the External Exercise On/Off function must be set to On. If the external exerciser is factory supplied, the External Exercise On/Off function is set to On at the factory. If the external exerciser is not factory installed, the External Exercise On/Off function is set to Off. Information on configuring the control is included in *Section 5*. Information on the optional external exerciser is included later in this section.

Exercise With or Without Load

The exercise with/without load configuration works with both types of exercisers (default = without load) – see *Section 5*. When "With Load" is selected, the load is transferred to the genset. When "Without Load" is selected, the genset runs with no load for the duration of the exercise period.

Integrated Exerciser

This function is standard and is built into the control. With this exerciser, the exercise period is 20 minutes and it repeats every 7, 14, 21, or 28 days (default = 7 days) – see *Section 5*.

The integrated exercise function cannot be used unless the External Exercise function is disabled (set to Off).

Before an exercise can begin, the transfer switch must be connected to utility power and utility power must be available (the green Utility Power Available LED must be lit).

Power Loss Backup

If DC power is removed from the control panel, the exercise clock uses a replaceable lithium battery (Onan part number 416–1250) to back up the time setting. The battery is good for ten years and doesn't need to be serviced. The battery is attached to the time chip on the control board.

If no exercise period is set, the Exercise LED is off (see Figure 3-5).

Setting the Integrated Exercise Period

1. Verify that the Exercise LED is off and the External Exercise function is disabled (set to Off – see *Section 5*). If the External Exercise function is enabled, the integral exerciser is disabled.

2. To set the exercise start time for a **repeat exercise period**, press and hold the Set Exercise pushbutton for 5 seconds. The Exercise LED flashes at a rate of twice per second for 5 seconds and then stays on when the exercise period is set. A delayed 20 minute exercise period will start in 12 hours. At that time, the Exercise LED flashes at a rate of once per second during the entire exercise period. When the exercise period is over, the Exercise LED quits flashing and remains on to signify that repeat exercise periods are enabled.

3. To start an **immediate exercise period** and have it repeat, momentarily press the Set Exercise pushbutton a second time within ten seconds of starting the delayed exercise period. Momentarily pressing and releasing the Set Exercise pushbutton a second time starts an immediate 20 minute exercise period instead of waiting for 12 hours. The Exercise LED flashes at a rate of once per second during the entire exercise period. When the exercise period is over, the Exercise LED stops flashing and remains on to signify that repeat exercise periods are enabled.

Canceling Repeat Exercise Periods

With the control panel Exercise LED on steady, press and hold the Set Exercise pushbutton for 5 seconds. The Exercise LED flashes at a rate of twice per second for 5 seconds and then goes out to signify that repeat exercise periods are cancelled.

Canceling An Active Exercise Period

Active exercise periods can be canceled by pressing the Override pushbutton on the control panel or by grounding the remote override input (P4-2) on the back of the control panel.

Power Source Failure During An Active Exercise Period

If either power source fails during an active exercise period, the control immediately terminates the exercise and proceeds with the automatic mode of operation.

Exercise Without Load Sequence of Events

1. When an exercise period becomes active, the Exerciser LED flashes at a rate of once per second.
2. The control signals the generator to start and run for 20 minutes.
3. After the exercise period has ended, the control signals the generator to stop.
4. The Exercise LED stops flashing and remains on to signify that repeat exercise periods are set (unless there are no repeat exercise periods). If there are no repeat exercise periods, the Exercise LED goes out.

Exercise With Load Sequence of Events

1. When an exercise period becomes active, the Exerciser LED flashes at a rate of once per second.
2. The control signals the generator to start.
3. When the generator output is acceptable, the control transfers the load to the generator, following the configuration set points.
4. After the exercise period has ended, the control retransfers the load back to the utility, following the configured set points.
5. Once the load is connected to utility power, the control runs the genset unload for the duration of the cooldown timer (TDEC).
6. After the TDEC timer expires, the control signals the genset to stop.
7. Unless the repeat exercise periods have been canceled, the Exercise LED quits flashing and remains on to signify that repeat exercise periods are set. If the exerciser is not set up to repeat exercises, the Exercise LED goes out.