# Installation Manual

# ASCO® 4000 Series, J-Design 150-600 A

## Automatic & Non-Automatic Transfer & Bypass-Isolation Switches

Electrically-operated bypass switch with Bypass-Isolation & Group H controllers

**⚠ DANGER**

DANGER is used in this manual to warn of a hazard situation which, if not avoided, will result in death or serious injury.

**⚠ WARNING**

WARNING is used in this manual to warn of a hazardous situation which, if not avoided, could result death or serious injury.

**⚠ CAUTION**

CAUTION is used in this manual to warn of a hazardous situation which, if not avoided, could result in minor or moderate injury.

Refer to the outline and wiring drawings provided with the 4000 Series transfer switch for all installation and connection details and accessories.

Refer to **User's Guide 381333-444** for the Group H Controller status display messages, time delays, pickup and dropout settings, and adjustments.

### Rating Label

Each transfer switch contains a rating label to define the loads and fault circuit withstand/closing ratings. Refer to the label on the transfer switch for specific values.

**⚠ WARNING**

Do not exceed the values on the rating label. Exceeding the rating can cause person injury or serious equipment damage.

**An experienced licensed electrician must install the switch.**

### Table of Contents

## Nameplate

The nameplate includes data for each specific 4000 Series transfer switch. Use the switch only within the limits shown on this nameplate. A typical Catalog Number is shown below with its elements explained.

## Catalog Number Identification

Typical 4000 Series J4ATE catalog no. for switched neutral, 3 pole, 400 ampere, 480 V, ATE in Type I enclosure:

| J | 04A | TE | B | 3 | 0400 | N | H0 | C |
|---|---|---|---|---|---|---|---|---|

**Transition Type**
- **04A** open
- **4AC** closed
- **4AD** delayed
- **04N** open non-automatic
- **4NC** closed non-automatic
- **4ND** delayed non-automatic

**Neutral**
- **0** none
- **A** solid
- **B** switched

**Poles**
- **2** single phase
- **3** three phase

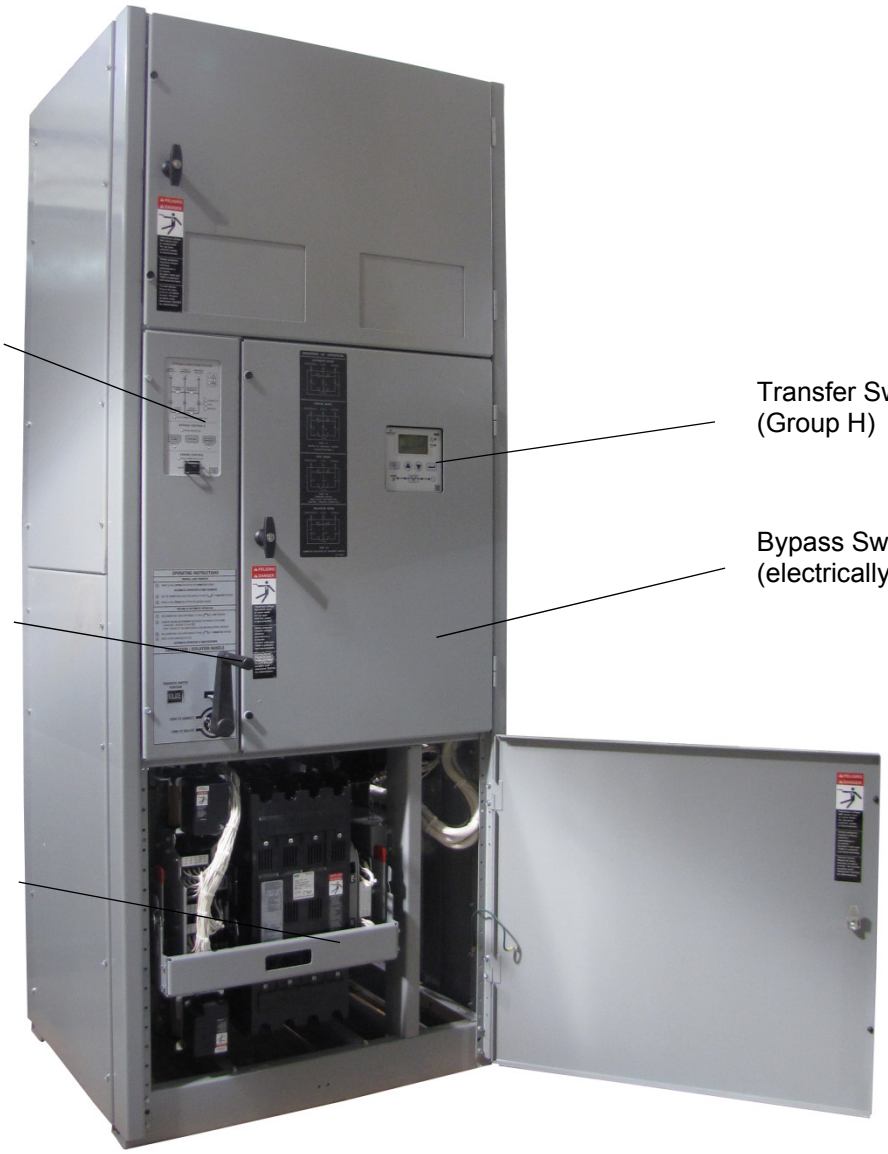
**Amperes**
- **0150**
- **0200**
- **0230**
- **0260**
- **0400**
- **0600**

**Voltage**

| | | | |
|---|---|---|---|
| **C** | 208 | **K** | 415 |
| **D** | 220 | **L** | 440 |
| **E** | 230 | **M** | 460 |
| **F** | 240 | **N** | 480 |
| **G** | 277 | **P** | 550 |
| **H** | 380 | **Q** | 575 |
| **J** | 400 | **R** | 600 |

**Acessories**
- **0**=no
- **X**=yes

**Enclosure**
- **C** type 1
- **H** type 3R secure
- **N** type 4 secure
- **P** type 4X secure (304 stainless steel)
- **V** type 4X secure (316 stainless steel)
- **Q** type 12 secure



# Installation

These transfer switches are factory wired and tested. Installation requires mounting, connecting power cables, and connecting engine start and auxiliary control circuits (if required.).

## Supporting Foundation

The supporting foundation for the enclosure must be level and straight. Refer to the applicable enclosure outline drawing included with the transfer switch for all mounting details including door opening space.

If bottom cable entry is used, the foundation must be prepared so that the conduit stubs are located correctly. Refer to the enclosure outline drawing for specified area and location.

Provide cable bending space and 1 inch minimum clearance to live metal parts. When a concrete floor is poured, use interlocking conduit spacer caps or a wood or metal template to maintain proper conduit alignment.

## Mounting

Refer to the outline and mounting diagram and mount the transfer switch according to details and instructions shown on the diagram. Mount it vertically to a rigid supporting structure. Level all mounting points by using flat washers behind the holes to avoid distortion of the transfer switch.

***NOTICE***

Protect the transfer switch from construction grit and metal chips to prevent malfunction or shortened life of the transfer switch.

## Line Connections

Refer to the wiring diagram provided with the transfer switch. All wiring must be made in accordance with the National Electrical Code and local codes.

**⚠ DANGER**

De-energize the cables before making any line or auxiliary circuit connections. Be sure that the Normal and Emergency line connections are in proper phase rotation. Place the engine generator starting control in the OFF position. Make sure engine generator is not in operation.

## Testing Power Cables

Do not connect the power cables to the transfer switch until they are tested. Installing power cables in conduit, cable troughs, and ceiling-suspended hangers often requires considerable force. The pulling of cables can damage insulation and stretch or break the conductor's strands. For this reason, after the cables are pulled into position, and before they are connected, they should be tested to verify that they are not defective or have been damaged during installation.

## Connecting Power Cables

After the power cables have been tested, connect them to the appropriate terminal lugs on the transfer switch as shown on the wiring diagram provided with the transfer switch. Make sure that the lugs provided are suitable for use with the cables being installed. Standard terminal lugs are solderless screw type and will accept the wire sizes listed on the drawings provided with the transfer switch. Be careful when stripping insulation from the cables; avoid nicking or ringing the conductor. Remove surface oxides from cables by cleaning with a wire brush. When aluminum cable is used, apply joint compound to cables. Tighten cable lugs to the torque specified on rating label.

## Auxiliary Circuits

Connect auxiliary circuit wires to appropriate terminals on transfer switch terminal block TB as shown on the wiring diagram provided with this switch.

## Engine Starting Contacts

All customer connections, including the engine control contact connections, are located on terminal block TB which is mounted on the top right side of the enclosure. Refer to the wiring diagram provided with this switch and connect the engine start wires to the appropriate terminal. See Figure 1 and Table A.

Table A. Engine Start Connections.

| When normal source fails | Terminals on terminal block TB |
|---|---|
| contact closes | TB1 and TB2 |
| contact opens | TB1 and TB3 |

**NOTE**: To temporarily disable engine control from the automatic transfer switch you can unplug J3 from the small P3 receptacle at the bottom of the assembly. Be sure to reconnect plug J3 to the P3 receptacle for automatic transfer switch operation.

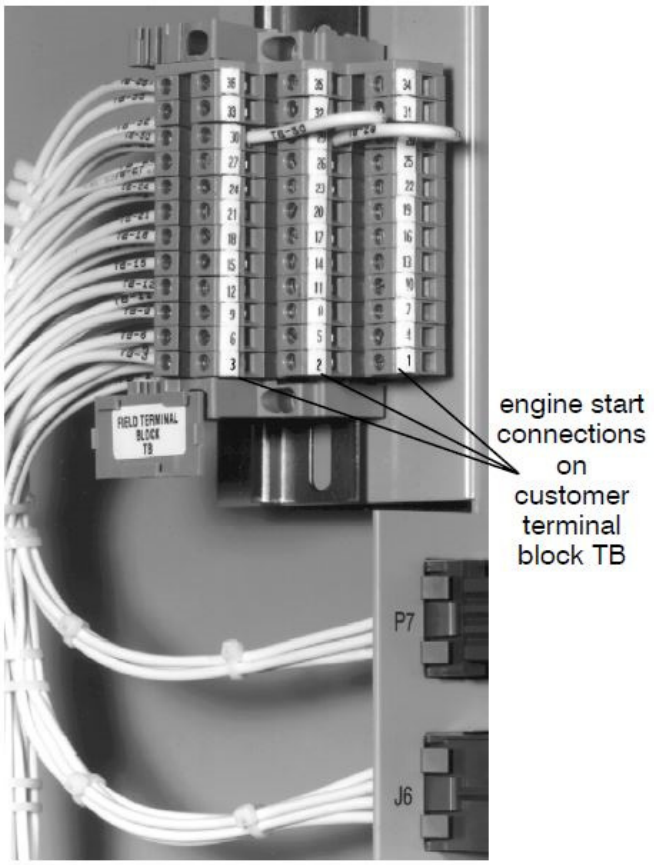



Figure 1. Engine start & auxiliary circuit TB

# Functional Test

The Functional Test consists of two checks: voltage checks and electrical operation.

Read all instructions on the wiring diagram and labels affixed to the transfer switch. Note the control features that are provided and review their operation before proceeding.

**NOTICE**

Do these checks in the order presented to avoid damaging the transfer switch.

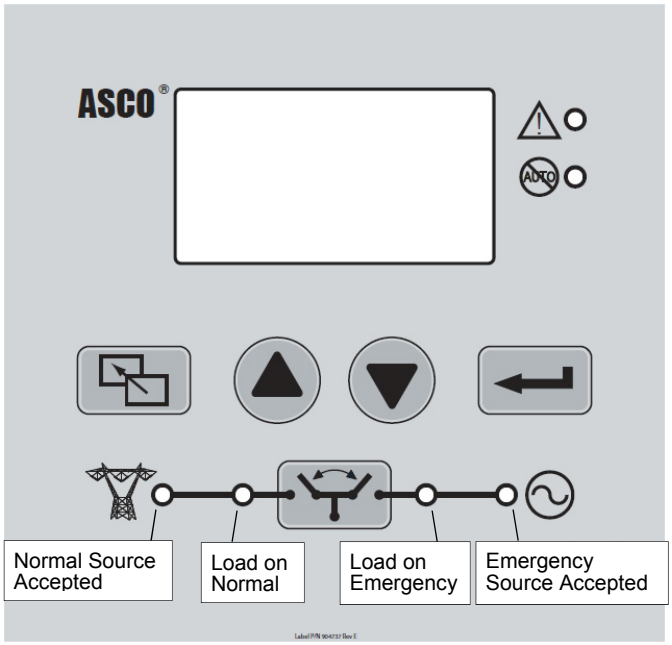



Figure 2. Four indicator lights on Group H Controller

## 1 – Voltage Checks

First check the nameplate on the transfer switch; rated voltage must be the same as normal and emergency line voltages.

Perform steps 1 through 6 at the right. Observe the indicator lights. See Figure 2.

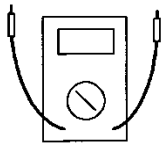
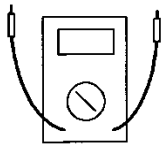
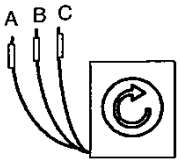
- ● Black circle means the light is on.
- ○ White circle means the light is off.

* If necessary, adjust the voltage regulator on the generator according to the manufacturer's recommendations. The transfer switch will respond only to the rated voltage specified on the transfer switch nameplate.

Also see User's Guide 381333-444 for voltage settings in the Group H controller.

**⚠ DANGER**

Use extreme caution when using a meter to measure voltages in the following steps.
Do not touch power terminals; shock, burns, or death could result!

| | | |
|---|---|---|
| 1 | Close the normal source circuit breaker. The normal source accepted and the load on normal lights should come on.  | |
| 2 | Use an accurate voltmeter to check phase to phase and phase to neutral voltages present at the transfer switch normal source terminals. |  |
| 3 | Close the emergency source circuit breaker. (Start generator, if necessary.) The emergency source accepted light should come on.  | |
| 4 | Use an accurate voltmeter to check phase to phase and phase to neutral voltages present at the transfer switch emergency source terminals.* |  |
| 5 | Use a phase rotation meter to check phase rotation of emergency source; it must be the same as the normal source. |   |
| 6 | Shut down the engine-generator, if applicable. The emergency source accepted light should go off. Then put the starting control selector switch (on the generator set) in the automatic position. Close the enclosure door.  | |

Continue to **2 – Electrical Operation** on the next page.

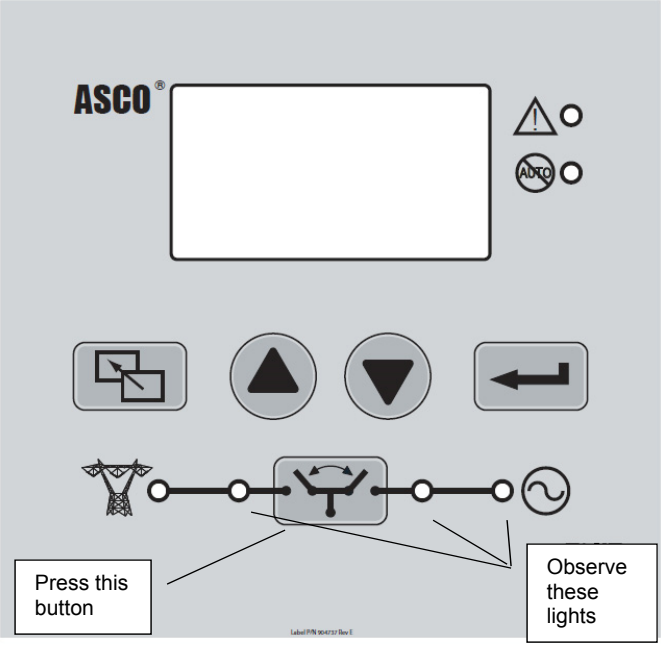



Figure 3. Transfer button and indicator lights

## 2 – Electrical Operation

This procedure will check the electrical operation of the transfer switch.

**WARNING**

Close the transfer switch enclosure door and tighten the screws before you test electrical operation.

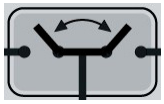
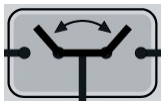
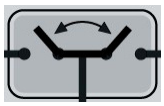
Perform steps 1 through 5 at the right. Observe the status lights. See Figure 3.

- ● Black circle means light is on.
- ○ White circle means light is off.

**NOTE:** For 4NTE, 4NCTE, 4NDTE manually start the emergency generator at the generator. Then press the transfer button for load transfer. If the inphase transfer feature is activated, transfer may not occur immediately. Transfer will occur when the phase relationship between sources is correct. Press the transfer button again for load retransfer to normal, then manually stop the generator at the generator.

Also see User's Guide 381333-444 for inphase transfer and time delay settings in the controller.

This completes the functional test of the transfer switch. Leave the engine-generator starting control in the automatic position.

| | |
|---|---|
| 1 | The normal source must be available and the generator must be ready to start. Check that the normal source accepted light is on.  |
| 2 | Press the transfer button. The engine should start and run within 15 seconds. For 4NTE, 4NCTE, 4NDTE the generator must be started manually at the generator.  |
| | The emergency source accepted light should come on.  |
| 3 | The transfer switch should transfer to the emergency position. The load on emergency light should come on and the load on normal light should go off. For 4NTE, 4NCTE, 4NDTE press the transfer button for load transfer. For 4ADTE, 4NDTE both lights will be off during the delayed-transition transfer time delay. |
| | If the transfer to emergency delay is used, the transfer occurs after a time delay. For immediate transfer (bypass timer) press the transfer button again.  |
| |  |
| 4 | The transfer switch should transfer back to the normal position. The load on normal light should come on and the load on emergency light should go off. For 4NTE, 4NCTE, 4NDTE press the transfer button for load retransfer. For 4ADTE, 4NDTE both lights will be off during the delayed-transition transfer time delay. |
| | If the retransfer to normal delay is used the retransfer should occur after a time delay. For immediate retransfer (bypass timer) press the transfer button again.  |
| |  |
| 5 | The unloaded running delay keeps the generator running for a cool-down period. Then the generator should stop and the emergency source accepted light should go off. For 4NTE manually stop the generator at the generator (after a cool-down period).  |

# Bypassing & Isolating

The Bypass Switch (electrically-operated) is controlled by a bypass-isolation controller (Figure 4). It provides status lights and push-button operation of the Bypass Switch.

### Bypass & Isolation Status

| Light | Function |
|---|---|
| Normal Available | ON if both normal source voltage & frequency are above pickup points. OFF if either is below the dropout points. |
| Emergency Available | ON if both emergency voltage & frequency are above pickup points. OFF if either is below the dropout points. |
| Load Energized | Green if load is connected to normal source & available. Red if the load is connected to emergency & is available. OFF if load de-energized. |
| Bypassed to Normal | ON when the Bypass Switch is closed on normal. OFF when the Bypass Switch normal contact is open. |
| Bypassed to Emergency | ON when the Bypass Switch is closed on emergency. OFF when Bypass Switch emergency contact is open. |
| Connected | ON when ATS is connected. |
| Test | ON when ATS is in test.. |
| Isolated | ON if ATS is Isolated. |
| ATS on Normal | ON when the ATS is closed on the Normal source. |
| ATS on Emergency | ON when the ATS is closed on the Emergency source. |
| OK to Connect or Disconnect ATS | ON when the ATS can be connected or disconnected (isolation handle can be turned to *TEST* , *CONN or ISO*) |
| Alarm | Blinks yellow when an alarm condition is present |
| Not in Auto | Blinks yellow when the ATS is not in an automatic operation mode (bypassed or rack not connected) |

### Allowable Positions of the Bypass Switch in relation to Positions of the Transfer Switch

| If Transfer Switch is Connected and in this position | Bypass Switch can be in either | |
|---|---|---|
| Normal | open | Normal |
| Emergency | open | Emergency |

### Bypass Controls

| Light | Function |
|---|---|
| Bypass Restricted | Flashes if the wrong **Bypass to** button is pressed or the **Permitted** light is off. ON solid is an alarm (see troubleshooting). |
| Permitted | ON if bypassing to that source (N or E) is allowed. OFF if bypassing to that source is not allowed. |

### Engine Control

| Light | Function |
|---|---|
| Manual Engine Start Active | ON if the Engine Control is in the RUN position. |

**NOTE:** The automatic controls will only allow the bypass to connect to the same source as the ATS.

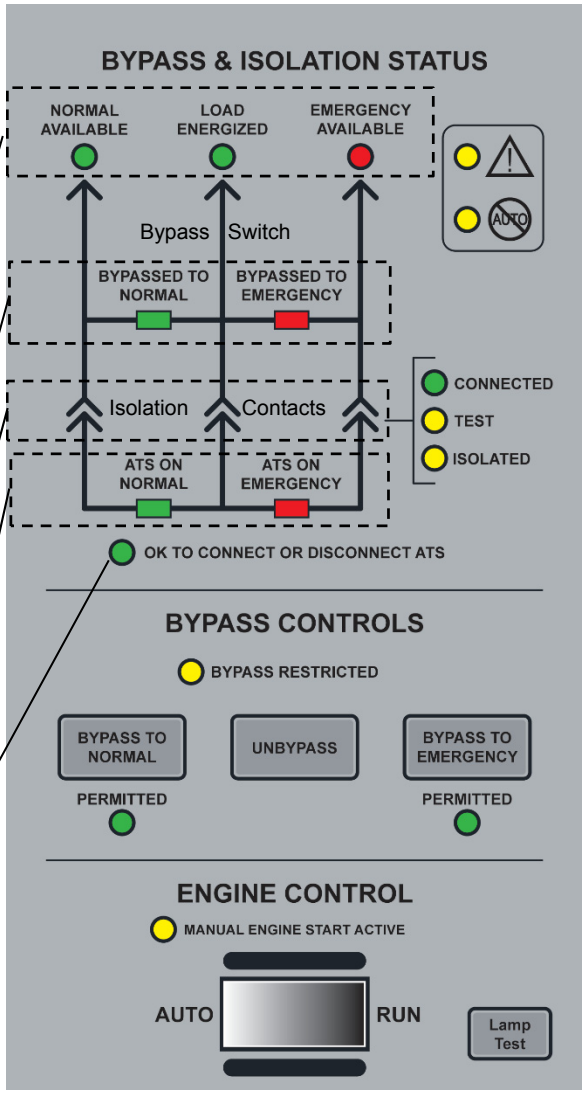



Figure 4. Bypass-Isolation Controller lights & controls

**WARNING**

Close enclosure door to prevent personal injury in case of electrical system fault.

### Source Voltage & Frequency Availability Points

| | Normal | Emergency |
|---|---|---|
| $V_{ca}$ Drop Out | 85% | 80% |
| $V_{ca}$ Pick Up | 90% | 90% |
| Frequency Drop Out | 85% | 85% |
| Frequency Pick Up | 86% | 86% |

Availability is determined by monitoring the Voltage across the C & A phases to ensure it meets the below parameters relative to the nominal voltage. It is only meant to indicate if there is sufficient power to operate the Bypass Switch and does not represent acceptability of the source relative to the loads.

# Bypassing & Isolating *continued*

## Bypassing the ATS

This procedure explains how to bypass the closed transfer switch contacts. Bypassing is required before the Transfer Switch can be tested or isolated. The **Bypassed** lights must be off and the **Connected** light must be on. See Figure 4.

1. Observe which **ATS On** light is on (Normal or Emergency). This is the position of the transfer switch.
2. Follow below to bypass the same source as that which is connected to the transfer switch (select Normal or Emergency).

### Bypass to the Normal Source

(When ATS is connected to Normal Source)

1. Press and hold the **Bypass to Normal** button until the **Bypassed to Normal** light comes on.

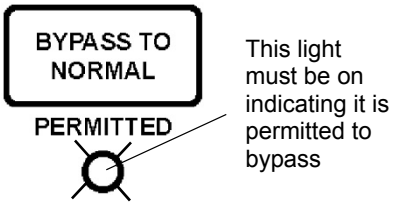



Figure 5. Bypass to Normal button

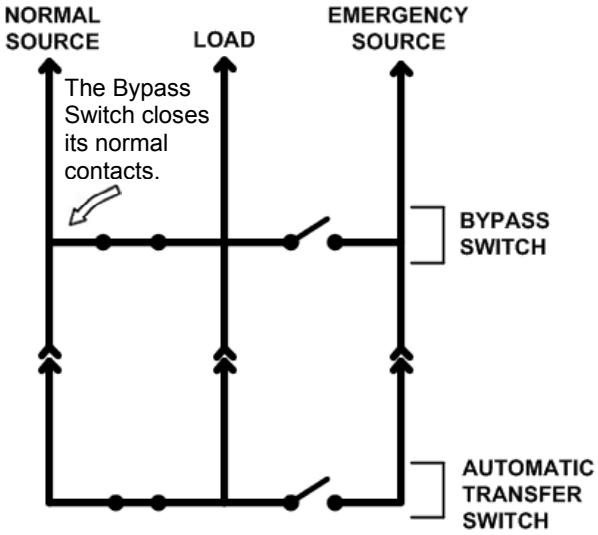



Figure 6. Bypass to Normal diagram

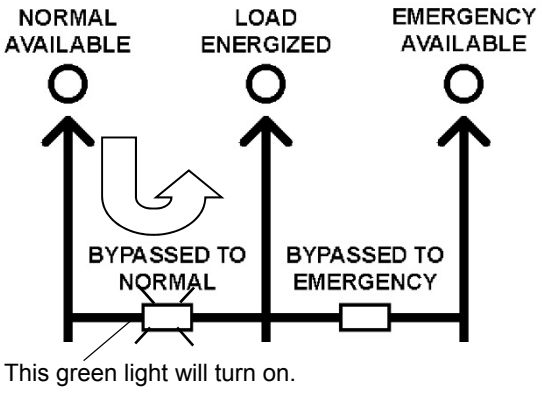



Figure 7. Bypassed to Normal light

### Bypass to the Emergency Source

(When ATS is connected to Emergency Source)

1. Press and hold the **Bypass to Emergency** button until the **Bypassed to Emergency** light comes on.

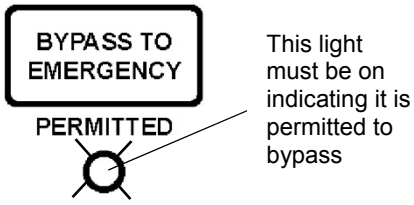



Figure 8. Bypass to Emergency button

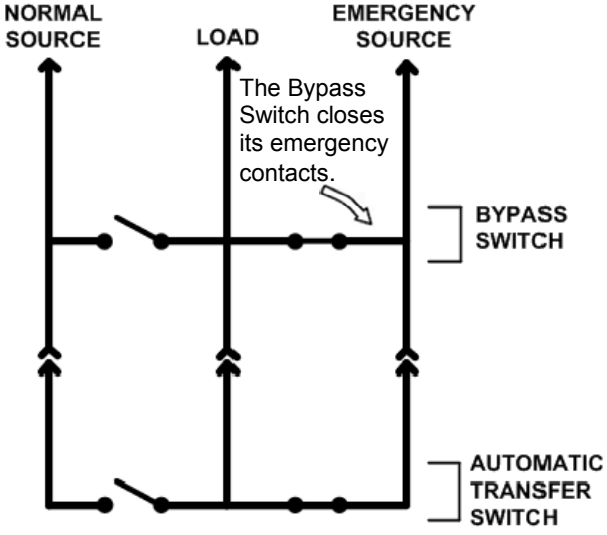



Figure 9. Bypass to Emergency diagram

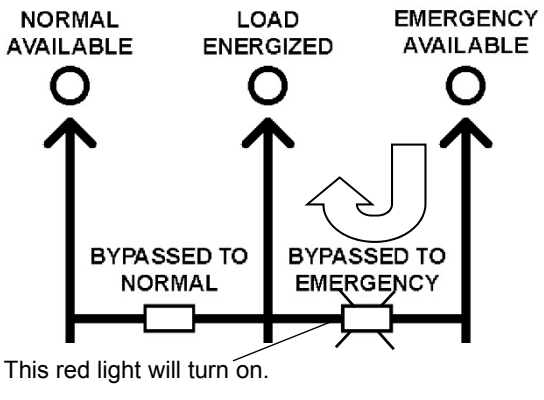



Figure 10. Bypassed to Emergency light

## Isolating the ATS (to TEST Positon)

Isolating is required before any service work can be performed on the automatic transfer switch. Refer to Figures 11-16.

**NOTE:** Bypass Switch can be used for manual load transfer to an available power source if transfer switch is in the TEST or ISOLATE position.

1. Bypass the closed ATS contacts. See **Bypassing the ATS** on pages 7-8.
2. Turn the **Connection / Isolation Handle** counter-clockwise (about 9-10 turns) until the window shows ***TEST***. The **TEST** light comes on. The ATS can be tested/operated now without load interruption (see page 6).

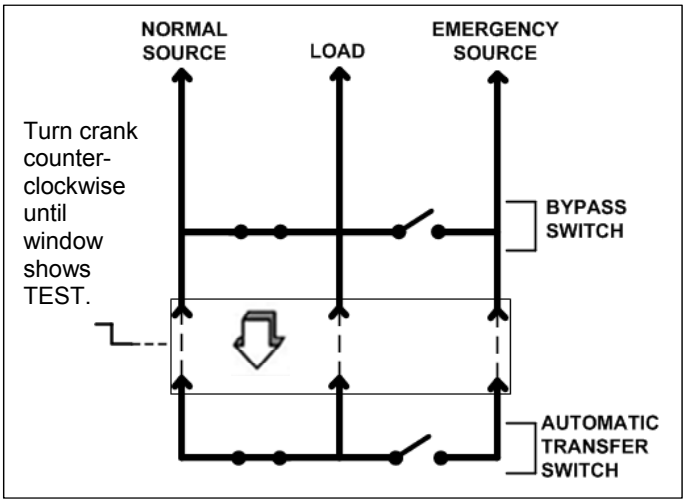



Figure 11. *CONNECTED* to *TEST* position

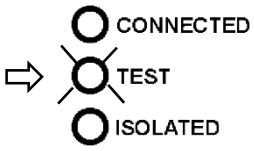



Figure 12. The **TEST** light will illuminate

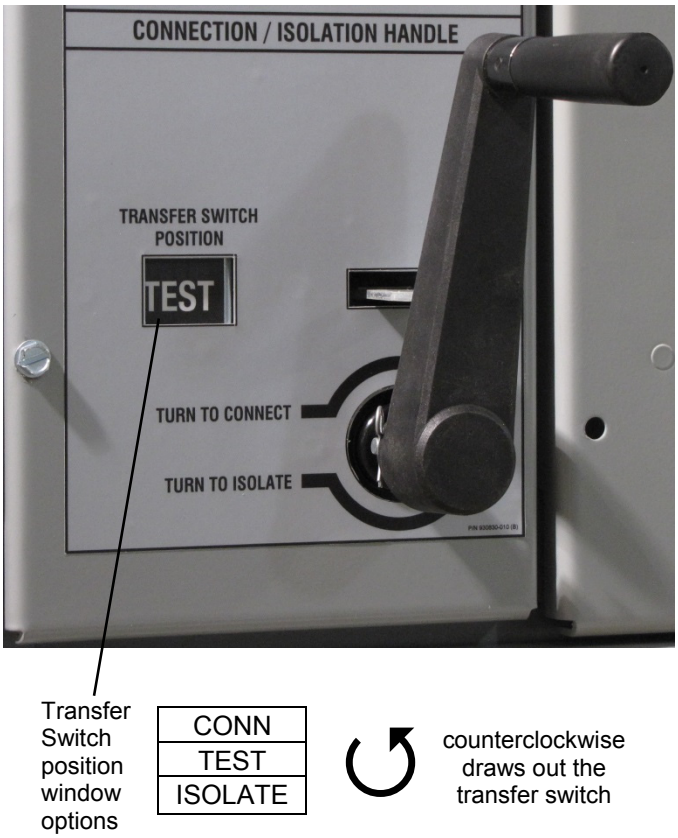



Figure 13. Connection / Isolation Handle turned to the *TEST* position

**NOTE:** In the TEST position the transfer switch solenoid operator circuit is energized through secondary disconnects**.**

continued on next page

## Isolating the ATS (to ISOLATE Positon) continued

**DANGER**

Hazardous voltage capable of causing shock, burns, or death is used in this transfer switch. Do not touch any control circuit terminals.

3. Continue turning the **Connection / Isolation Handle** counterclockwise (approximately 5-6 turns) until window shows ***ISOLATE***. The **ISOLATED** light comes on.

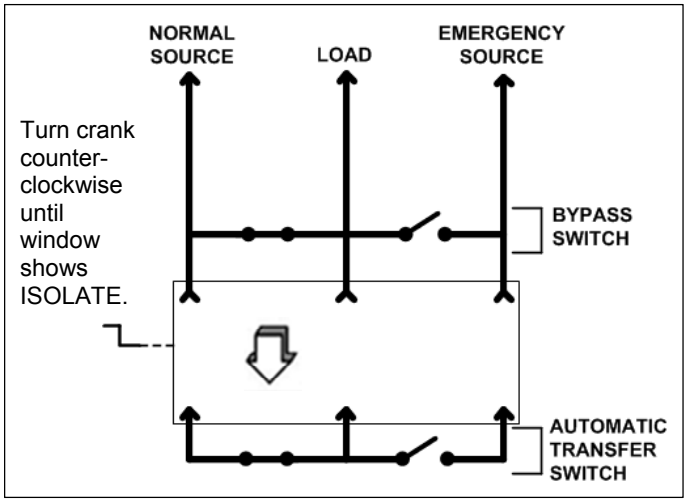



Figure 14. *TEST* to *ISOLATE* position

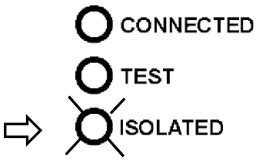



Figure 15. The **ISOLATED** light will illuminate


Transfer Switch position window options

| CONN |
|---|
| TEST |
| ISOLATE |

counterclockwise draws out the transfer switch

Figure 16. Connection / Isolation Handle turned to the *ISOLATE* position

continued on next page

4. Open the lower enclosure door. Pull out both left and right side rails then use the two tab handles to roll out the transfer switch. It can be safely inspected in this position. The transfer switch can also be removed for easier maintenance operations. See Figure 17.

**⚠ DANGER**

Hazardous voltage capable of causing shock, burns, or death is used in this transfer switch. Do not touch any control circuit terminals.

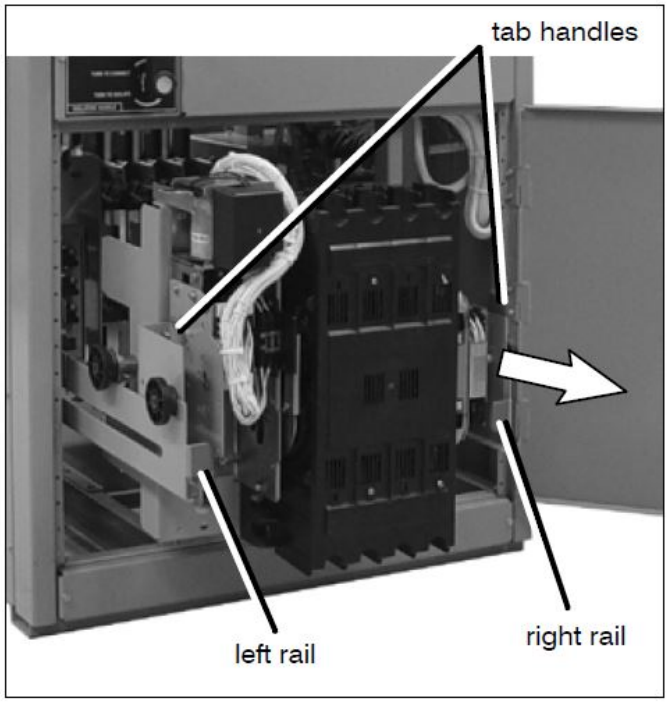



Figure 17. Transfer switch isolated and pulled out for inspection

See page 16 for maintenance handle use. A lifting yoke 812053 is available to facilitate lifting by using an overhead crane or similar equipment. See **WARNING**.

**⚠ WARNING**

The Transfer Switch weighs about 120 lbs. depending upon the number of poles. Use lifting device 812053 or other device capable of lifting this weight to avoid personal injury or equipment damage. Two persons are recommended.

## Contact Inspection

Contact condition should be checked annually. Discoloration is normal. Do not file contacts. Instead use light emery paper to clean up the contact surfaces. The non-replaceable main contacts are designed to last the life of the transfer switch.

**⚠ DANGER**

To prevent the possibility of fatal electrical shocks and burns, bypass, isolate, and withdraw the transfer switch before working on it.

1. **Deenergize transfer switch** (pages 7-11). Bypass, isolate, and withdraw transfer switch. Use a voltmeter to verify that no electrical power is present at the transfer switch terminals.
2. **Use the maintenance handle** (page 16). Open the contacts that will be inspected by using the detachable maintenance handle.
3. **Remove the barrier** (Figure 18). Use a Phillips (cross-head) screwdriver to loosen (ccw) four or six round-head screws that hold the barrier to the arc chutes. Then pull the barrier straight outward to remove it.
4. **Reinstall the barrier**. After contacts are inspected and if required, cleaned, install the barrier over the arc chutes. Tighten (cw) the four or six screws to secure the barrier to the arc chute insulator nuts.

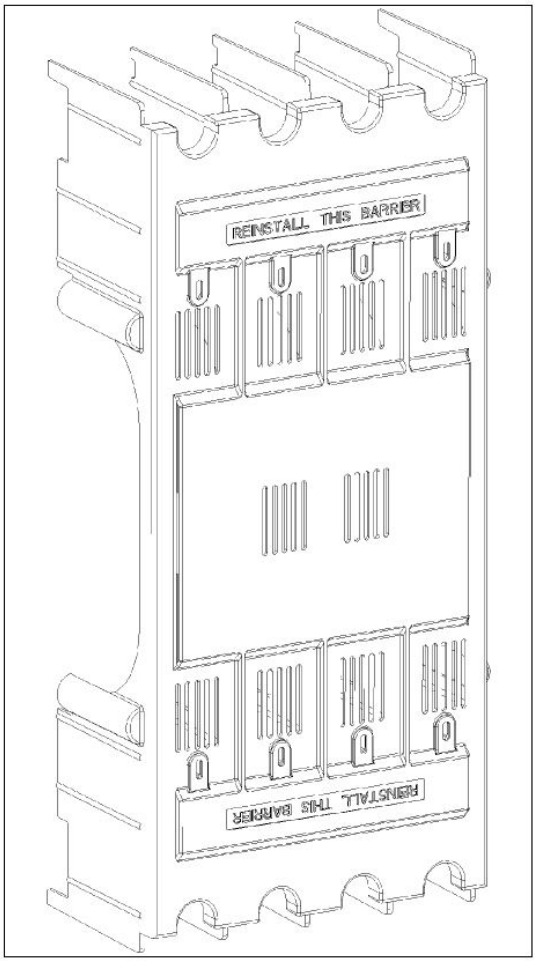



Figure 18. Transfer switch barrier removal

## Return to Operation

This procedure explains how to return the automatic transfer switch (ATS) to operation after inspection and maintenance.

1. Use the two tab handles to roll the transfer switch into the enclosure (isolation contacts facing inward) until the crank bearings stop against the draw-in plates. Then push in both side rails and close the enclosure door.

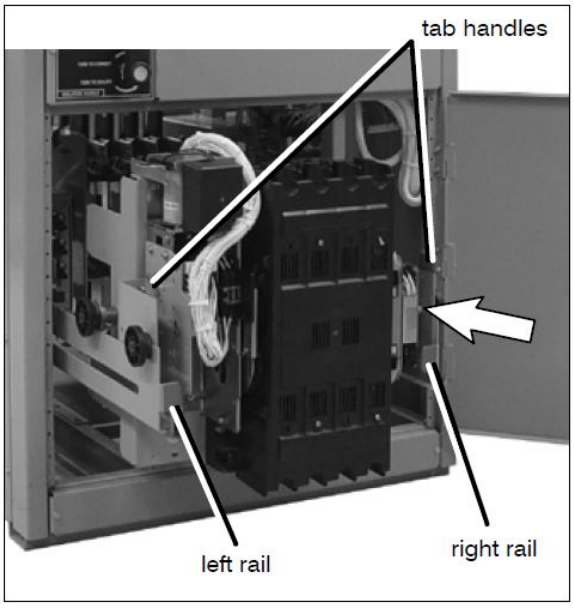



Figure 19. Push in the isolated transfer switch

**WARNING**

Close enclosure door to prevent personal injury

2. Turn the **Connection / Isolation Handle** clockwise (approx. 5 turns) until the window shows ***TEST.*** The **TEST** light comes on.

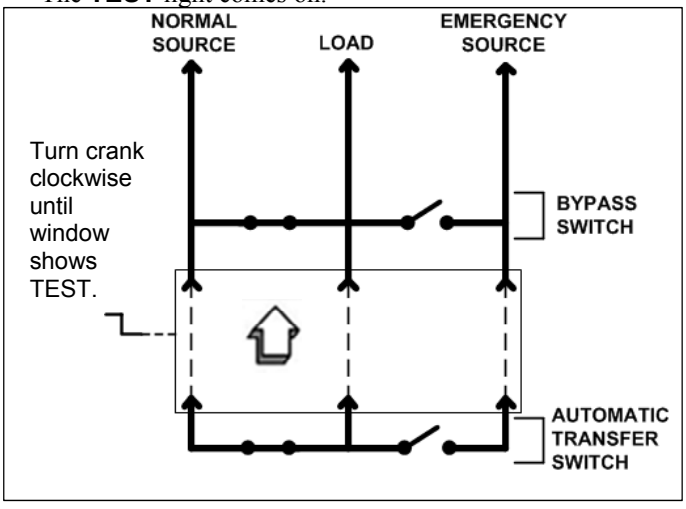



Figure 20. *ISOLATE* to *TEST* position

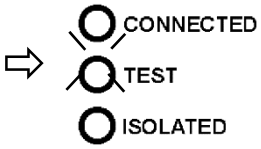



Figure 21. The **TEST** light will illuminate

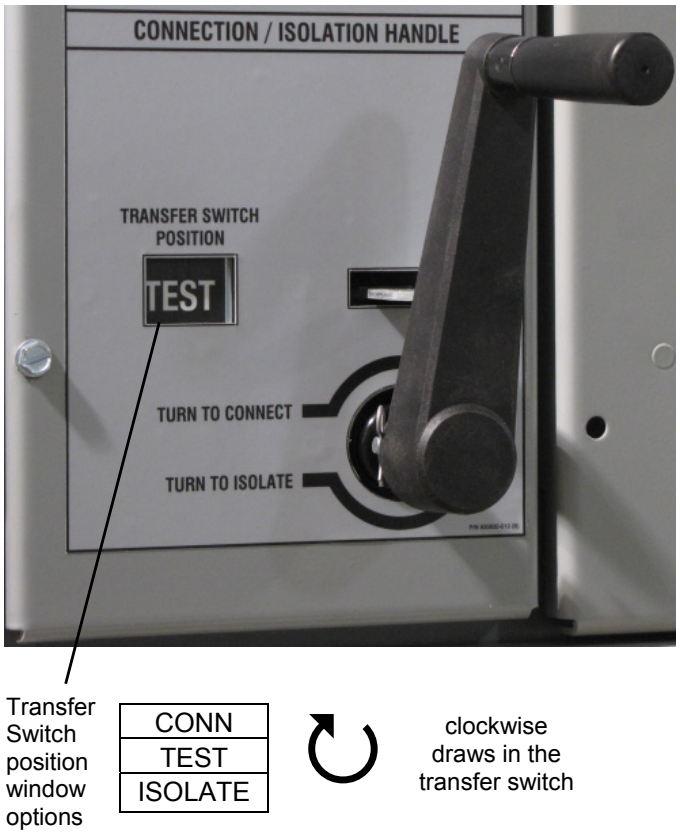



Figure 22. Connection / Isolation Handle turned to the *TEST* position

3. The ATS can be tested now without load interruption (see page 6).

continued on next page

4. Observe which **Bypassed To** light is on (Normal or Emergency). This indicates the source connected to the load.
5. Observe which **ATS On** light is on (Normal or Emergency). This is the position of the Transfer Switch. If it is <u>not</u> in the same position as the Bypass Switch, change the position of the Transfer Switch as follows:

To change the position of the Transfer Switch

| Operate to NORMAL | Operate to EMERGENCY |
|---|---|
| Press the transfer button and follows prompts. | Press the transfer button and follows prompts.* |
| Connected to Normal light should come on. | Connected to Emergency light should come on. |

* If Feature 2B time delay is used, there will be a delay before transfer to Emergency.

**NOTE:** With Normal available, the ATS will not stay in the emergency position unless Feature 3A time delay is used (at least 30 seconds).

***NOTICE***

Solenoid interlock prevents you from closing the isolation contacts until the ATS is in the same position as the Bypass Switch.

6. When the transfer switch is in the same position as the Bypass Switch, continue turning the **Connection / Isolation Handle** clockwise (about 10 turns) until the window shows ***CONN*** (connected) . The **Connected** light comes on.

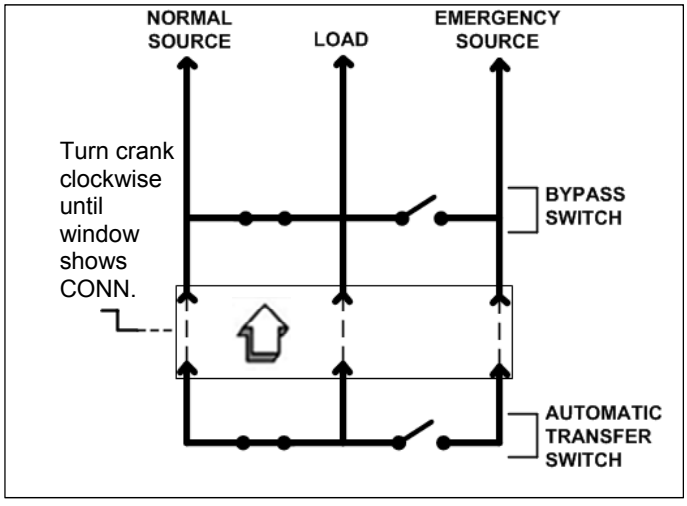



Figure 23. *TEST* to *CONN* position

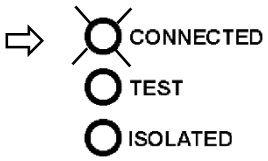



Figure 24. The **CONNECTED** light will illuminate

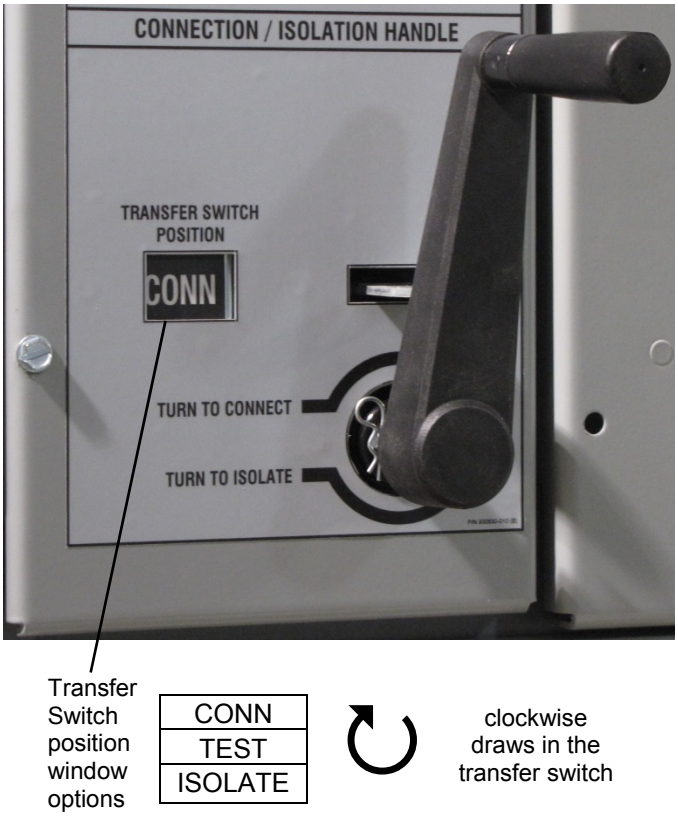



Figure 25. Connection / Isolation Handle turned to *CONN* position

# Unbypass

### ATS is connected to Normal Source

1. Press and hold the **Unbypass** button until the **Bypassed to Normal** light goes off.

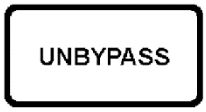



Figure 26. Unbypass to Normal button

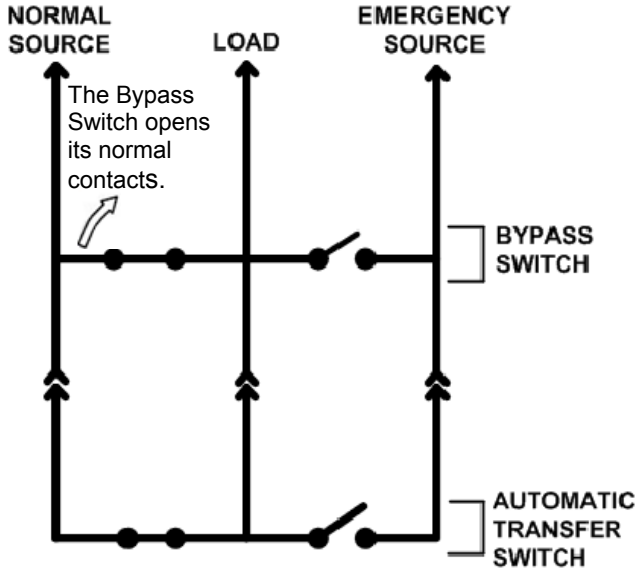



Figure 27. Unbypass Normal diagram

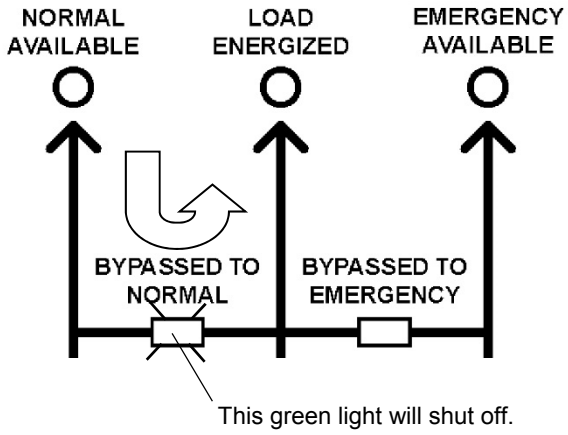



Figure 28. Bypassed to Normal light off

The Not in Automatic light will turn off.

### ATS is connected to Emergency Source

1. Press and hold the **Unbypass** button until the **Bypassed to Emergency** light goes off.

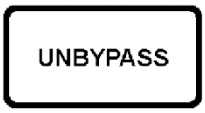



Figure 29. Unbypass to Emergency button

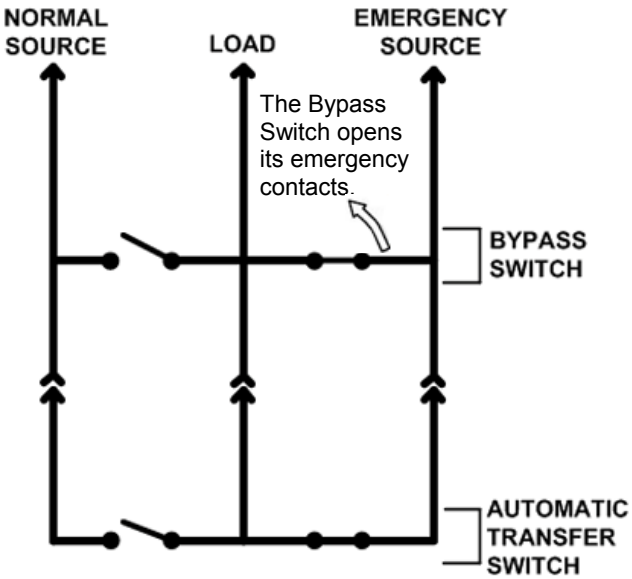



Figure 30. Unbypass Emergency diagram

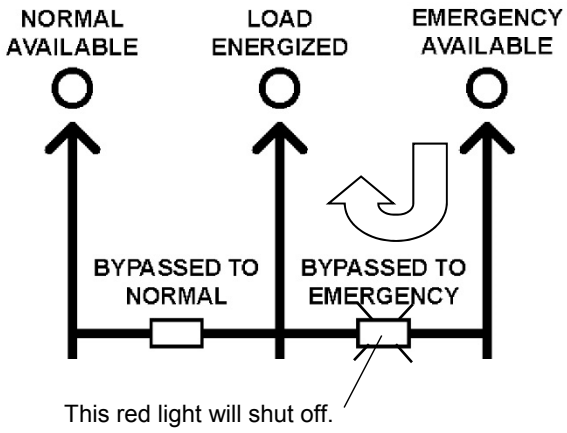



Figure 31. Bypassed to Emergency light off

The Not in Automatic light will turn off.

The automatic transfer & bypass-isolation switch should be left in this position.

## Manual Load Transfer

This emergency procedure uses the electrically-operated Bypass Switch to transfer the load to the other source (if available). It only can be used if the ATS is bypassed and isolated (racked out). The generator must be started via the **Engine Control** switch. There is a brief interruption to the load during transfer between sources.

**⚠ WARNING**

Close enclosure door to prevent personal injury.

### To Transfer the Load to Emergency Source

- **Bypassed to Normal** light is on.
- **Isolated** light is on.

| | | |
|---|---|---|
| 1 | Put **Engine Control** switch in the **RUN** position. Generator starts. Let it warm up (according to manufacturer's guidelines).<br>• **Manual Engine Start Active** light is on.<br>• **Emergency Available** light comes on.<br>Press here → AUTO [ ] RUN | |
| 2 | Press and hold the **Bypass to Emergency** button. You will hear the Bypass Switch operate twice (first open then close on emergency source). | BYPASS TO EMERGENCY |

- **Bypassed to Normal** light goes off.
- **Bypassed to Emergency** light comes on.

### To Transfer the Load to Normal Source

- **Normal Available** light is on.
- **Bypassed to Emergency** light is on.
- **Isolated** light is on.

| | | |
|---|---|---|
| 1 | Press and hold the **Bypass to Normal** button. You will hear the Bypass Switch operate twice (first open then close on normal source). | BYPASS TO NORMAL |
| 2 | Wait for generator to cool down (according to manufacturer's guidelines) before turning it off. Then put **Engine Control** switch in the **AUTO** position. Generator stops.<br>• **Manual Engine Start Active** light is off.<br>• **Emergency Available** light goes off.<br>Press here → AUTO [ ] RUN | |

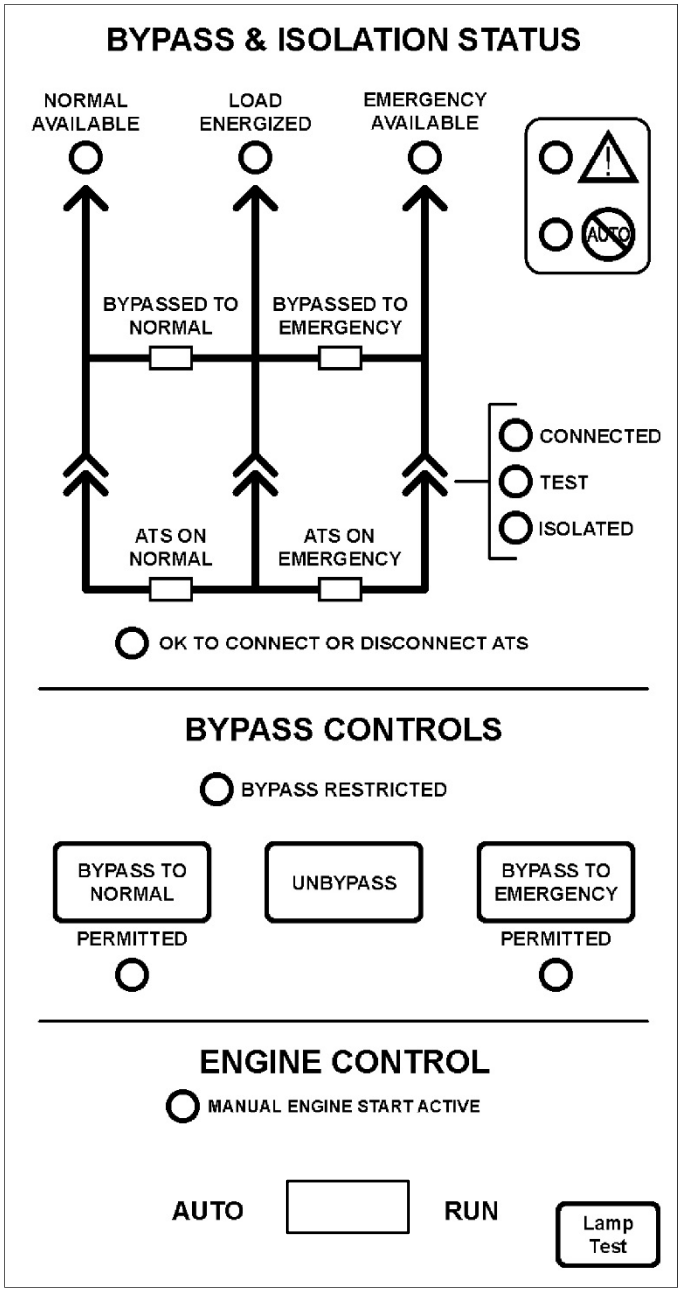
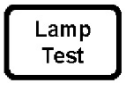



Figure 32. Engine control and Bypass controls

# Testing & Service

## Transfer Test

Operate the transfer switch at least once a month by following the ***Electrical Operation*** procedure on page 6.




## Lamp Test

Use the **Lamp Test** button to check the lights on the **Bypass & Isolation Status** panel. All lights should come on when this button is pressed. Do not hold the button more than 3 seconds. If the button is held for more than 3 seconds the panel will enter into service diagnostic mode The panel will revert to normal operation after 30 seconds. An ASCO Services technician uses this button for diagnostics.

## Preventive Maintenance

Reasonable care in preventive maintenance will insure high reliability and long life for the transfer switch. An annual preventive maintenance program is recommended.

## Replacement Parts

When ordering replacement parts provide the Serial No., Bill of Material No. (BOM), and Catalog No. from the transfer switch nameplate. In the US call 800-800-2726 (ASCO) or contact customercare@ascopower.com.

## Yearly Inspection

**⚠ DANGER**

Hazardous voltage capable of causing shock, burns, or death. Deenergize both Normal & Emergency power sources before performing inspections!

**Clean the enclosure.** Deenergize all sources, then brush and vacuum away any excessive dust accumulation. Remove moisture with a clean cloth.

**Inspect the transfer switch contacts.** Deenergize all sources, then remove the transfer switch barriers and check the contact condition. The non-replaceable main contacts are designed to last the life of the transfer switch. Reinstall the barriers carefully.

**Maintain transfer switch lubrication.** Under normal operating conditions no further lubricating is required. Renew factory lubrication if the transfer switch is subjected to severe dust, abnormal operating conditions, or if the TS coil(s) is replaced. Order lubrication kit 920799.

**Check all cable connections & retighten them.** Torque to values shown on the transfer switch label.

# Testing & Service

## Maintenance Handle

1. Bypass, isolate, and withdraw the transfer switch (pages 7-11). Then locate and remove the maintenance handle from the storage location (inside lower left side). Insert the handle into the hole in the molded hub on the left side of the operator of the transfer switch. See Figures 33, 34, 35 and Table C.

2. Move the maintenance handle up or down as shown to manually operate the transfer switch. Operate both upper and lower contact shafts. Observe the window indicators (right side). Remove the maintenance handle and store it on the lower left side.

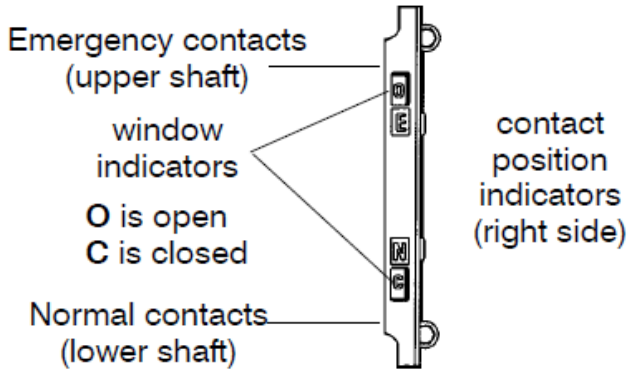



Figure 33. Contact position indicators

Table C. Maintenance handle positions.

| ATS Position | | Handle | Indicators |
|---|---|---|---|
| Normal | E | up | E = O<br>upper contacts open |
| | | up | |
| Emergency | E<br>N | down | E = C<br>upper contacts closed |
| | | down | N = O<br>lower contacts open |

Figure 35. Maintenance Handle operation for Normal sou

**NOTE** If Normal and Emergency connections are reversed, this operation is also reversed.

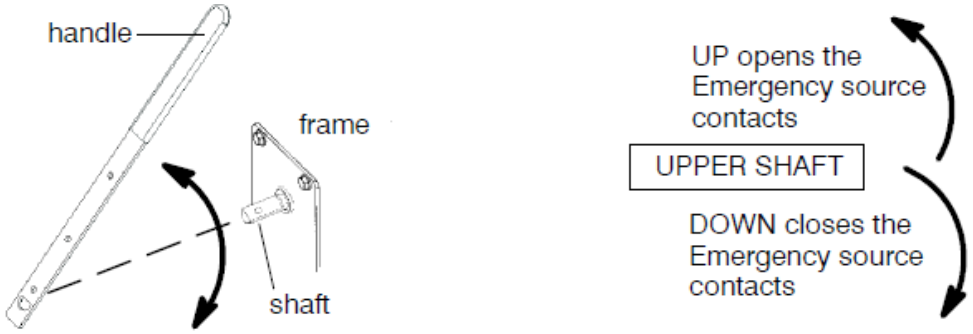
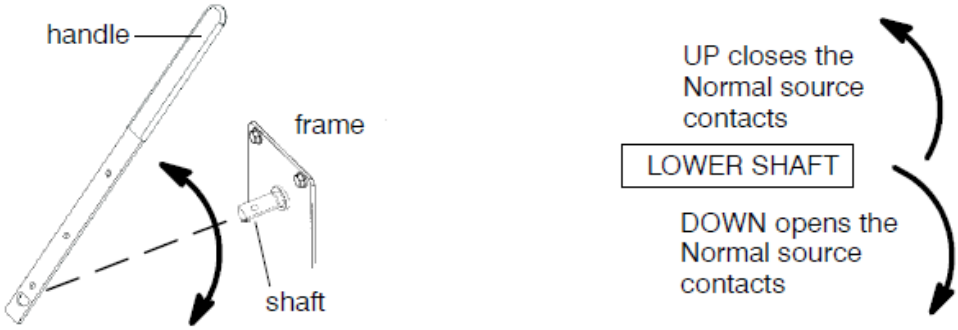



Figure 34. Maintenance Handle operation for Emergency source contacts (upper shaft)



# Troubleshooting

| r | Check in Numerical Sequence | | |
|---|---|---|---|
| | 1 Operation | 2 Generator | 3 Voltage |
| For 4ATE, 4ACTE, 4ADTE the engine-generator set does not start when the transfer test button is pressed or when the Normal source fails. | The outage must be long enough to allow for the feature 1C time delay plus engine cranking and starting time. | Starting control must be in automatic position. Batteries must be charged and connected. Check wiring to the engine starting contacts. | - |
| For 4ATE, 4ACTE, 4ADTE the transfer switch does not transfer the load to the emergency source after the gen-set starts. | Wait for the feature 2B time delay. For immediate transfer, press the transfer button (bypass timer). If inphase transfer is active, wait for inphase condition. For 4NTE, 4NCTE, 4NDTE press the transfer button. | Is the generator accepted light on? Generator output circuit breaker must be closed. Generator frequency must be correct. | Refer to Group H controller User's Guide 381333-444 for voltage settings. |
| For 4ATE, 4ACTE, 4ADTE the transfer switch does not transfer the load to normal source when normal returns or after transfer test. | Wait for the feature 3A time delay. For immediate retransfer, press the transfer button (bypass timer). If inphase transfer is active, wait for inphase condition. For 4NTE, 4NCTE, 4NDTE press the transfer button. | - | Refer to Group H controller User's Guide 381333-444 for voltage settings. |
| For 4ATE, 4ACTE, 4ADTE the generator does not stop after load retransfer to the normal source. | Wait for the feature 2E delay. The **Engine Control** switch must be in the **Auto** position. | Starting control must be in automatic position. | - |
| For 4ATE, 4ACTE, 4ADTE the load is deenergized (off). *Load Disconnect Timer* on display. | Wait for the delayed-transition transfer timer. See the Group H User's Guide 381333-444. | | - |
|  Group H controller Not in Auto light is always on. | For 4NTE, 4NCTE, 4NDTE this light is <u>always</u> on, indicating it is a manual transfer switch. | - | - |
|  Group H controller Alert light is on. | Read the display for more information. Refer to User's Guide 381333-444. | - | - |
|  Bypass-Isolation controller Not in Auto light is flashing. | The ATS is not in an automatic operation mode because it is bypassed or isolated (not connected). | The light will go off when the ATS is connected and un-bypassed. | |
|  Bypass-Isolation controller alarm light is flashing. | Alarm condition (1 flash a second)<br>Diagnostic mode (5 flashes a sec.) | | |

## **Troubleshooting** (continued)

| Problem | Check in Numerical Sequence | | |
|---|---|---|---|
| | 1 Check | 2 Solution | 3 See Page |
| The **Bypass to Normal** button does not operate the bypass switch. The **Bypassed to Normal** light does not come on. | Is the **Permitted** light on under the **Bypass to Normal** button? | You can only bypass the closed transfer switch contacts (the **ATS on Normal** light should be on). | 7-8 |
| The **Bypass to Emergency** button does not operate the bypass switch. The **Bypassed to Emergency** light does not come on.. | Is the **Permitted** light on under the **Bypass to Emergency** button? | You can only bypass the closed transfer switch contacts (the **ATS on Emergency** light should be on). | 7-8 |
| The **Bypass to Normal** button does not operate the bypass switch. The **Bypassed to Normal** light does not come on. | Is the **Bypass Restricted** light flashing? | Check that the **Connection & Isolation Handle** is not between the *TEST* and *CONN* positions. It should be in the *CONN* position. The **Connected** light should be on. | |
| The **Bypass to Normal** button does not operate the bypass switch. The **Bypassed to Normal** light does not come on. | Is the **Bypass Restricted** light is on solid (not flashing)? Is the bypass-isolation controller alarm light flashing? | Contact ASCO Services. | |
|  The **Bypass Restricted** light flashes. | Did you press a **Bypass To** button? You can only bypass to the same position as the ATS. | With the **Connection & Isolation Handle** is in the *CONN* position and the **Connected** light is on, you can only bypass to the same position that the ATS is in. | |
|  The **Bypass Restricted** light is on solid. | Is the **Isolation Handle** in an intermediate position (in between positions are not allowed)? | The **Connection & Isolation Handle** must be in either *CONN*, *TEST*, or *ISOLATE*. Check the handle window indicator and position lights: **Connected**, **Test**, or **Isolated**. | |

# INDEX





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