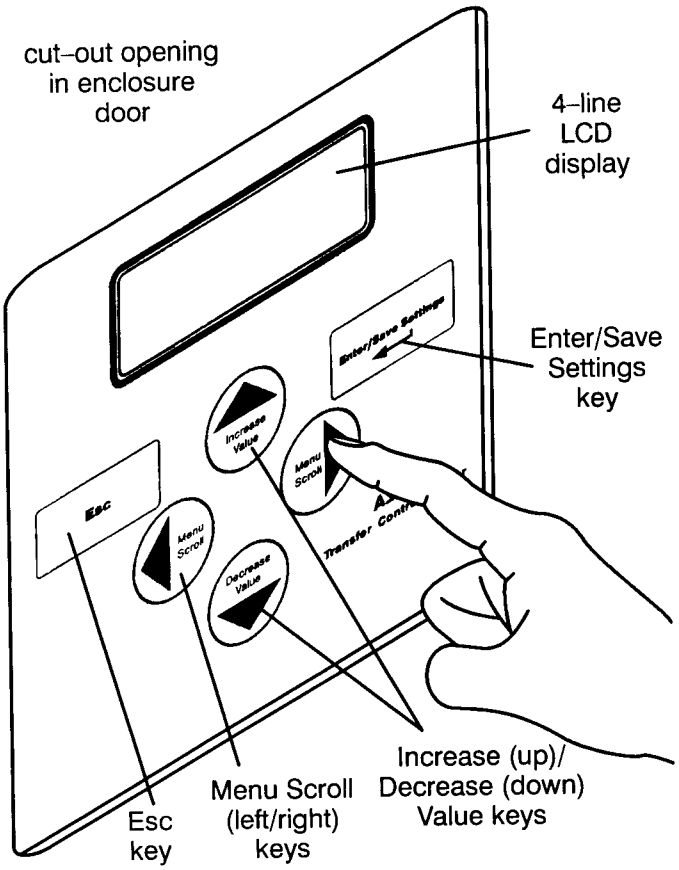
User's Guide

Group 5 Controller for ASCO® 7000 Series Automatic Transfer Switch Products



Keypad and display

An experienced licensed electrician must install the switch.

⚠ DANGER

DANGER is used in this manual to warn of high voltages capable of causing shock, burns, or death.

⚠ WARNING

WARNING is used in this manual to warn of possible personal injury.

⚠ CAUTION

CAUTION is used in this manual to warn of possible equipment damage.

Note: Refer to the outline and wiring drawings provided with your 7000 Series ATS product for all installation and connection details and accessories.

Note: Refer to the *Operator's Manual* for the ASCO 7000 Series ATS product for installation, functional testing, sequence of operation,and troubleshooting.

Description

ASCO 7000 Series Automatic Transfer Switch products utilize the Group 5 Controller for sensing, timing, and control functions. This state–of–the art microprocessor–based controller includes a built–in keypad and a four–line LCD display. All monitoring and control functions can be done with the enclosure door closed for greater convenience. In addition, all changes in voltage settings (except for nominal voltage) and time delays can be made through a system of menus.

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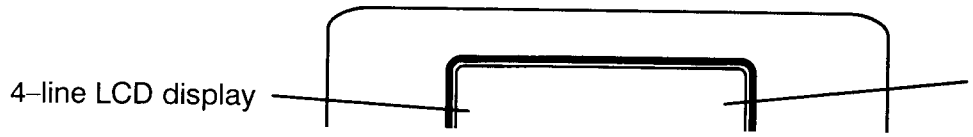
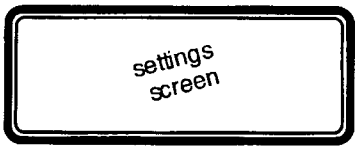
Control Overview

Six keys allow access to all monitoring and setting functions. Two levels of screens are used. The *status level* provides information about the automatic transfer switch. The *settings level* allows configuration of the controller. Access to some settings may require entering a password (if the controller is set for one – see page 2–1 and Appendix A–3).



How to Change a Setting



To change a setting in the controller (CP):

1 Navigate to the settings screen that you want to change (see page 1–2).

2 Press **Enter/Save Settings** ↵ key to start the first field blinking. If the controller requires a password, see below.

3 Press up ▲ and down ▼ arrow keys to change flashing digit(s) or word and press **Enter/Save Settings** ↵ key to move to next field.

4 Repeat step 3 until all the fields have been entered.

Tips ☞ If a field is blinking, the CP is waiting for information to be entered.

The **Esc** key will end the editing session.

Password

Tip ☞ **Default password is 1111** (see page 2–8)

If **Enter Password** displays, you must enter the correct password first.

Use the up ▲ and down ▼ arrow keys to change the flashing digit of the password. Press the **Enter/Save Settings** ↵ key to move to next next digit (left to right). When the correct password is displayed, press the **Enter/Save Settings** ↵ key.

If *WRONG PASSWORD !!!* displays, you are returned to the first flashing digit. When the correct password is displayed, press the **Enter/Save Settings** ↵ key.

You can now change the settings on the selected screen.

Tip ☞

Voltage & Frequency Settings

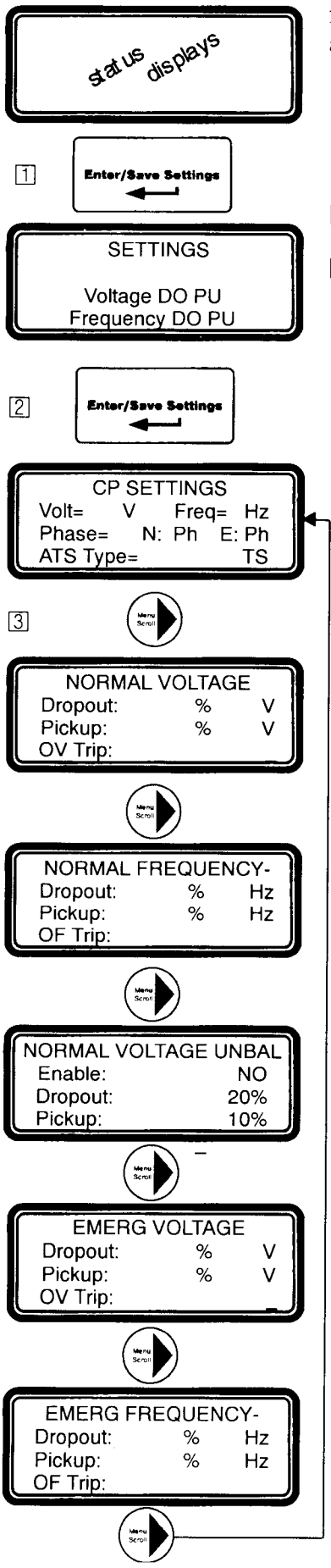
Unless otherwise specified on the order, the controller voltage and frequency settings are set at the factory to the default values. If a setting must be changed, carefully follow the procedure on the next page. Some settings may require a password (if the controller is set up for one).

⚠ CAUTION

Any indiscriminate change in these settings may affect the normal operation of the Automatic Transfer Switch. This change could allow the load circuits to remain connected to an inadequate source

Description	Settings	Default Setting % of nominal	Adjustment Range increments of 1%	Display Screen (see next page)
Normal Source Voltage	Dropout	85 %	70 to 98 %	NORMAL VOLTAGE Dropout
	Pickup	90 %	85 to 100 %	NORMAL VOLTAGE Pickup
	Over Voltage Trip	off	102 to 115 %	NORMAL VOLTAGE OV Trip
	Unbalance Enable	no	yes or no	NORMALVOLTAGEUNBAL Enable
	Unbalance Dropout	20 %	5 to 20 %	NORMALVOLTAGEUNBAL Dropout
	Unbalance Pickup	10 %	3 to 18 %	NORMALVOLTAGEUNBAL Pickup
Emergency Source Voltage	Dropout	75 %	70 to 98 %	EMERG VOLTAGE Dropout
	Pickup	90 %	85 to 100 %	EMERG VOLTAGE Pickup
	Over Voltage Trip	off	102 to 115 %	EMERG VOLTAGE OV Trip
	Unbalance Enable	no	yes or no	EMERG VOLTAGE UNBAL Enable
	Unbalance Dropout	20 %	5 to 20 %	EMERG VOLTAGE UNBAL Dropout
	Unbalance Pickup	10 %	3 to 18 %	EMERG VOLTAGE UNBAL Pickup
Normal Source Frequency	Dropout	90 %	85 to 98 %	NORMAL FREQUENCY Dropout
	Pickup	95 %	90 to 100 %	NORMAL FREQUENCY Pickup
	Over Frequency Trip	off	102 to 110 %	NORMAL FREQUENCY OF Trip
Emergency Source Frequency	Dropout	90 %	85 to 98 %	EMERG FREQUENCY Dropout
	Pickup	95 %	90 to 100 %	EMERG FREQUENCY Pickup
	Over Frequency Trip	off	102 to 110 %	EMERG FREQUENCY OF Trip

Voltage & Frequency Settings



The controller (CP) voltage and frequency setting can be displayed and changed from the keypad. See the table on the previous page. Some settings may require a password (if the controller is set up for one).

1 From any of the **Status** displays, press the **Enter/Save Settings** ↵ key to move to the **Settings** level of menus.

2 Press the **Enter/Save Settings** ↵ key to move to the **CP Settings** display.

3 Then you can press the **right arrow** ▶ key to see the other voltage and frequency displays (as shown below). An overview explanation of each setting is listed below.

5 Voltage & Frequency Menus (last menu loops back to first)

CP Settings see page 2–1

This display shows the base configuration of the controller. These settings are hardware activated and cannot be changed from the keypad:

- Nominal source voltage — Normal and Emergency sources
- Nominal source frequency — 50 or 60 Hz
- Normal & Emergency source sensing — single or 3 phase
- Switch type — open, closed, or delayed transition

Normal Voltage see page 2–1

This display shows pickup, dropout, and over–voltage trip settings for the Normal source. They are in percentage of nominal voltage and volts rms.

Normal Frequency see page 2–1

This display shows pickup, dropout, and over–frequency trip settings for the Normal source. They are in percentage of nominal frequency and Hz.

Normal Voltage Unbalance see page 2–1

This display appears only if the CP is set for 3 phase sensing on Normal. When enabled, the CP considers the Normal source unacceptable if the calculated voltage unbalance is greater than the specified dropout.

Emerg Voltage see page 2–1

This display shows pickup, dropout, and over–voltage trip settings for the Emergency source. They are in percent of nominal voltage and volts rms.

Emerg Frequency see page 2–1

This display shows pickup, dropout, and over–frequency trip settings for Emergency source. They are in percentage of nominal frequency and Hz.

Emerg Voltage Unbalance (not shown) see page 2–1

This display appears only if the CP is set for 3 phase sensing on Emergency. When enabled, the CP considers the Emergency source unacceptable if the calculated voltage unbalance is greater than the specified dropout.

Time Delay Settings

Unless otherwise specified on the order, the Controller time delay settings are set at the factory to the default values. If a setting must be changed, follow the procedure on the next page. Some settings may require a password (if controller is set up for one).

⚠ CAUTION

Any indiscriminate change in these settings may affect the normal operation of the Automatic Transfer Switch. This change could allow the load circuits to remain connected to an inadequate source.

Feature	Time Delay	Default Setting	Adjustment Range 1 sec. increments	Display Screen (see next page)
1C [3]	override momentary Normal source outages	1 second	0 to 6 sec see **CAUTION** below	TD NormFail
1F	override momentary Emergency source outages	0	0 to 60 min 59 sec	TD EmrgFail
2B	transfer to Emergency	0	0 to 60 min 59 sec	TD N>E
2E	unloaded running (engine cooldown)	5 minutes	0 to 60 min 59 sec	TD EngCool
3A	retransfer to Normal (if Normal fails)	30 minutes	0 to 60 min 59 sec	TD E>N if Normal Fail
	retransfer to Normal (if just a test)	30 seconds	0 to 60 min 59 sec	TD E>N if Test Mode
31F [4]	Normal to Emergency pre–transfer signal	0	0 to 5 min 59 sec	TD N>E Xfer Signal PreXfer
31M [4]	Normal to Emergency post–transfer signal	0	0 to 5 min 59 sec	TD N>E Xfer Signal PostXfer
31F, 31M	bypass 31F & 31M if Normal fails	no	yes or no	TD N>E Xfer Signal BypassIfNFail
31G [4]	Emergency to Normal pre–transfer signal	0	0 to 5 min 59 sec	TD E>N Xfer Signal PreXfer
31N [4]	Emergency to Normal post–transfer signal	0	0 to 5 min 59 sec	TD E>N Xfer Signal PostXfer
31G, 31N	bypass 31G & 31N if Emergency fails	no	yes or no	TD E>N Xfer Signal BypassIfEFail
7ACTS/B only [1]	in sync	1.5 second	0 to 3.0 seconds 0.1 sec increments	CTTS TD SyncMonitorTD
	failure to synchronize	5 minutes	0 to 5 min 59 sec	CTTS TD FailToSyncTD
	extended parallel time	0.5 second	0.100 to 1.000 sec 0.01 sec increments	CTTS TD XtdParallelTD
7ADTS/B only [2]	delay transition time	0	0 to 5 min 59 sec	DTTS TD LoadDisconnDelay

[1] Time delays do not appear on the display unless you have a 7ACTS or 7ACTB closed–transition transfer switch.

[2] Time delay does not appear on the display unless you have a 7ADTS or 7ADTB delayed–transition transfer switch

[3] Standard adjustment up to 6 seconds (total power outage). For additional time delay contact ASI. **See CAUTION.**

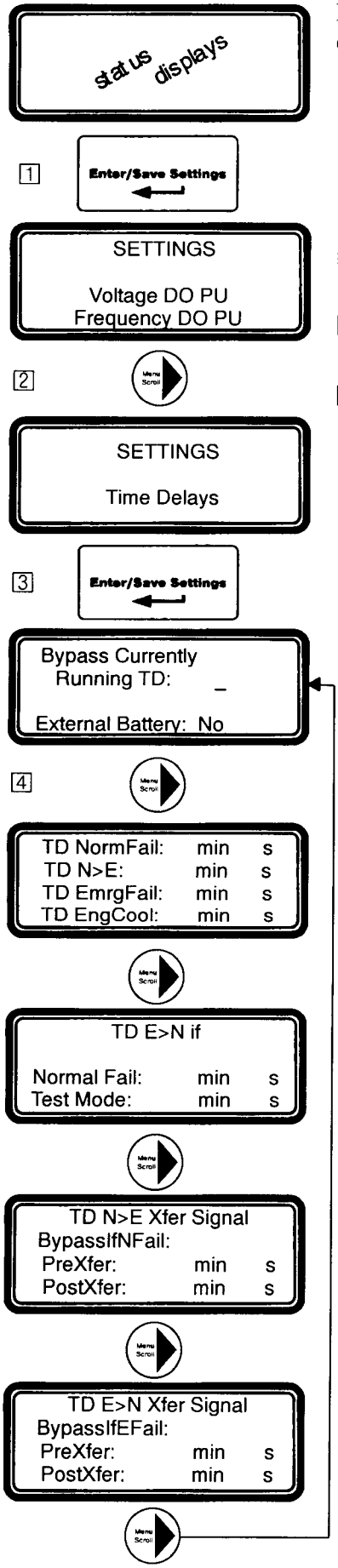
[4] If output contacts required, contact ASI at 1–800–800–2726.

⚠ CAUTION

Do not set Feature 1C TD longer than 6 sec. unless an external 24 V dc power supply is included. Contact ASI if longer than 6 sec. is required.

Time Delay Settings

The controller time delay (TD) settings can be displayed and changed from the keypad. Some settings may require a password (if the control panel is set up for one).



1 From any of the **Status** displays, press the **Enter/Save Settings** ↵ key to move to the **Settings** level of menus.

2 Press the **right arrow** ▶ key to move to the **Setting Time Delays** display.

3 Now press **Enter/Save Settings** ↵ key to move to the first **Time Delay** menu.

4 You can press the right arrow ▶ key to see the other time delay menus (as shown below). An overview explanation of each setting is listed below.

5 Time Delay Menus (last menu loops back to first)

Bypass Currently Running TD see page 2–1

This display allows you to bypass some time delays. When the display is set to **Yes** the controller will bypass any of these time delays

- Feature 1C — Momentary Normal failure time delay
- Feature 2B — Normal to Emergency transfer time delay
- Feature 3A — Emergency to Normal transfer time delay

External Battery: see CAUTION on bottom of page 2–4

Yes means external battery connected, Feature 1C can be set longer than 6 sec.

No mean there is no external battery, Feature 1C can be set for 0–6 sec. only

Standard Time Delays see page 2–1

This display shows the settings for the following standard time delays:

- Feature 1C — Momentary Normal source failure time delay
- Feature 2B — Normal to Emergency transfer time delay
- Feature 1F — Momentary Emergency source failure time delay
- Feature 2E — Engine cooldown time delay

TD E>N if see page 2–1

This display shows the settings for Feature 3A retransfer to Normal time delay. There are two modes:

- Normal source outage — retransfer TD if Normal fails
- Transfer Test — retransfer TD if just a test

TD N>E Xfer Signal see page 2–1

This display shows the settings for the time delays used to signal external equipment before and after transfer from Normal to Emergency:

- Feature 31F — Pre–transfer time delay signal
- Feature 31M — Post–transfer time delay signal

TD E>N Xfer Signal see page 2–1

This display shows the settings for the time delays used to signal external equipment before and after retransfer from Emergency to Normal:

- Feature 31G — Pre–transfer time delay signal
- Feature 31N — Post–transfer time delay signal

CTTS TDs (not shown) see page 2–1

DTTS TD (not shown) see page 2–1

Features Settings

Unless otherwise specified on the order, the controller features settings are set at the factory to the default values. If a setting must be changed, follow the procedure on the next page. Some settings may require a password (if the controller is set up for one).

⚠ CAUTION

Any indiscriminate change in these settings may affect the normal operation of the Automatic Transfer Switch. This change could allow the load circuits to remain connected to an inadequate source

Feature	Default Setting	Adjustment Range	Display Screen (see next page)
commit to transfer	no	yes or no	Commit to Xfer After TD Norm Fail
shed load direction	from E	from N or from E	SHED LOAD Direction
shed load in phase	no	yes or no	SHED LOAD InPhase
shed load in phase time delay	1.5 second	0 to 3.0 seconds 0.1 sec increments	SHED LOAD TD
shed load isolate load on source failure [2]	yes	yes or no	SHED LOAD IsoLoadOnSrcFail
shed load isolate load on test 17 [2]	no	yes or no	SHED LOAD IsoLoadOnTest17
phase rotation monitor enable [3]	no	yes or no	PHASE ROTATION MONITOR Enable
phase rotation monitor reference [3]	ABC	ABC or CBA	PHASE ROTATION MONITOR Reference
inphase monitor enable [4]	no	yes or no	IN-PHASE MONITOR Enable
inphase monitor time delay [4]	1.5 second	0 to 3.0 seconds 0.1 sec increments	IN-PHASE MONITOR Time Delay
failure to sync auto bypass [1]	no	yes or no	CTTS BYPASS/SHED LD FailSyncAutoByps
bypass time delay [1]	0 second	0 to 59 seconds 1 sec increments	CTTS BYPASS/SHED LD Bypass DT Delay
bypass in phase [1]	no	yes or no	CTTS BYPASS/SHED LD Bypass InPhase

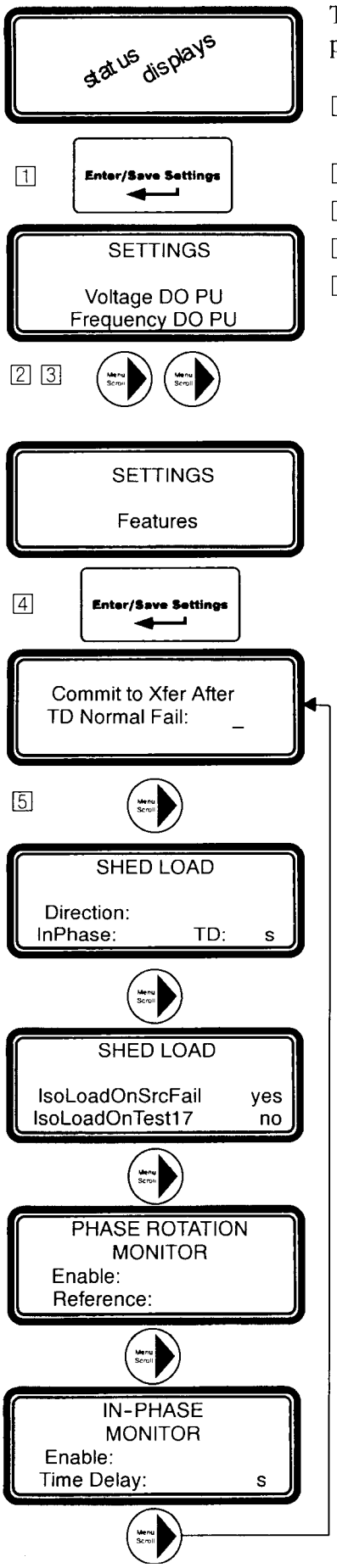
[1] These features do not appear on the display unless you have a 7ACTS or 7ACTB closed-transition transfer switch.

[2] These features do not appear on the display unless you have a 7ACTS or 7ACTB closed-transition transfer switch or a 7ADTS or 7ADTB delayed-transition transfer switch.

[3] These features do not appear on the display unless you both sources have 3 phase sensing enabled.

[4] These features appear only on a 7ATS or a 7ATB (open-transition automatic transfer switch).

Features Settings



The controller (CP) Features settings can be displayed and changed from the keypad. Some settings may require a password (if the controller is set up for one).

1 From any of the **Status** displays, press the **Enter/Save Settings** ↵ key to move to the **Settings** level of menus.

2 Then press the **right arrow** ▶ key to move to **Setting Time Delays** menu.

3 Press the **right arrow** ▶ key again to move to **Settings Features** menu.

4 Now press **Enter/Save Settings** ↵ key to move to the first **Features** display

5 You can press the right arrow ▶ key to see the other Features menus (as shown below). An overview explanation of each setting is listed below.

7 Features Menus (last menu loops back to first)

Commit to Xfer After TD Normal Fail see page 2–1

This display shows the commit to transfer setting. It affects the transfer sequence as follows:

Yes — If Normal fails, CP continues transfer sequence to emergency even if Normal returns before Emergency becomes acceptable.

No — If Normal fails, CP cancels the transfer sequence to emergency if Normal returns before Emergency becomes acceptable.

Shed Load see page 2–1

This display shows status of 3 load shed parameters:

Direction — from Emergency or from Normal

InPhase — yes means transfer delayed until sources are in phase

TD — 3 second default time delay

Shed Load Options see page 2–1

This display appears only for 7ACTS, 7ACTB, 7ADTS, or 7ADTB. It determines switch position after the shed load transfer.

IsoLoadOnSrcFail — **Yes** means CP will disconnect the load from the non–load shed source if it fails.

IsoLoadOnTest17 — **Yes** means CP will isolate the load if Test 17 is active.

Phase Rotation Monitor see page 2–1

This display shows status of phase rotation monitor and desired reference phase rotation. It only appears if both sources are set to 3–phase sensing.

Enabled — **Yes** means phase rotation is considered as part of the source acceptability criteria for each source. If the phase rotation of the source does not match the reference phase rotation, that source is considered unacceptable. If phase rotation of the two sources is different, the load will be transferred to the source with the reference phase rotation.

Reference — phase rotation order: ABC or CBA (ABC is default)

In–Phase Monitor see page 2–1

This display appears only for 7ATS or 7ATB. This display shows status of in–phase monitor and in–phase time delay (1.5 seconds is default setting).

Enabled — **Yes** means in–phase transfer is initiated when any of these conditions are met: Transfer Test (Feature 5) signal, connected source fails, retransfer to acceptable Normal occurs and Emergency source acceptable.

CTTS Bypass / Shed Load (not shown) see page 2–1

This display shows status of the closed–transition bypass options.

FailSyncAutoBypass — **Yes** means if the fail to sync alarm occurs, the controller will bypass the closed–transition mode and will make a delayed–transiton transfer. The load disconnect time is set by the **Bypass DT Delay** parameter.

Bypass InPhase — **Yes** means the inphase monitor is active during load transfer.

General Settings

Unless otherwise specified on the order, the controller general settings are set at the factory to the default values. If a setting must be changed, follow the procedure on the next page. Some settings may require a password (if the controller is set up for one).

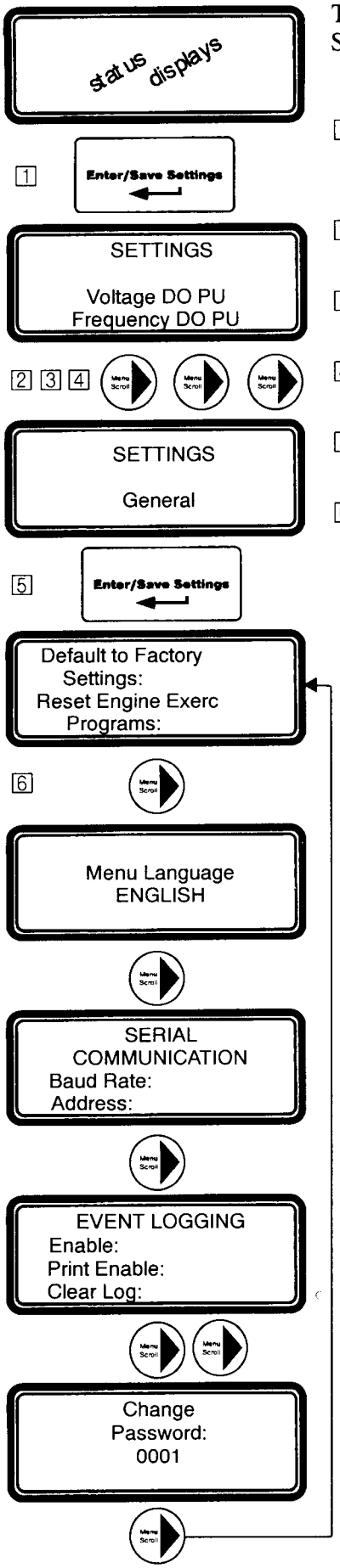
⚠ CAUTION

Any indiscriminate change in these settings may affect the normal operation of the Automatic Transfer Switch. This change could allow the load circuits to remain connected to an inadequate source

Parameter	Default Setting	Adjustment Range	Display Screen (see next page)
language	ENGLISH*	ENGLISH FRENCH CDN ENGLISH EU ENGLISH EU S1–S2 ENGLISH S1–S2* SPANISH GERMAN PORTUGUESE	Menu Language ENGLISH
serial communications baud rate	19.2k	off, x9600, 9600, 19.2k, Mbus9600, Mbus19.2k	SERIAL COMMUNICATION Baud Rate
serial communications address	1	0 to 63	SERIAL COMMUNICATION Address
event log enable	no	yes or no	EVENT LOGGING Enable
print enable	no	yes or no	EVENT LOGGING Print Enable
clear log	no	yes or no	EVENT LOGGING Clear Log
password	1111	4 characters letters or numbers	Change Password

* **Note:** If the language setting *ENGLISH S1–S2* is selected the usual display words *Normal (N)* and *Emergency (E)* are changed to *Source 1 (S1)* and *Source 2 (S2)*.

General Settings



The controller (CP) general setting can be displayed and changed from the keypad. Some settings may require a password (if the controller is set up for one).

1 From any of the **Status** displays, press **Enter/Save Settings** ↵ key to move to the **Settings** level of menus.

2 Press the **right arrow** ▶ key to move to **Setting Time Delays** menu.

3 Press the **right arrow** ▶ key again to move to **Settings Features** menu.

4 Press the **right arrow** ▶ key again to move to **Settings General** menu.

5 Now press **Enter/Save Settings** ↵ key to move to the first **General** display

6 You can press the right arrow ▶ key to see the other General menus (as shown below). An overview explanation of each setting is listed below.

6 General Settings Menus (last menu loops back to first)

Default to Factory Settings see page 2–1
This display (upper half) allows the user to reset the majority of controller settings to their factory default values.

Reset Engine Exerc Programs see page 2–1
This display (lower half) also allows the user to reset the engine exerciser routines. YES means reset. NO means do not reset.

Menu Language see page 2–1
This display shows the language in which the messages will be shown.
English is the default language.

Serial Communication see page 2–1
This display allows the user to configure the serial communications port of the controller.
Baud Rate — off, 9600, x9600. 19.2 k, Mbus9600, Mbus19.2k
x9600 selects 9600 and the Group 1/7 CP protocol
Address — can be set from 0 to 63

Event Logging see page 2–1
This display allows the user to enable the event logging feature of the controller and to clear the event log.
Enable — YES means to start event logging; NO means turn it off.
Print Enable — YES means enables printer option; NO turns it off.
Clear Log — YES means erase the event log; NO means keep it.

Print Event Log (not shown) see page 2–1
This display shows the status of the optional printer.
Also see Printer Interface Module instructions 381339–218.

Change Password see page 2–1
This display allows the user to change the controller password.

Engine Exerciser Settings

Unless otherwise specified on the order, the controller engine exerciser settings are set at the factory to the default values. If a setting must be changed, follow the procedure on the next page. Some settings may require a password (if the controller is set up for one).

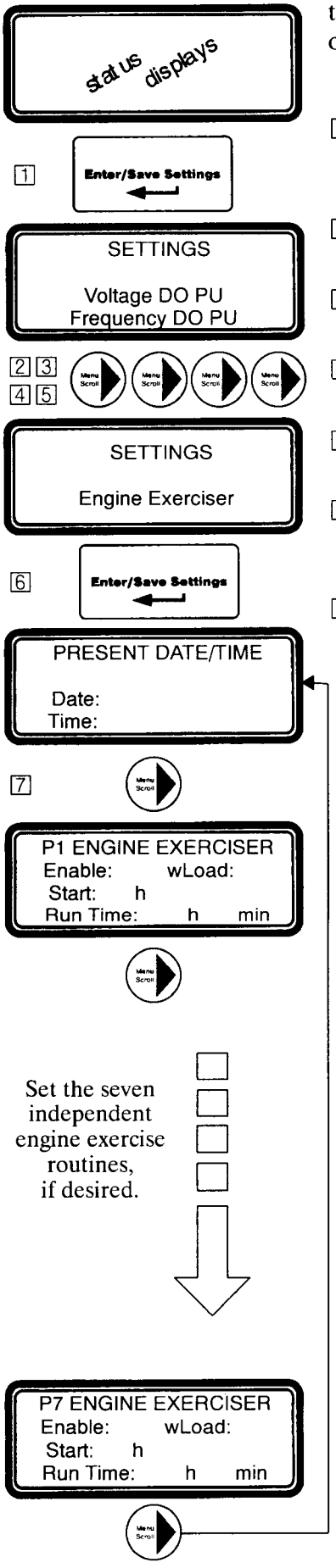
⚠ CAUTION

Any indiscriminate change in these settings may affect the normal operation of the Automatic Transfer Switch. This change could allow the load circuits to remain connected to an inadequate source

Parameter	Default Setting	Adjustment Range	Display Screen (see next page)
month	JAN	JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC	PRESENT DATE/TIME Date
day	1	1 to 31	PRESENT DATE/TIME Date
year *	1	00 to 99	PRESENT DATE/TIME Date
hour	1	0 to 23	PRESENT DATE/TIME Time
minute	1	0 to 59	PRESENT DATE/TIME Time
engine exerciser enable (P1 to P7)	no	yes or no	P1 ENGINE EXERCISER Enable
engine exerciser transfer load (P1 to P7)	no	yes or no	P1 ENGINE EXERCISER wLoad
engine exerciser start hour (P1 to P7)	0	0 to 23	P1 ENGINE EXERCISER Start h
engine exerciser start minute (P1 to P7)	0	0 to 59	P1 ENGINE EXERCISER Start min
engine exerciser run week (P1 to P7)	all	all, alternate, first, second, third, fourth, or fifth	
engine exerciser run day (P1 to P7)	SUN	SUN, MON, TUE, WED, THU, FRI, SAT	
engine exerciser duration hours (P1 to P7)	0	0 to 23	P1 ENGINE EXERCISER Run TIme h
engine exerciser duration minutes (P1 to P7)	0	0 to 59	P1 ENGINE EXERCISER Run TIme min

* For the year 2000, enter 00.

Engine Exerciser Settings



The controller (CP) engine exerciser setting can be displayed and changed from the keypad. Some settings may require a password (if the controller is set up for one).

1 From any of the **Status** displays, press **Enter/Save Settings** ↵ key to move to the **Settings** level of menus.

2 Press the **right arrow** ▶ key to move to **Setting Time Delays** menu.

3 Press the **right arrow** ▶ key again to move to **Settings Features** menu.

4 Press the **right arrow** ▶ key again to move to **Settings General** menu.

5 Press the **right arrow** ▶ key again to move to **Settings Engine Exerciser**.

6 Now press **Enter/Save Settings** ↵ key to move to the first **Engine Exerciser** menu.

7 You can press the right arrow ▶ key to see the other Engine Exerciser menus (as shown below). An overview explanation of each setting is listed below.

8 Engine Exerciser Settings Menus
(last menu loops back to first)

Present Date/Time see page 2-1
This display allows the user to change the controller date and time.

P(1—7) Engine Exerciser(s) see page 2-1
These displays (P1 through P7) allow the user to set the controller's seven independent engine exerciser routines. Each routine functions in the same manner. Six parameters need to be configured for each routine (P1, P2, P3, P4, P5, P6, P7 — not all have to be used).

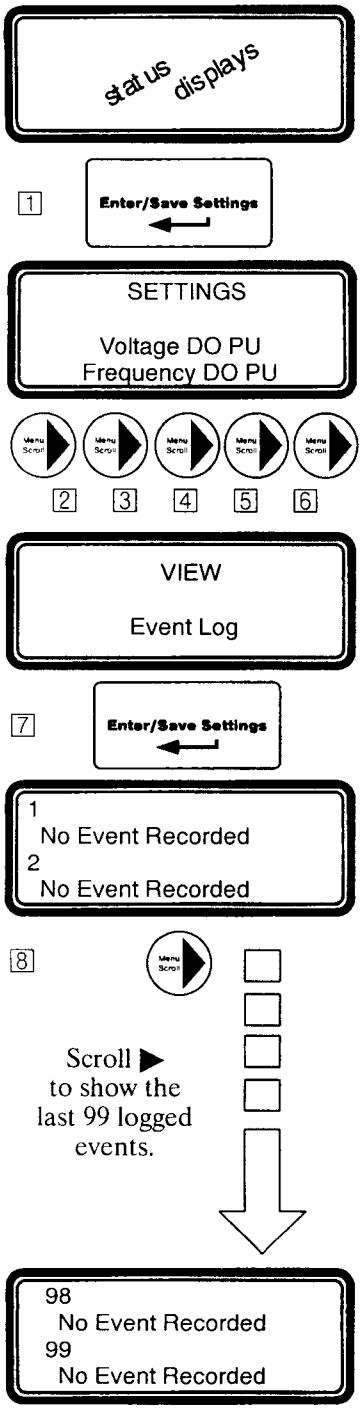
Enable — YES enables the routine; NO turns it off.

wLoad — YES transfers load to Emergency; NO = no transfer.

Start — when the routine will start the generator
- time (hour, minute)
- week (all, alternate, 1st, 2nd, 3rd, 4th, or 5th week)
- day of the week (mon, tue, wed, thu, fri, sat, sun)

Run Time — duration (length of time) that the generator will run.

View Event Log



The controller event logging feature can be displayed from the keypad. Some settings may require a password (if the controller is set up for one).

1 From any of the **Status** displays, press **Enter/Save Settings** ↵ key to move to the **Settings** level of menus.

2 Press the **right arrow** ▶ key to move to **Setting Time Delays** menu.

3 Press the **right arrow** ▶ key again to move to **Settings Features** menu.

4 Press the **right arrow** ▶ key again to move to **Settings General** menu.

5 Press the **right arrow** ▶ key again to move to **Settings Engine Exerciser.**

6 Press the **right arrow** ▶ key again to move to **View Event Log.**

7 Now press **Enter/Save Settings** ↵ key to move to the events logged display.

8 You can press the right arrow ▶ key to see the other events logged. An overview explanation of each setting is listed below.

Logged Events

This display shows the last 99 logged events. Each event display shows the event number (1 is the most recent, 99 is the oldest), the time and date of the event, the event type, and the event reason (if applicable).

Event Types

Nine types of events are logged. They are (displayed event & meaning) :

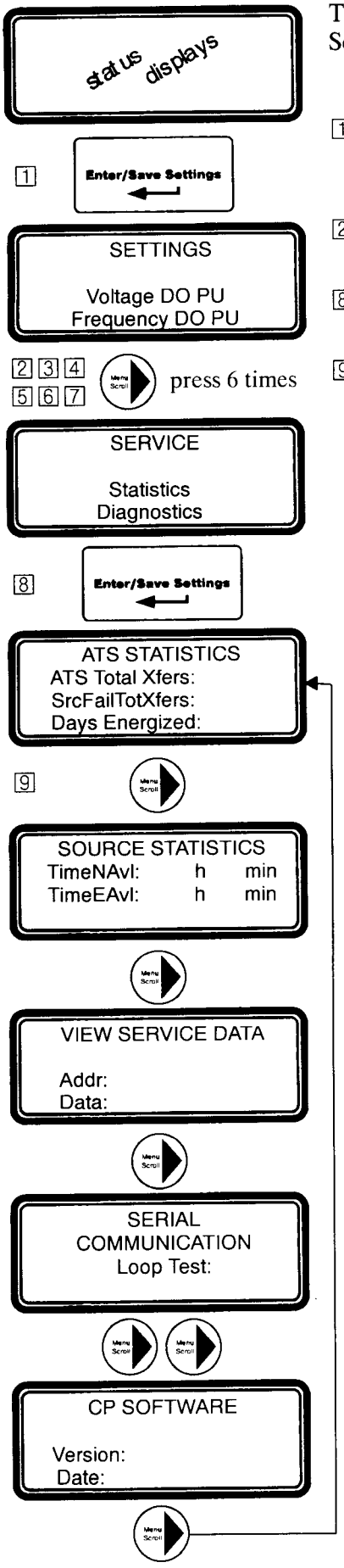
Eng Start	The controller has signaled the engine to start
Xfer N>E	The controller has initiated transfer from normal to emergency
Xfer E>N	The controller has initiated transfer from emergency to normal
Eng Stop	The controller has signaled the engine to stop
EmergAcc	The emergency source has become acceptable
EmergNAcc	The emergency source has become not acceptable
NormAcc	The normal source has become acceptable
NormNAcc	The normal source has become not acceptable
XfrAbort	The transfer has been aborted

Event Reasons

Twenty–one reasons for events are logged. They are (displayed reason & meaning):

LoadShed	Load shed requested
NormFail	Normal source failure
ManualXfr	Manual transfer
Test 5	Test requested (Feature 5)
Test 17	Test requested (Feature 17)
Comm	Serial communications
EngExerc	Engine Exerciser
EmergFail	Emerg source failure
NormUV	Normal source under voltage
NormOV	Normal source over voltage
NormUF	Normal source under frequency
NormOF	Normal source over frequency
NormPHR	Normal source phase rotation
NormVUNB	Normal source voltage unbalance
EmergUV	Emergency source under voltage
EmergOV	Emergency source over voltage
EmergUF	Emergency source under frequency
EmergOF	Emergency source over frequency
EmergPHR	Emergency source phase rotation
EmergVUNB	Emergency source voltage unbalance
Feature 6	Feature 6 activated

Service — Statistics / Diagnostics



The controller service statistics / diagnostics can be displayed from the keypad. Some settings may require a password (if the controller is set up for one).

1 From any of the **Status** displays, press **Enter/Save Settings** ↵ key to move to the **Settings** level of menus.

2 3 4 5 6 7 Press **right arrow** ▶ key six times to move to **Service** menu.

8 Now press **Enter/Save Settings** ↵ key to move to the first **Service** menu.

9 You can press the right arrow ▶ key to see the other Service menus (as shown below). An overview explanation of each setting is listed below.

6 Service Menus (last menu loops back to first)

ATS Statistics

This display shows the total number of transfers, the total number of transfers due to source failures, and the total number of days that the ATS has been energized since the controller has been installed. These values cannot be reset.

Source Statistics

This display shows the total time that the normal and emergency sources have been acceptable since installation of the controller. These values cannot be reset.

View Service Data

This display is for service personnel only.

Serial Communication

This display allows the user to test the serial communications port of the controller. To perform the test, the transmit lines of the serial communications port are connected to the receive lines so that the signals sent by the controller are also received by the controller. The test is activated by pressing the **Enter/Save Settings** ↵ key while viewing this display. If the controller receives the same information that it sent, test is passed, otherwise it fails.

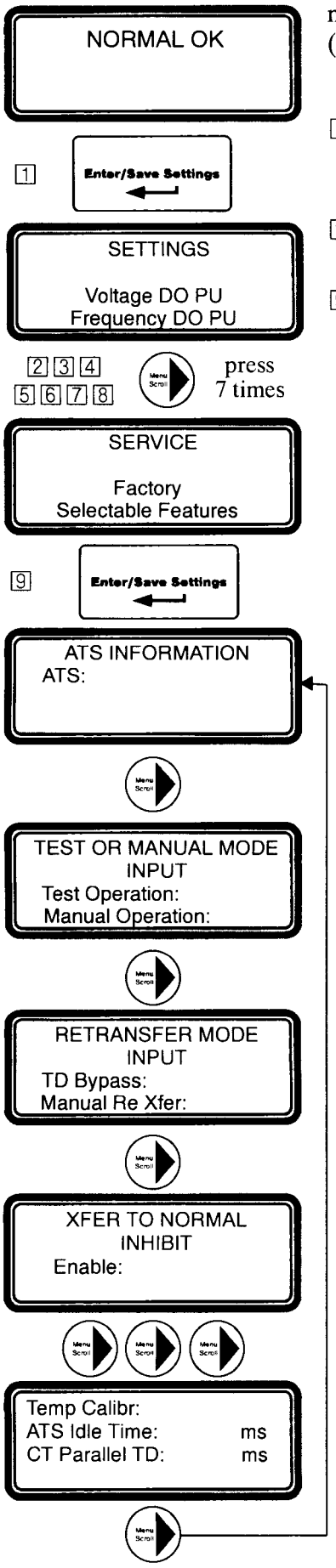
I/O Status (not shown)

These displays show the status of several of the controller's input and output lines.

CP Software

This display shows the version of the loaded software and the date of its release.

Service — Factory Selectable Features



The controller service factory selectable features can be displayed from the membrane controls. These factory settings should not be changed by the customer (they cannot be changed without entering the factory password).

1 From the **ATS Status** display (NORMAL OK), press **Enter/Save Settings** ↵ button to move down to the **Settings** level of menus.

2 3 4 5 6 7 8 Press **right arrow** ▶ button 7 times to move to **Service** menu.

9 Now press **Enter/Save Settings** ↵ button to move down to the first **Service** factory selectable feature.

You can press the right arrow ▶ button to see the other Service menus (as shown below). An overview explanation of each setting is listed below.

7 Service Menus (last menu loops back to first)

ATS Information

This display shows the transfer switch ampere size, whether the switch is a bypass switch or a non–bypass switch, and any name or description information that has been assigned to it through the serial communications port.

Test or Manual Mode Input

This display shows the setting of the Feature 5/6Z input. This input can be used for either Feature 5 or 6Z. Yes means active; no means not used.

Test Operation — Feature 5
Manual Operation — Feature 6Z
This Feature is not available for automatic operation.

Retransfer Mode Input

This display shows the settings for Features 6B/6C inputs. This input can be used for either Feature 6B or 6C. Yes means active; no means not used.

TD Bypass — Feature 6B
Manual Re Xfer — Feature 6C

These Features are typically set to *Yes* with the inhibit Feature overridden with external factory wiring. These Features are not available for customer use.

Xfer to Normal Inhibit and Emergency (not shown)

This display shows whether the Feature 34A input is enabled (yes) or disabled (no).

Likewise, the next display **Xfer to Emerg** shows whether the Feature 34B input is enabled (yes) or disabled (no).

Factory Calibration (not shown)

This display is for factory calibration only and should be used by factory personnel only.

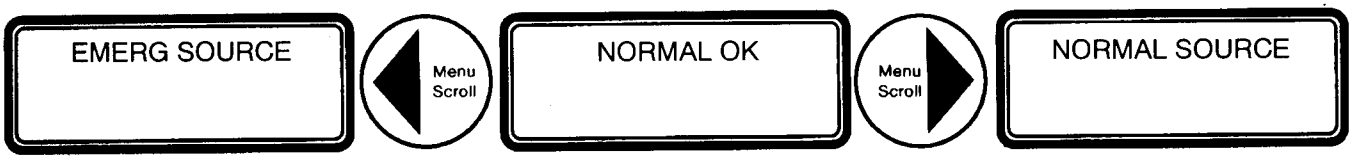
Other

This display shows various parameters that should be accessed by factory personnel only.

Status Information

The controller (CP) provides the status of the automatic transfer switch (ATS) and of both the normal and emergency sources. This information is at the *status level* of all screens and no password is required to view them.

You can press the right arrow ▶ key to see the status of the Normal Source or press the left arrow ◀ key to see the status of the Emergency source (the menus loop back).



ATS Status

The ATS Status is the primary display. It shows the present status of the ATS. Transfer sequence status and running time delays are shown. For inphase or closed–transition transfers, phase relation between the sources is also shown.

Tip ☞ The ATS Status display can be directly reached from anywhere in the menu structure by pressing the *Esc* key three times.

Normal Source Status

The Normal Source Status display shows the rms voltage of each of the phases, the source frequency in Hz, and the phase rotation. If enabled, the voltage unbalance will also be displayed.

Emergency Source Status

The Emergency Source Status display shows the rms voltage of each of the phases, the source frequency in Hz, and the phase rotation. If enabled, the voltage unbalance will also be displayed.

Source Acceptability

The CP considers a source unacceptable if any of these conditions are true:

- Any phase voltage of the source is less than the voltage dropout setting.
- Any phase voltage is greater than voltage trip setting for more than 3 sec.
- Frequency of the source is less than the frequency dropout setting.
- Frequency is greater than frequency trip setting for more than 3 seconds.
- Phase rotation does not match specified phase rotation (only if enabled).
- The phase unbalance is greater than the unbalance dropout setting (only if enabled).

The CP considers a source acceptable again when all these conditions are true:

- Each phase voltage is greater than the voltage pickup setting.
- Each phase voltage is less than trip voltage setting by more than 2% of nom
- The frequency of the source is greater than the frequency pickup setting.
- Frequency is less than the frequency trip setting by more than 2% of nom.
- Phase rotation matches the specified phase rotation (only if enabled).
- The phase unbalance is less than the unbalance pickup setting (only if enabled).

Display Messages and their Meaning

The following messages (in alphabetical order) can appear on the CP display:

Display Message	Meaning or Explanation	Also Refer To
ATS LOCKED OUT!	An error condition has occurred and the controller has locked out all further attempts to transfer the load. Press the Alarm Reset pushbutton to clear this message.	Transfer Switch Operator's Manual
EMERG SOURCE	The emergency status display shows the emergency voltages, voltage unbalance (if enabled), and frequency.	page 3–1
ENGINE EXERCISE WITH LOAD	The engine exerciser is running the engine–generator set with load (the transfer switch transfers the load to the generator).	pages 2–10, 2–11
ENGINE EXERCISE WITHOUT LOAD	The engine exerciser is running the engine–generator set without load (the transfer switch does not transfer the load to the generator).	pages 2–10, 2–11
Enter Password:	A password is required to proceed further in the change process. Enter the correct password to continue or press the **Esc** key to clear this message.	pages 2–1, 2–8
FAILURE TO SYNCHRONIZE ALARM	The failure to synchronize time delay has expired. This alarm occurs when the sources fail to synchronize within the specified time. Press the Alarm Reset pushbutton to clear this message. (ACTS, 7ACTB)	pages 4–4, 4–5
Load Disconnected	The load is disconnected (7ADTS, 7ADTB)	pages 4–6, 4–7
Load on Emerg	The load is connected to the emergency source.	
Load on Normal	The load is connected to the normal source.	
LOAD SHED FROM EMERG	The load shed signal is active and the load has been shed from the emergency source.	page 2–6
LOAD SHED FROM NORMAL	The load shed signal is active and the load has been shed from the normal source.	page 2–6
NORMAL FAILED	The normal source is not acceptable.	page 3–1
NORMAL OK	The normal source is accepted.	page 3–1
NORMAL SOURCE	The normal status display shows the normal source voltages, voltage unbalance (if enabled), and frequency.	page 3–1
POWER–UP INHIBIT *stays on*	The controller has powered up and has recognized an error condition.	Contact ASI
TD Emerg>Normal:	The emergency to normal load transfer time delay (Feature 3A) is running. The amount of time remaining is shown.	page 2–4
TD Engine Cooldown:	The engine–generator set unloaded cooldown time delay (Feature 2E) is running. The amount of time remaining is shown.	page 2–4
TD Load Disconnect:	The load disconnect time delay is running. The amount of time remaining is shown. (7ADTS, 7ADTB)	pages 4–6, 4–7

continued on next page

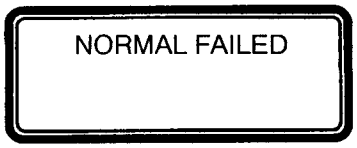
Display Messages and their Meaning (continued)

The following messages (in alphabetical order) can appear on the CP display:

Display Message	Meaning or Explanation	Also Refer To
TD Normal Fail:	The normal source failure time delay (Feature 1C) is running. The amount of time remaining is shown.	page 2–4
TD Normal>Emerg:	The normal to emergency load transfer time delay (Feature 2B) is running. The amount of time remaining is shown.	page 2–4
TD Post Transfer	The post–transfer time delay (Feature 31M or 31N) is running. The amount of time remaining is shown.	page 2–4
TD Pre Transfer	The pre–transfer time delay (Feature 31F or 31G) is running. The amount of time remaining is shown.	page 2–4
TEST MODE SERIAL COMM	A test has been initiated via the serial communications port.	page 2–13
TEST MODE TEST CIRCUIT 5	Test circuit Feature 5 is active (**Transfer Test**).	Transfer Switch Operator's Manual
TEST MODE TEST CIRCUIT 17	Test circuit Feature 17 is active (remote test).	page 2–6
Transfer to Emerg Inhibited	Load transfer to emergency is inhibited.	
Transfer to Normal Inhibited	Load transfer to normal source is inhibited.	
Waiting for Emerg Acceptable	The controller is waiting for the emergency source to become acceptable so that it can continue in the transfer sequence.	page 3–1
Waiting for In–Phase	The controller is waiting for the sources to come in phase so that it can make an in phase load transfer. The phase angle and frequency difference are also displayed. This message will be displayed until the sources come in phase. (7ATS, 7ATB)	pages 4–1, 4–2
Waiting for In–Sync	The controller is waiting for the sources to come into synchronism so that it can make a closed–transition load transfer. The three parameters required for synchronization (phase angle, frequency difference, and voltage difference) are also displayed. If the sources do not have the same rotation, this will also be displayed. (7ACTS, 7ACTB)	pages 4–4, 4–5
WRONG PASSWORD !!!	An incorrect password has been entered.	page 2–1
XTD PARALLEL ALARM	The extended parallel time delay has expired, which indicates that the sources have been paralleled for longer than the specified extended parallel time. Press the Alarm Reset pushbutton to clear this message. (7ACTS, 7ACTB)	pages 4–4, 4–5
PARM CHCKSUM ERROR	An internal memory error has been detected. On occurance of this error message, memory is cleared and all parameters need to be reset.	Contact ASI
UNKNOWN ERROR	System error.	Contact ASI

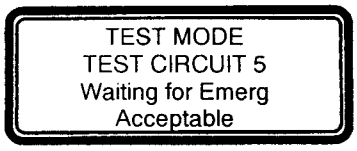
Open–Transition (2–position) Automatic Transfer (7ATS, 7ATB)

Load Transfer To Emergency



The sequence for load transfer to the emergency source begins automatically when the controller detects a normal source failure or a transfer test signal.

Normal Source Failure. The Normal source is considered unacceptable when any one of six voltage, frequency, or phase rotation conditions occur (see page 3–1).



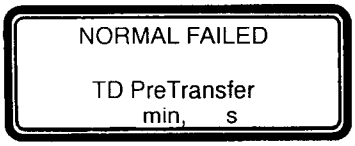
Transfer Test Signal. Test transfer signal can be from the **Transfer Control** switch (Feature 5), the engine–generator exerciser clock (Feature 11C), or via the serial port (Feature 72A). When using the **Transfer Control** switch, it must be held in the *Transfer Test* position until the emergency source becomes available (within 15 seconds).

The controller begins the load transfer sequence by de–energizing the SE relay and starting the Feature 1C time delay. Feature 1C time delay on engine starting prevents nuisance starting of the engine–generator set and load transfer to emergency due to momentary failures of the normal source. If the normal source is restored (voltage returns above the dropout point) while Feature 1C time delay is running, the SE relay is re–energized and the transfer sequence is terminated. (For transfer test the Feature 1C time delay is bypassed.)

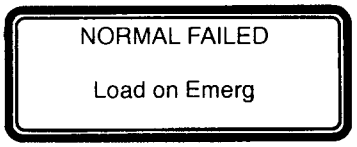
Engine Start Signal. When the Feature 1C time delay ends, the controller de–energizes the NR relay which signals the engine–generator to start. The controller monitors the emergency source, waiting for it to become acceptable. Usually about 10 seconds elapse from dropout of the NR relay to acceptance of the emergency source. This interval occurs because the engine–generator must crank, start, and run up to nominal pickup points. If the emergency source is available immediately, the controller will accept it as soon as the NR relay drops out.

When the emergency source becomes acceptable, the controller starts the Feature 2B time delay on transfer to emergency (if desired). Feature 2B time delay allows the emergency source to stabilize before load transfer. If the emergency source fails while Feature 2B time delay is running, the controller again waits for the emergency source to become acceptable again and restarts Feature 2B.

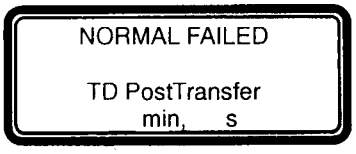
Feature 31F



At the conclusion of the Feature 2B time delay, the controller is ready to transfer the load to emergency. If enabled, Feature 31F time delay will run prior to transfer and the Feature 31 output will be active while the time delay runs. Also, if Feature 27 inphase monitor control (for motor loads) is enabled, the controller will inhibit transfer until the sources are in phase.



Load Transfer. To transfer the load to the emergency source the controller energizes ER relay. The transfer switch TS coil energizes, and all transfer switch contacts (mains, controls, auxiliaries) reverse position. Transfer switch is now supplying the load from emergency source.

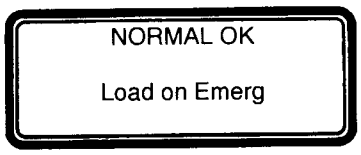


If enabled, Feature 31M time delay will run after the transfer and the Feature 31 output will be active while the time delay runs.

Feature 31M

Open–Transition (2–position) Automatic Transfer Switches continued

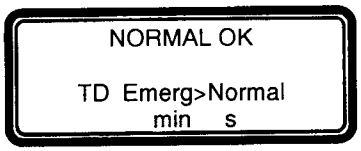
Load Retransfer To Normal



The sequence for load retransfer to the normal source begins automatically when the controller detects a restored normal source or a cancelled transfer test signal.

Normal Source Restoration. The Normal source is considered acceptable again when all six voltage, frequency, or phase rotation conditions occur (see page 3–1).

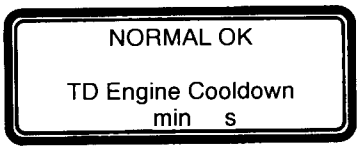
Cancel Transfer Test. Removal of the test transfer signal can be by the **Transfer Control** switch (Feature 5), engine–generator exerciser clock (Feature 11C), or via serial port (Feature 72A). When using the **Transfer Control** switch, it must be released from the *Transfer Test* position.



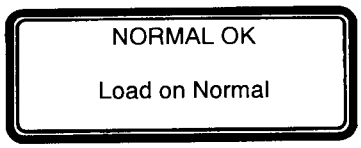
The controller begins the load retransfer sequence by starting the Feature 3A time delay. Feature 3A time delay on retransfer to normal allows the normal source to stabilize. If the normal source fails while the Feature 3A time delay is running, the controller waits for the normal source again to become acceptable and restarts the Feature 3A time delay. If the emergency source fails while Feature 3A is running, the controller bypasses the time delay for immediately load retransfer. To bypass Feature 3A time delay, turn the **Transfer Control** switch to the *Retransfer Delay Bypass* position.

At the conclusion of the Feature 3A time delay, the controller is ready to transfer the load to normal. If Feature 27 inphase monitor control is enabled, the controller will inhibit transfer until the sources are in phase.

Load Retransfer. To retransfer the load to the normal source the controller de–energizes ER relay and energizes SE relay. The transfer switch TS coil energizes, and all transfer switch contacts (mains, controls, auxiliaries) reverse position. The transfer switch is now supplying the load from the normal source again

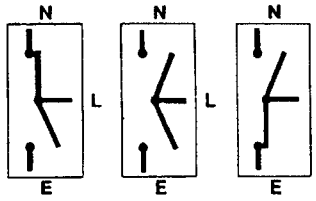


Engine Cooldown & Stop. After load retransfer to the normal source, the controller starts Feature 2E time delay. Feature 2E time delay provides an unloaded cooldown running period for the engine–generator. At the end of the time delay, the controller energizes the NR relay and the engine–generator is signalled to shutdown.



Closed–Transition Automatic Transfer (7ACTS, 7ACTB)

The 7ACTS and 7ACTB provides load transfer in either closed (make–before–break) or open (break–before–make) transition modes depending upon the condition of the two power sources. Control logic automatically determines whether the load transfer should be open or closed transition. If both sources are acceptable, such as during a transfer test or when retransferring back to Normal, closed–transition transfer occurs without interrupting the electrical loads. If either source is not present, such as when normal fails, open–transition load transfer occurs in the break–before–make mode.



Open–Transition Load Transfer to Emergency Source due to Normal Source Failure

The sequence for open–transition load transfer to the emergency source begins automatically when the controller detects an unacceptable normal source. The Normal source is considered unacceptable when any one of six voltage, frequency, or phase rotation abnormal conditions occur (see page 3–1).

NORMAL FAILED

Normal Source Failure. An under voltage condition on any phase of the normal source means that the voltage has fallen below the preset dropout point.

The controller begins the load transfer sequence by de–energizing the SE and SE2 relays and starting the Feature 1C time delay. Feature 1C time delay on engine starting prevents nuisance starting of the engine–generator set and load transfer to emergency due to momentary failures of the normal source. If the normal source is restored (voltage returns above the dropout point) while Feature 1C time delay is running, the SE and SE2 relays are re–energized and the transfer sequence is terminated. (For transfer test the Feature 1C time delay is bypassed.)

Engine Start Signal. When the Feature 1C time delay ends, the controller de–energizes the NR relay which signals the engine–generator to start. The controller monitors the emergency source, waiting for it to become acceptable. Both voltage and frequency must reach preset pickup points before the emergency source is accepted. Usually about 10 seconds elapse from dropout of the NR relay to acceptance of the emergency source. This interval occurs because the engine–generator must crank, start, and run up to nominal pickup points. If the emergency source is available immediately, the controller will accept it as soon as the NR relay drops out.

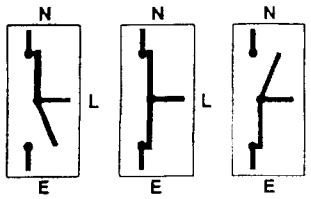
When the emergency source becomes acceptable, the controller starts the Feature 2B time delay on transfer to emergency (if desired). If the emergency source fails while Feature 2B time delay is running, the controller again waits for the emergency source to become acceptable again and restarts Feature 2B.

At the conclusion of the Feature 2B time delay, the controller is ready to transfer the load to emergency. If enabled, Feature 31F time delay will run prior to transfer and the Feature 31F output will be active while the time delay runs.

TEST MODE
TEST CIRCUIT 5
Load on Emerg

Load Transfer. To transfer the load to the emergency source the controller energizes the ER relay. The transfer switch CN coil energizes, and all CN transfer switch contacts (mains, controls, auxiliaries) reverse position to disconnect the Normal source. Then the controller energizes the ER2 relay. The transfer switch CE coil energizes, and all CE transfer switch contacts (mains, controls, auxiliaries) reverse position to connect the Emergency source. The transfer switch is now supplying the load from emergency source. If enabled, Feature 31M time delay will run after the transfer and the Feature 31M output will be active while the time delay runs.

Closed–Transition Automatic Transfer Switches continued



TEST MODE
TEST CIRCUIT 5
Waiting for Emerg
Acceptable

Closed–Transition Load Transfer to Emergency Source due to Transfer Test

The sequence for closed–transition load transfer to the emergency source begins automatically when the controller detects a transfer test signal.

Transfer Test Signal. Test transfer signal can be from the **Transfer Control** switch (Feature 5), the engine–generator exerciser clock (Feature 11C), or via the serial port (Feature 72A). When using the **Transfer Control** switch, it must be held in the *Transfer Test* position until the emergency source becomes available (within 15 seconds).

The controller begins the load transfer sequence by de–energizing the SE, SE2, and NR relays. Feature 1C engine starting time delay is bypassed during transfer test.

Engine Start Signal. When the NR relay de–energizes it signals the engine–generator to start. The controller monitors the emergency source, waiting for it to become acceptable. Both voltage and frequency must reach preset pickup points before the emergency source is accepted. Usually about 10 seconds elapse from dropout of the NR relay to acceptance of the emergency source. This interval occurs because the engine–generator must crank, start, and run up to nominal pickup points. If the emergency source is available immediately, the controller will accept it as soon as the NR relay drops out.

When the emergency source becomes acceptable, the controller starts the Feature 2B time delay on transfer to emergency (if desired). If the emergency source fails while Feature 2B time delay is running, the controller again waits for the emergency source to become acceptable again and restarts Feature 2B.

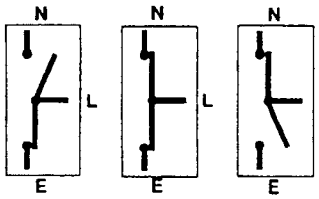
At the conclusion of the Feature 2B time delay, the controller starts the synchronization time delay which allows both sources to stabilize. After the synchronization time delay, the controller starts the in–sync monitor. Three criteria must be met for the sources to be considered in–sync. The phase difference between the sources must be less than 5 degrees, the frequency difference must be less than 0.2 Hz, and the voltage difference must be less than 5%. These parameters are displayed. The controller waits for the sources to become in–sync. At the same time, the failure to sync time delay is running. If the failure to sync time exceeds the user selected time, the failure to sync output is activated and remains active until it is reset via the alarm reset. The controller continues the transfer sequence even after the failure to synchronize alarm becomes active.

TEST MODE
TEST CIRCUIT 5
Load on Emerg

When the sources become in–sync the controller is ready to transfer the load to emergency.

Load Transfer. To transfer the load to the emergency source the controller energizes the ER2 relay. The transfer switch CE coil energizes, and all CE transfer switch contacts (mains, controls, auxiliaries) reverse position. The load is connected to both the Normal and Emergency sources. The extended parallel time delay is started and the controller energizes the ER relay. The transfer switch CN coil energizes, and all CN transfer switch contacts (mains, control, auxiliaries) reverse position to disconnect the Normal source. The load is now only connected to the Emergency source. If the sources are paralleled longer than the extended parallel time setting the controller activates an extended parallel output. It also deenergizes the ER and ER2 relays, energizes the SE and SE2 relays, and it locks out any further transfer operations. This lock–out condition is reset via the alarm reset.

Closed–Transition Automatic Transfer Switches continued



NORMAL OK

Load on Emerg

NORMAL OK

TD Emerg>Normal
min s

NORMAL OK

TD Engine Cooldown
min s

NORMAL OK

Load on Normal

Closed–Transition Load Retransfer To Normal

The sequence for load retransfer to the normal source begins automatically when the controller detects a restored normal source or a cancelled transfer test signal.

Normal Source Restoration. The Normal source is considered acceptable again when all six voltage, frequency, or phase rotation conditions occur (see page 3–1).

Cancel Transfer Test. Removal of the test transfer signal can be by the **Transfer Control** switch (Feature 5), engine–generator exerciser clock (Feature 11C), or via serial port (Feature 72A). When using the **Transfer Control** switch, it must be released from the *Transfer Test* position.

The controller begins the load retransfer sequence by starting the Feature 3A time delay. Feature 3A time delay on retransfer to normal allows the normal source to stabilize. If the normal source fails while the Feature 3A time delay is running, the controller waits for the normal source again to become acceptable and restarts the Feature 3A time delay. If the emergency source fails during while Feature 3A is running, the controller bypasses the time delay for immediately load retransfer. To bypass Feature 3A time delay, turn the **Transfer Control** switch to the *Retransfer Delay Bypass* position.

At the conclusion of the Feature 3A time delay, the controller starts the synchronization time delay which allows both sources to stabilize. After the synchronization time delay the controller starts the in–sync monitor and the failure to sync time delay. When the sources become in–sync the controller is ready to transfer the load to normal.

Load Retransfer. To retransfer the load to the normal source the controller de–energize the ER and ER1 relays and energizes the SE relay. The transfer switch CN coil energizes, and all CN transfer switch contacts (mains, controls, auxiliaries) reverse position to connect the Normal source. The load is now connected to both sources. The extended parallel time delay is started and the SE2 relay is energized. The transfer switch CE coil energizes, and all CE transfer switch contacts (mains, controls, auxiliaries) reverse position to disconnect the Emergency source. The transfer switch is now supplying the load from the normal source again. If the sources are paralleled longer than the extended parallel time setting the controller activates an extended parallel output. It also deenergizes the SE and SE2 relays, energizes the ER and ER2 relays, and it locks out any further transfer operations. This lock–out condition is reset via the alarm reset.

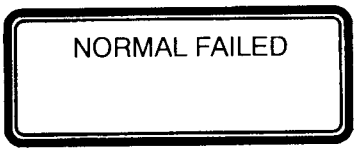
Engine Cooldown & Stop. After load retransfer to the normal source, the controller starts Feature 2E time delay. Feature 2E time delay provides an unloaded cooldown running period for the engine–generator. At the end of the time delay, the controller energizes the NR relay and the engine–generator is signalled to shutdown.

Bypass Closed–Transition Load Transfer

A pending closed–transition load transfer can be bypassed by using the Closed Transition Bypass switch. Depending upon the configuration of the controller, bypassing the closed–transition load transfer sequence will result in either an open or delayed–transition transfer.

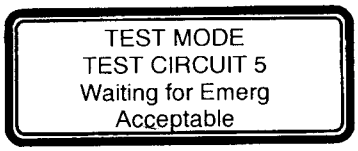
Delayed–Transition Automatic Transfer (7ADTS, 7ADTB)

Load Transfer To Emergency



The sequence for load transfer to the emergency source begins automatically when the controller detects a normal source failure or a transfer test signal.

Normal Source Failure. The Normal source is considered unacceptable when any one of six voltage, frequency, or phase rotation conditions occur (see page 3–1).



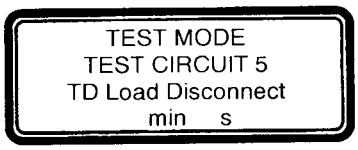
Transfer Test Signal. Test transfer signal can be from the **Transfer Control** switch (Feature 5), the engine–generator exerciser clock (Feature 11C), or via the serial port (Feature 72A). When using the **Transfer Control** switch, it must be held in the *Transfer Test* position until the emergency source becomes available (within 15 seconds).

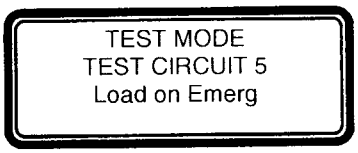
The controller begins the load transfer sequence by de–energizing the SE and SE2 relays and starting the Feature 1C time delay. Feature 1C time delay on engine starting prevents nuisance starting of the engine–generator set and load transfer to emergency due to momentary failures of the normal source. If the normal source is restored (voltage returns above the dropout point) while Feature 1C time delay is running, the SE and SE2 relays are re–energized and the transfer sequence is terminated. (For transfer test the Feature 1C time delay is bypassed.)

Engine Start Signal. When the Feature 1C time delay ends, the controller de–energizes the NR relay which signals the engine–generator to start. The controller monitors the emergency source, waiting for it to become acceptable. Both voltage and frequency must reach preset pickup points before the emergency source is accepted. Usually about 10 seconds elapse from dropout of the NR relay to acceptance of the emergency source. This interval occurs because the engine–generator must crank, start, and run up to nominal pickup points. If the emergency source is available immediately, the controller will accept it as soon as the NR relay drops out.

When the emergency source becomes acceptable, the controller starts the Feature 2B time delay on transfer to emergency (if desired). Feature 2B time delay allows the emergency source to stabilize before load transfer. If the emergency source fails while Feature 2B time delay is running, the controller again waits for the emergency source to become acceptable again and restarts Feature 2B.

At the conclusion of the Feature 2B time delay, the controller is ready to transfer the load to emergency.

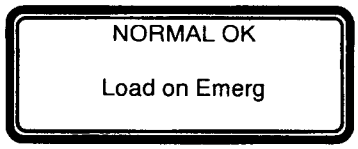




Load Transfer. To transfer the load to the emergency source in a delayed–transition mode the controller energizes ER relay first. The transfer switch CN coil energizes and opens the CN transfer switch contacts. The load is disconnected from both sources. The load disconnect time delay starts. When this time delay ends, the controller energizes the ER relay. The transfer switch CE coil energizes and closes the CE transfer switch main contacts. The transfer switch is now supplying the load from emergency source.

Delayed–Transition Automatic Transfer Switches continued

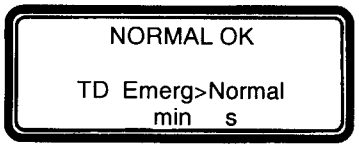
Load Retransfer To Normal



The sequence for load retransfer to the normal source begins automatically when the controller detects a restored normal source or a cancelled transfer test signal.

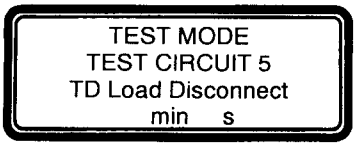
Normal Source Restoration. The Normal source is considered acceptable again when all six voltage, frequency, or phase rotation conditions occur (see page 3–1).

Cancel Transfer Test. Removal of the test transfer signal can be by the **Transfer Control** switch (Feature 5), engine–generator exerciser clock (Feature 11C), or via serial port (Feature 72A). When using the **Transfer Control** switch, it must be released from the *Transfer Test* position.

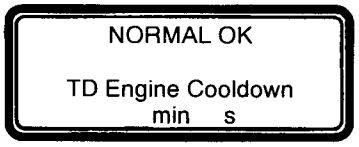


The controller begins the load retransfer sequence by starting the Feature 3A time delay. Feature 3A time delay on retransfer to normal allows the normal source to stabilize. If the normal source fails while the Feature 3A time delay is running, the controller waits for the normal source again to become acceptable and restarts the Feature 3A time delay. If the emergency source fails during while Feature 3A is running, the controller bypasses the time delay for immediately load retransfer. To bypass Feature 3A time delay, turn the **Transfer Control** switch to the *Retransfer Delay Bypass* position

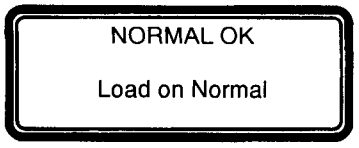
At the conclusion of the Feature 3A time delay, the controller is ready to transfer the load to normal.



Load Retransfer. To retransfer the load to the normal source in a delayed–transition mode the controller de–energizes the ER and ER2 relays and energizes the SE2 relay. The transfer switch CE coil energizes and opens the CE transfer switch main contacts. The load is disconnected from both sources. The load disconnect time delay starts. When this time delay ends the controller energizes the ER relay. The transfer switch CN coil energizes and closes the CN transfer switch main contacts. The transfer switch is now supplying the load from the normal source again



Engine Cooldown & Stop. After load retransfer to the normal source, the controller starts Feature 2E time delay. Feature 2E time delay provides an unloaded cooldown running period for the engine–generator. At the end of the time delay, the controller energizes the NR relay and the engine–generator is signalled to shutdown.



Controller Cover Removal

⚠ DANGER

Hazardous voltage capable of causing shock, burns, or death is connected to controller. Deenergize all power before removing cover.

The Group 5 controller (CP) is used for sensing, timing, and control functions with 7000 Series Automatic Transfer Switches. This Appendix shows the controller DIP switch actuator settings and jumper block settings for input voltage, frequency, phases, and type of transfer switch used (open, closed, delayed transition). These controls should only be used by trained technicians from ASCO Services, Inc. (ASI 1–800–800–2726).

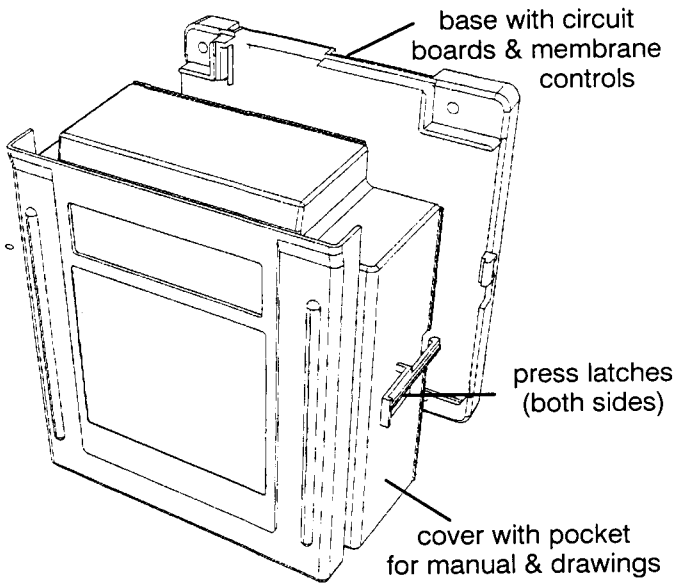


Figure A–1. Cover release latches.

DIP switch actuators see page A–2

Voltage jumper blocks see page A–4

⚠ CAUTION

Any indiscriminate change in DIP switch and jumper block settings may damage the controller and/or cause an inoperative ATS.

⚠ CAUTION

Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to local ordinances.

DIP Switch Actuators

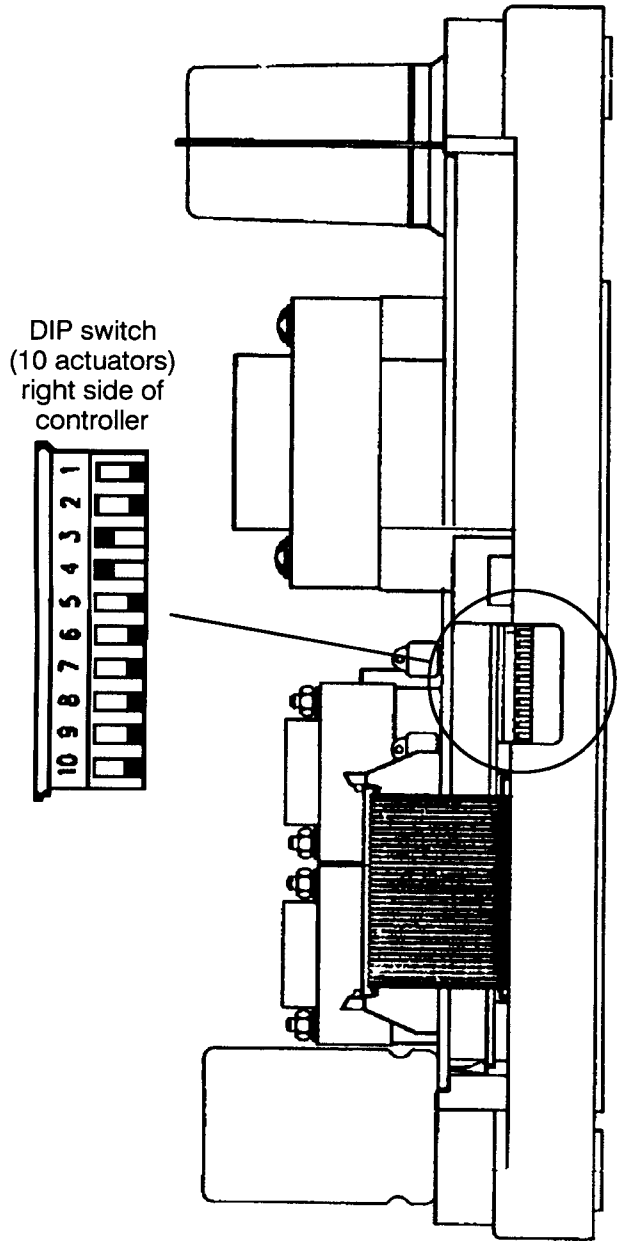


Figure A–2. Location of DIP switch.

The DIP switch in the Group 5 controller is located on the right side through a opening in the base. The following tables show what each actuator does.

Transfer Switch Type

DIP switch actuators 1 and 2 select the type of transfer switch used with the controller (open–transition, closed–transition, or delayed–transition). See Table A.

Table A. Transfer switch type — DIP actuators 1 & 2.

DIP switch actuator	open transition or *		closed transition	delayed-transition
1	⇨	⇦	⇦	⇨
2	⇨	⇦	⇨	⇦

* For open–transition, both actuators 1 & 2 must be in the same position (either both right or both left).

⚠ CAUTION

To avoid permanently damaging the Group 5 controller and/or disabling it, be certain that the setting matches the transfer switch type.

Nominal Source Voltage Selection

DIP switch actuators 3, 4, 5, and 6 select the input voltage to the controller. See Table B.

⚠ CAUTION

To avoid permanently damaging to the Group 5 controller, be certain that the voltage setting matches the transfer switch system voltage.

Table B. Nominal Input Voltage — DIP actuators 3, 4, 5, & 6.

DIP switch actuator	Input Voltage to Controller															
	115	120	208	220	230	240	277	380	400	415	440	460	480	550	575	600
3	⇦	⇨	⇦	⇨	⇦	⇨	⇦	⇨	⇦	⇨	⇦	⇨	⇦	⇨	⇦	⇨
4	⇦	⇦	⇨	⇨	⇦	⇦	⇨	⇨	⇦	⇦	⇨	⇨	⇦	⇦	⇨	⇨
5	⇦	⇦	⇦	⇦	⇨	⇨	⇨	⇨	⇦	⇦	⇦	⇦	⇨	⇨	⇨	⇨
6	⇦	⇦	⇦	⇦	⇦	⇦	⇦	⇦	⇨	⇨	⇨	⇨	⇨	⇨	⇨	⇨

Frequency of Sources

DIP switch actuator 7 selects either 50 or 60 Hz source frequency. See Table C.

Table C. Source Frequency — DIP actuator 7.

DIP switch actuator	50 Hz	60 Hz
7	⇦	⇨

Phases of Normal & Emergency Sources

DIP switch actuators 8 and 9 select either 1 phase or 3 phase for the Normal and Emergency sources. See Tables D and E.

Table D. Normal Source Phases — DIP actuator 8.

DIP switch actuator	1 Phase	3 Phase
8	⇦	⇨

Table E. Emergency S. Phases — DIP actuator 9.

DIP switch actuator	1 Phase	3 Phase
9	⇦	⇨

Data Input Lock

The Group 5 controller has an external input for a dry contact that, if closed, prevents setting changes from the keypad. DIP switch actuator 10 selects either yes or no for the external input (such as a key switch). Placing DIP switch actuator 10 in the **Yes** position enables the controller to respond to the external input. See Table F.

Lost or Forgotten Password

Moving DIP switch actuator 10 to the **Yes** position will allow a new password to be input (as long as the external input is open). Once the new password has been entered, return DIP switch actuator 10 to the **No** position. See Table F.

Table F. Lock Input — DIP actuator 10.

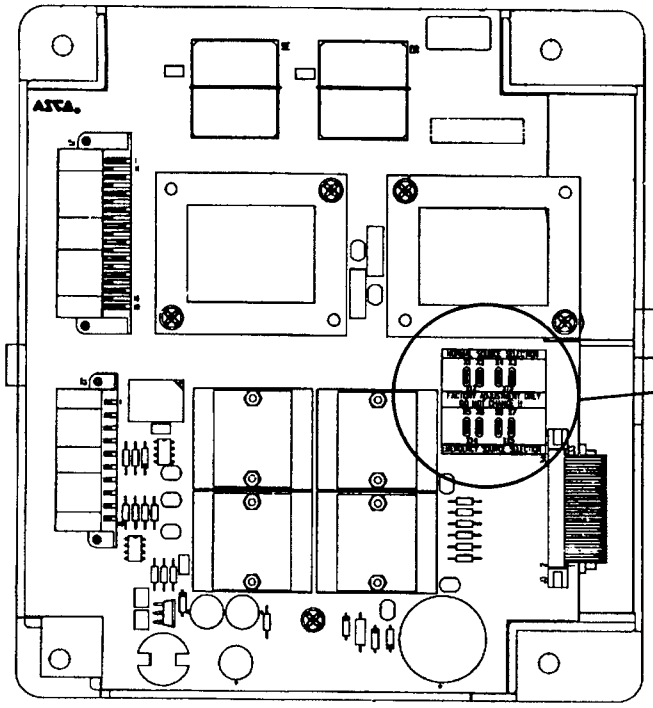
DIP switch actuator	Yes	No
10	⇦	⇨

Voltage Jumper Blocks

⚠ CAUTION

To avoid permanently damaging the Group 5 controller, be certain that the voltage setting matches the transfer switch system voltage.

Eight jumper blocks on the Group 5 controller are arranged in one of two patterns for the power supply to meet the requirements of the 16 different voltage inputs (shown in Table B on page A–2). These jumpers are located on the front right side near the ribbon cable. See Figures A–3 and A–4.



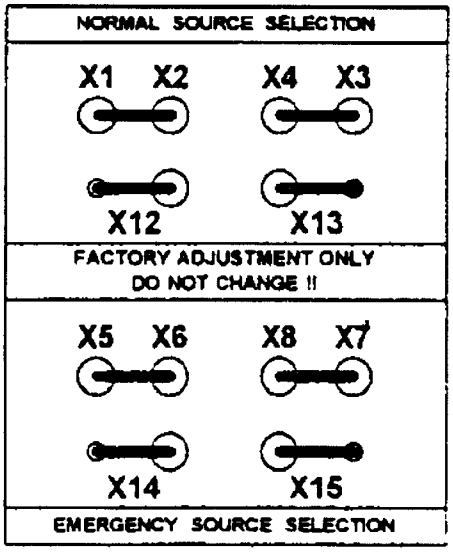
Note: Also see page A–2 for Nominal Source Voltage Selection DIP switch actuator settings.

jumper blocks (see Figure A–4)

Figure A–3. Location of jumper blocks.

Nominal voltage
115 — 277 V
(115, 120, 208, 220, 230, 240, 277)

Position jumpers HORIZONTALLY



Nominal voltage
380 — 600 V
(380, 400, 415, 440, 460, 480, 550, 575, 600)

Position jumpers VERTICALLY

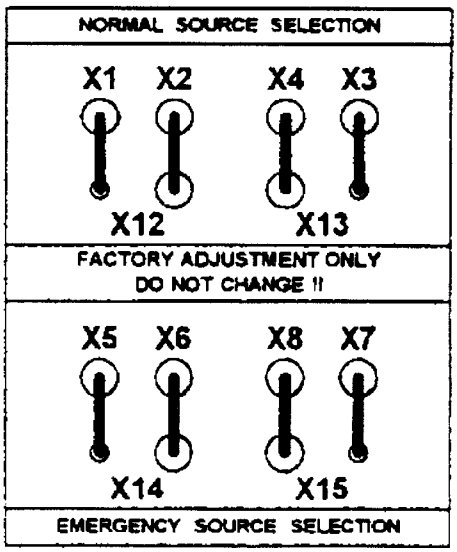


Figure A–4. Power supply jumper arrangements.

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Operator's Manual

ASCO® 7000 Series 7ATB Automatic Transfer & Bypass–Isolation Switches H design 600 through 1200 amp.

⚠ DANGER

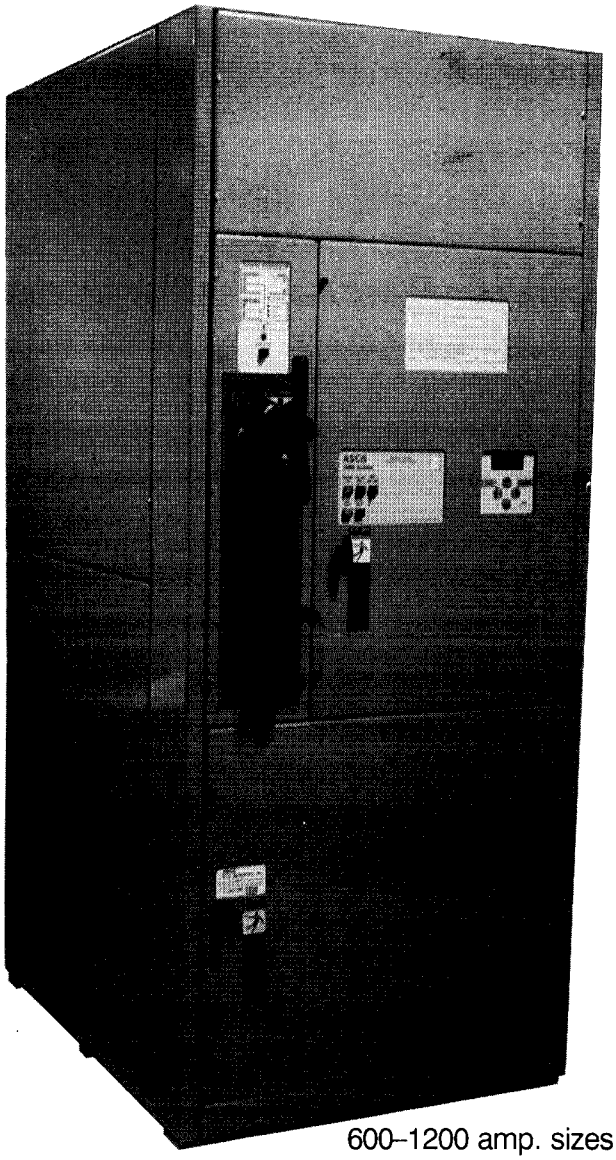
DANGER is used in this manual to warn of high voltages capable of causing shock, burns, or death.

⚠ WARNING

WARNING is used in this manual to warn of possible personal injury.

⚠ CAUTION

CAUTION is used in this manual to warn of possible equipment damage.



600–1200 amp. sizes

Note: Refer to the outline and wiring drawings provided with your 7000 Series ATB for all installation and connection details and accessories.

Note: Refer to *Group 5 Controller User's Guide* 381333–126 for ATS status display messages, time delays, pickup & dropout settings, and adjustments.

An experienced licensed electrician must install the 7ATB.

Rating Label

Each 7000 Series 7ATB 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 personal injury or serious equipment damage.

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ASCO POWER TECHNOLOGIES L.P. 50 Hanover Road, Florham Park, New Jersey 07932–1591 USA
telephone 1 800 937–2726 (ASCO), for service call 1 800 800–2726 (ASCO) www.asco.com

381333–193 A

ASCO POWER TECHNOLOGIES CANADA PO Box 1238, 17 Airport Road, Brantford, Ontario, Canada N3T 5T3
telephone 519 758–8450, fax 519 758–0876, for service call 1 888 234–2726 (ASCO) www.asco.ca

Nameplate

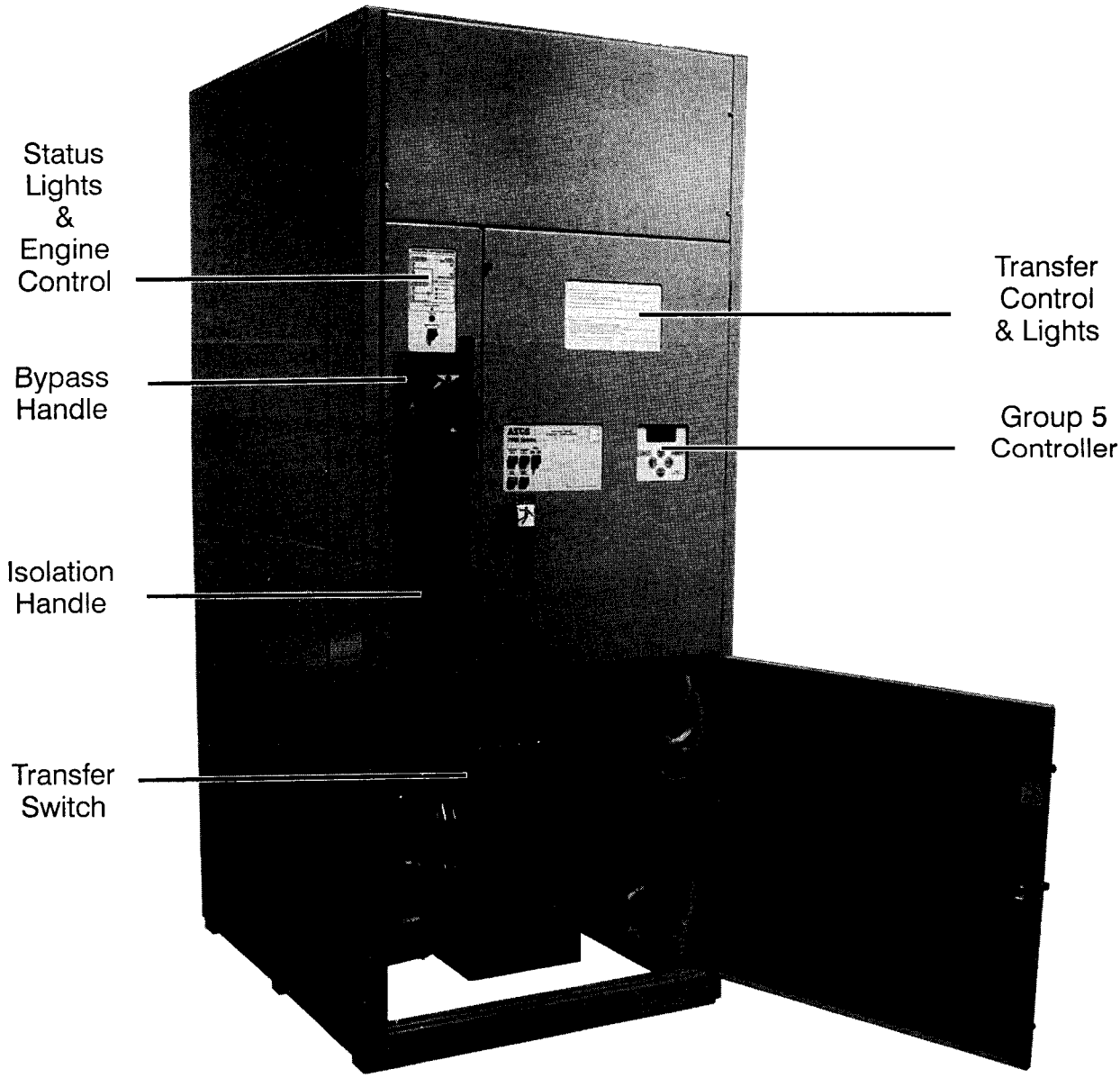
The Transfer Switch nameplate includes data for each specific 7000 Series ATB. Use the switch only within the limits shown on this nameplate. A typical Catalog Number is shown below with its elements explained.

Catalog Number Identification

Typical 7000 Series ATB catalog no. for overlapping neutral, 3 pole, 600 amp, 480 V, ATS in Type 1 enclosure:

H7ATB C 3 600 N 5 C

Neutral	Phase Poles	Amperes	Voltage		Controller	Enclosure
A – solid	2 – single Ø	600	C 208	K 415	5 – standard	C – type 1
B – switched	3 – three Ø	800	D 220	L 440	5X – if accessories ordered	F – type 3R
C – overlapping		1000	E 230	M 460		G – type 4
blank – none		1200	F 240	N 480		L – type 12
			G 277	P 550		blank – open type
			H 380	Q 575		
			J 400	R 600		



H7ATB with the lower door open (transfer switch shown).

SECTION 1 INSTALLATION

ASCO 7000 Series Automatic Transfer & Bypass–Isolation Switches (7ATBs) are factory wired and tested. Field installation requires mounting and connection of service cables, and auxiliary control circuits (if required).

Remove the Shipping Skid

Open the enclosure's lower front door and also remove the lower rear access panel. Then remove the four lag screws (2 in front, 2 in rear) securing the enclosure to the shipping skid.

Supporting Foundation

The supporting foundation for the enclosure must be level and straight. Refer to the applicable enclosure outline drawing included with the 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 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 applicable enclosure outline drawing furnished with this switch and mount the automatic transfer switch according to details and instructions shown on diagram.

Line Connections

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

Do not remove the interphase barriers from the transfer switch. Always protect the transfer switch, bypass switch, and isolation contacts and mechanisms from construction grit and metal chips when cabling.

⚠ DANGER

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

Testing Power Conductors

Do not connect the power conductors 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.

⚠ CAUTION

Protect the switch from construction grit and metal chips to prevent malfunction or shortened life of the 7ATB switch.

Connecting Power Conductors

After the power cables have been tested, connect them to the appropriate terminal lugs on the bypass switch as shown on the wiring diagram provided with the switch. Make sure 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 7ATB. 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 conductors. Tighten cable lugs to the torque specified on rating label.

Controller Ground

A grounding wire must be connected to the controller's lower left mounting stud. Because the controller is mounted on the enclosure door, a conductive strap must be used between the enclosure and the door. This connection provides proper grounding which does not rely upon the door hinges.

Harnesses

The transfer switch is connected to the left side of the controller by a plug–in harness (two plugs).

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 the automatic transfer switch and connect the engine start wires to the appropriate terminals. See Figure 1-1 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.

Auxiliary Circuits

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

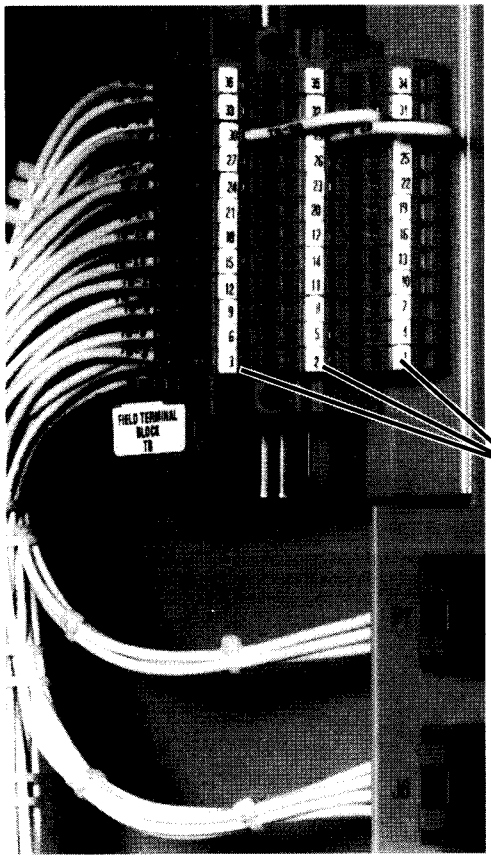


Figure 1-1. Customer terminal block on the top right side of the enclosure.

Functional Test

The Functional Test consists of two checks:

- ☐ 1 — Voltage Checks, page 1–3
- ☐ 2 — Electrical Operation, page 1–4

⚠ CAUTION

Do these checks in the order presented to avoid damaging the 7ATB.

Read all instructions on the Wiring Diagram and labels affixed to the automatic transfer & bypass–isolation switch. Note the control features that are provided and review their operation before proceeding.

Continue to **1 – Voltage Checks** on next page.

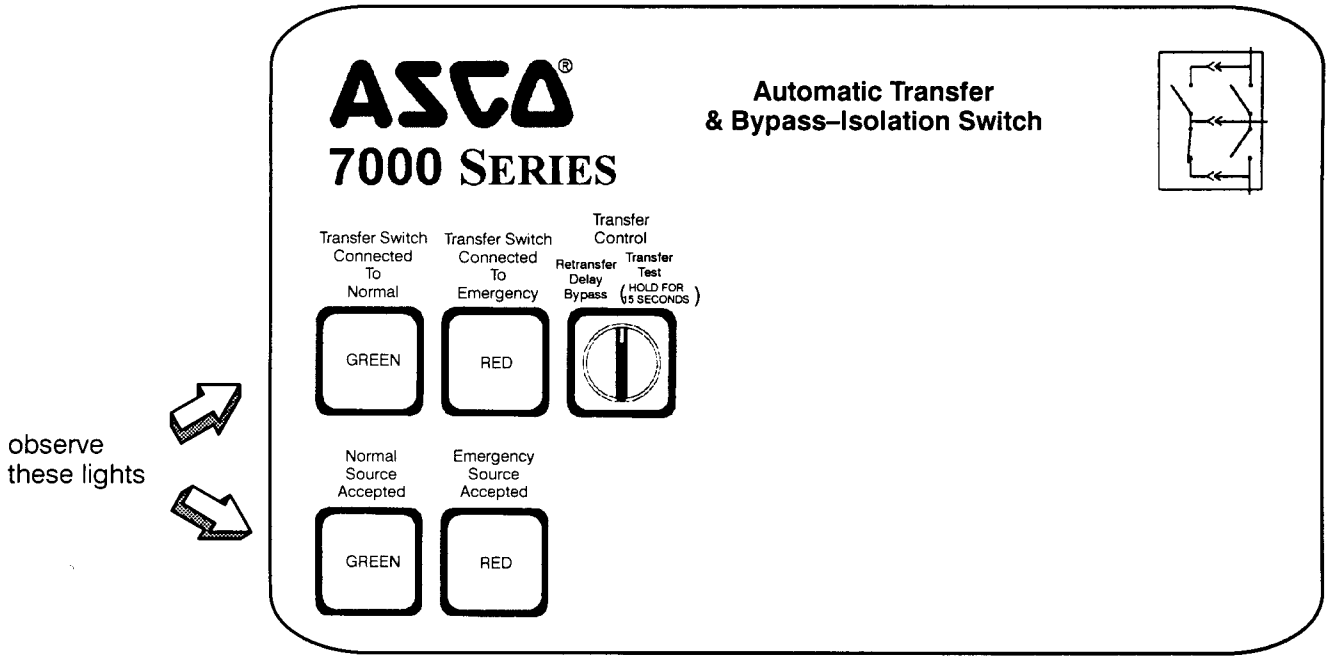


Figure 1-2. Standard controls and indicators.

Functional Test

Read all instructions on the *Wiring Diagrams* and labels affixed to the 7ATB. Note the control features that are provided and review their operation before proceeding.

After installing the 7ATB check the following:

- Bypass Handle should be in the *NORMAL* position.
- Isolation Handle should be in the *CONN* position.
- TS transfer switch Normal contacts should be *C* (closed)
  Emergency contacts should be *O* (open)

If handles are not in correct positions, follow instructions for Bypassing and Isolating the automatic transfer switch in **Section 3**. **Do not force the handles.** Electrical interlocks prevent a wrong sequence of operation.

1 – Voltage Checks

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

⚠ DANGER

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

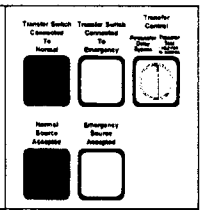
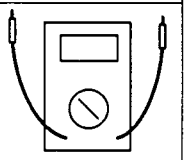
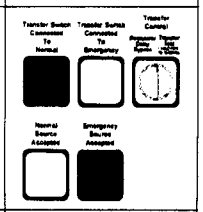
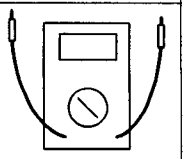
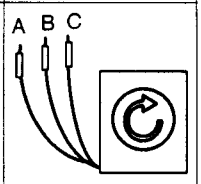
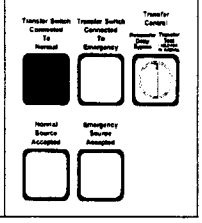
Perform steps 1–6 at the right. Observe the status lights. See Figure 1–2.

■ Black square means light is on.

❒ White square means light is off.

* If necessary, adjust voltage regulator on generator per the manufacturer's recommendations. The 7ATB will respond only to rated voltage specified on the nameplate.

Now continue to **2 – Electrical Operation** on next page.

1	Close the normal source circuit breaker. The *Transfer Switch Connected To Normal* and the *Normal Source Accepted* 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 *Transfer Switch Connected To Normal & Emergency Source Accepted* lights 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 enclosure door.	

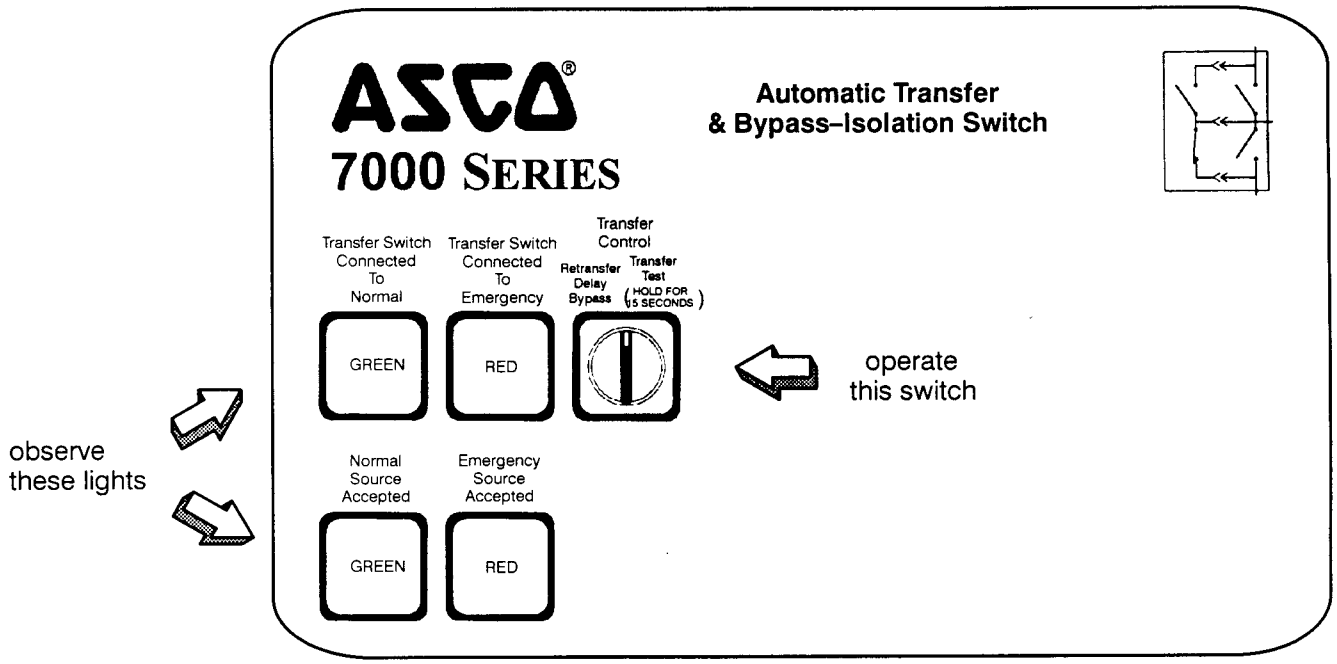


Figure 1-3. Standard controls and indicators.

2 – Electrical Operation

This procedure checks electrical operation of the ATS.

⚠ WARNING

Be sure to close the enclosure door before proceeding to prevent personal injury in case of electrical system fault.

Transfer Test

The ATS should still be bypassed. Both normal and emergency sources must be available and the emergency source generator (if used) must be capable of being started; put engine starting control in *automatic* position. The *Transfer Switch Connected to Normal* light and the *Normal Source Accepted* light should be on.

1. Turn the **Isolation Handle** counterclockwise to the *TEST* position.

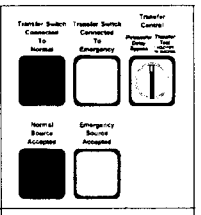
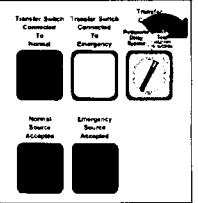
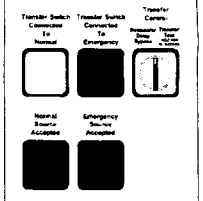
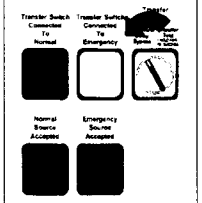
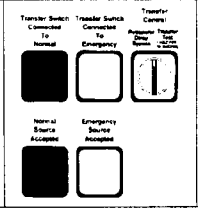
   NOTE: The engine generator may be signalled to start while turning the Isolation Handle. If emergency source is available, the ATS may operate to the emergency position. If it does, operate **Retransfer Delay Bypass** switch.

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

   ■ Black square means light is on.
   ❒ White square means light is off.

3. Turn the **Isolation Handle** clockwise to the *CONN* (connected) position.
4. Turn the **Bypass Handle** clockwise to the *OPEN* position.

This completes the Functional Test of the 7ATB.

1	The *Transfer Switch Connected to Normal* and *Normal Source Accepted* lights should be on.	
2	Turn and hold **Transfer Control** switch clockwise to *Transfer Test* until the engine starts and runs (within 15 sec.). The *Emergency Source Accepted* light should come on.	
3	Transfer switch will operate to the Emergency position after Feature 2B time delay. The *Transfer Switch Connected To Emergency* light should come on and *Load Connected to Normal* light goes off.	
4	Transfer switch will operate back to Normal position after Feature 3A time delay. For immediate retransfer turn **Transfer Control** counterclockwise to *Retransfer Delay Bypass*. The *Transfer Switch Connected To Normal* light should come on; *Transfer Switch Connected to Emergency* light should go off.	
5	The engine–generator will stop after the Feature 2E time delay (unloaded running engine cool-down). The *Emergency Source Accepted* light should go off.	

SECTION 2 TESTING & SERVICE

TRANSFER TEST

Test the Automatic Transfer Switch portion of the 7000 Series 7ATB at least once a month. This procedure checks the electrical operation of the Transfer Switch and Controller. Put the engine–generator starting control (at the engine–generator set) in automatic mode.

In the following test the generator will start, the load will be transferred to the Emergency source, then back to the Normal source. An interruption to the load will occur, unless the the Transfer Switch contacts are bypassed before the test. See pages 3–1 through 3–4 for bypassing & isolating instructions if no interruption of load is required.

⚠ WARNING

Be sure to close the enclosure door before proceeding to prevent personal injury in case of electrical system fault.

Perform the five–step **Electrical Operation – Transfer Test** procedure on page 1–4.

PREVENTIVE MAINTENANCE

Reasonable care in preventive maintenance will insure high reliability and long life for the 7000 Series 7ATB. An annual preventive maintenance program is recommended.

ASCO Services, Inc. (ASI) is ASCO Power Technologies's national service organization. In the US ASI can be contacted at 1-800-800-2726 for information on preventive maintenance agreements.

Checklist for Yearly Inspection

⚠ DANGER

Hazardous voltage capable of causing shock, burns, or death is used in this switch. Deenergize both Normal – Emergency power sources before performing inspections!

- ☐ **Clean the 7ATB enclosure.**
  Brush and vacuum away any excessive dust accumulation. Remove any moisture with a clean cloth.
- ☐ **Check the transfer switch contacts.**
  Bypass, isolate, and withdraw the transfer switch. Then remove the transfer switch interphase barriers and check the condition of the contacts. Replace contacts when pitted or worn excessively. Reinstall the interphase barriers carefully. See page 3–4.
- ☐ **Maintain transfer switch lubrication.**
  If switch is subjected to severe dust or abnormal operating conditions, renew factory lubrication on all movements and linkages. Relubricate solenoid operator if TS coil is replaced. Don't use oil; order *lubrication kit 75-100.*
- ☐ **Check all cable connections & retighten them.**

REPLACEMENT PARTS

Replacement parts are available in kit form. When ordering parts provide the Serial No., Bill of Material No. (BOM), and Catalog No. from the transfer switch nameplate. Contact your local ASCO Power Technologies Sales Office or ASI:

In the United States
call 1 – 800 – 800 – ASCO (2726)

In Canada
call 1 – 888 – 234 – ASCO (2726)

DISCONNECTING THE CONTROLLER

The harness disconnect plugs are furnished for repair purposes only and should not have to be unplugged. If the controller must be isolated, follow these steps:

⚠ DANGER

Bypass–Isolation Switch is energized! Do not touch isolation contact fingers; shock, burns, or death could result!

Disconnecting the Plugs

1. Bypass and Isolate the Automatic Transfer Switch.
2. Open the upper enclosure door.
3. Separate the two quick disconnect plugs by squeezing the latches. Do not pull on the harness wires.

Reconnecting the Plugs

1. The ATS should be still bypassed and isolated.
2. The two harness plugs and sockets are keyed. Carefully align the plugs with the sockets and press straight in until the latches click.
3. Close the enclosure doors.
4. Follow *Return to Service* instructions on page 3–5.

MANUAL LOAD TRANSFER

This procedure manually transfers load to other source if the Transfer Switch or Controller are out of service.

⚠ WARNING

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

1. Bypass the connected ATB source. Turn Bypass Handle to *EMERGENCY* or *NORMAL* (see page 3–2).
2. Isolate to Test. Turn the Isolation Handle to *TEST* position (see page 3–3).
3. Turn the Bypass Handle to *OPEN*, then to the other source (see page 3–1). The load will be interrupted.
4. Turn the Isolation Handle clockwise to the *CONN* [connected] position (see page 3–4).

TROUBLE-SHOOTING

Note any optional accessories that may be furnished on the 7ATB and review their operation. Refer to any separate drawings and/or instructions that may be packed with the 7ATB. See Table B.

⚠ DANGER

Hazardous voltage capable of causing shock, burns, or death is used in this switch. Do not touch the power or load terminals of the bypass switch or transfer switch!

Table B. Trouble-Shooting Checks.

PROBLEM	CHECK IN NUMERICAL SEQUENCE		
	1 – OPERATION	2 – GEN-SET	3 – VOLTAGE
Engine–generator set does not start when the **Transfer Control** switch is turned and held in *Transfer Test* position or when normal source fails.	Hold *Transfer Test* switch 15 seconds or the outage must be long enough to allow for Feature 1C time delay plus engine cranking and starting.	Starting control must be in the automatic position. Batteries must be charged and connected. Check wiring to engine starting contacts.	–
Transfer switch does not transfer the load to the emergency source after the engine–generator set starts.	Wait for Feature 2B time delay to time out.	Generator output circuit breaker must be closed. Generator frequency must be at least 95% of nominal (57 Hz for a 60 Hz system.) *	Voltmeter should read at least 90% of nominal phase to phase voltage between transfer switch terminals EA & EC (or EL1 & EL2 for 2 pole)*
Transfer switch does not transfer the load to normal source when normal returns or when the **Transfer Control** switch is released.	Wait for Feature 3A time delay to time out.	–	Voltmeter should read at least 90% of nominal phase to phase voltage between transfer switch terminals NB & NC, NC & NA, & NA & NB (or NL1 & NL2 for 2 pole).
Engine–generator-set does not stop after load retransfer to the normal source.	Wait for Feature 2E time delay to time out.	Starting control must be in the automatic position.	–

* These are factory settings. Refer to **Controller's User's Guide**.

If the problem is isolated to circuits on the controller or the transfer switch, call your local ASCO Power Technologies sales office or ASI: in the United States, call 1–800–800–2726 or in Canada call 1–888–234–2726. Furnish the Serial No., Catalog No., and Bill of Material (BOM) No. from the transfer switch nameplate.

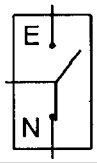
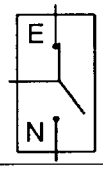
MAINTENANCE HANDLE

⚠ DANGER

Bypass and isolate the Transfer Switch before using the maintenance handle! See pages 3–1 through 3–4. Remove the maintenance handle after using it; store it inside.

1. Bypass, isolate, and withdraw the transfer switch (pages 3–1 through 3–4). Then locate and remove the maintenance handle from the clip (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 Figure 2–1 and Table C.

Table C. Maintenance handle positions.

ATS Position		Handle	Indicators
Normal			E = O upper contacts open N = C lower contacts closed
Emergency			E = C upper contacts closed N = O lower contacts open

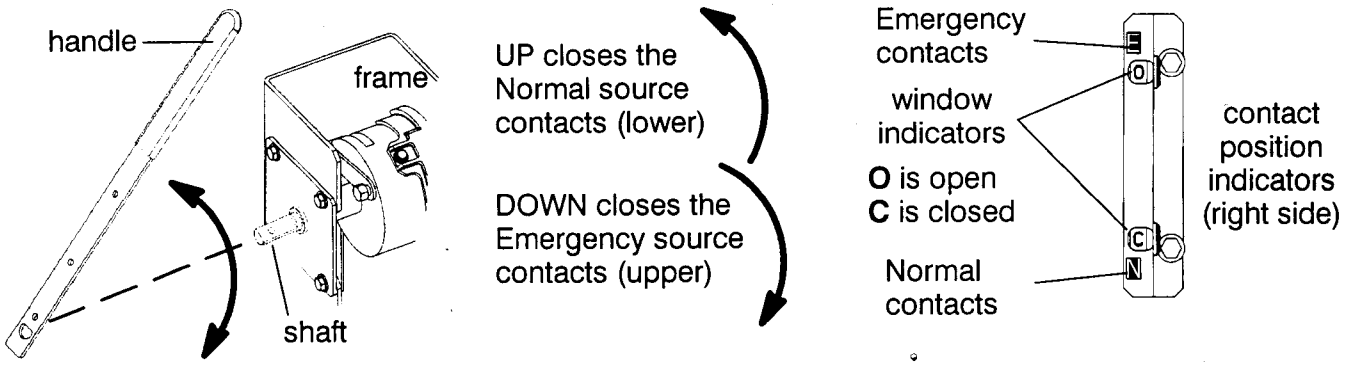


Figure 2–1. Maintenance handle operation and contact position indicators.

SECTION 3 BYPASSING & ISOLATING

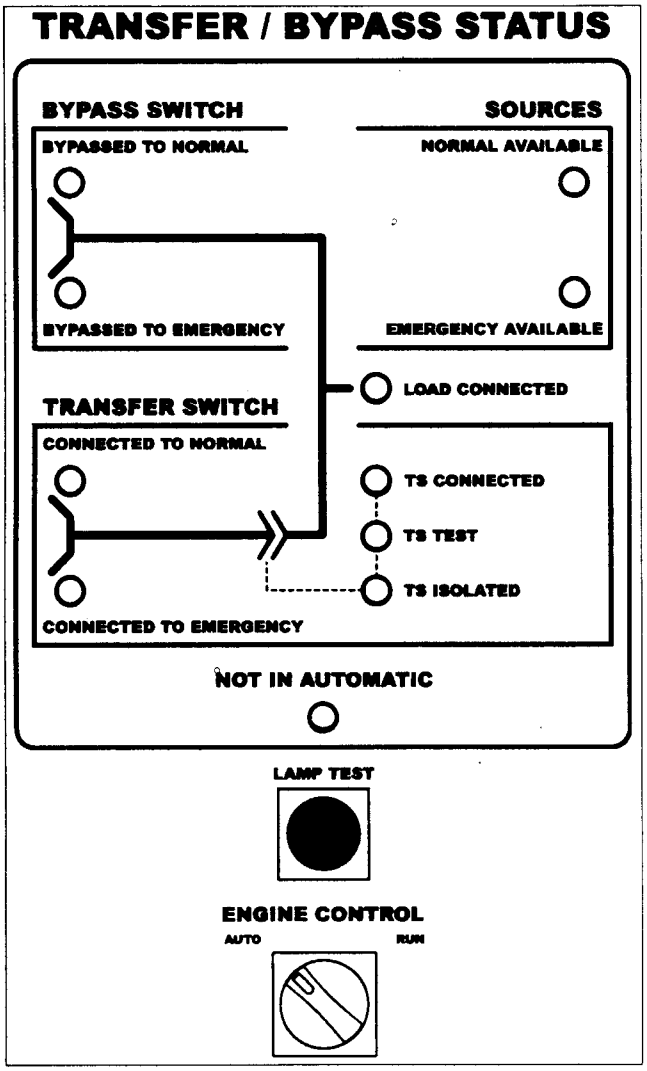


Figure 3–1. Status lights and Engine Control.

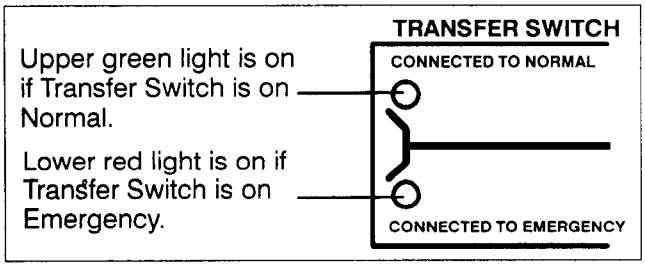


Figure 3–2. Status lights for Transfer Switch main contact position.

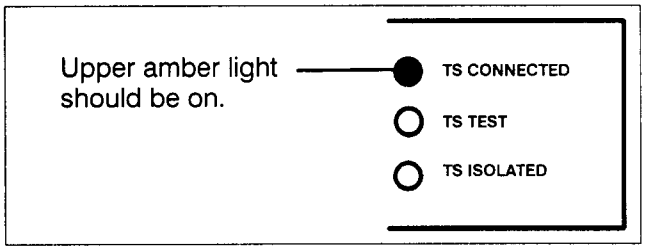


Figure 3–3. Status lights for Transfer Switch isolation contact position.

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 Bypass Switch Handle must be in the *OPEN* position (green window indicator) and the Isolation Handle must be in the *CONN* [connected] position (window indicator). The *TS Connected* light must be on. See Figures 3–1, 3–2, 3–3.

⚠ CAUTION

You can only bypass to the same source that the Transfer Switch is connected. Solenoid interlock prevents incorrect operation.

1. Observe which *Transfer Switch Connected To* light is on (*Normal* or *Emergency*) on the door. This is the position of the transfer switch (see Figure 3–2).
2. Follow the directions on next page to Bypass to the same source as connected to transfer switch (select Normal or Emergency).

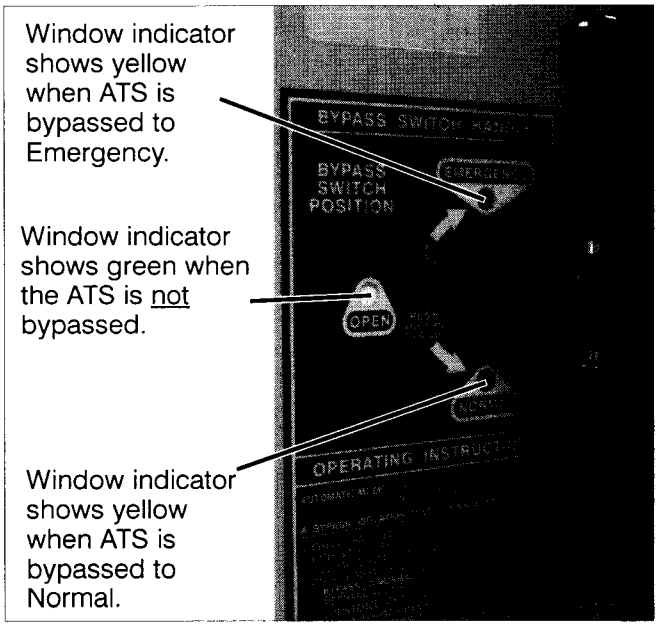


Figure 3–4. Bypass Handle and three position window indicators.

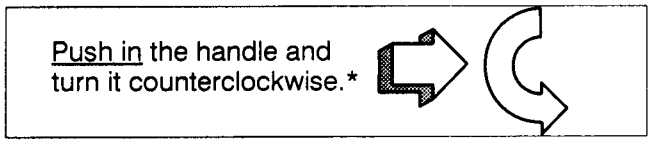
Allowable Positons of the Bypass Switch in relation to Positons of the Transfer Switch
(with Isolation Handle in the *Conn* [connected] positon and *TS Connected* light on)

Transfer Switch	Bypass Switch can be in either	
If Transfer Switch is in Normal position.	Open or	Normal
If Transfer Switch is in Emergency position.	Open or	Emergency

BYPASSING & ISOLATING *(continued)*

To Bypass Normal Source*

(Load connected to Normal Source)
The *Transfer Switch Connected To Normal* light is on and *Transfer Switch Connected To Emergency* light is off.



Push in* the Bypass Handle all the way, then turn it counterclockwise until *Bypass Switch Position* shows closed on NORMAL (yellow window indicator). The green light *Bypassed to Normal* will come on and the amber light *Not In Automatic* will flash.

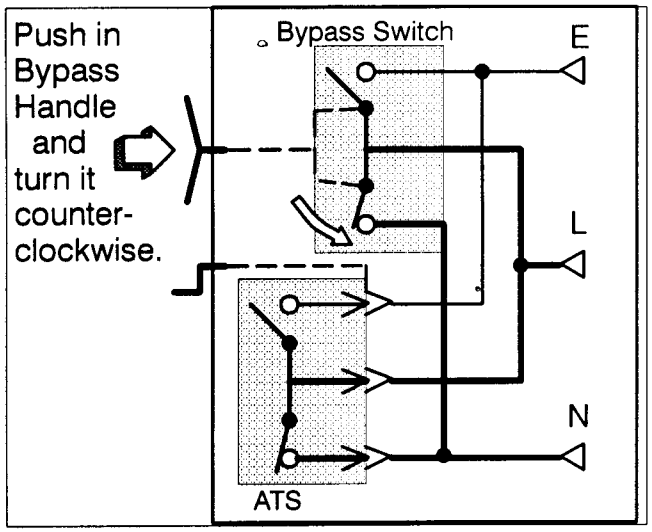
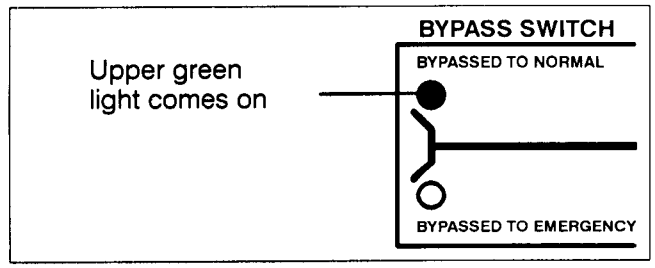


Figure 3–5. Bypass to Normal diagram.



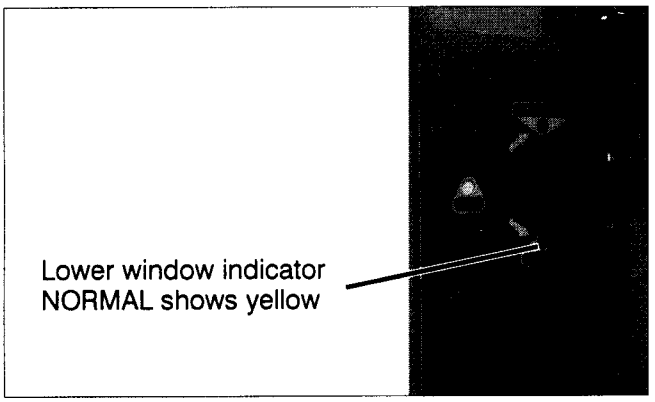
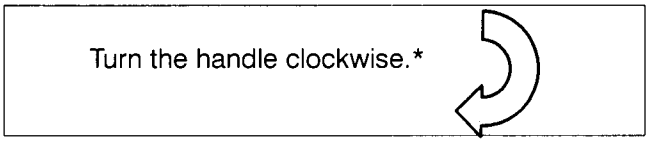


Figure 3–6. Status light and window indicator for Bypassed to Normal Source.

To Bypass Emergency Source*

(Load connected to Emergency Source)
The *Transfer Switch Connected To Emergency* light is on and *Transfer Switch Connected To Normal* light is off.



Turn* the Bypass Handle clockwise until *Bypass Switch Position* shows closed on EMERGENCY (yellow window indicator). The red light *Bypassed to Emergency* will come on and the amber light *Not In Automatic* will flash.

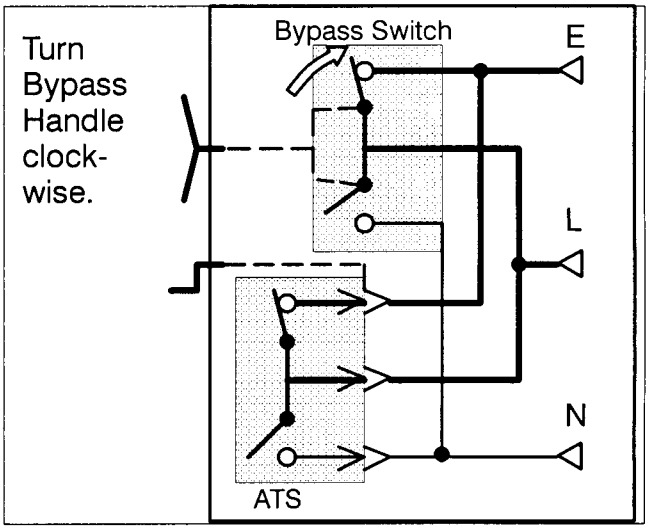
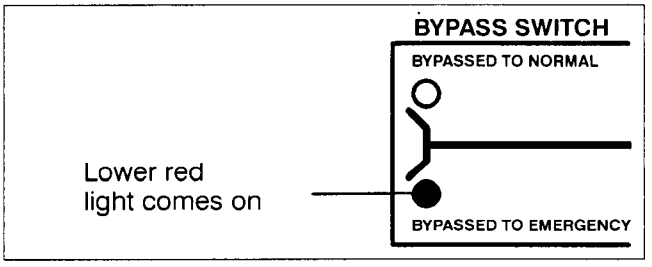


Figure 3–7. Bypass to Emergency diagram.



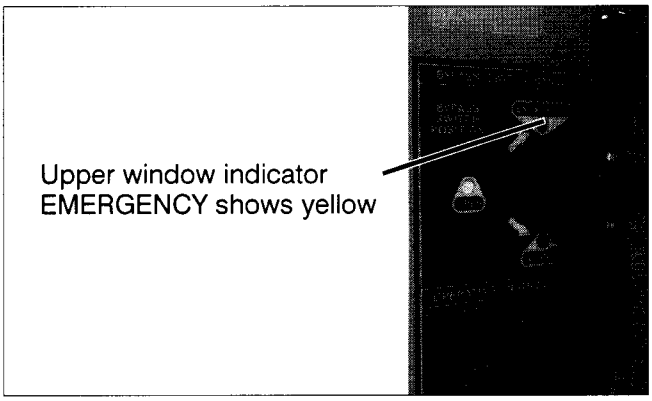


Figure 3–8. Status light and window indicator for Bypassed to Emergency Source.

The automatic transfer switch can now be put in the *TEST* or *OPEN* position. See **ISOLATING** on page 3–3.

*** NOTE:** When Accessory 40*B (reversed Normal & Emergency connections) is specified, the handle operation is reversed. Follow instructions on the door.

ISOLATING THE ATS

Isolating is required before any service work can be performed on the automatic transfer switch (ATS). Refer to Figures 3–9, 3–10, 3–11, and 3–12.

1. Bypass the closed automatic transfer switch contacts. See **BYPASSING** on pages 3–1 and 3–2.
2. Turn the Isolation Handle counterclockwise (approx. 8 turns) until window shows *TEST*. The *TS Test* amber light should come on. The ATS can be tested now without load interruption (see page 2–1).

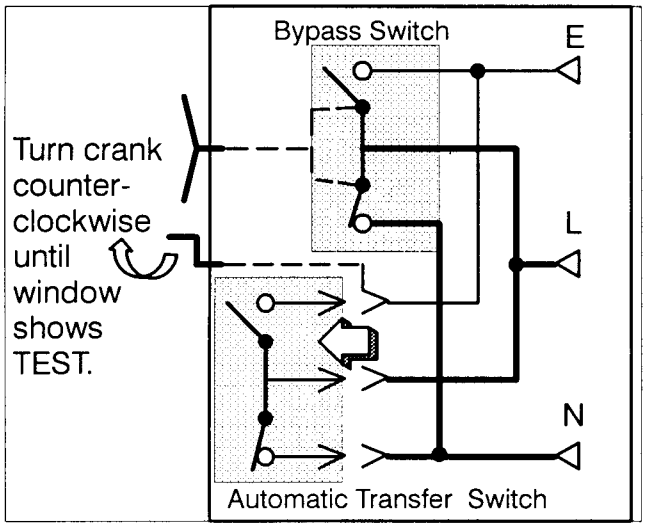
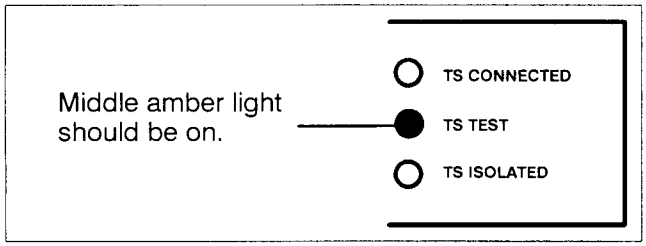


Figure 3–9. *CONNECTED* to *TEST* position.



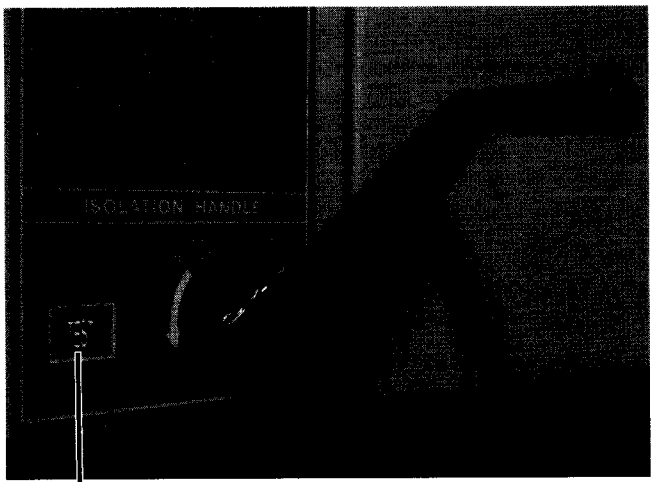


Figure 3–10. Isolation Handle turned to *TEST*.

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

⚠ DANGER

Hazardous voltage capable of causing electrical shock, burns, or death; do not touch any control circuit terminals.

3. Continue turning Isolation Handle counterclockwise (approx. 6 turns) until the window shows *ISOLATE*. The *TS Isolated* amber light should come on.

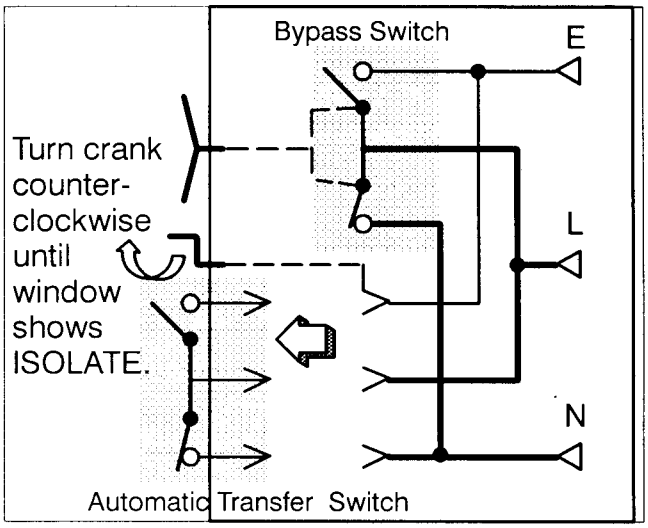
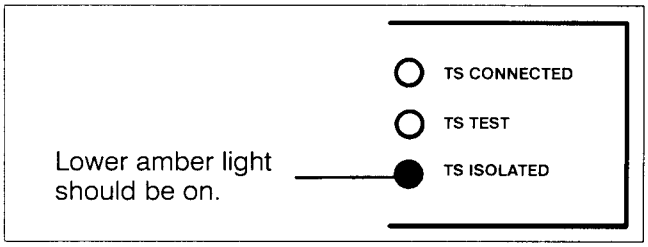


Figure 3–11. *TEST* to *ISOLATE* position.



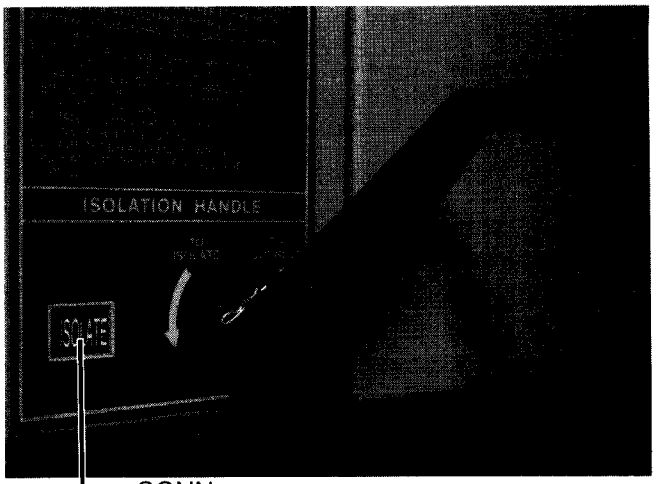


Figure 3–12. Isolation Handle turned to *ISOLATE*.

4. Open the lower enclosure door. Pull out both left and right side rails then use the two 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 3–13.

⚠ DANGER

Hazardous voltage capable of causing electrical shock, burns, or death; do not touch any control circuit terminals.

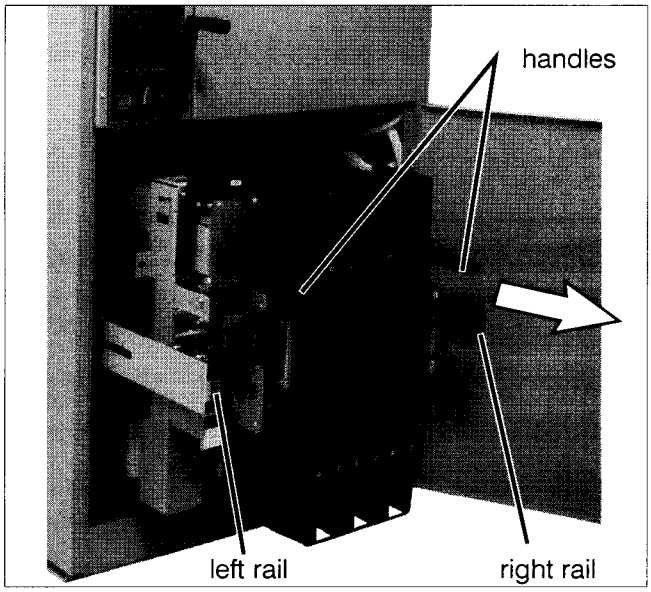


Figure 3–13.Transfer switch isolated and pulled out for inspection.

See page 2–2 for maintenance handle use. A lifting yoke 734408 is available to facilitate lifting by using an overhead crane or similar equipment. See **WARNING**.

⚠ WARNING

The Transfer Switch weighs 130–200 lbs. depending upon the number of poles. Use lifting device 734408 or other device capable of lifting this weight to avoid personal injury or equipment damage. Two persons are recommended.

Contact Inspection

The main contacts are protected by arcing contacts. The arcing contacts make first and break last to avoid arcing at the main contacts. Contact condition should be checked annually. Contacts should be replaced when contact material becomes severely worn. Discoloration is normal. Do not file contacts because it wastes material. Instead use light emery paper to clean up the contact surfaces.

If the contacts need to be replaced see page 2–1. The Service Bulletin is 381339–237.

⚠ DANGER

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

The contact assemblies (two for each pole) are located to the right of the operator mechanism.

1. **Deenergize transfer switch** (pages 3–1 thru 3–4) 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 2–2). Open the contacts that will be inspected by using the detachable maintenance handle.
3. **Remove the interphase barriers** (Figure 3–14). Use a blade screwdriver to loosen (ccw) four round–head screws holding each barrier to the arc chutes. Slide barrier up until keyholes clear the round–head screws, then remove it.

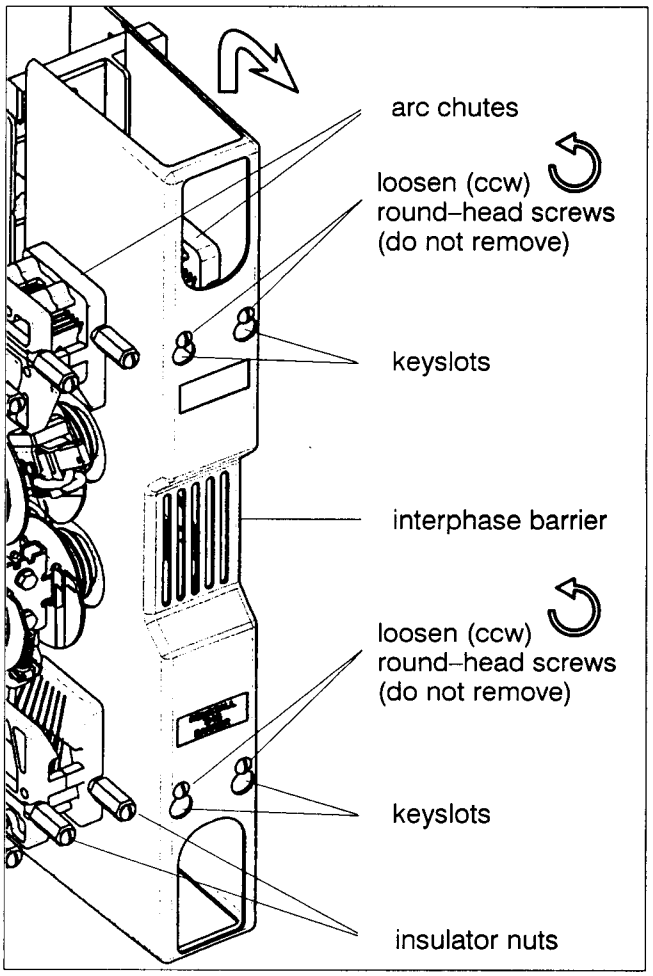


Figure 3–14. Interphase barrier removal.

4. **Remove the arc chutes.** Use a 5/8" nutdriver to remove (ccw) two long insulator nuts. Then pull the arc chute outward (off the long threaded rods). See Figure 3–14.

5. **Remove the movable contact cover.**
   Use your thumb and fingers to squeeze the sides inward until the contact cover is released from the shaft clamp (both sides). Then remove the movable contact cover. See Figures 3–15 & 3–16.

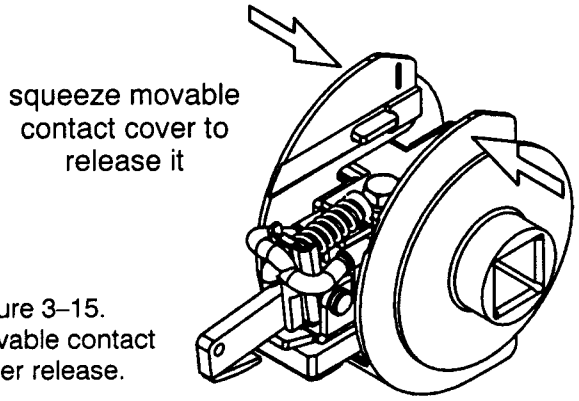


Figure 3–15. Movable contact cover release.

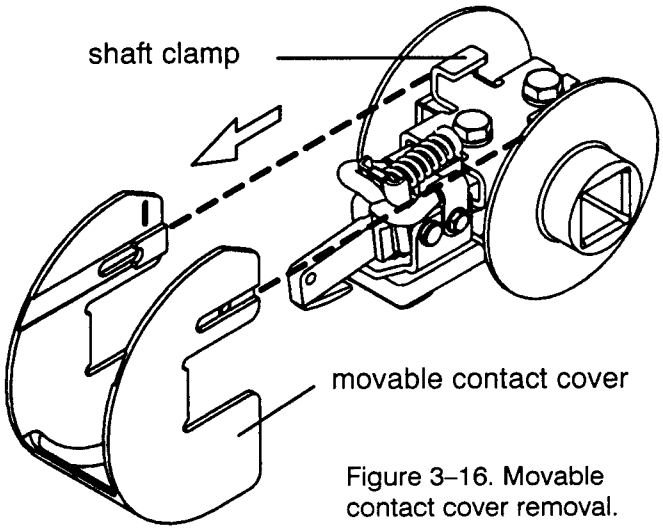


Figure 3–16. Movable contact cover removal.

6. **Reinstall the movable contact cover.**
   After inspection reinstall the movable contact cover onto the movable contact assembly. Use your thumb and fingers to squeeze the sides inward until the contact cover is latched onto the metal bracket (both sides). Figures 3–15 & 3–16.

7. **Reinstall the arc chute.**
   Slide the arc chute (arc splitters toward the contacts and recess for nuts outward) between the two long threaded rods. Reinstall the two long insulator nuts (round shoulder in) and use a 5/8" nutdriver to GENTLY tighten (cw) until snug. Do not overtighten these nuts. See Figure 3–14.

8. **Reinstall the interphase barrier.**
   Install the barrier over the arc chutes and slide it up until the four round-head screws align in the four keyholes in the barrier. Then slide the barrier down. Use a blade screwdriver to tighten (cw) the four round-head screws to secure the barrier to the arc chute insulator nuts. See Figure 3–14.

RETURN TO SERVICE

This procedure explains how to return the automatic transfer switch (ATS) to service after inspection and maintenance. Observe the *Bypass Switch Position* indicator and lights).

1. Use the two handles to roll the transfer switch into the enclosure (isolation contacts facing inward) until its crank pins engage the latch plates on both sides. Next push in both side rails and close enclosure door.

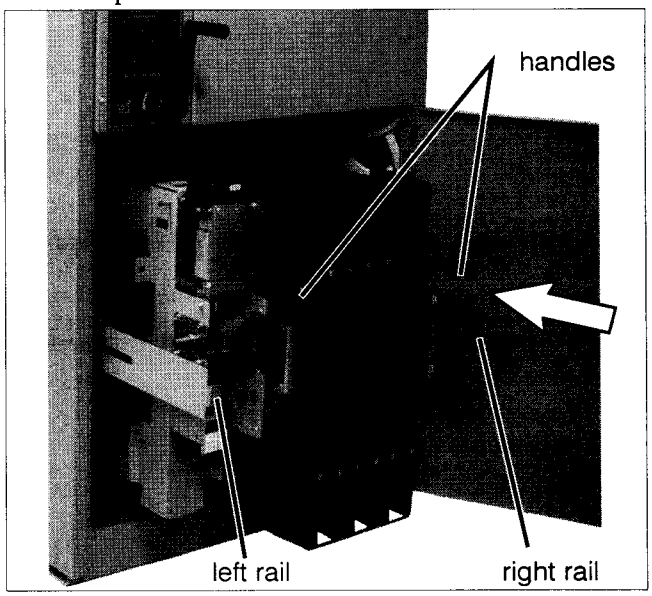


Figure 3–17. Transfer switch isolated and pulled out for inspection.

⚠ WARNING

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

2. Turn Isolation Handle clockwise (approx. 6 turns) until the window shows *TEST* and *TS TEST* light comes on.

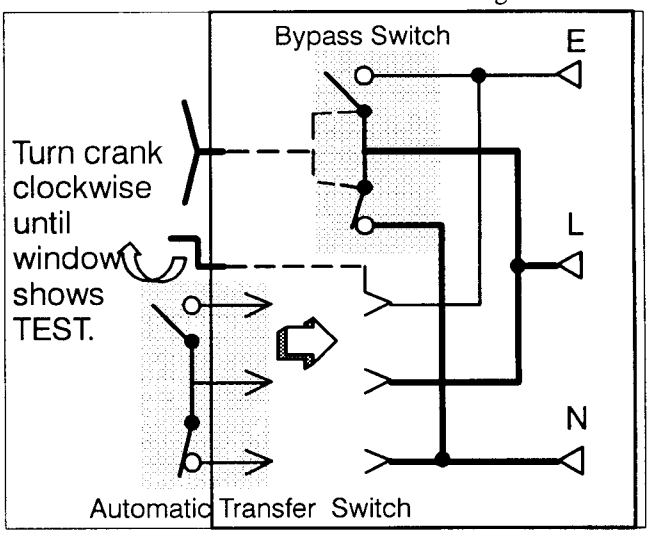
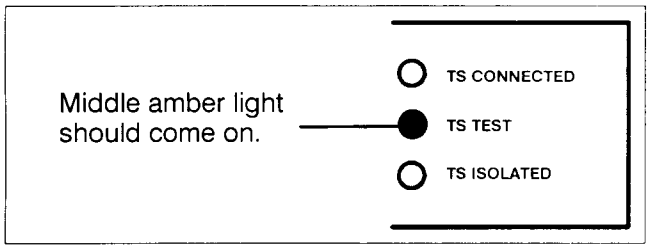


Figure 3–18. *ISOLATE* to *TEST* position.



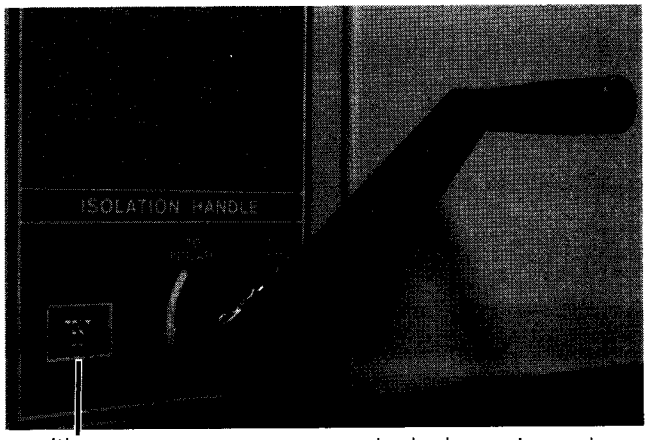


Figure 3–19. Isolation Handle turned to *TEST*.

3. The ATS can be tested now without load interruption (see page 2–1).

⚠ CAUTION

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

4. Observe which *Bypass Switch Position* window indicator is yellow (*NORMAL* or *EMERGENCY*) at the Bypass Switch Handle. This indicates the source connected to the load.
5. Observe which *Transfer Switch Connected To* light is on (*Normal* or *Emergency*) on the door. This is the position of the Transfer Switch. If it is not in the same position as the Bypass Handle change the position of the Transfer Switch as follows:

To change the position of transfer switch

Operate to NORMAL	Operate to EMERGENCY
Turn **Transfer Control** switch to *Retransfer Delay Bypass*.	Turn **Transfer Control** switch to *Transfer Test* (hold 15 seconds).*
Connected To Normal light should come on.	*Connected To Emergency* light should comes on.

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

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

⚠ WARNING

Do not close the isolation contacts unless the Transfer Switch (ATS) and Bypass Switch are in the same position!

6. When the transfer switch is in the same position as the Bypass Switch handle, continue turning the Isolation Handle clockwise (about 8 turns) until the window shows *CONN* (connected).

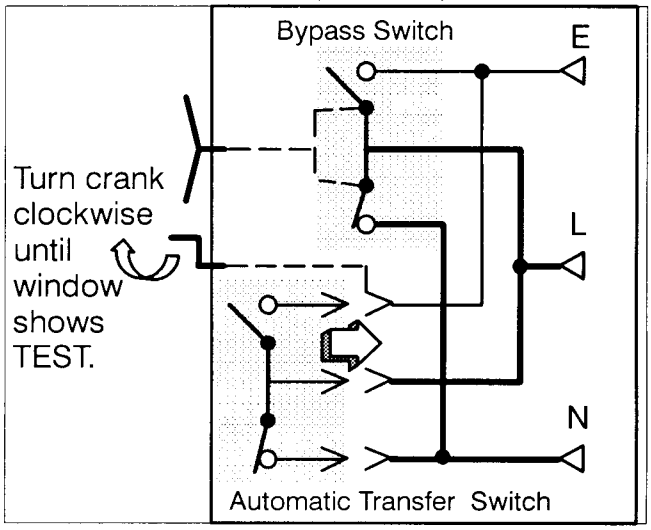
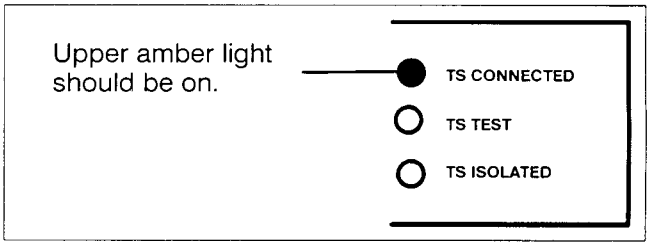


Figure 3–20. *TEST* to *CONN* (connected) position.



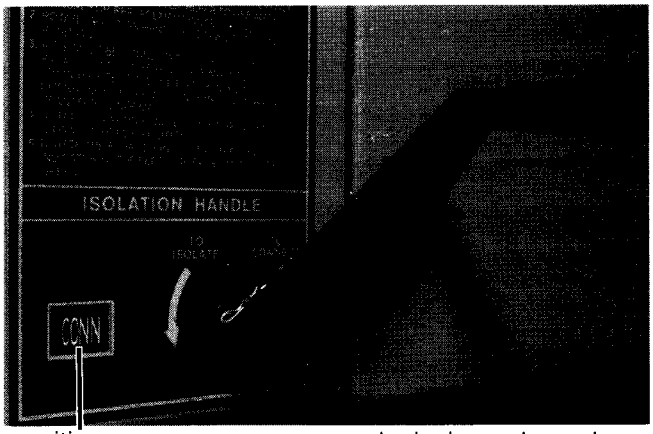


Figure 3–21. Isolation Handle turned to *CONN*.

RETURN TO SERVICE continued*

This procedure explains how to return the Bypass Switch Handle to the OPEN position. The Bypass Handle must be in the *CLOSED* position (yellow indicator on *NORMAL* or *EMERGENCY*) and the Isolation Handle must be in the *CONN* position (window). See Figures 3–22, 3–23, and 3–24.

⚠ CAUTION

You can only bypass to the same source that the ATS is connected. Solenoid interlock prevents incorrect operation.

1 Observe which Bypass Switch Position indicator is yellow (*NORMAL* or *EMERGENCY*) at the Bypass Switch Handle. This indicates the source connected to the load.

2 Un–Bypass to same source as the Bypass Switch Position as follows (select Normal or Emergency).

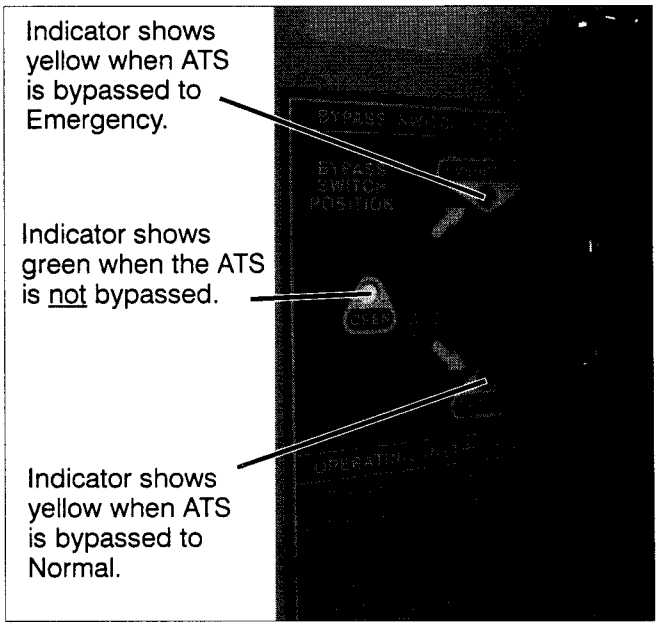


Figure 3–22. Bypass Handle and position indicators.

To Un–Bypass Normal Source*

(Load connected to Normal Source)

The *Transfer Switch Connected To Normal* light is on and *Transfer Switch Connected To Emergency* light is off.

Turn the handle clockwise.*

Turn* the Bypass Handle clockwise until the *Bypass Switch Position* shows OPEN (green window indicator). The *Bypassed to Normal* light should go off and the *Not In Automatic* light should go off.

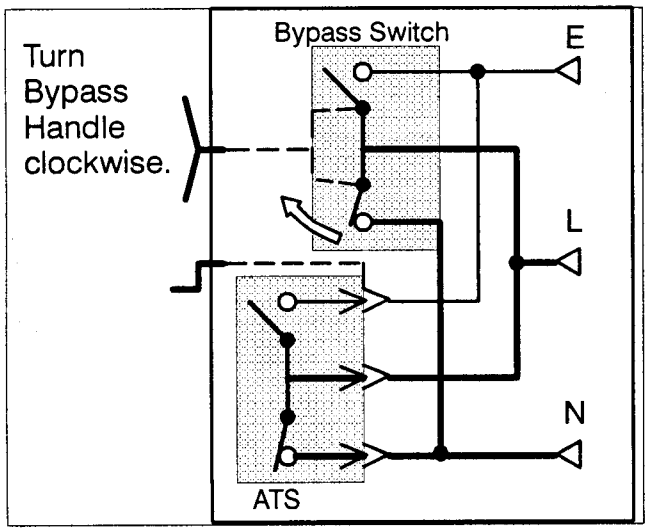


Figure 3–23. Un–Bypass Normal diagram.

To Un–Bypass Emergency Source*

(Load connected to Emergency Source)

The *Transfer Switch Connected To Emergency* light is on and *Transfer Switch Connected To Normal* light is off.

Turn the handle counterclockwise.*

Turn* the Bypass Handle counterclockwise until the *Bypass Switch Position* shows OPEN (green window indicator). The *Bypassed to Emergency* light should go off and the *Not In Automatic* light should go off.

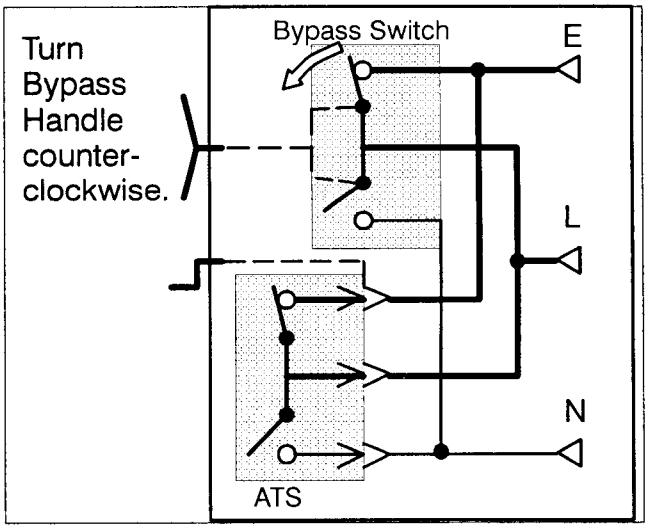


Figure 3–24. Un–Bypass Emergency diagram.

The Automatic Transfer & Bypass–Isolation Switch should be left in this position.

* **NOTE**: When Accessory 40*B (reversed Normal & Emergency connections) is specified, the handle push–pull operation is reversed. Follow instructions on the door.

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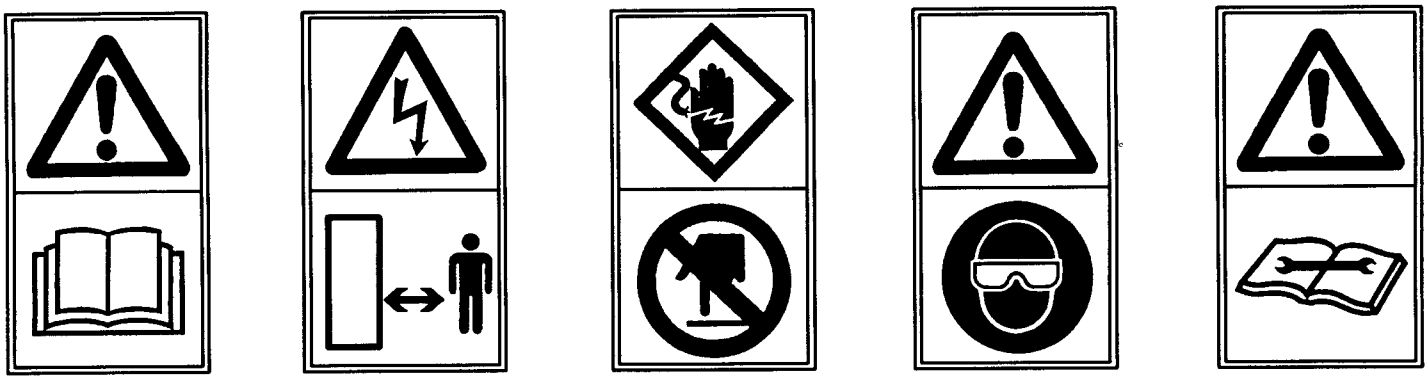


GB Safety Instructions

Please carefully read these general supplemental safety Dangers and Warnings before performing installation, operation, or service on any ASCO Switch product. Also read the manual included with the product.

Safety Levels

Only experienced licensed electricians should install the switch. All standard safety practices should be observed.

Nameplate Ratings

Do not exceed the values on the rating label. Exceeding the rating could cause serious damage or personal injury.

Inspection and Maintenance

To prevent the possibility of fatal electrical shocks and burns, do not work on the switch until all power and control circuits are disconnected.

Manual Operation with Maintenance Handle

To prevent the possibility of personal injury or property damage, do not manually operate the switch until all power and control circuits are disconnected.

To prevent the possibility of personal injury or property damage, be sure to remove the manual handle after working on the switch. Reattach it to the switch in the place provided.

Solenoid Operator Coil Replacement

To prevent the possibility of personal injury, hold the core tube assembly securely away from yourself when removing and installing the coil; the spring exerts substantial force outward on the core and link.

D Sicherheitshinweise

Bitte lesen Sie aufmerksam diese ergänzenden, allgemeinen Gefahrenhinweise und Warnungen, bevor Sie mit der Installation, Inbetriebnahme oder Wartung der ASCO Schaltgeräte beginnen. Lesen Sie auch das dem Gerät beiliegende Handbuch.

Sicherheitsanforderungen

Die zur Installation und Inbetriebnahme erforderlichen Arbeiten dürfen nur von zugelassenen Elektrofachkräften ausgeführt werden. Dabei sind die jeweils gültigen gesetzlichen und behördlichen Vorschriften und die einschlägigen Sicherheitsbestimmungen zu beachten.

Bemessungsdaten auf dem Leistungsschild

Die auf dem Leistungsschild angegebenen Bemessungs–daten dürfen nicht überschritten werden. Ein Über–schreiten dieser Daten kann zu erheblichen Personen– oder Sachschäden führen.

Prüfung und Wartung

Um die Möglichkeit eines gefährlichen elektrischen Schlages und Verbrennungen auszuschliessen, sind vor Arbeiten an dem Schaltgerät alle Haupt– und Steuer– stromkreise spannungsfrei zu schalten.

Handbetätigung mit dem Bedienungshebel

Um mögliche Verletzungen oder Sachschäden zu ver–meiden, sind vor der Betätigung des Schalters von Hand alle Haupt– und Steuerstromkreise spannungsfrei zu schalten.

Um mögliche Verletzungen oder Sachschäden zu ver–meiden, entfernen Sie den Bedienungshebel wieder, wenn die Arbeiten am Schalter abgeschlossen sind. Befestigen Sie den Bedienungshebel in der dafür vorgesehenen Halterung am Schalter.

Betätigungsmagnet Spulentausch

Um mögliche Verletzungen zu vermeiden, halten Sie die Baugruppe Magnetanker und Führungsrohr beim Ausbau und Einbau der Magnetspule nicht in Ihre Richtung. Die eingebaute Feder übt eine erhebliche Kraft auf den Magnetkern und das Schaltgestänge aus.

E Instrucciones de Seguridad

Por favor lea cuidadosamente estos instrucciones generales de seguridad, sobre Peligro y Advertencia antes de realizar la instalacion, operacion, o servicio sobre cualquier producto de Interruptores ASCO. Lea tambien el manual incluido con el producto.

Niveles de Seguridad

Solo personal electricista con licencia y experiencia puede instalar el interruptor. Todas las normas de seguridad deben ser observadas.

Rangos en la Placa de Datos

No exceda los valores de los rangos establecidos. Excediendo los rangos puede causar serios daños o lesiones personales.

Inspección y Mantenimiento

Para prevenir la posibilidad de descargas eléctricas o quemaduras fatales, no trabaje sobre el interruptor hasta que toda la energia y circuitos de control hayan sido desconectados.

Operacion Manual con la Palanca para Mantenimiento

Para prevenir la posibilidad de lesiones personales o daños al equipo, no opere manualmente el interruptor hasta que toda la energia y circuitos de control hayan sido desconectados.

Para prevenir la posibilidad de lesiones personales o daños al equipo, asegureso de retirar la palanca de operacion manual después de haber trabajado sobre el interruptor. Reinstálela en el lugar provisto para este fin.

Reemplazo de la Bobina en el Operador Solenoide

Para prevenir la posibilidad de lesiones personales, sujete el núcleo y tubo firmemente separado de usted cuando quite o instale la bobina; el resorte ejerce una substancial fuerza hacia afuera sobre el núcleo y opresor.

F Instructions de Sécurité

S'il vous plais lire attentivement ces indication additionnelles de Danger et de Mise en garde evant de procéder a l'installation, l'opération ou l'entretien de l'un des communtateurs ASCO. Aussi lire le manuel inclu avec le produit.

Niveaux de sécurité

Un électricien qualifié doit installer ce commutateur. Il doit se conformer à toutes les pratiques sécuritaires normalisées.

Plaque signalétique des valeurs nominales

Opérer dans la plage des valeurs nominales prescrites. Le dépassement de ces valeurs peut entraîner des dommages sérieux ou des blessures physiques.

Inspection et entretien

Afin de prévenir la possibilité de brûlures ou de choc électique fatal, débrancher tous les circuits d'alimentation et de contrôle avant d'effectuer des travaux sur le commutateur.

Manette de commutation manuelle

Afin de prévenir la possibilité de blessures ou de dommages aux équipements, ne faire fonctionner manuellemanet le communtateur qu'après avoir débranché tous les circuits d'alimentation et de contrôle.

Afin de prévenir la possibilité de blessures physiques ou de dommages aux équipements, retirer la manette de commutation manuelle après les travaux et la remiser à l'endroit prévu à cet effet.

Remplacement du solénoïde de commutation

Afin de prévenir la possibilité de blessures, tenir le mécanisme d'entraînement loin de vous lors du retrait et de l'installation de la bobine; le ressort exerce une force appréciable que repousse le noyau.

Handle Installation for ASCO® 7000 Series H–design 7ATB, 7ACTB, 7ADTB Switches

The *Bypass Handle* and *Isolation Handle* have been removed for shipping purposes. These two handles must be reinstalled after the H–design 7ATB, 7ACTB, 7ADTB switches have been moved to their installation location.

Locate the *Bypass Handle* and the *Isolation handle* and hardware supplied loose with the 7ATB, 7ACTB, 7ADTB.

Tools required: ¼" hex key (allen) wrench

⚠ DANGER

ELECTROCUTION – FLASH HAZARD
Do not work on the transfer switch until both the utility and generator are off. Turn OFF both circuit breakers.

Bypass Handle Installation

See Figure A

1. With the set screw on the left side, slide the Bypass Handle onto the bypass shaft (top). If necessary, use a ¼ hex–key (allen) wrench to loosen (counterclockwise) the set screw so that the handle goes in against the pin (the two drive pins must be adjacent to the shaft pin).
2. Use a ¼ hex–key (allen) wrench to tighten (clockwise) the set screw into the groove in the bypass shaft until it stops. Then back out the screw one complete turn (360° counterclockwise). Remove the hex–key (allen) wrench.
3. Verify that the bypass handle is free to rotate on the shaft, and that the handle will not come off the shaft.

⚠ CAUTION

Back out the set screw one revolution (360° counterclockwise) to allow free movement of bypass handle on the shaft.

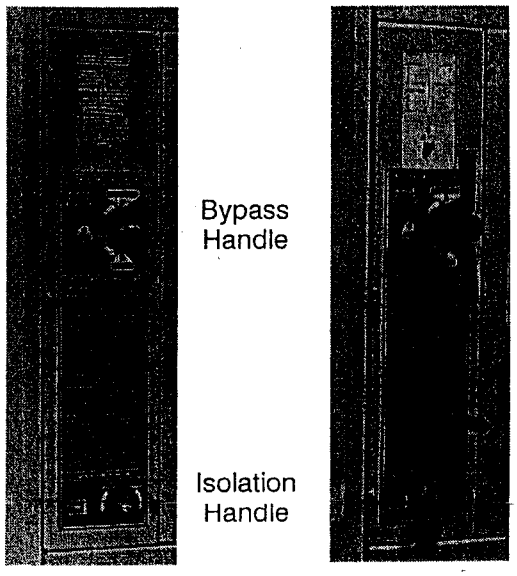
Isolation Handle Installation

See Figure B

1. With the crank facing upward, slide the Isolation Handle onto the isolation shaft (lower).
2. Insert the clevis pin from the right side through the hub of the isolation handle and through the hole in the isolation shaft. Secure the isolation handle by installing the hairpin clip through the hole in the clevis pin.
3. Verify that the isolation handle is secure on the shaft, and that the handle will not come off the shaft.

⚠ CAUTION

Do not remove the handles after they are installed.



Handles Removed Handles Installed

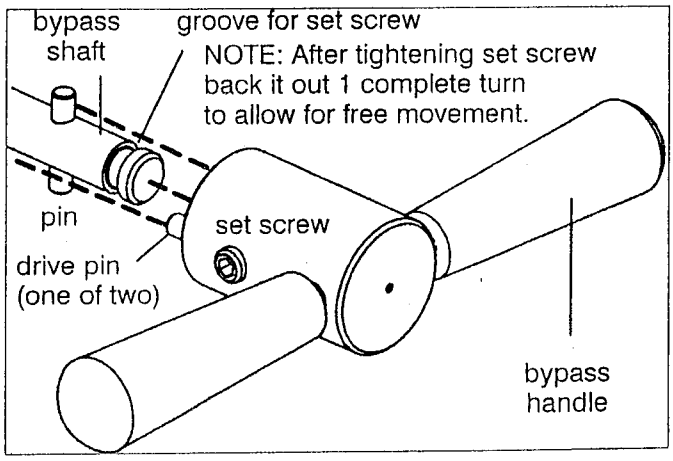


Figure A. Bypass Handle installation

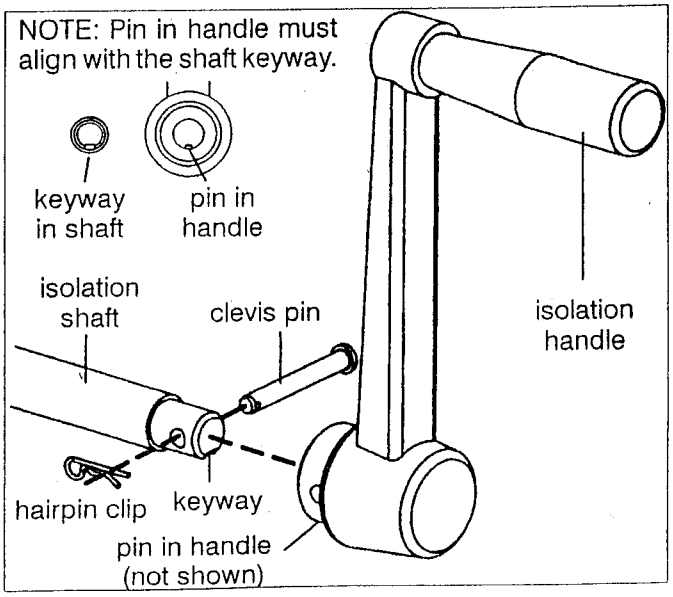


Figure B. Isolation Handle installation

SERIES 7000 / GROUP 5 CONTROL PANEL SETUP DATA SHEET

Date of Print-out 10/21/04

This data sheet records the Control Panel setup, as shipped.

Work Order #: 278143
Control Panel S/N: 35040015
Software Version: 607540-037
Software Date: 07/09/04

DIP SWITCH SETTINGS	RANGE	AS SHIPPED
ATS Information	Bypass or No Bypass	BYPASS
Switch Type	OT, CT or DTTS	OTTS
Current Setting	30 to 4000 Amps	600 A
Nominal Voltage	120 to 600 Vrms	208
Nominal Frequency	50 or 60 Hz	60 Hz
N Voltage Sensing	1 or 3 Phase	3 Ph
E Voltage Sensing	1 or 3 Phase	3 Ph

NORMAL SOURCE	UNITS	RANGE	DEFAULT	AS SHIPPED
Voltage Dropout	% of nominal	70-98	85	85
Voltage Pickup	% of nominal	85-100	90	90
Voltage Trip	% of nominal	102-115	0=off	0
Frequency Dropout	% of nominal	85-98	90	90
Frequency Pickup	% of nominal	90-100	95	95
Frequency Trip	% of nominal	102-110	0=off	0
Voltage UnBal. Enabled	(3Ph N only)	0=off	0=off	0
Voltage UnBal. Dropout	(3Ph N only)	5-20	20 %	20
Voltage UnBal. Pickup	(3Ph N only)	3-18	10 %	10

EMERGENCY SOURCE	UNITS	RANGE	DEFAULT	AS SHIPPED
Voltage Dropout	% of nominal	70-98	75	75
Voltage Pickup	% of nominal	85-100	90	90
Voltage Trip	% of nominal	102-115	0=off	0
Frequency Dropout	% of nominal	85-98	90	90
Frequency Pickup	% of nominal	90-100	95	95
Frequency Trip	% of nominal	102-110	0=off	0
Voltage UnBal. Enabled	(3Ph E only)	0=off	0=off	0
Voltage UnBal. Dropout	(3Ph E only)	5-20	20 %	20
Voltage UnBal. Pickup	(3Ph E only)	3-18	10 %	10

FACTORY SELECTABLE FEATURES	RANGE	DEFAULT	AS SHIPPED
F5 Enable - Test Operation	Yes or No	Yes	YES
F6Z Enable - Manual Operation	Yes or No	No	NO
F6B Enable - TD ByPass	Yes or No	Yes	YES
F6C Enable - Manual ReXfer	Yes or No	No	NO
F34A Enable- Xfer to N Inhibit	Yes or No	Yes	YES
F34B Enable- Xfer to E Inhibit	Yes or No	Yes	YES
ATS Idle Time	0 to 50 ms	30	30
CT Parallel TD	0 to 200 ms	0	0
CT In-Sync Voltage Difference	5 to 10%	5	5

SERIES 7000 / GROUP 5 CONTROL PANEL SETUP DATA SHEET

Date of Print-out 10/21/04

This data sheet records the Control Panel setup, as shipped.

Work Order #: 278143
Control Panel S/N: 35040015
Software Version: 607540-037
Software Date: 07/09/04

FEATURES	RANGE	DEFAULT	AS SHIPPED
Commit to Xfer After TD Normal Fail:		NO	NO
Shed Load: Direction	(1 = N to E) or (0 = E to N)	0	E to N
Shed Load: In-Phase	In-phase=1 Not-InPhase =0	0	0
Shed Load: TD	0 to 3.0 sec	1.5sec	1.5
Phase Rotation Monitor: Enable	(3Ph Only)	NO	NO
Reference	ABC or CBA	ABC	ABC
Iso Load On Source Fail	(CTTS, DTTS Only)	YES	YES
Isolate Load on Test 17	(CTTS, DTTS Only)	NO	NO
In-phase Monitor Enable	(OT only)	NO	NO
In-Phase Monitor TD	(OT only)	0 to 3.0sec	1.5
Fail to Sync Auto ByPass	(CTTS Only)	NO	NO
Bypass DT Delay	(CTTS Only)	0 to 59sec	0
ByPass InPhase	(CTTS Only)	NO	NO

TIME DELAYS	RANGE	DEFAULT	AS SHIPPED
1C - TD N Failure	0 to 60 min	00	0
	0 to 59 sec	01	1
2B - TD N to E Transfer	0 to 60 min	00	0
	0 to 59 sec	00	0
1F - TD E Failure	0 to 60 min	00	0
	0 to 59 sec	00	0
2E - TD Engine CoolDown	0 to 60 min	05	5
	0 to 59 sec	00	0
3A - TD E to N On Source Fail	0 to 60 min	30	30
	0 to 59 sec	00	0
3A - TD E to N On Test	0 to 60 min	00	0
	0 to 59 sec	30	30

SERIES 7000 / GROUP 5 CONTROL PANEL SETUP DATA SHEET

Date of Print-out 10/21/04

This data sheet records the Control Panel setup, as shipped.

Work Order #: 278143
Control Panel S/N: 35040015
Software Version: 607540-037
Software Date: 07/09/04

TIME DELAYS	RANGE	DEFAULT	AS SHIPPED
ByPass 31F & 31M On N Failure	1=Yes or 0=No	0=NO	0
31F - Pre N to E Transfer Signal	0 to 5 min	00	0
	0 to 59 sec	00	0
31M - Post N to E Transfer Signal	0 to 5 min	00	0
	0 to 59 sec	00	0
ByPass 31G & 31N On E Failure	1=Yes or 0=No	0=NO	0
31G - Pre E to N Transfer Signal	0 to 5 min	00	0
	0 to 59 sec	00	0
31N - Post E to N Transfer Signal	0 to 5 min	00	0
	0 to 59 sec	00	0
Fail to Sync TD (CTTS)	0 to 5 min	05	5
	0 to 59 sec	00	0
Load Disconnect TD (DTTS)	0 to 5 min	00	0
	0 to 59 sec	03	3
In Sync TD (CTTS)	0 to 3.0 sec	1.5	1.5
Extended Parallel TD (CTTS)	0.10 to 1.0 se c	0.5	0.5

GENERAL	RANGE	DEFAULT	AS SHIPPED
Menu Language	****	***	English
Event Log Enable	Yes or No	No	NO
PassWord	0000 to ZZZZ	1111	1111
Event Print enable	Yes or No	No	NO