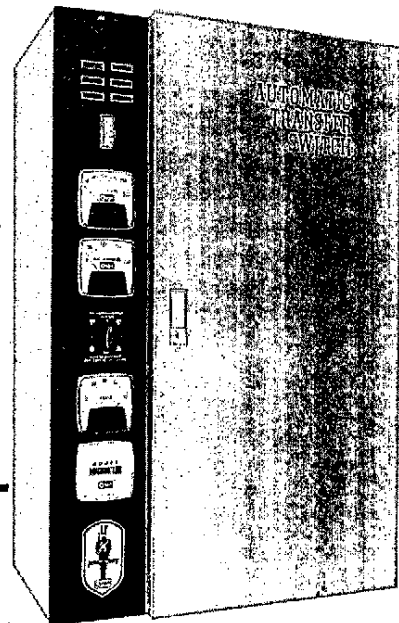


Onan

Service Manual

AT Switch

30 through 400 Amperes



962-0500
SPEC A-C
8-79

Printed in U.S.A.

SAFETY PRECAUTIONS

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

WARNING Onan uses this symbol throughout this manual to warn of possible serious personal injury.

CAUTION This symbol refers to possible equipment damage.

The automatic transfer switch has components with high voltages which present serious shock hazards. For this reason, read the following suggestions:

Keep the automatic transfer switch cabinet(s) closed and locked. Make sure authorized personnel only have the cabinet keys.

Always move the operation selector switch on the generator set or automatic transfer switch to "STOP," disconnect the starting batteries of the generator set,

and remove AC line power to the automatic transfer switch before performing maintenance or adjustments (unless specified otherwise in the instructions—then only using extreme caution due to danger of shock hazard).

Before using the disconnect plug, if equipped, for deenergizing the control panel, be sure to place the operation selector switch on the generator set or automatic transfer to the "STOP" position. Neglect of this procedure results in set starting and energization of the transfer switch generator side.

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

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

Do not work on this equipment when mentally or physically fatigued.

WARNING

TO AVOID POSSIBLE PERSONAL INJURY OR EQUIPMENT DAMAGE, A QUALIFIED ELECTRICIAN OR AN AUTHORIZED SERVICE REPRESENTATIVE MUST PERFORM INSTALLATION AND ALL SERVICE.

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GENERAL INFORMATION

ONAN SERVICE MANUAL

This manual contains operation descriptions of typical AT transfer switches, modifications, adjustments, and troubleshooting procedures. Whenever troubleshooting or planning a repair for an AT automatic transfer switch, remember the generator set, automatic transfer switch and commercial power source are all interdependent. Decide which is the source of the problem and then repair

using necessary and normal safety precautions. Note **WARNING** on inside the front cover of this service manual which states that ". . . a qualified electrician or an authorized service representative must perform all service."

Throughout the text, front of the automatic transfer switch is the door side. Determine left and right when facing the cabinet doors. Metric equivalents of U.S. customary units will appear in parentheses where applicable.

MODEL NUMBER SYSTEM

Following is a typical model number with explanations of the different parts.

<u>AT</u>	<u>U</u>	<u>C</u>	<u>D</u>	<u>400</u>	-	<u>4X</u>	/	<u>11</u>	<u>10</u>	<u>C</u>
1	2	3	4	5		6		7	8	9

1. Series Identification

2. Transfer Switch Type

- U—3-pole transfer switch, UL listed
- S—3-pole transfer switch, special or CSA approved
- N—4-pole, 3-phase switched neutral

3. Starting Circuit

- C—2-wire, 24-volt
- D—2-wire, 12-volt
- E—3-wire, 12-volt

4. Transfer Switch and Cabinet Combinations

5. Current Rating (amperes)

6. Voltage Code

- 3 —120/240, 1-phase, 3-wire
- 4 —120/208, 3-phase, 4-wire
- 4X—277/480, 3-phase, 4-wire
- 5D—120/240, 3-phase, 4-wire delta
- 7 —220/380, 3-phase, 4-wire
- 9X—347/600, 3-phase, 4-wire

Voltage code with prefix "5" indicates 50 hertz; e.g. 53 indicates 50 hertz, 120/240 volts, 1-phase, 3-wire.

(continued on next page)

7. Control Accessory Group

GROUPS 10 THROUGH 15 AND 20 THROUGH 25 (SOLID-STATE, MODULAR TYPE)

ACCESSORY	GROUP					
	10	11	12	13	14	15
Standard Items*	X	X	X	X	X	X
Start-Stop Time Delay	P	X	X	X	X	P
Undervoltage Sensor (1 sensor on emergency side)	X	X	X	X	X	X
Transfer-Retransfer Time Delay	P	P	X	X	X	P
Battery Charger Module		X	X	X	X	P
Battery Voltage Sensor		W	W	W	X	P
Undervoltage Sensor (1 sensor/phase-normal side)	X	X	X	X	X	X
Overvoltage Sensor (1 sensor/phase-normal side)	W	W	W	W	X	P
Exerciser Clock		W	X	X	X	W
Manual Retrtransfer Switch	W	W	W	X	W	X
Preheat Time Delay (AT-E Only)	W	W	W	W	W	P

X = Supplied standard.

P = Plug-in module package available.

W = Wire-in package available.

* - Includes normal-test switch, with load — without load selector switch, disconnect plug, area protection terminals, overcrank lamp on AT-E only, and engine start-run signal.

GROUPS 51 THROUGH 55 (RELAY TYPE CONTROL GROUPS)

ACCESSORY	GROUP				
	51	52	53	54	55
Standard Items*	X	X	X	X	X
Start Time Delay	W	W	W	X	X
Transfer Time Delay	W	W	W	W	X
Retransfer Time Delay	W	X	X	X	X
Stop Time Delay	W	W	W	W	X
Exerciser Clock	W	W	X	X	X
Preheat Time Delay (AT-E Only)	W	W	W	W	W
Undervoltage Sensor (line)	W	W	W	W	W
Undervoltage Sensor (gen)	W	W	W	W	W
Overvoltage Sensor (line)	W	W	W	W	W
Overvoltage Sensor (gen)	W	W	W	W	W
Battery Charger - 2 Amp SCR Float	W	W	W	W	W
Battery Charger - 50 to 300 ma Trickle	W	W	W	W	W

X = Supplied standard.

W = Wire-in package available.

* - Includes voltage sensing relays, normal-test switch, disconnect plug, area protection terminals, engine start-run contacts; cranking limiter, overcrank lamp, and manual reset (AT-E only).

8. Meter-Lamp Combination:

ACCESSORY	GROUP																	
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18
Charge Ammeter	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Overcrank Lamp (AT-E only)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Normal-Emergency Lamps	W	X	W	X	W	X	W	X	W	X	W	X	X	X	X	X	X	X
Battery Voltage Lamps			X	X			X	X			X	X			X	X		
AC Voltmeter					X	X	X	X	X	X	X	X						
Frequency Meter									X	X	X	X						
Running Time Meter									X	X	X	X	X	X	X	X	X	

X = Supplied standard.

9. Specification Letter: Advances with production modification.

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