Information Sheet # 18

Auto Transfer Switch Service and Maintenance

Your Reliable Guide for Power Solutions

1.0 Introduction

This information sheet details the required testing and examination that system operators should conduct on automatic transfer switches used on standby generator set systems. It is important to regularly test equipment that is in the stationary mode waiting to start when required. Ambient conditions can contaminate or damage equipment while stationary and result in failure to operate when required and an automatic transfer switch needs to be regularly inspected to ensure it is being maintained fully operational.

Service Schedule for Auto Transfer Switch

Frequency of checks required*	Note Clause # on page two	Qualified Inspector Key O = Operator of switch D = Authorized dist/dealer		Required Action Adjust Repair Replace	Clean	Test	Transfer Switch (ATS) and System's Components Recommended for Examination and Test
		Visual	Physical				
Electrical System							
Yearly	2.0	O	O				Check wiring and connections are tight with no discoloration of metal, melted plastic and odor indicating excessive heat.
Yearly	2.0	O			D		Verify contractor's external operating mechanism is clean and relubricate if found dirty.
Yearly	2.0	O	D	D			Check for any deterioration of wiring insulation such as cuts and abrasions. Replace or repair any damaged wiring.
Yearly	2.2		D			D	Check tightness of wiring connections. Retighten to specification if any loose wiring found.
Yearly	2.1	D		D	D		Check ATS main power switching contacts condition. Clean or replace. Replace contactor assembly if necessary.
Control System							
Weekly	2.3					O	Exercise the generator set under load.
Monthly	2.3					O	Test the transfer switch's automatic control system.
Yearly	2.3					D	Test all indicators (LEDs) and all remote control systems for operation.
General Condition of Transfer Switch and Controls							
Monthly	2.0	O			O		Inspect the outside of the transfer switch for any indication of wear, excessive vibration, leakage, high temperature, contamination or other deterioration.
Monthly	2.0	O	O	O			Verify all external components are in place, firm, tightened and not excessively worn.
Yearly	2.1	D	D		D		Inspect the inside of the transfer switch for any indication of excessive vibration, leakage, high temperature, contamination or any other deterioration.
Yearly	2.1	O	D	D			Verify all internal components are in place, firm, tightened and not excessively worn.

Visual Inspection	Items marked for visual inspection should be examined visually by a trained operator.
Check	Check assumes physical contact with the part or component being inspected or the use of a nonvisual indication.
Adjust, Repair, Replace	This includes tightening all hardware and lubricating where necessary. Replacement may be necessary if repair not possible.
Clean	This means the removal of dust, dirt, contaminants and moisture. Remove by cloth or vacuum, never use compressed air.
Test	Testing may require tools (some special), equipment, or training available only through an authorized distributor/dealer.

Key to chart symbols: O = Trained operator D = Distributor/dealer with trained technician *Service more frequently if system operates in dusty dirty areas

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2.0 General Inspection

The chart on page one details the frequency of visual and physical inspections recommended for a transfer switch on a standby power generator system. The following inspection work should be conducted externally and internally on the transfer switch.

External Inspection - The transfer switch should be kept in good condition by performing a weekly overall examination of the unit. This inspection should include checking for signs of vibration damage, excessive heat, any leakage, contamination or any level of deterioration. Any accumulations of dirt or dust have to be removed. Dirt, dust and any other contaminants should always be removed from the outside and inside with a vacuum cleaner, dry cloth or brush. *Never use compressed air to blow away dirt and other contaminants. This can result in debris being lodged in components resulting in damage to the switch.*

If the inspection reveals loose or damaged components, call a trained professional to carry out repairs. Any broken, worn or missing external components should be replaced with manufacturer's recommended parts or components. Contact the local authorized distributor or dealer for the specific part number to order.

Internal Inspection - All power sources should be disconnected before any internal inspection is made. On opening the switch door, check to see if any external problems detected have affected internal components.

A trained service technician should be contacted to carry out any service work if any of the following conditions are detected:

- Dirt, dust, moisture and other contaminants accumulating on the surfaces of the unit and components
- Any signs of corrosion
- Loose, missing or broken components
- Deterioration of wiring or insulation due to cuts, abrasion or wear
- Indications of overheating such as melted plastic, discolored metal or burning odor
- Any other evidence of damage, wear or malfunction of the transfer switch and its components

Only a trained service technician should perform internal inspection and service work on a standby system that does not allow a power interruption during the required inspection.
In addition to being good maintenance practice, NFPA 110 has detailed requirements for transfer switch maintenance and inspection.

2.1 Inspections beyond visual inspections

The chart on page one details the visual and physical inspections needed to assure reliable operation of the transfer switch. When inspections are internal or more than just a visual inspection by the operator, they should be performed by an authorized distributor or dealer under a scheduled planned maintenance agreement. Have an authorized distributor or dealer repair or replace all damaged or worn internal components with the manufacturer's recommended parts or components.

2.2 Disabling the generator set - *Accidental starting can lead to severe injury and even death*

Precautions must be taken to avoid the generator set starting during maintenance by an automatic transfer switch, remote start/stop switch or another remote start engine command. Before working on the generator set or any of its connected equipment, such as the transfer switch, disable the generator set as follows:

a) Move the generator master switch to the OFF position
b) Disconnect the power to the battery charger
c) Remove battery cables starting with the negative (-) lead first

2.3 Testing

Standby generator systems should be exercised once a week, using the automatic exerciser (if provided) or a manual test to start. The transfer switch automatic control system should be tested monthly. The test should verify the following:

- The required sequence of operation occurs when the load transfers to the emergency source following primary source failure
- Verify indicator LEDs on the transfer switch operates properly
- Observe and listen for any excessive vibration or noise during operation
- After the switch transfers the load to the standby source, end the test and verify the expected sequence of operations occurs as the transfer switch transfers the load to the primary power source and signals the generator set to shut down after a cool down period.
- For systems with programmed time transitions, verify that the time delay in the OFF position functions during transfer to the standby source and transfer back to the preferred source

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