



OPT and AST Series Transfer Switch Technical Bulletin

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1.	OPT/AST Series (Discontinued).....	3
1.1	Operation.....	3
1.2	Replacement Relay Boards	5
1.3	RB41 Series: White Molex Connector Info	6
1.4	Troubleshooting	7

1. OPT/AST Series (Discontinued)

1.1 Operation

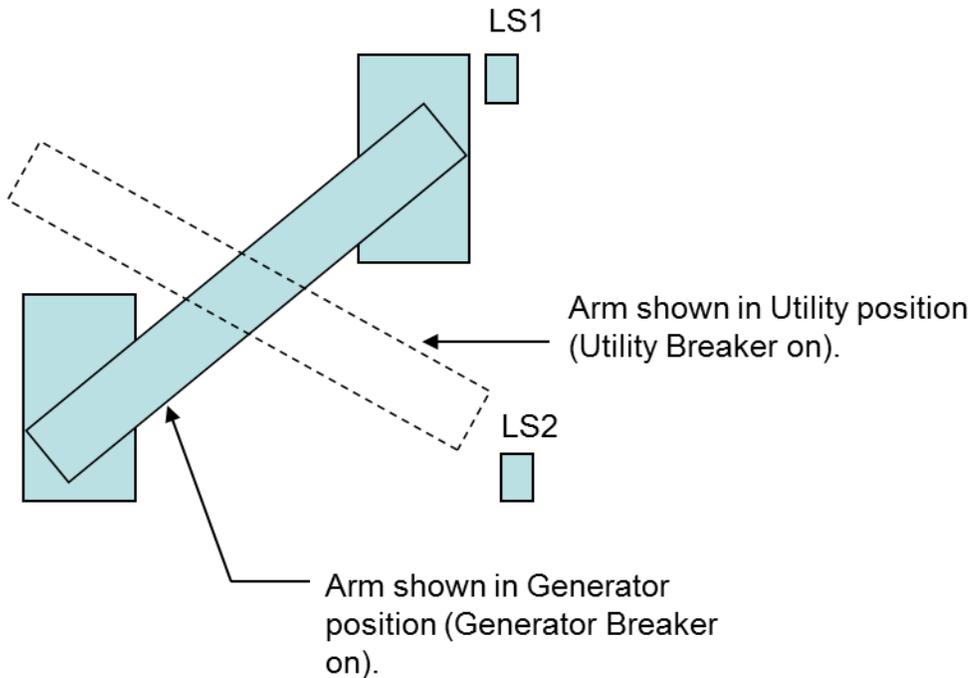


Figure 1 – AST/OPT Transfer Arm

Basic principle of switch operation is a lever arm rotates to switch on the generator breaker or utility breaker. This is done by a Motor [M] that rotates in one direction only.

Two controllers are used: RB41 and an external timing controller such as the TSC3. The RB41 does the “sensing” and transfer. The TSC3 controller is responsible for the delays. If the TSC3 controller is not connected to the RB41, the RB41 would transfer the switch immediately.

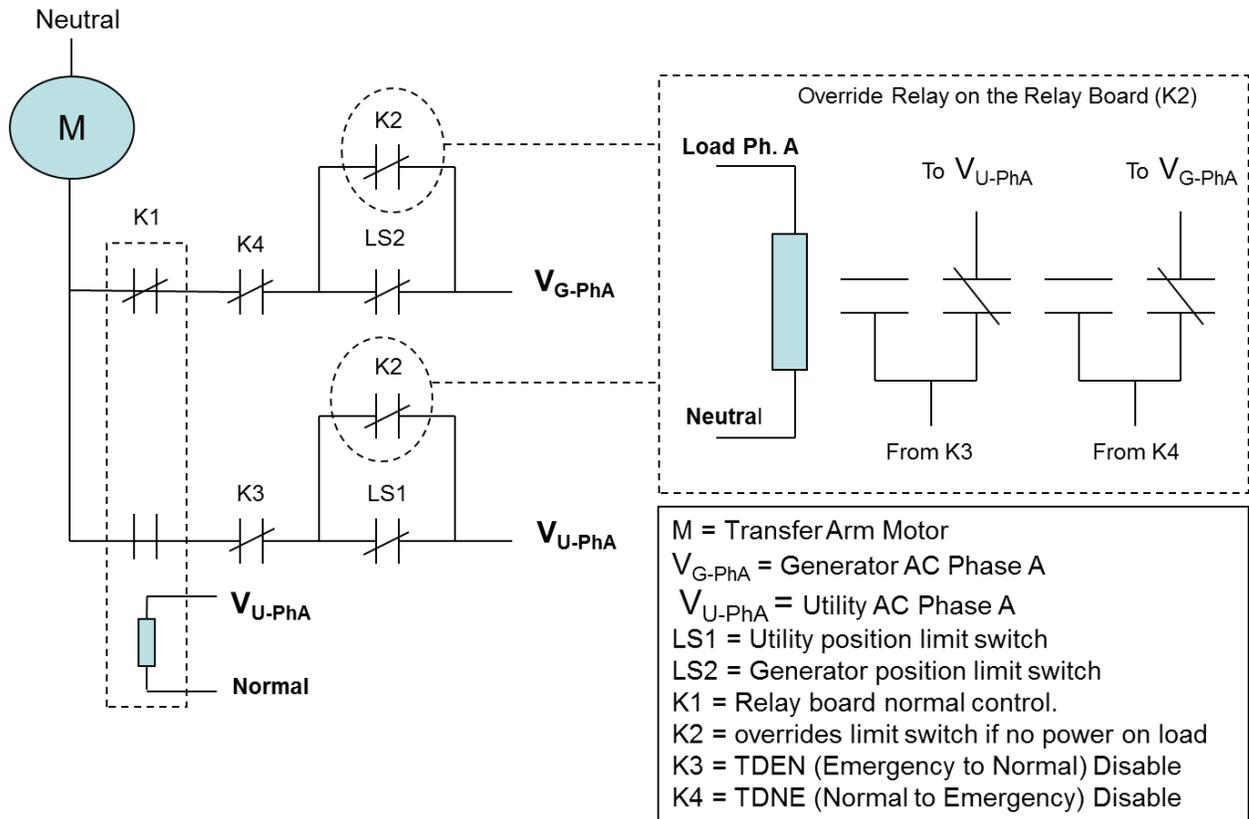


Figure 2 – RB41 Schematic

RB41 Operation

Contact [K1] initiates motor movement to transfer to emergency or utility based on utility phase A voltage. An external controller (e.g. TSC3) can delay the transfer by outputting high on contacts K3 and K4 which opens the relay keeping the motor off. If no external controller is connected transfer begins immediately.

Limit switches [LS1 and LS2] are responsible for stopping the motor when the lever arm is in the correct position. Power to the motor is obtained from either the utility or generator side depending on direction of transfer.

If load is not detected when the lever is in the correct position another relay on the relay board [K2] overrides the limit switch to allow the motor to continue to rotate to attempt to turn on the breaker.

RB41 5pin Terminal OPT/AST Wire Harness

Black Wire – Ground for K3 and K4 control.

Red Wire – [K4] control

White Wire - [K3] control

Brown and Green Wires – RSC signal to start genset (triggered by loss of utility or exerciser). These two wires are shorted to signal a start or open to stop.

1.2 Replacement Relay Boards

Single phase applications: use RB41-2

Three phase applications: use RB41-3

There are older revisions but all can be replaced with these two. There are two connectors on board: (1) green Euro style connector, (2) white molex type connector.

See below for photo of RB41-2. RB41-3 is identical except it uses a larger Molex connector (the white connector).

The slide switch (select switch) must be in the off position (towards the white Molex connector) if the voltage sensing relay is not being used. Otherwise if there is no relay in place the RB41 will think there is a utility fault and attempt to switch to emergency.

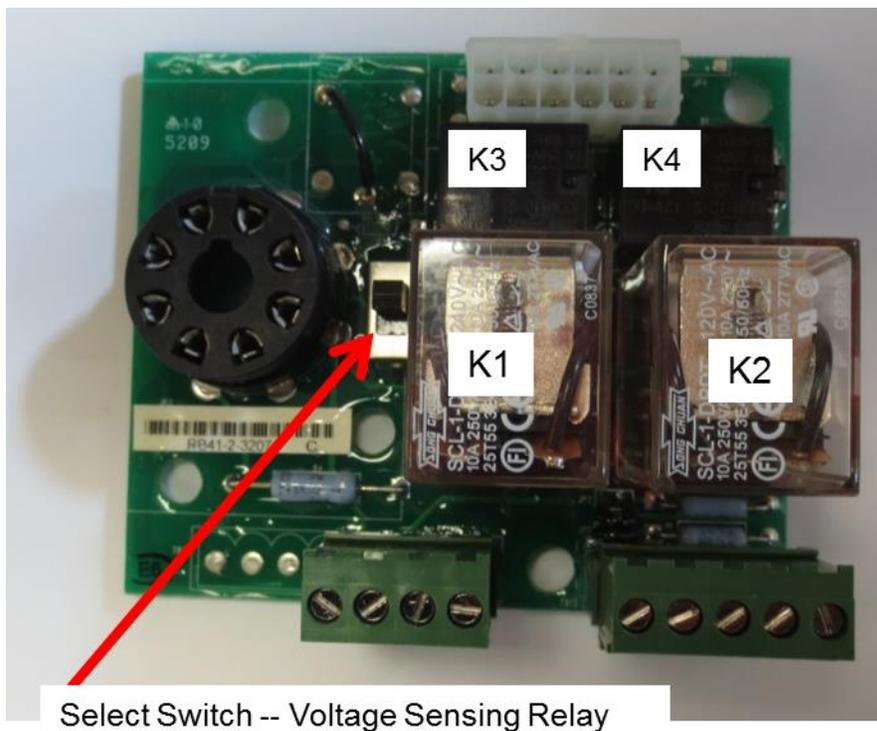


Figure 3 – RB41-2

1.3 OPT Replacement Clock

The Dynagen part number for the exerciser clock is ACC0073.

1.4 RB41 Series: White Molex Connector Info

RB41-2 uses CON0028 (Molex 39-28-1123, 2x6) connector on its board. This is used internally to connect to the contactor and other components of the transfer switch.

RB41-3 is the same board as RB41-2 except it uses CON0038 (Molex 39-28-1123, 2x7) instead of CON0028.

CON0014 (Molex 39-01-2125, 2x6 plug) is the plug that connects to CON0028.

CON0010 (Molex 39-01-2145, 2x7 plug) is the plug that connects to CON0038.

The crimp pins used for these two plugs are CON0015 (Molex 39-00-0039) which are the same as the pins used in the GSC400 molex connectors.

DWG1410 is a kit of 5 wires with CON0015 crimps.

1.5 Troubleshooting

(1) Motor continues to run for abnormal time or continuously. Power turns on and off (i.e. lights turn on and off).

Breaker is working. Power is being applied to load side.

- Limit switch damaged or not switching on due to wear.
 - o Adjust Limit switch.
- Limit switch works but motor inertia causes motor to continue pass limit switch eventually causing limit switch to close its contacts again. Transfer switch then thinks it has not switched breaker (has no memory) and tries again.
 - o Tighten the central arm pivot. This will provide more friction to arm to prevent motor from overshooting.
- Relay board is bad causing limit switch to be bypassed.
 - o Troubleshoot and replace relay board.
- Was the RB41 board replaced? Check that there is an orange wire from pin 7 of the 2x6 RB41 connector (refer to wiring diagram in manual) to the load side of the transfer switch. Had a case where this was missing.
 - o If missing, add.

(2) Motor continues to run for abnormal time or continuously. Power does NOT turn on and off (i.e. lights do not turn on and off), power remains off.

Breaker not turning on or bad breaker causing no power to be applied to load side of transfer switch. The limit switch override feature causes reattempts to be made to turn on the breaker as it detects no load.

- Breaker good, but not being activated by the arm.
 - o Adjust the arm portion that activates the breaker. Wear can cause the arm not to exert sufficient force against the breaker.
- Bad breaker
 - o Replace breaker