



INSTRUCTION TO SERVICE

ITS: 58779	
SECTION:	292 Electrical Harnesses
WRITTEN BY:	Kristian Melo
SUBJECT:	Rewire TRW steering column to provide a memory power circuit

ITS58779

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PROCEDURE:

- 1) Turn the main battery disconnect switch to the “OFF” position.
- 2) Locate the fuse box assembly.
- 3) Drill a hole 0.5” in diameter into the front door of the fuse box for the new emergency power switch. Exact location shown in Figure 1 below.

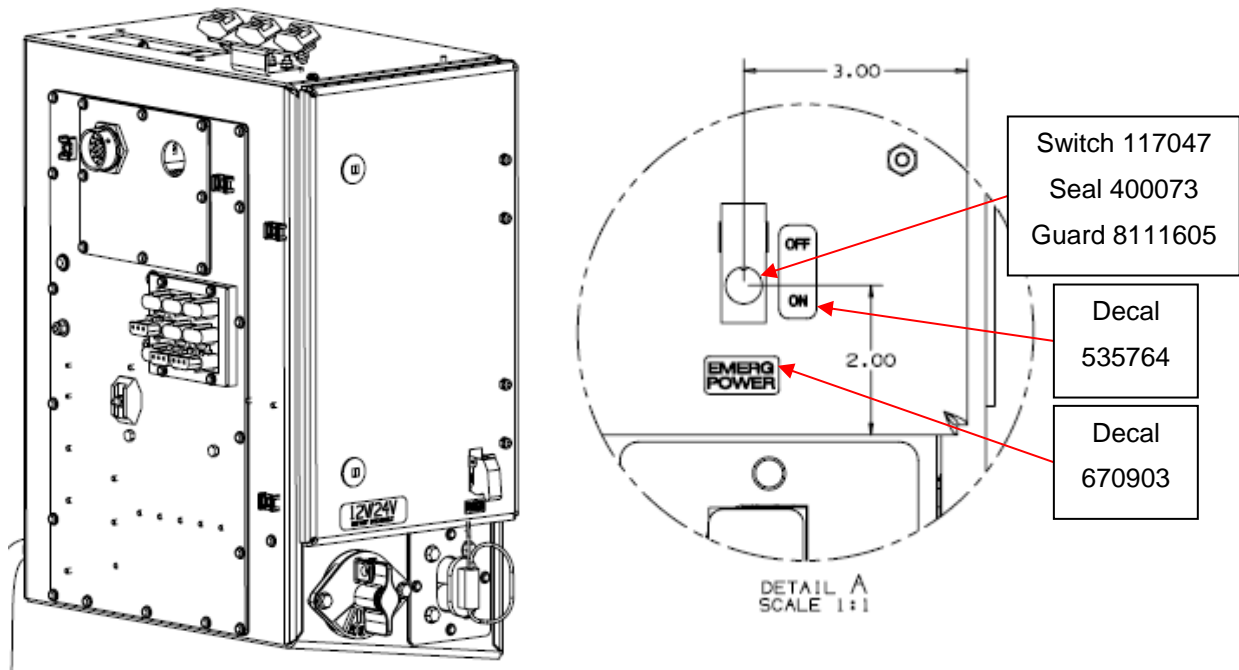


Figure 1: Emergency Power Switch Location

- 4) Install the provided emergency power switch (PN: 117047), seal (PN: 400073), switch guard (PN: 8111605) and decals (PN: 535764 and 670903). For stack up of switch install see Figure 2.

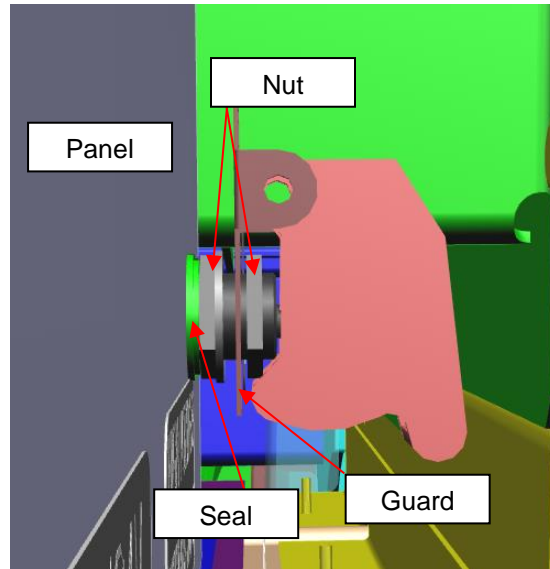


Figure 2: Emergency Power Switch Stack Up

- 5) Drill and tap 10-24UNC hole on the interior of the fuse box. Details shown in Figure 3 and 4.

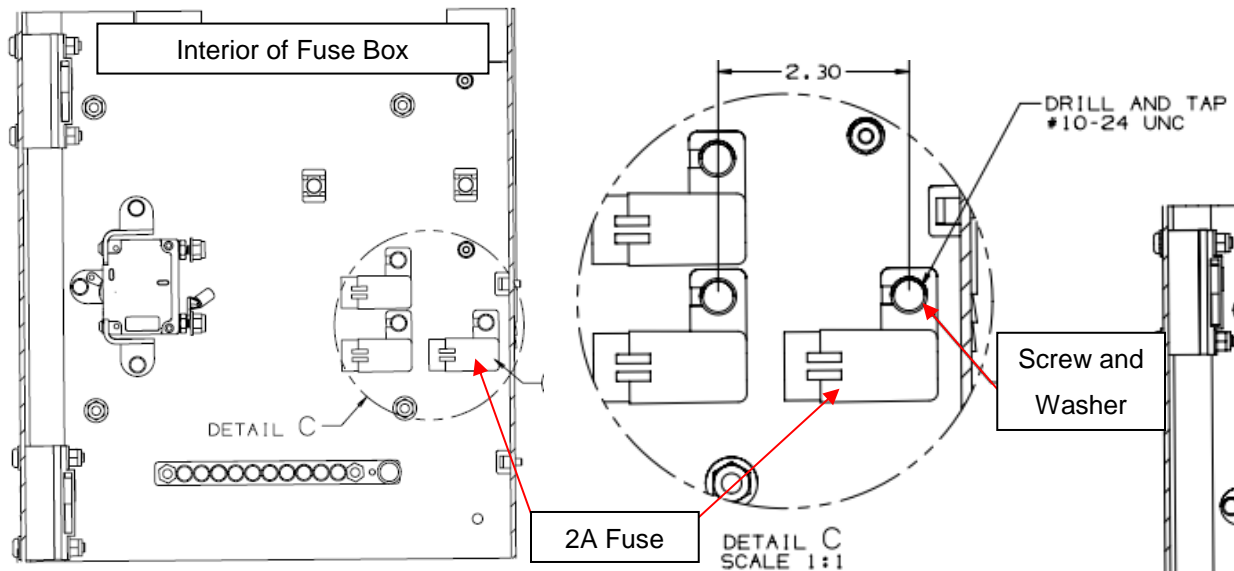


Figure 3: Location of 10-24UNC Hole for Fuse

- 6) Secure the provided 2A fuse (PN: 198196) to the inside of the fuse box using the hole drilled in step 5 and the provided screw (PN: 14S00006) and washer (PN: 659000).
- 7) Locate wire 36SPR36G in the engine fuse box.
- 8) Apply provided socket (PN: 102879) to 36SPR36G and load 36SPR36G into cavity A of XEFB9 (PN: 104043), shown below in Figure 4, using the provided connector seal (PN: 102877) to seal open cavities.



NEW FLYER



a) SR-2177



NEW FLYER



b) SR-1767, 2027, 2063

Figure 4: Fuse Box Connection Locations

- 9) Secure wiring neatly along routing paths using tyrap (PN: 5958112).
- 10) Locate and install HRNS-JMPR FUSE BOX (PN: 813086).
 - a) Identify wire 99PS99A. Terminate the appropriate end to terminal A of breaker F99PS (indicated in Figure 4) and connect the other end of the wire as indicated in Table 1.

Table 1: Install Location of Wire 99PS99A

SR	SR-2177	SR-1767, SR-2027, SR-2063
Location	Position A of XBAT12	Position 2 of MAIN PWR SW

- b) Identify wire 99PS99B. Terminate the appropriate end of the wire to terminal B of breaker F99PS and connect the other end of the wire to terminal 3 of EMER PWR SW (indicated in Figure 4).
 - c) Identify wire 99PS99C. Connect the appropriate end of the wire to terminal 2 of EMER PWR SW and insert the other end of the wire to cavity A of the connector XEFB9-SHR.
- 11) Secure wiring neatly along the paths inside the paths with tyraps (PN: 5958112).

- 12) In the side console, identify the end of wire 20SPR20J terminated with an end cap. Cut and trim the wire and re-terminate with the provided socket (PN: 102879).
- 13) Insert the wire into cavity A of the connector indicated in Table 2. This connector is located on the underside of the side console panel.

Table 2: Wire 20SPR20J Install location

SR	SR-2177, SR-1767	SR-2027, SR-2063
Location	XSC50-TWR	XSC38-TWR

For SR-2027 and SR-2063 SKIP TO STEP 16

- 14) Locate XJ20 connector in the curbside joint bulkhead.
- 15) Load 20SPR20J into cavity 3 of XJ20.
- 16) Identify end of wire 51AF92A terminated within the side console panel at position 2 of breaker F35AF. Cut and trim the wire. Re-terminate the wire with the provided ring terminal (PN: 8110713) and connect it at position 6 of terminal XSC4.
- 17) Secure wiring neatly along the paths inside the paths with tytraps (PN: 5958112).
- 18) Locate the provided power relay (PN: 133915) and attach it to the provided connector (PN: 133916).
- 19) Install this new relay assembly using the provided screw (PN: 14S00006) and washer (PN: 659000). This relay will be installed in the next position above the 24V relays on the right side of the panel, refer to Figure 5.
- 20) Locate the provided power resistor (PN: 627976). Using the provided screw and washers, (same parts as above) install below node 9. See Figure 5 below.

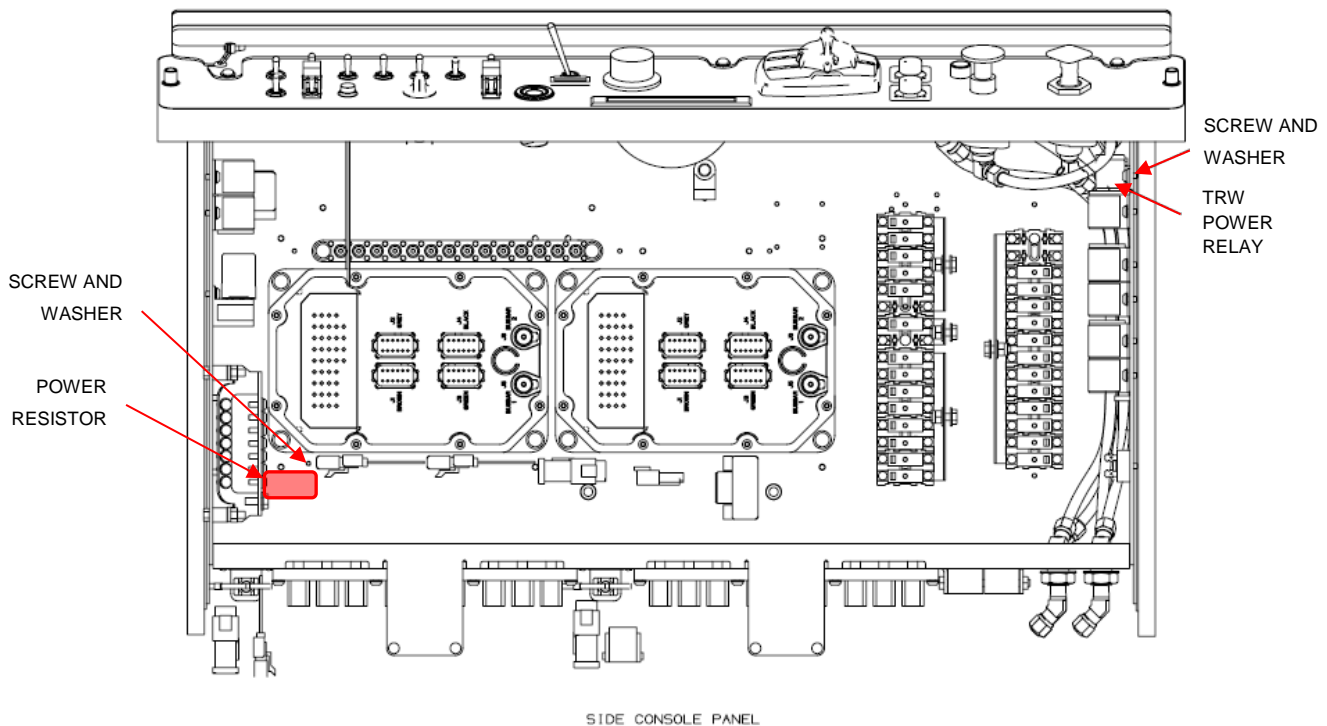


Figure 5: Side console panel with power relay and power resistor locations indicated.

For SR-2027 and SR-2063 SKIP TO STEP 29

- 23) Locate XJ21 at the joint.
- 24) Identify wire 21SPR21C terminated with an end cap at the joint. Cut and trim the wire and then re-terminate with the provided socket (PN: 102879). Insert the wire into cavity 3 of the connector XJ21 at the joint bulkhead.
- 25) Locate XBHR3 at the rear curbside bulkhead shown below in Figure 7.

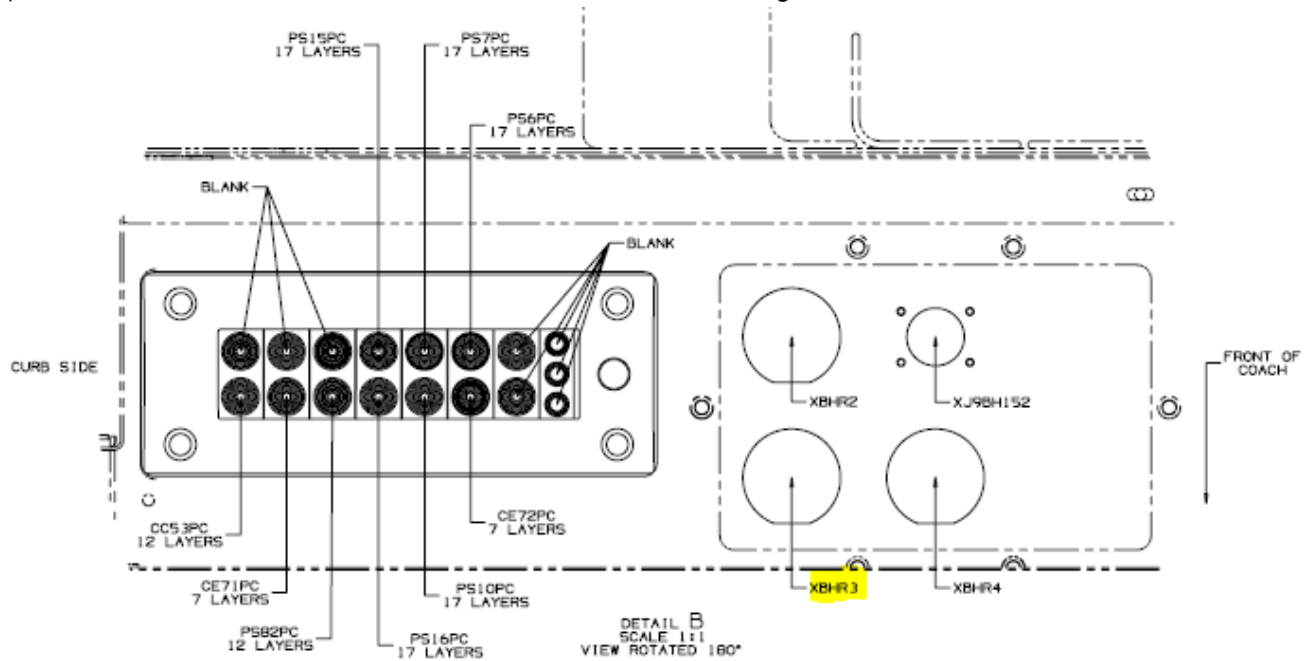


Figure 7. Rear bulkhead with connector XBHR3 indicated.

- 26) In connector XBHR3, locate 21SPR21C and 21SPR21D.
- 27) Swap 21SPR21C in XBHR3-16 with 21SPR21D in XBHR3-14.
- 28) Secure wiring neatly along routing paths using tyrap (PN: 5958112).
- 29) Install provided side console and fuse box decals.

	SR-2177	SR-1767	SR-2027	SR-2063
DECAL-SIDE CONSOLE PNL	729856	551751	633051	641828
DECAL-FUSE BOX	729860	551754	633055	633055

- 30) Remove all tools and debris and return the bus to service condition.
- 31) Turn the main battery disconnect switch to the "ON" position.
- 32) After installation of the ITS is complete, the *Straight Ahead* position of the steering column will need to be reset. To do this, you will need the adapter to communicate with the steering column. The column communicates at a 250k baud rate.



Figure 8: Adapter harness

- 33) The figure below shows the screen you will see after you open the TRW ReAx Diagnostic Tool, select the adapter that you are using from the drop-down menu. Then connect to the column by clicking the “Connect” button. The bus must be running to communicate with the column, not just key on. (Note how the Position Index Valid is “False”, this is normal.)

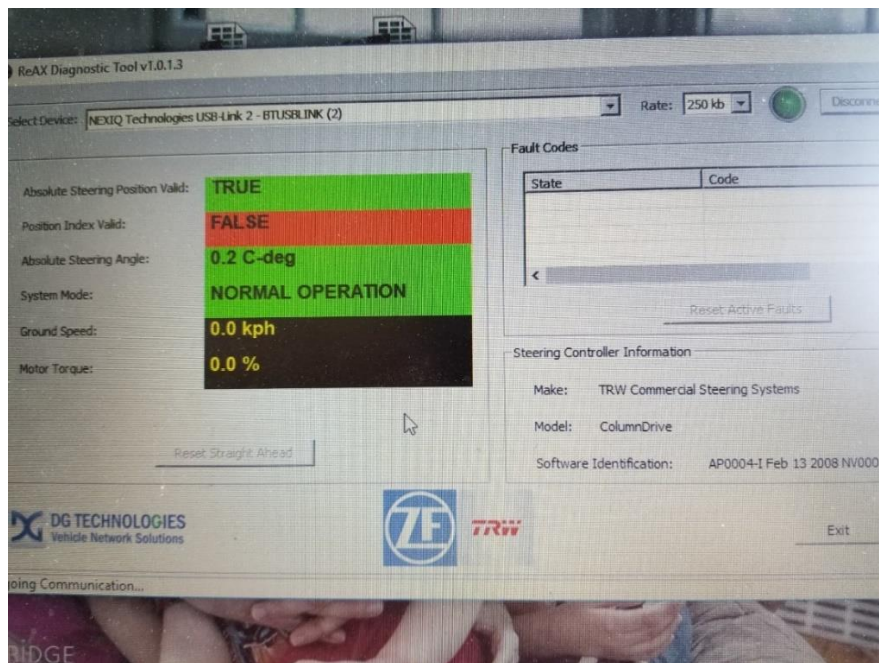


Figure 9: TRW Software

- 34) Once you have set the wheels straight ahead by looking at the tires, you will then click the “Reset Straight Ahead” button. (Note how the Position Index Valid is now “True”, this is because the steering wheel was turned past straight ahead when making sure the wheels were facing straight ahead.)

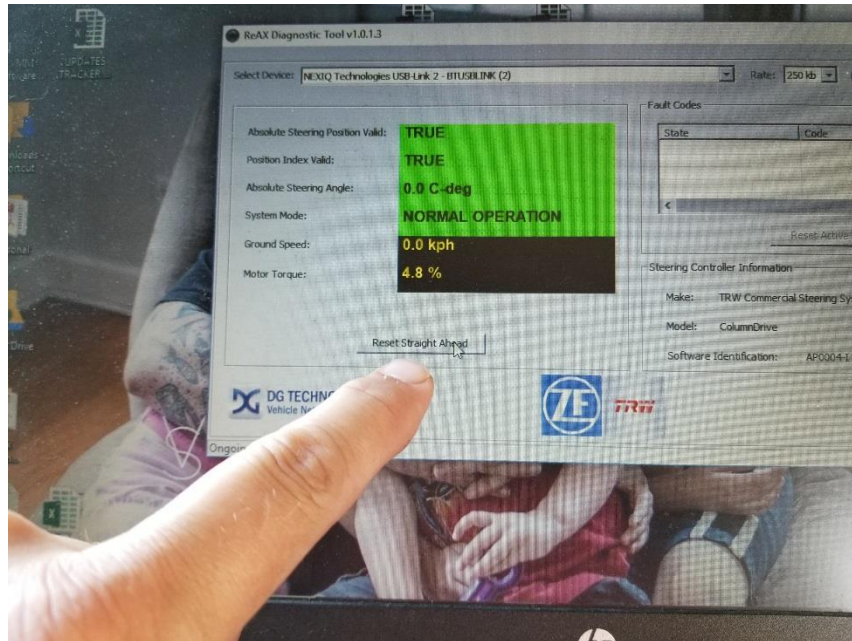


Figure 10: TRW Software Calibration Setup

35) After clicking the “Reset Straight Ahead” button this is the screen you will see. Follow the instructions on the screen. (NOTE: The bus must be running, not just key on, to communicate with the steering column.)

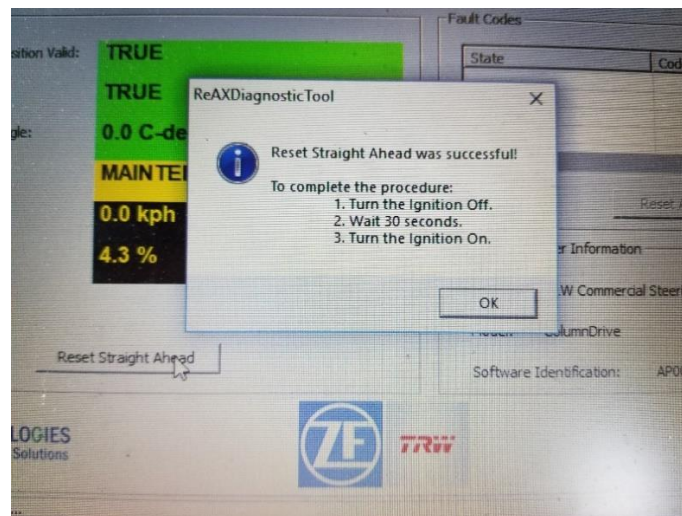


Figure 11: TRW Software Calibration Setup

36) After you have waited 30 seconds and restarted the bus, you will need to reconnect to the column as you did initially. Once you are connected the “Absolute Steering Angle” should be 0.0 degrees if you have not turned the steering wheel after performing the procedure. Also, the “Position Index Valid” will be red and FALSE, until the steering wheel is turned past straight ahead. At this point the ITS is complete.

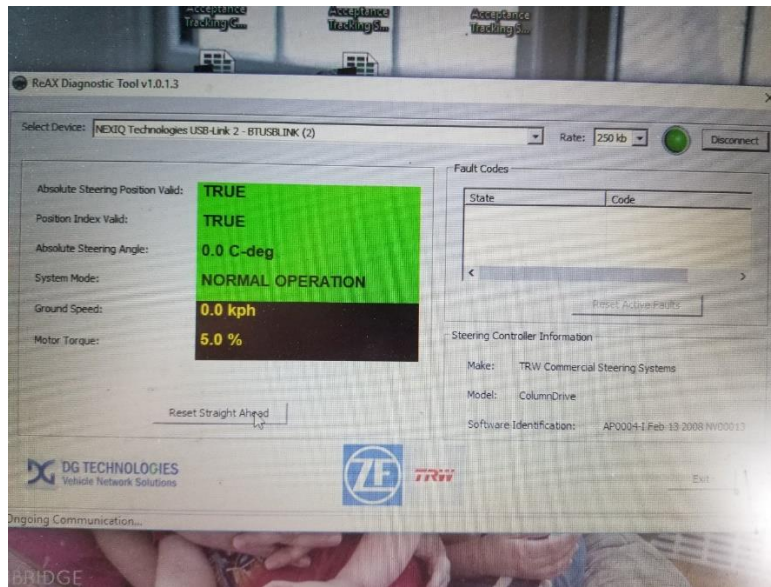


Figure 12: TRW Software Calibration Setup

LABOUR ESTIMATE

	Operation	Men	Hours	Labour Time M X HR
1	Rewire TRW steering column to provide a memory power circuit	1	3.5	3.5

PARTS REQUIRED

Item	Part Number	Description	Qty. per Coach	Units	Notes
1	8111605	GUARD KNEELING SW	1	EA	
2	813086	HRNS-JMPR FUSE BOX	1	EA	
3	813084	HRNS-JMPR SIDE CONSOLE PNL	1	EA	
4	670903	DECAL-EMERG POWER	1	EA	
5	659000	WASHER FLAT SST 10	3	EA	
6	627976	ASSY-RESISTOR PACK 1K OHMS/.5W	1	EA	
7	535764	DECAL-ON OFF TOGGLE	1	EA	
8	400073	SEAL-SWITCH RING	1	EA	
9	198196	ASSY-2A FUSE M/PACK CAP	1	EA	
10	169346	KIT-4CCT TWR DT	1	EA	
11	14S00006	SCREW MACHINE NO 10 PN HD	3	EA	
12	133916	CONN-POTTER&BRUMFIELD	1	EA	
13	133915	RELAY-12V, 70A	1	EA	
14	117047	SWITCH SPST WP MAINTAIN	1	EA	
15	104043	CONN-3CCT TWR WEATHERPACK	1	EA	
16	102879	SOCKET-FEM TERM	3	EA	
17	102877	SEAL-CONN 14 16 AWG	1	EA	
18	034794	SOCKET 18 16AWG DEUTSCH	1	EA	
19	8110713	TERM-R #10 8AWG IN	1	EA	
20	5958112	TYRAP-7.0 BLACK	20	EA	
21	729856	DECAL-SIDE CONSOLE PNL	1	EA	SR-2177
22	729860	DECAL-FUSE BOX	1	EA	SR-2177
23	551751	DECAL-SIDE CONSOLE PNL	1	EA	SR-1767



24	551754	DECAL-FUSE BOX	1	EA	SR-1767
25	633051	DECAL-SIDE CONSOLE PNL	1	EA	SR-2027
26	633055	DECAL-FUSE BOX	1	EA	SR-2027 or SR-2063
27	641828	DECAL-SIDE CONSOLE PNL	1	EA	SR-2063

SPECIAL TOOLS REQUIRED					
Item	Part Number	Description	Qty. per Coach	Units	Notes
1		Laptop with TRW ReAx Diagnostic Tool	1	EA	
2		TRW adapter harness	1	EA	