INTRODUCTION

These notes are offered to help Harrop owners and installing shops to plan and execute the installation of the Harrop Eaton ELocker™. Cruiser Brothers, LLC is not responsible for your results and accept no liability for your results. Good luck.

CREDITS

Thanks to Joey Romero, Eric Willis, Ken Francisco and RobRed (www.tlcfaq.com) for content, ideas, photos and leadership in these topics. You can see much more on this subject (specific to 80 Series at http://tlcfaq.com/main/2012/04/factory-toyota-locker-switch-to-control-air-lockers-and-compressor-part-1/ and http://tlcfaq.com/main/2012/05/factory-switch-to-control-air-lockers-part-2/.

UPGRADES / GENERAL COMMENTS

The good news is that the Harrop is a stunningly well crafted tool The bad news is that anything can be improved upon. Specifically, some owners/shops have upgraded the wiring harness to improve quality or function of connectors, terminals, wiring and switches. Specifically, Delphi Metr-Pack connectors are a popular replacement for the provided components and some have also swapped out the wiring and relay with aftermarket items. Another option is to replace wire with lighter, more flexible telecom wire. Finally, some owners prefer the new, 80 Series OEM locker switch.

If you want to go with the Toyota switch, here re the part numbers and approximate prices:

- 80 Series Differential Switch: 84725-60020 (80 Series F/R) approx.$45
- Male Connector: 90980-10631 $4
- Wire Splices (x3): 82998-12170 (165mm long) $5

GENERAL TIPS

When setting up the wiring for install, some installers take the trouble to “spin” the twin wires by putting those wires in the chuck of an electric drill and gently rotating the chuck under power to braid the wires.





80 SERIES TIPS

On North American FZJ80's, the plug is already part of the factory wiring harness. As is the wiring for the front and rear locker dash lights. Both go to a connector in the front PS kick panel where the locker ECU would normally go. A 30A fused circuit that is only hot when the ignition is on also is present in the same kick panel ECU connector. So if you run the Harrop wiring into the PS kick panel everything you need to get to is accessible in that one place and it's easy to just splice a few wires together and you're done.

The elockers only draw 3A and so can be run directly by the dash switch and you can re-purpose the relays that come with the locker to run the dash lights. The hardest part of the project is probably pulling the gauge cluster out so that you can install the two locker indicator lamps, and even that's not difficult. The part number for the lamps is 90981-11018 and the p/n for the lamp holder is 83101-04020. The relevant FSM wiring diagram is on the following pages.

You can easily get the lights on the cluster to work. If you are using the OEM diff locker switch, you just need to put in the bulbs in the cluster and ground pin 2 on the passenger side kickpanel harness to light up the rear indicator, and pin 9 to light up the front. Since the OEM locker switch sends +12v to the pins 6 (FR-RR switch position) and 12 (RR switch position) of the passenger kickpanel harness, you would need a relay to convert it to ground.

To light up the front, wire up a relay with terminals 30 and 85 to ground, 86 to pin 6 of the OEM kickpanel plug, and terminal 87 to pin 9 of the OEM kickpanel plug. You need a second relay to light up the rear indicator light, wired the same as the front except that terminal 86 goes to pin 12 of the OEM plug, and 87 goes to pin 2 of the OEM plug.





SYSTEM OUTLINE

THIS SYSTEM FREES OR LOCKS THE FRONT AND REAR DIFFERENTIALS ACCORDING TO THE POSITION OF THE DIFF. LOCK CONTROL SW. THE DIFFERENTIAL WILL LOCK ONLY WHEN THE CENTER DIFF. LOCK INDICATOR SW IS ON AND THE VEHICLE SPEED IS AT 8 KM/H (5 MPH) OR LESS.
WHEN THE CENTER DIFF. LOCK INDICATOR SW IS OFF, DIFFERENTIAL LOCK DOES NOT OCCUR EVEN IF THE DIFF. LOCK CONTROL SW IS IN **RR** POSITION OR **FR-RR** POSITION.
WHEN THE DIFF. LOCK CONTROL SW IS SWITCHED FROM **OFF** POSITION TO **RR** POSITION, THE CURRENT FLOW TO **TERMINAL 12** OF THE DIFF. LOCK ECU. IF THE LIMIT SW ON THE LOCK SIDE INSIDE THE REAR DIFF. LOCK CONTROL MOTOR IS ON AT THIS TIME, UNTIL THE LIMIT SW IS TURNED OFF, THE CURRENT FLOWS FROM THE **DIFF** FUSE TO **TERMINAL 8** OF THE DIFF. LOCK ECU → **TERMINAL 3** → **TERMINAL 3** OF THE REAR DIFF. LOCK CONTROL MOTOR → **TERMINAL 2** → **TERMINAL 1** OF THE DIFF. LOCK ECU → **TERMINAL 13** → **GROUND**. THIS DRIVES THE REAR DIFF. LOCK CONTROL MOTOR AND LOCKS THE REAR DIFFERENTIAL. WHEN THE REAR DIFFERENTIAL LOCKS, THE REAR DIFF. LOCK POSITION SW TURNS ON, LIGHTING UP THE REAR DIFF. LOCK INDICATOR LIGHT IN THE COMBINATION METER.
WHEN THE DIFF. LOCK CONTROL SW IS SWITCHED FROM **RR** POSITION TO **FR-RR** POSITION, THE CURRENT FLOWS TO **TERMINAL 6** OF THE DIFF. LOCK ECU. IF THE LIMIT SW ON THE LOCK SIDE INSIDE THE FRONT DIFF. LOCK CONTROL MOTOR IS ON AT THIS TIME, UNTIL THE LIMIT SW IS TURNED OFF, THE CURRENT FLOWS FROM THE **DIFF** FUSE TO **TERMINAL 8** OF THE DIFF. LOCK ECU → **TERMINAL 7** → **TERMINAL 3** OF THE FRONT DIFF. LOCK CONTROL MOTOR → **TERMINAL 2** → **TERMINAL 5** OF THE DIFF. LOCK ECU → **TERMINAL 13** → **GROUND**. THIS DRIVES THE FRONT DIFF. LOCK CONTROL MOTOR AND LOCKS THE FRONT DIFFERENTIAL. WHEN THE FRONT DIFFERENTIAL LOCKS, THE FRONT DIFF. LOCK POSITION SW TURNS ON, LIGHTING UP THE FRONT DIFF. LOCK INDICATOR LIGHT IN THE COMBINATION METER.
WHEN THE DIFF. LOCK CONTROL SW IS SWITCHED FROM **FR-RR** POSITION TO **RR** POSITION, THE CURRENT TO **TERMINAL 6** OF THE DIFF. LOCK ECU IS CUT OFF. IF THE LIMIT SW ON THE FREE SIDE INSIDE THE FRONT DIFF. LOCK CONTROL MOTOR IS ON AT THIS TIME, UNTIL THE LIMIT SW IS TURNED OFF, THE CURRENT FLOWS FROM THE **DIFF** FUSE TO **TERMINAL 8** OF THE DIFF. LOCK ECU → **TERMINAL 5** → **TERMINAL 2** OF THE FRONT DIFF. LOCK CONTROL MOTOR → **TERMINAL 3** → **TERMINAL 7** OF THE DIFF. LOCK ECU → **TERMINAL 13** → **GROUND**. THIS DRIVES THE FRONT DIFF. LOCK CONTROL MOTOR AND FREES THE FRONT DIFFERENTIAL. THIS CAUSES THE FRONT DIFF. LOCK POSITION SW AND THE FRONT DIFF. LOCK INDICATOR LIGHT INSIDE THE COMBINATION METER TO TURN OFF.
WHEN THE DIFF. LOCK CONTROL SW IS SWITCHED FROM **RR** POSITION TO **OFF** POSITION, CURRENT TO **TERMINAL 12** OF THE DIFF. LOCK ECU IS CUT OFF. IF THE LIMIT SW ON THE FREE SIDE INSIDE THE REAR DIFF. LOCK CONTROL MOTOR IS ON, UNTIL THE LIMIT SW IS TURNED OFF, THE CURRENT FLOW FROM THE **DIFF** FUSE TO **TERMINAL 8** OF THE DIFF. LOCK ECU → **TERMINAL 1** → **TERMINAL 2** OF THE REAR DIFF. LOCK CONTROL MOTOR → **TERMINAL 3** → **TERMINAL 3** OF THE DIFF. LOCK ECU → **TERMINAL 13** → **GROUND**. THIS DRIVES THE REAR DIFF. LOCK CONTROL MOTOR AND FREES THE REAR DIFFERENTIAL. WHEN THE REAR DIFFERENTIAL IS FREE, THE REAR DIFF. LOCK POSITION SW AND THE REAR DIFF. LOCK INDICATOR LIGHT IN THE COMBINATION METER ARE TURNED OFF.

THE DIFF. LOCK INDICATOR LIGHT FLASHES WHEN:
- THE DIFF. LOCK CONTROL SW IS SWITCHED TO **RR** POSITION OR **FR-RR** POSITION DURING DIFFERENTIAL LOCK PROHIBITION CONDITIONS (VEHICLE SPEED ABOVE 8 KM/H (5 MPH) OR CENTER DIFF. LOCK INDICATOR SW OFF).
- THE DIFF. **LOCK** POSITION SW IS TURNED OFF DURING OPERATION OF THE DIFF. LOCK CONTROL MOTOR.

SERVICE HINTS

D4 DIFF. LOCK CONTROL SW

4-1 : CLOSED WITH THE DIFF. LOCK CONTROL SW AT "**RR**" POSITION OR "**FR-RR**" POSITION
4-2 : CLOSED WITH THE DIFF. LOCK SW AT "**FR-RR**" POSITION

D5 DIFF. LOCK ECU

(DISCONNECTED WIRING CONNECTOR FROM ECU)
13-GROUND : ALWAYS CONTINUITY
4-GROUND : PULSE GENERATION WITH VEHICLE MOVING
8-GROUND : **9-14** VOLTS WITH THE IGNITION SW ON
2-GROUND : ABOUT 0 VOLTS WITH THE REAR DIFF. LOCK INDICATOR LIGHT ON
: **9-14** VOLTS WITH THE REAR DIFF. LOCK INDICATOR LIGHT OFF
6-GROUND : ABOUT 0 VOLTS WITH THE FRONT DIFF. LOCK INDICATOR LIGHT ON
: **9-14** VOLTS WITH THE FRONT DIFF. LOCK INDICATOR LIGHT OFF
15-GROUND : ABOUT 0 VOLTS WITH THE CENTER DIFF. LOCK INDICATOR LIGHT ON
: **9-14** VOLTS WITH THE CENTER DIFF. LOCK INDICATOR LIGHT OFF

F12, R10 FRONT, REAR DIFF. LOCK CONTROL MOTOR

2-3 : 0.3-100 Ω

○ : PARTS LOCATION

CODE		SEE PAGE	CODE	SEE PAGE	CODE	SEE PAGE
C2		22	D5	24	J8	25
C10	A	24	F11	25	R10	27
C11	B	24	F12	26	R11	27
C13	C	24	F13	26		
D4		24	J1	25		

□ : CONNECTOR JOINING WIRE HARNESS AND WIRE HARNESS

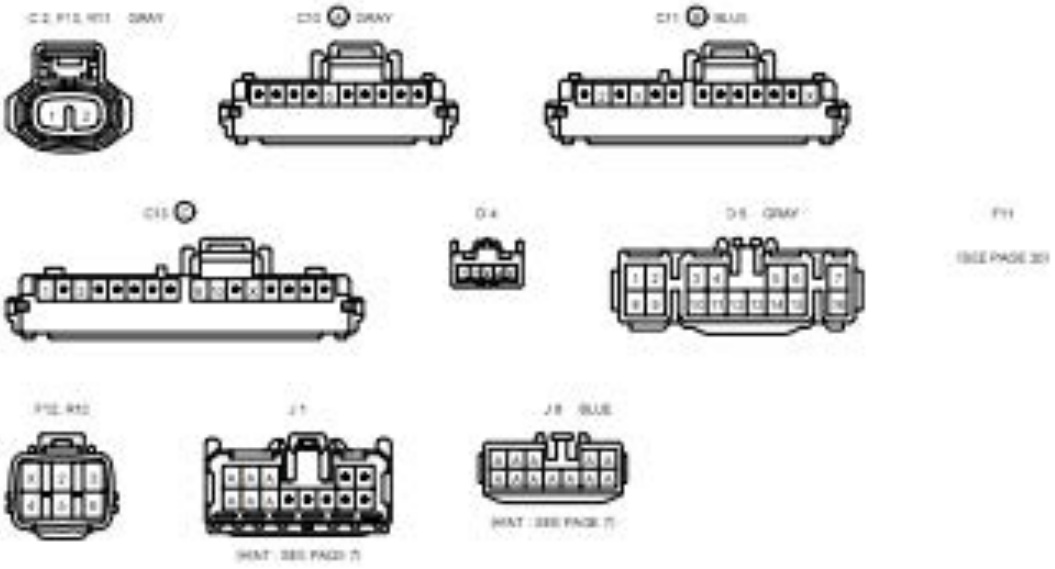
CODE	SEE PAGE	JOINING WIRE HARNESS AND WIRE HARNESS (CONNECTOR LOCATION)
EC1	30	ENGINE WIRE AND TRANSMISSION WIRE (NEAR THE STARTER)
ID1	32	COWL WIRE AND FLOOR NO. 1 WIRE (LEFT KICK PANEL)
IH1	32	ENGINE WIRE AND COWL WIRE (BEHIND GLOVE BOX)
BQ1	34	FLOOR NO. 3 WIRE AND FLOOR NO. 1 WIRE (LEFT QUARTER PANEL INNER)
Bh1	36	COWL WIRE AND FRAME WIRE (RIGHT FENDER)
Bh2	36	FLOOR NO. 3 WIRE AND FRAME NO. 2 WIRE (LEFT QUARTER PANEL INNER)

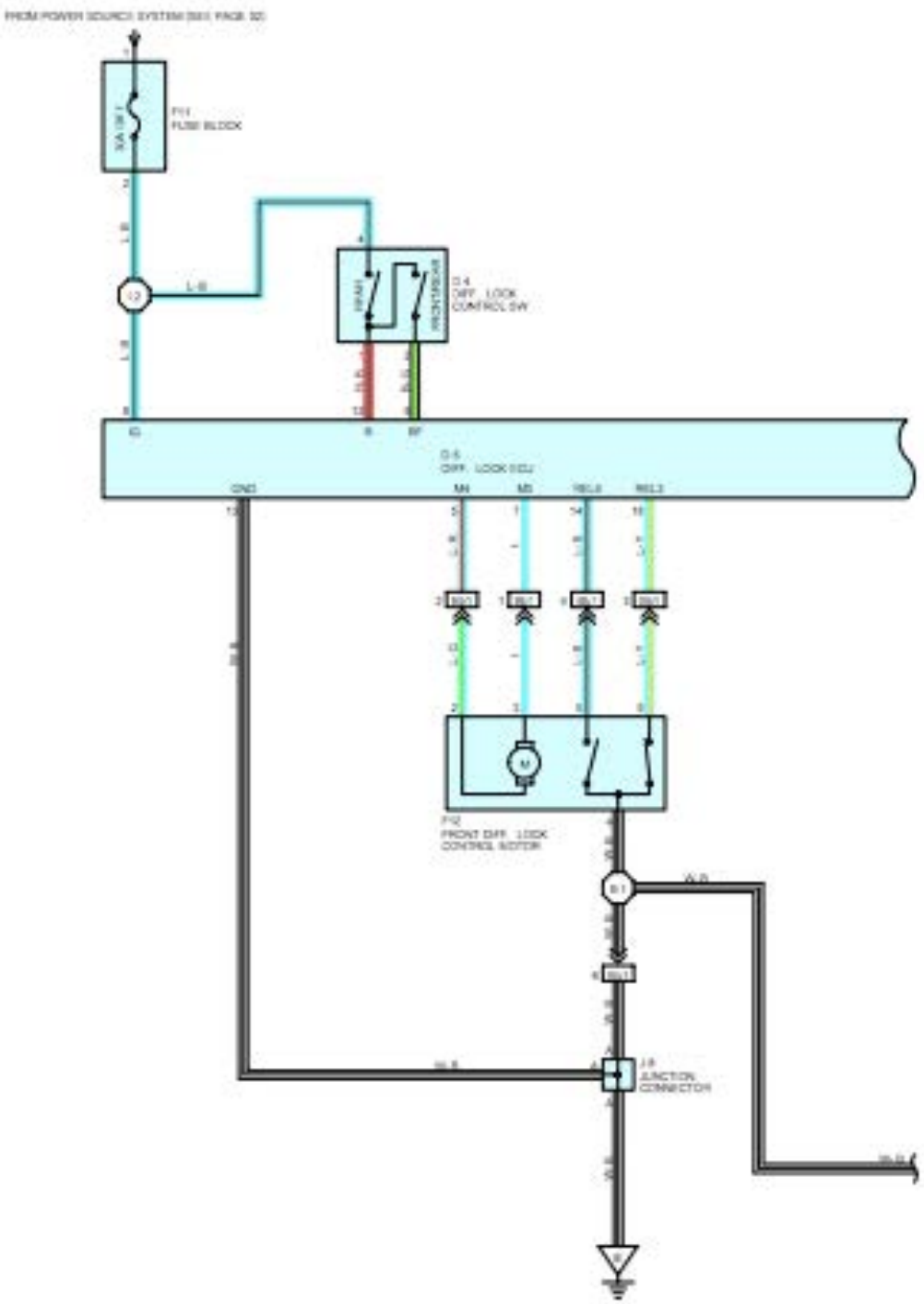
▽ : GROUND POINTS

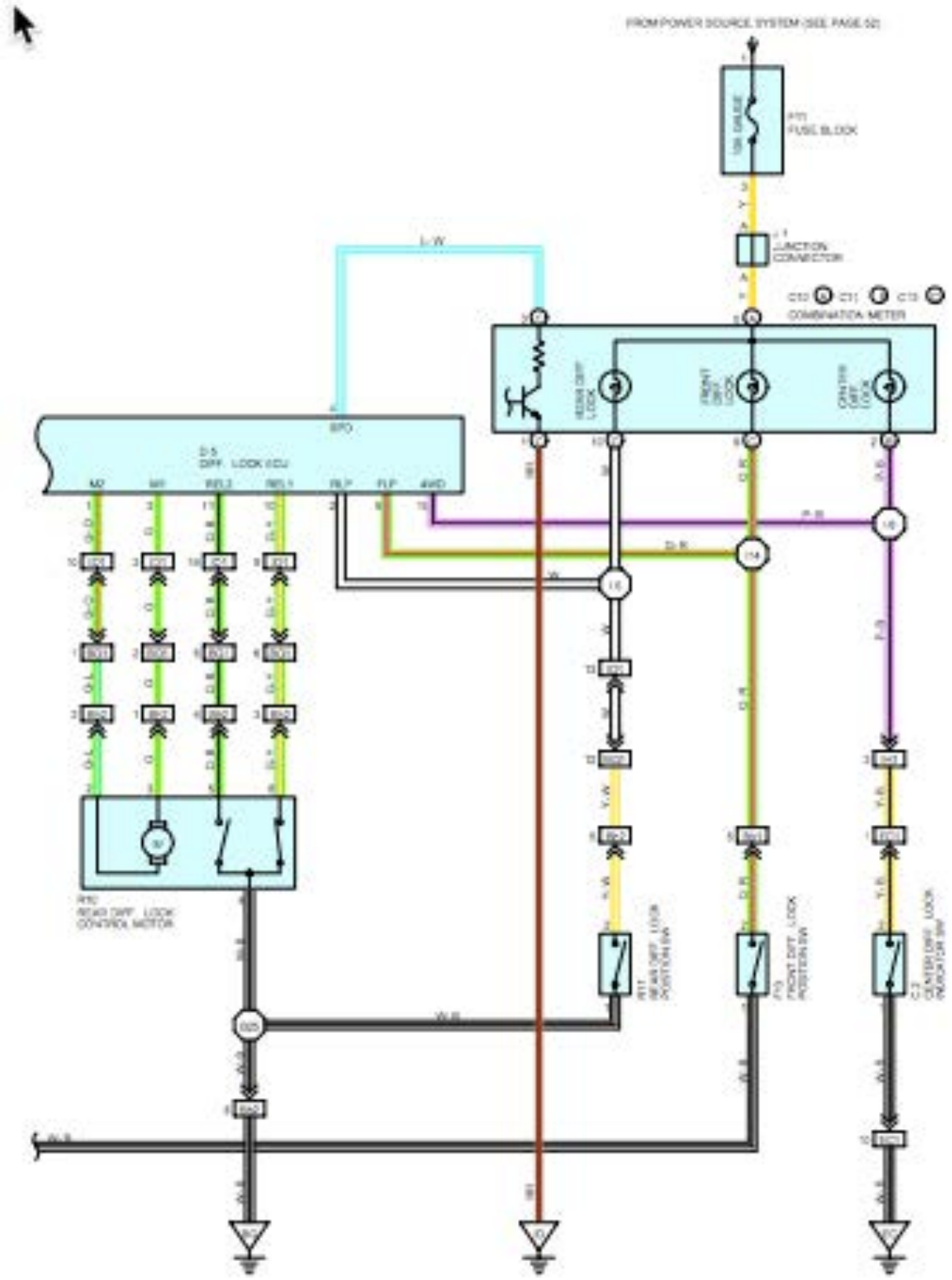
CODE	SEE PAGE	GROUND POINTS LOCATION
EC	30	AIR INTAKE CHAMBER
ID	32	LEFT KICK PANEL
IE	32	RIGHT KICK PANEL
BG	34	LOWER BACK PANEL CENTER

○ : SPLICE POINTS

CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS	CODE	SEE PAGE	WIRE HARNESS WITH SPLICE POINTS
I2	32	COWL WIRE	I14	32	COWL WIRE
I9			B1	36	FRAME WIRE
IE			B25	36	FLAME NO. 2 WIRE







TACOMA TIPS

The clock panel is a popular location for the OEM locker switch.



Remove screws to remove the lower dash panel.



Pull on the bottom of the ignition / clock fascia to remove.



Remove two screws to disconnect clock.



TACOMA TIPS
You will need to fill the gap with a new surround.



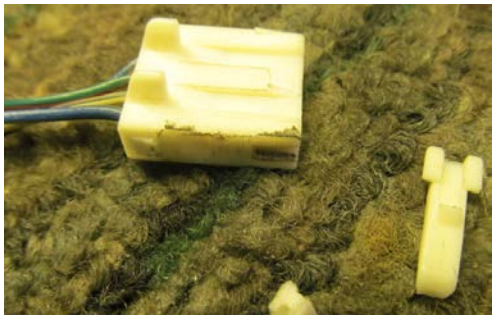
Source some aluminum stock and cut out the surround to fit (more to follow).



You can use the clock power plug to feed the OEM switch (and Harrop).



Clip off the retainer on top and file to trim.



TACOMA TIPS

A little sanding and the clock male plug fits into the female OEM locker switch



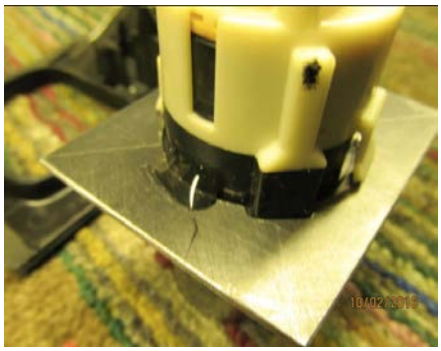
Here are the two wires to use from the clock harness.



This wire is always hot – good power source.



Here is the new aluminum switch surround 2.5" x 2.125" thickness of .100 up to .125 – secure with GOOP..





TACOMA TIPS

Good path for the elocker wires is the ebrake cable hold in the firewall.



And into the cabin.



See the yellow and pink wires?

See the 4 wires on top that used to go to the clock module?

The white with black tracer is ground....so that goes to one of the elocker wires(yellow)

The clock wire (blue with yellowish tracer) is a constant 12v that was powering the clock...so just crimp the shown 2 butt connectors and it's done!!!!!





TACOMA TIPS
And done – the locker pulls about 2.7 amps



You can also pick up the indicator lamp in the gauge harness, to show when the locker is engaged.

