Wiring Supplement

FOR PACBRAKE EXHAUST RETARDER IN CONJUNCTION WITH ALLISON 1000 AND 2000 SERIES TRANSMISSIONS

INTRODUCTION

When a Pacbrake Exhaust Retarder is installed on a vehicle equipped with an Allison 1000 and 2000 Series transmission, we ask that the enclosed wiring instructions be followed.

ALLISON 1000/2000 AND 2400 SERIES FEATURES

This electronically controlled transmission when correctly wired with the Pacbrake Exhaust Retarder, will provide converter lock-up in 2nd through 5th gears and also operate in the pre-select downshift mode.

When the Pacbrake dash switch is actuated a 12 volt input signal is sent to the (TCM) Transmission Control Module via wire #107 at connector J1 (gray plug). The signal tells the ECU that the brake is requested and when the throttle is closed and the transmission is in lock-up, increased braking will be provided by pre-selecting a lower range, dependent on the road speed of the vehicle at that time.

The pre-select is normally set for third gear, but this may be re-programmed by an Allison Distributor to second or fourth gear should the operator of a the vehicle so desire.

The Retarder Enable output signal is wire #120 from the (TCM) which activates a relay to prevent engagement of the Retarder with the throttle>0 or lock-up off.

INSTALLATION INSTRUCTIONS

As it is not practical to produce a made up harness to suit all the different engine/vehicle configurations, our wiring kit includes all the necessary colour coded wire, connectors and ample convoluted conduit to protect the additional wiring. Use only relays that are diode protected.

1. Supply an ignition switched 12 volt + wire (R) to the Pacbrake dash switch through a 10 amp circuit breaker or fuse.
2. Add a ground wire (G) to the upper terminal to operate the lighted switch, if a lighted switch is supplied.
3. The dash switch output wire (Y) should run in to the vicinity of the (TCM) Transmission Control Module.
4. At the (TCM) locate the GRAY connector. Check for wire #107 in pin cavity 07 and wire #120 in pin cavity 20. If the VOEM has installed wires in these locations connect to the TCM side as shown in the schematic, it is okay to cut these two wires. If no wires exist use the two supplied in this kit, insert into the correct cavities and attach to the end as shown in the schematic.
5. Transmission relay installation: This relay is wired normally closed and when wire #120 supplies a ground signal it opens the relay which will turn the exhaust brake off. Connect wire #120 to terminal #85.

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5a. Install an ignition power supply through a fuse to terminal #86.

5b. Connect dash switch 12 volt ignition power to terminal #30. Connect terminal #87a to the throttle switch circuit.

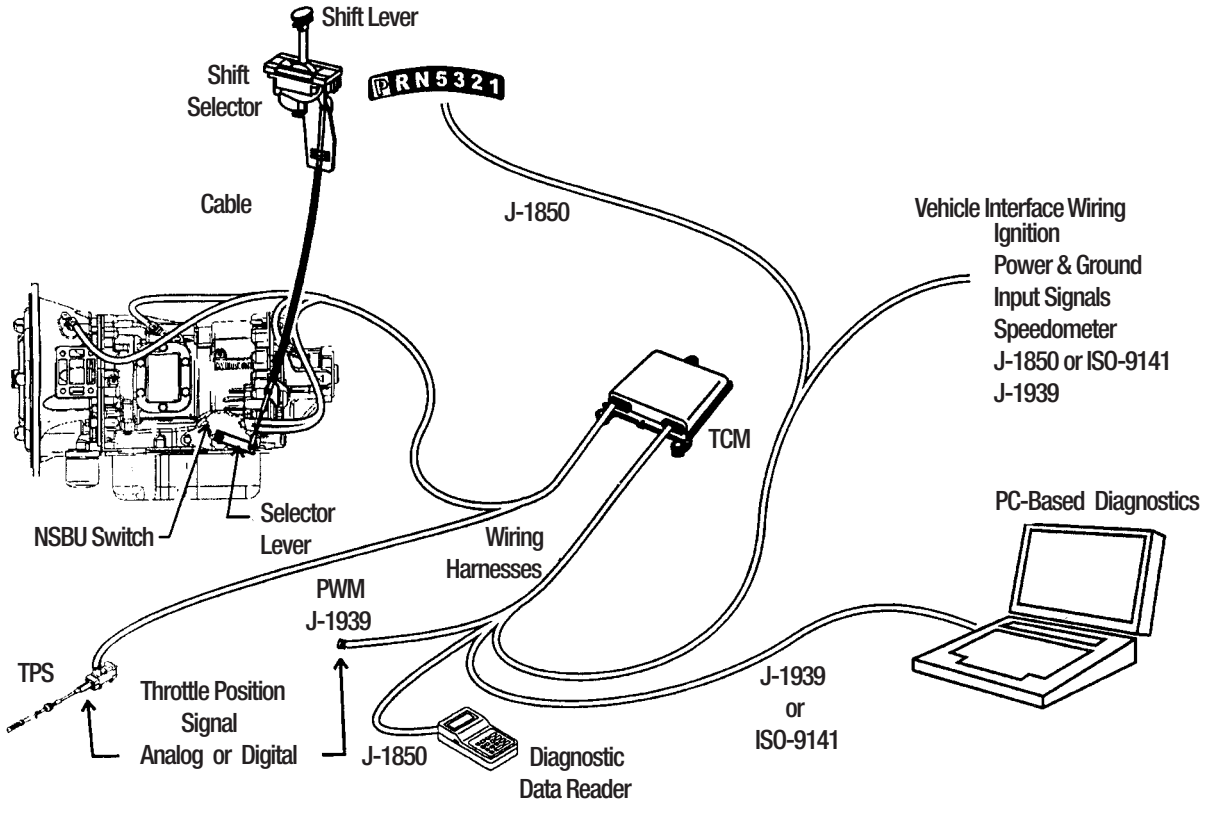
THROTTLE SWITCH INSTALLATION

NOTE 1: Engines with mechanical fuel control: A mechanical switch must be installed on the throttle linkage to disable the retarder at speeds slightly higher than idle RPM.

NOTE 2: Engines with electronic fuel control: A special relay must be installed to disable the retarder at speeds higher than idle RPM. Each engine manufacturer provides a signal from the engines ECU for this purpose. Each engine manufacturer does this differently, some are a 12 volt positive output, some are a negative output and some require an input signal. It is very important this is done correctly, consult the engine manufacturer or Pacbrake customer service or visit our website at www.pacbrake.com.

SOLDER SPLICE CONNECTOR (SSC) INSTRUCTIONS

1. Strip 3/16” of insulation from the wires to be joined. Slide the shrink tube over one of the wires to be spliced.
2. Insert wires to be joined into each end of the SSC up to the wire stop. If connecting two wires in one end, insert the wires at the same time in parallel making sure that each wire is inserted up to the wire stop. The wire lock flap aligns the wires and holds them in place until a permanent soldered connection is made.
3. To install the SSC using a butane torch or similar source, heat the centre of the SSC until the solder disk is seen to melt and flow outward. During this step it is important to keep the connector horizontal with the barrel openings up so the solder can coat the connectors. Allow the solder time to adequately wet the conductors. After the solder sets, slide the shrink tube over the SSC and heat each end of the tubing until it shrinks, creating the insulating seal.



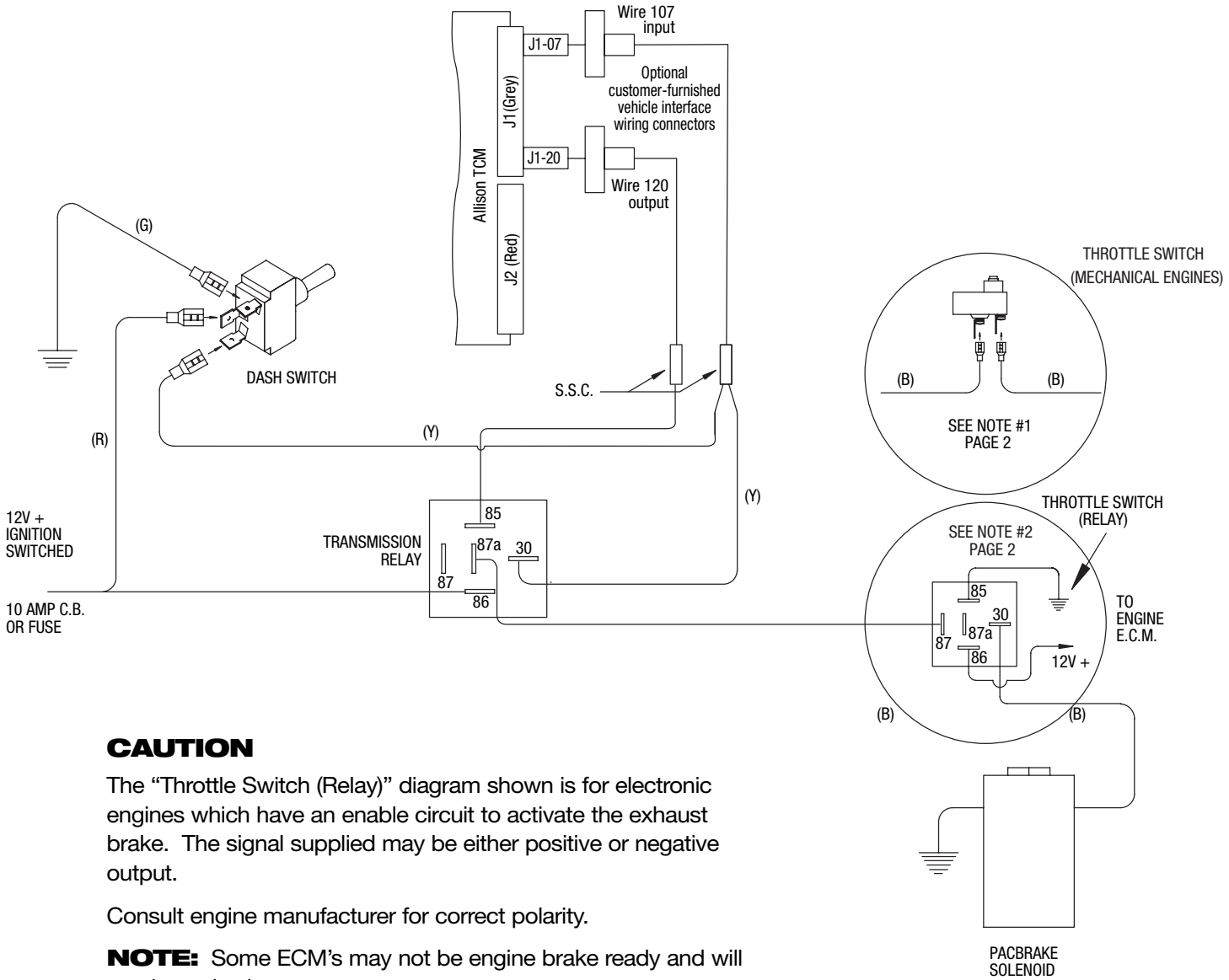
TESTING

1. Vehicle stationary. Start the engine with the transmission in neutral and throttle at idle. Turn the Pacbrake dash switch on. The Pacbrake Exhaust Retarder should **NOT** operate. If it does, either:

   a.) Engine Brake Enable feature may have been turned off. This may be verified and enabled again with the use of a Prolink diagnostic tool, or check the exhaust brake input is wire #107 and exhaust brake output is wire #120.

   b.) The wires at the transmission relay may be installed incorrectly. Check the wire that is attached to terminal #87a, it may be connected to terminal #87. If so, change it to 87a.

2. Road test the vehicle with the transmission in 5th. gear. Turn the Pacbrake dash switch on and when the throttle is put in idle position, confirm that the Retarder applies and the transmission pre-selects a lower range.



CAUTION

The "Throttle Switch (Relay)" diagram shown is for electronic engines which have an enable circuit to activate the exhaust brake. The signal supplied may be either positive or negative output.

Consult engine manufacturer for correct polarity.

NOTE: Some ECM's may not be engine brake ready and will require activation.

*Note: Do not use on vehicles equipped with **Allison 4th Generation Transmissions**, they are identified by one connector at the transmission ECU, consult Pacbrake factory*