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THE CANADIAN BOMBARDIER ILTIS MOTOR POOL

By Stuart Fedak

This article will be about the installation of a rear back-up light and switch on the Canadian Bombardier Iltis activated by the transaxle when shifting into reverse.

The Ontario Passenger / Light-Duty Vehicle Inspection Standard Reference Handbook, October 2015 (1) determines the requirements used for the inspection of the 1984-1986 Canadian Bombardier Iltis. As per the regulations, back-up lamps became a requirement on motor vehicles manufactured after January 1, 1971. The standards have criteria for rejection. In the case of the back-up lights, inspection criteria rejects if the back-up light is: - missing; or - not white in colour or not located at rear; or - fail to illuminate with engine running and transmission in reverse gear; or - illuminate when transmission is in any other gear position than reverse. Additional criteria require one white back-up light on the rear. The criteria do not specify height above the road surface. Based on the criteria, this rules out the use of a switch on the dash or other locations, that is manually turned on when backing up.

The Iltis transaxle (transmission) was supplied with a mounting hole for installation of a switch that will be activated by the transaxle when shifting into reverse. The Iltis rear differential also has a switch that is turned on when the driver locks the rear differential. This same rear differential switch will be used as the rear back-up switch in the transaxle. The **DND Illustrated Repair Parts Manual and Scale** (C-30-108-00/MX-00) and the **Parts Index** (2) (3) identify the **Rear Differential Lock Switch** as NSN 5930-21-895-9743 and VW/Audi number of **016941521**. Fortunately, the Canadian Bombardier Iltis has many VW/Audi parts that are available Commercial Off The Shelf (COTS). You just read the COTS parts numbers on the Parts Index. You then can purchase the 016941521 switch from a NOS dealer; on-line; VW/Audi dealer; or from your local parts store.

As my Canadian Bombardier Iltis has to earn its keep moving trailers; camping and off-road fun; I wanted a LED back-up light that would give more light when backing up when camping. I purchased a small 3 LED flood light from Princess Auto that was rated for 12 to 36 VDC at 0.63 A current. I would stay away from anything with old school light bulbs as the lights always seem to fill up with water. You can pick your favourite mounting location. I prefer the driver side, mounted on the rear taillight metal protector. One could also use the mounting holes/bolts for the radio antenna mast. Lots of possibilities.

Note: The wiring standard on LED lights is not the same as most devices. In most cases the **LED Positive** (+) wire is **Black** and the **LED Negative** (-) wire is **White**. Many units come with a sticker/label to indicate polarity. **Check this before wiring up the device**.

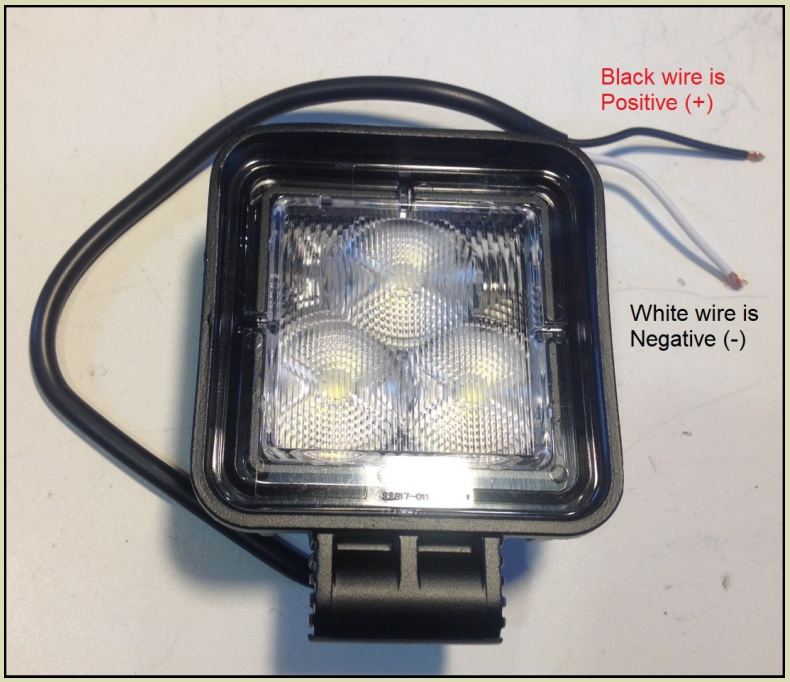
Based on the rejection criteria, I selected taking power from the **fuel pump circuit breaker** (circuit breaker closest to the driver side panel). This circuit is energized when the **Master Power** is turned on, and the **Accessory Switch** (Ignition Switch) is turned on. The 0.63 A current demand of the LED light does not put significant demand on the fuel pump breaker. For all of my Bombardier Iltis wiring, I follow the VW/Audi practice of running separate ground lines for all circuits, rather than just grounding at the light to the body tub where the light is.

Installation steps:

The basic wiring circuit is to tap into the fuel pump breaker positive line (taking care to remove driver side battery ground before working) to run a Positive Red (+) wire through the fire wall, and down to the base of the shifter on the transaxle. Refer to Canadian Bombardier Iltis simplified wiring diagram (next page) for installation of rear back-up light and VW/Audi switch 061941521 activated by the transaxle when shifting into reverse.

1. Disconnect **driver side battery ground** before installation.
2. Locate the transaxle shifter tower under the Iltis and identify the M18 x 1.5 plug that is covering the mounting hole location used for the switch. Remove the plug and insert the VW-Audi 016941521 switch. Use Teflon on the thread and only torque to 15 ft-pounds (aluminum on aluminum). The switch is now installed and will have two male blade connectors that will be used with female blade connectors on the Positive Red (+) wires.

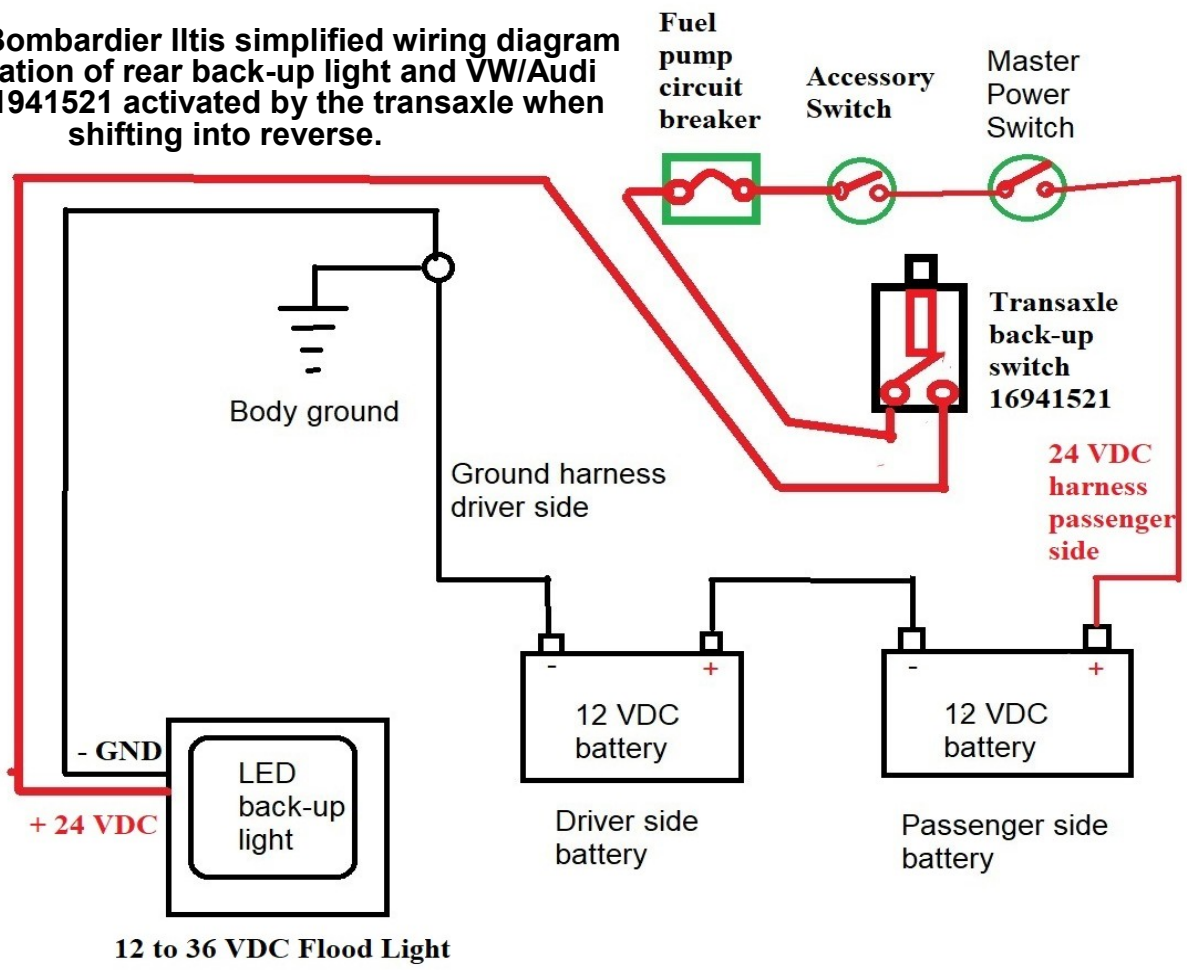
3. Splice a Positive Red (+) wire into the Positive (+) line of the Fuel Pump circuit breaker. Run the Positive Red (+) wire through the firewall and down to the location of the VW-Audi 016941521 switch on the shifter tower. Place a female blade connector on end of Positive Red (+) wire and attach to one male blade connector of the switch.
4. You will now be running a Red Positive (+) wire from the rear taillight area (driver side) where you decided to mount the LED backup light. This will go under the rear tailgate area; and follow the wire harness to inside the body tub, then follow the wire harness along the rocker panel; and up to the fuel pump breaker area; and then go through the firewall and down to the location of the VW-Audi 016941521 switch on the shifter tower. Place female blade connector on end of the long Positive Red (+) wire and attach to remaining male blade connector of the switch.



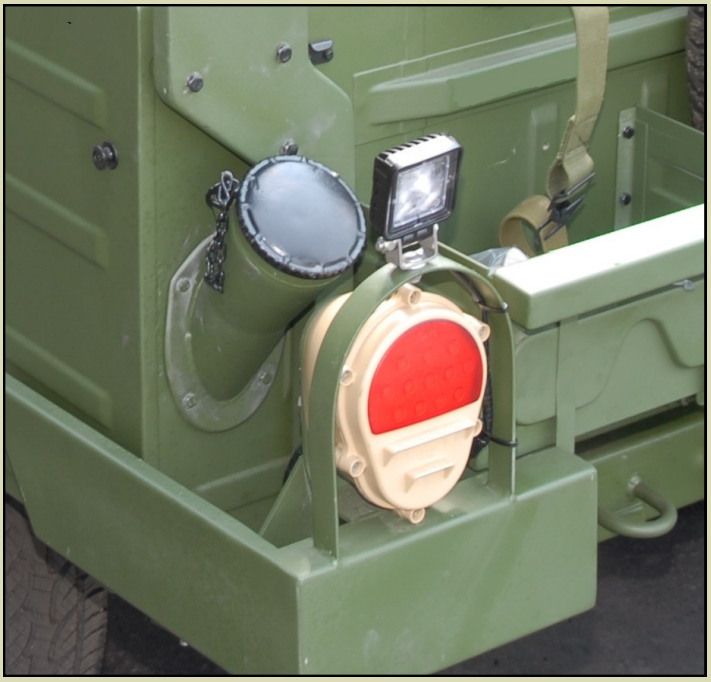
5. You will now be running a Negative Black (-) ground wire from the rear taillight area (driver side) where you decided to mount the LED backup light. This will go under the rear tailgate area; and follow the wire harness to inside the body tub, then follow the wire harness along the rocker panel; and up to the fuel pump breaker area; where there is a multiple ground post on the side of the body tub. Place a round connector on end of the long Negative Black (-) ground wire from the rear taillight area and attach to the multiple ground post on the side of the body tub. I use plastic wiring loom protection over the Positive Red (+) and Negative Black (-) wires run along the body tub and rocker panel area. The plastic wiring loom is secured with Zip ties to the main wiring harness.

6. Mount your LED light to the position of your choice. Make note of the polarity of your LED device as noted above. Connect the LED Positive (+) wire to the Positive RED (+) wire at the rear tailgate area using compression wiring fittings. Connect the LED Negative (-) wire to the Negative Black (-) wire at the rear tailgate area using compression wiring fittings. Tape and tidy up.
7. Connect driver side battery ground after installation.
8. Test.

Canadian Bombardier Iltis simplified wiring diagram for installation of rear back-up light and VW/Audi switch 061941521 activated by the transaxle when shifting into reverse.



Once installed and tested, the back-up light should only operate when **the Master Power** switch is **ON**; when the **Accessory Switch** (Ignition Switch) is **ON**; and the **transaxle** (transmission) is in **reverse gear**. The back-up light will not operate when the transaxle (transmission) is in any other gear other than reverse.



References:

1. Passenger / Light-Duty Vehicle Inspection Standard Reference Handbook, October 2015 http://www.mto.gov.on.ca/english/trucks/pdfs/passenger-light-duty-vehicle-inspection-standard.pdf accessed 07-11-2019.
2. DND Illustrated Repair Parts Manual and Scale (C-30-108-00/MX-00). Available at **Bombardier Iltis Canada** Facebook group <Files> page.
3. DND Iltis parts Index. Available at the **Bombardier Iltis Canada** Facebook group page.
4. DND First, Second and Third Line Maintenance Instructions. C-30-108-000/MP-001 dated 10-June 1991. Available at the **Bombardier Iltis Canada** Facebook group <Files> page.