

Jackalopee is a general purpose electrical interface between the HDT electrical system and the RV or fifth wheel electrical system.



It is housed in a gasketed waterproof enclosure with a see through cover, to observe the LEDs indicating proper operation. Cables and wires also enter the unit via waterproof hubs. (The cables, wires and plugs shown are not supplied, this is a display unit showing typical installation).

The Jackalopee performs several functions and allows for a neat, safe and professional wiring between the two vehicles.

Its primary function is to convert truck lighting signals to RV lighting signals similar to the function performed by the converters (or bricks) such as a Hoppy. This function, commonly known as 3 to 2 conversion, takes the truck signals which have a separate brake light output (left turn, right turn and brake light, hence the three) and channels it to the RV which typically will have only two lights (left turn and brake, right turn and brake, hence the two).

Jackalopee performs this conversion differently than the solid state modules available on the market. The logic function is done with relays which provide several advantages:

The relays are high capacity automotive relays, each capable of carrying and switching 40 to 60 amps at 12 VDC, far beyond the needs of even the most "lit up" RVs.

Common failure of the "bricks" is caused by their inability to carry sufficient current for the well lit larger RVs. Since they are potted they are not repairable and are thrown away when faulty. In a very unlikely event of a relay failure in a Jackalopee, it can simply be unplugged from the circuit board and replaced with a new one. Replacement relays are a common item carried by all well stocked automotive parts stores.

The relay logic is run by the truck output cable and does not require a separate +12VDC input in order to operate, unlike the "brick" units, which must have a separate 12VDC coming in just to power "the brick". Using the tractor trailer interface does not load the truck lighting electrical circuit, a problem with newer HDTs which have computers monitoring their lighting circuits and where extra load is detected by the computer as a fault in the circuit.

The running lights function in the Jackalopee is a straight through connection (does not go through a relay) between the input and the output cable.

In addition to the 3 to 2 lights conversion the Jackalopee also takes care of all the other wiring essential for RV pulling and lighting of both rigs (truck and RV). The printed circuit in the Jackalopee provides for wiring the electric brake controller, 12 V power to the RV, either switched, or direct, back up lights to the RV for those rigs equipped with these and for powering marker lights on HDTs with beds or droms

equipped with marker lights. (Depending on the bed/deck conversion this could be a DOT requirement). These functionalities are not provided with typical “brick” converters and often result in a real “rats nest” of wiring prone to shorts and opens.

Jackalopee can be used with any truck, LDT, MDT or HDT although primarily it was designed to be used on HDTs.

One of the things the Jackalopee solves is the basic incompatibility of the industries. The trucking industry has its own (DOT driven) standard for providing the lighting and power between the tractor and the trailer, the RV industry has its own standard and the two are not the same.

In addition HDTs have two systems on the truck one for running bobtail and one for running with a trailer.

When running bobtail HDTs power a light bar at the end of the frame consisting of three lights:

Left turn/stop/running in the left light (red)

Back up in the center light (white)

Right turn/stop/running in the right light (red)

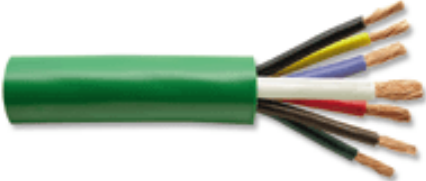

Although this setup is identical to the RV setup (as far as the lights are concerned) one should avoid the temptation to incorporate these into an RV plug. It’s a low power circuit, primarily designed to take care of those three lights only and, particularly on newer trucks, any attempts to drive an RV with it will cause the truck computer to complain. The computer will see the extra load of an RV as an anomaly (a fault). Seeing an extra current draw the computer will think that it has a short and since shorts are the worst things you can have in an electrical circuit it will complain bitterly.

Extra, or multiple lights can be driven by that circuit, as is often done on fancy bed conversions, but in those instances LED lights are utilized which draw less current and keep the computer “happy”. Trying to also drive an RV with this circuit is asking for trouble.

The better choice is to drive the RV circuits from the connector which every HDT has to power and light commercial trailers. The connector is typically located low and behind the cab in the vicinity of the air brakes hoses and every commercial trailer has an umbilical cord with a plug that plugs into it. Some HDTs will have two of these connectors and this has to do with “confusion” the trucking industry went through for a couple of years on how to power trailer ABS systems.

The truck connectors and trailer plugs are manufactured by Pollack and are a trucking version of a 7 pin. It is a much higher quality plug and connector than the typical 7 pin connectors used by the RV industry. But the biggest difference between the two industries is in the wire assignments and color codes.

One of the largest distributors of electrical components for the trucking and RV industry is Waytek, Inc. www.waytekwire.com . They sell cables, connectors and plugs used by both industries. The seven wire cables used by both industries are slightly different although they have the same wire color coding (white, black, red, green, brown, blue and yellow).





<p>Trucking industry uses cable (Waytek P.N WT703) that has a green outer jacket, 0.680” diameter and the seven wires are as follow: One 8 gauge wire (white), two 10 gauge wires (blue and red), four 12 gauge wires (brown, yellow, green and black).</p>	
<p>The RV industry uses cable (Waytek P.N WT702) that has a black outer jacket, 0.580” diameter and the seven wires are as follow: Two 10 gauge wires (white and black), one 12 gauge wire (blue), four 14 gauge wires (brown, yellow, green and red).</p>	

Since each industry has somewhat different “needs” they created different systems of assigning functions to wires in their cables and to which pins the wires will go in their plugs and sockets

Trucking industry			RV Industry		
Pin	Function	Color	Pin	Function	Color
1	Ground	WHT	1	Ground	WHT
2	ICC Marker lights	BLK	2	Brake controller	BLU
3	Left turn	YEL	3	Running lights	GRN
4	Brake lights	RED	4	+12 VDC	BLK
5	Right turn	GRN	5	Left turn/Brakes	RED
6	Running lights	BRN	6	Right turn/Brakes	BRN
7	Key on +12 VDC Auxiliary power	BLU	7	Back up or Auxiliary	YEL

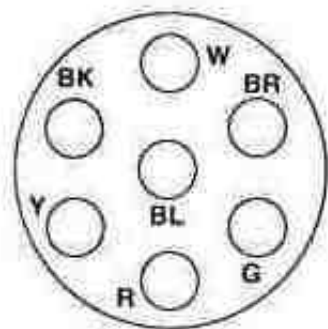
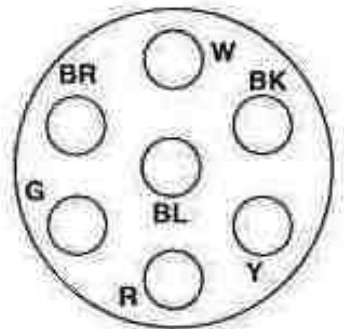
As can be seen there is a significant difference between the two systems and Jackalopee takes care of this incompatibility.

The plugs and sockets used by both industries are different. An HDT will have a cast metal socket and cast metal plug and circular brass pins and sockets in the outlet and the plug. On an RV they are likely to be the plastic types.

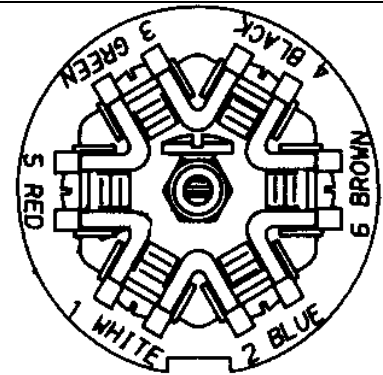
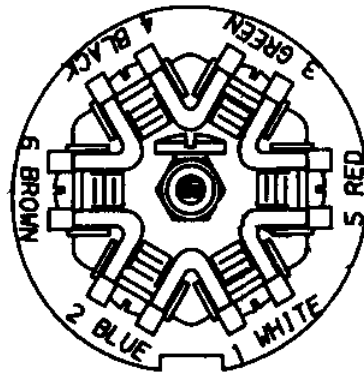
<p>An HDT will have a cast metal socket and cast metal plug and circular brass pins and sockets in the outlet and the plug Socket on the left, Waytek # 37674 Plug on the right, Waytek # 37675</p>		
<p>An RV will have a plastic socket and plug with flat copper strip pins and socket in the outlet and the plug Socket on the left, Waytek # 37676 Plug on the right, Waytek # 37677</p>		

The internal wiring configurations and pin locations in both systems are also different.

(socket and plug)

<p>Trucking system is arranged in a circular fashion. For instance, in the plug (right) WHT is 1, BLK 2, YEL 3, RED 4, GRN 5, BRN 6 and center pin BLU is 7</p>		
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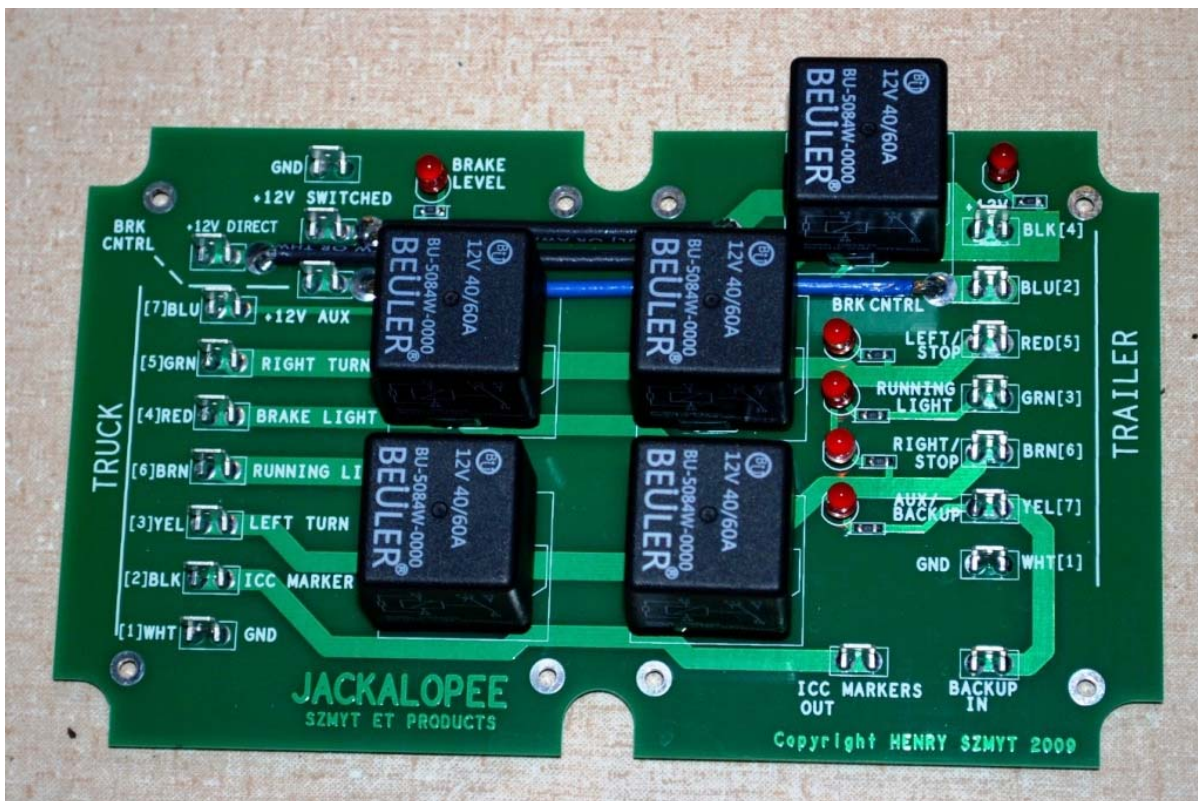
In RV systems the pin numbers alternate (as shown), as do the wires and the center pin (7) is YEL



The wire bundles inside 7 pin cables are also arranged in a circular fashion and favor the trucking industry arrangement which makes it more difficult to wire the RV plugs and sockets.

Now to wiring the Jackalopee.....

The HDT will probably have a functioning socket (like Waytek # 37674), so to complete the installation you will need it's corresponding plug (Waytek # 37675), an RV socket (Waytek #37676) and 20-25 feet of 7 pin cable (Waytek # WT702). Locate the Jackalopee in a convenient place on the chassis, deck or a compartment and mount it with four screws through the box flanges. Measure two lengths from the 25 feet of cable, to go from the truck socket to the Jackalopee and from the Jackalopee to the RV socket on the back of the truck.



As shown on the picture of the PCB, the cable from the truck terminates on the Jackalopee board on the left and the cable going out to the RV terminates on the right. All the terminations are done with 0.250 push-on connectors crimped to the ends of the wires. Use blue insulated connectors on the 14 gauge wires and yellow insulated connectors on the heavier 12-10 gauge wires. A full ratcheting crimper is recommended to assure secure and reliable crimps.



Strip outer casing from cables to have enough exposed wires to accomplish a neat installation. Then follow the color code indicated on the PCB crimp on lugs and connect. There is probably 100% chance that the truck side will be correct. On the RV side not so. Occasionally units are produced and wired by workers “not familiar” with the RV wiring code. Jackalopee should be wired according to the RV industry code and whatever problems the RV has should be corrected in the RV.



There are 5 terminals in the upper left hand corner of the board which deal with the brake controller and the 12V power needed by the RV.



The electric brake controller wiring is straight forward. Bring the power wire from the controller (typically blue), crimp a terminal on it and plug it into the tab identified as BRK CNTRL. If the controller requires another wire for ground, a ground terminal is provided at the top of the board. The Jackalopee routes this to the proper terminal and wire on the trailer side. A LED marked “BRAKE LEVEL” gives some indication whether this circuit is working or not (from dim to bright).

The +12VDC needed to charge the RV batteries while pulling can be provided three different ways:

1. It can come from the truck +12V AUX line (blue wire in the 7 wire tractor cable)
2. It can come DIRECTLY from the truck battery
3. Or it can come from the battery and be SWITCHED by the AUX line

Method number 1 is perhaps the simplest



First you need to test the [7]BLU +12V AUX line and make sure it's "hot" and puts out +12 V when the truck key is turned on. If it does (some trucks have this circuit disabled with a missing fuse) simply plug this line into +12V DIRECT and you have +12VDC going to the trailer switched on and off with the truck key. A word of caution when doing it this way.

First, this line is typically limited to 30 Amps, not too good for RVs with massive solar banks, etc. Second, some truck computers don't like being "back powered" from the RV batteries when you turn the truck off. If that is the case method number 3 should be utilized.

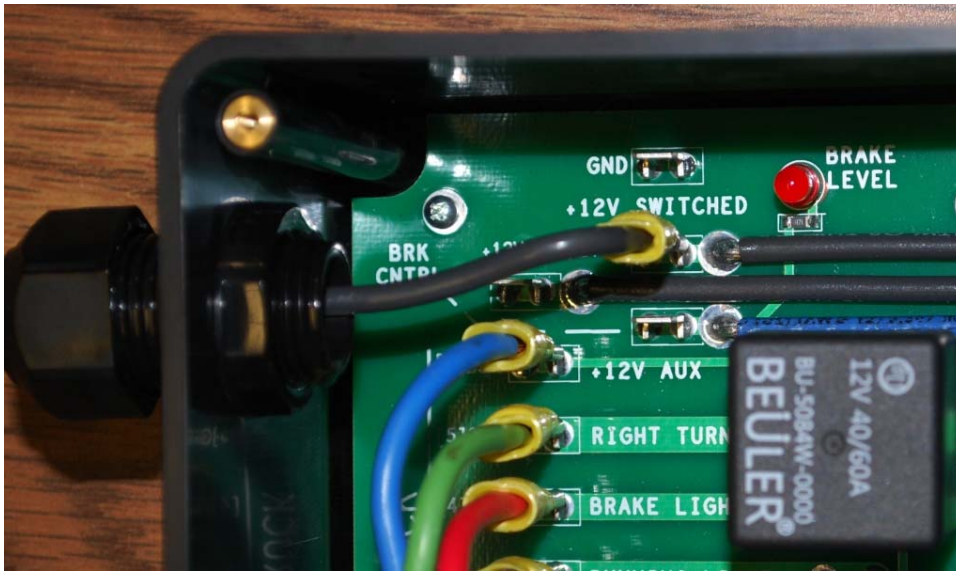
Method number 2



If the AUX line is dead or if you want to bring more power to charge your solar bank (up to 60 Amps) you can bring a separate wire into the Jackalopee and plug it into +12V DIRECT. Make sure you fuse this line properly at the battery but once this is done it will go through the closed contacts on the relay and directly into the trailer plug.

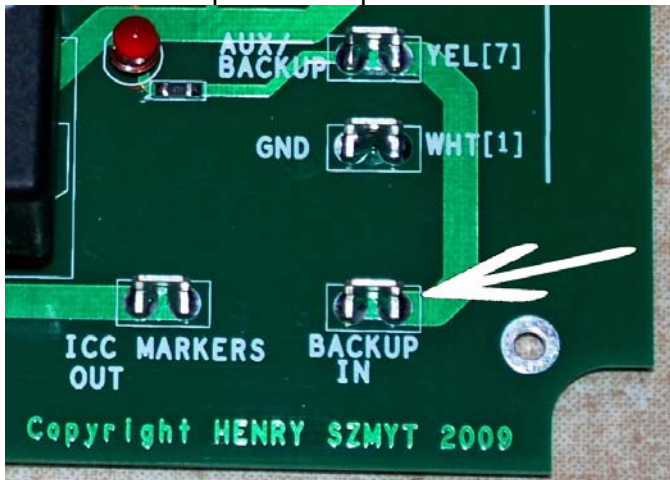
When wiring the +12VDC this way make sure that the blue AUX wire "parked" on the +12V AUX terminal is indeed dead. If it isn't you will be turning the +12VDC OFF every time you turn the key on. Note the dual 40/60 Amp rating on the relays used in the Jackalopee. The 40 Amp rating is on the terminals which are being switched; the 60 Amp rating is on the terminals which carry the current directly.

Method number 3

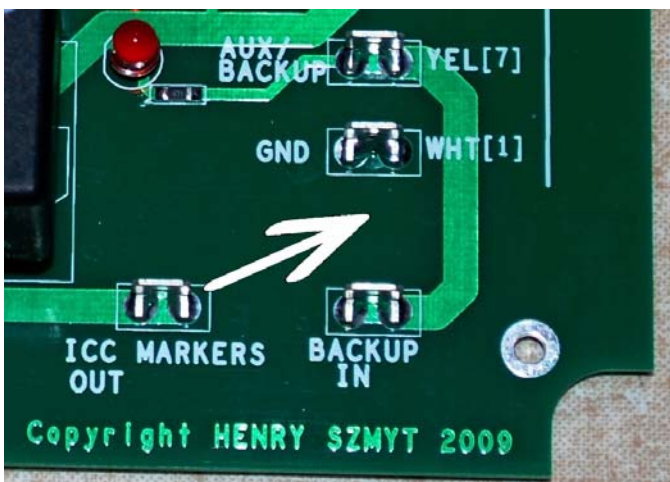


The third option (with a working AUX line plugged into [7]BLU +12 AUX) is to bring the current from the battery and plug it into +12V SWITCHED tab. This input should be fused and limited to 40 Amps. It will be switched on and off by the relay every time the truck key is turned on and off.

There are a couple other “options” available in the Jackalopee.

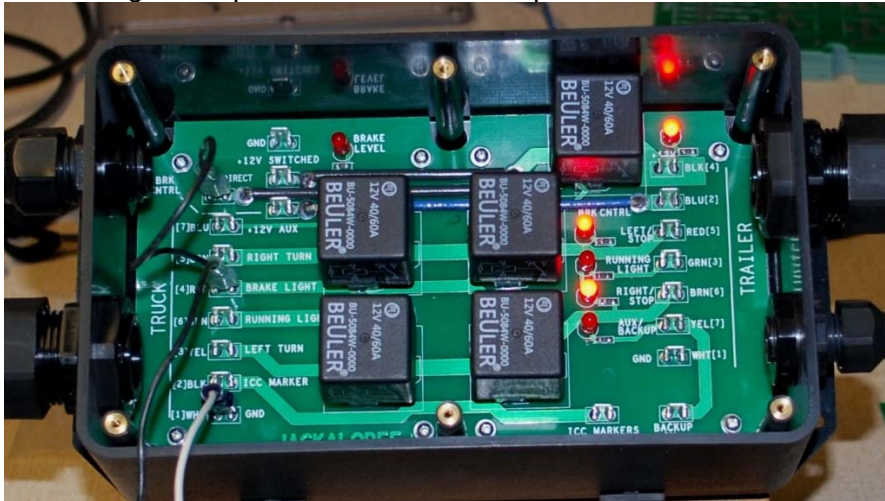


Many larger RVs have backup lights which are normally powered through pin number 7 (AUX) in the RV plug. HDTs do not provide a backup line in their trailer connector, therefore this function is not available in the “left side” of the Jackalopee. However a backup light is installed and powered on the bobtail three light bar in the rear of every HDT. Therefore that function can be “stolen” from there, brought into Jackalopee, plugged into BACKUP IN pin and used to drive the backup lights on the RV.



The other “option” is the ability to drive marker lights. Should you install a large deck and a drom or a garage on top of that deck and want to be “legal” with properly installed marker lights, Jackalopee provides that too. Just take the power for those from the ICC MARKERS OUT pin. You should be able to “courtesy flash” these at other truckers with a dashboard mounted switch in most HDTs.

The last “goodie” provided in the Jackalopee is the status LEDs.



Once you wire your Jackalopee you can test the various circuits by looking at the LEDs. Remember these only indicate what is happening on the “input side” (what is coming from the truck) and also if any of the relays failed. What is happening with the trailer can only be tested by looking at the RV lights. Jackalopee has a transparent cover which means that the status LEDs can be observed at any time to check its operation.

Assembly tips:

The screws holding down the cover have an oversize head and sealing grommets under the head. Do not lose any when removing the cover.

If you are not passing any individual wires through all the holes in the wire grommets (3 holes on the truck side, 2 holes on the trailer side) put a short length of wire in any unused hole to facilitate waterproof installation. Turning the large hex nuts clamps the rubber grommets around the large cables and the individual wires.



Here are the few tools which make the wiring Jackalopee an easy task. A good wire stripper for larger gauge wire 12-10 is a must as is a ratcheting crimper. The crimper shown is quite expensive but you can purchase a Chinese “knock off” at Radio Shack or Auto Zone for under \$20 dollars. The crimper will not release until a full crimp is achieved guaranteeing a good connection. Loop the wires to the corresponding tabs and trim them so they are flush with the tab. Strip the insulation (no more than 5/16”) and crimp the female push-on.



Use long nose pliers to push the female push-ons over the tabs.

Jackalopee has plenty of room to facilitate neat installation, but it helps to have the cable wires cut and dressed to the proper length.

Make sure the transparent cover is seated down completely and that its gasket provides a waterproof seal.

The four cord grips and wire grips on the Jackalopee are also waterproof. Once the wires are terminated and arranged simply tighten the hex nuts on the cord grips, this will compress the inner grommets and seal the cables and wires.

TYPICAL INTERFACE BETWEEN THE TRUCK SYSTEMS, JAKALOPEE and RV SYSTEMS

