09/19
TB20033, Rev 5

OPERATORS MANUAL

DEMCO

Diode Tail Light Kit

INSTALLATION INSTRUCTIONS



INSTALLATION
REPLACEMENT PARTS

READ *complete manual CAREFULLY BEFORE attempting operation.*

Doing Our Best To Provide You The Best

GENERAL INFORMATION

The Tail Light Wiring Kit connects the indicator lights of the towing vehicle to the indicator lights of the towed vehicle. The kits function will make use of the external wiring harness and diodes to automatically switch from the towed vehicle electrical system to the towing electrical system when the towed vehicle plug is plugged in the towing vehicle electrical system.

Prior to installation you have to determine which tail light wiring system you have on the towed vehicle, a 3-wire or 4-wire system. A 3-wire system combines turn signals and brake lights (red turn signals). A 4-wire tail light system for cars having separate amber turn signal lights and red brake lights. With the 4-wire system, the red brake light will function as turn signals when operated from the motorhome. The amber turn lights will only function from the car's system.

TAIL LIGHT KIT CONTENTS

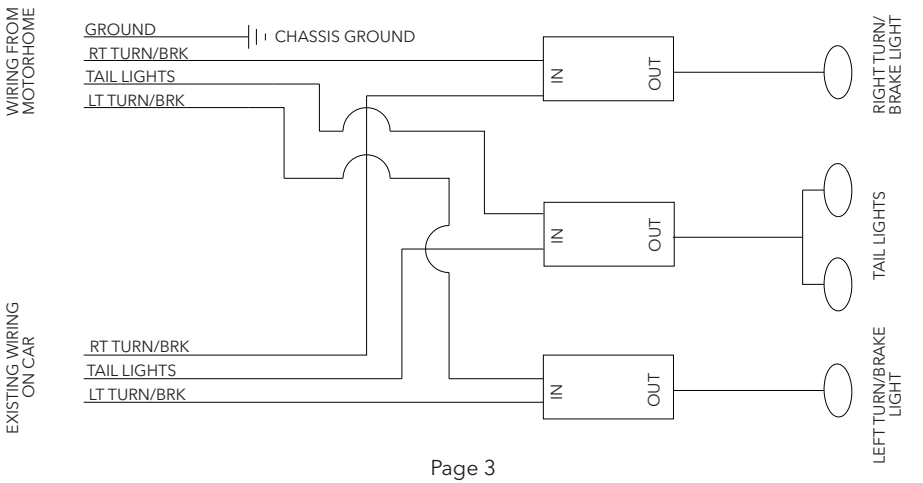
PART #	QTY	DESCRIPTION
13060	1	4-CONDUCTOR CABLE 26'
13061	1	DIODE KIT
-	4	DIODES
-	12	1/4" FEMALE SPADE CONNECTOR
01883	4	WIRE SPLICER
NHT11	6	11' NYLON HOSE TIES
57085	1	SPADE TERMINAL 16-14 GA
12171	1	#10 X .75 SELF DRILLING SCREW
16814	8	1/4" FEMAL SPADE CONNECTOR 22-16 AWG

NOTE: Use proper 1/4" female spade connector on existing wiring on car.

- **1/4" blue spade connector 16-14 AWG wire.**
- **1/4" pink or red spade connector 22-16 AWG wire.**

INSTALLATION OF DIODES FOR TOWED VEHICLES WITH 3-WIRE SYSTEMS

1. Access the tail light wires by removing tail light assembly or through the trunk.
2. Turn tail lights **ON**.
3. Using continuity tester, probe each wire to locate a **HOT** wire. **NOTE**: The continuity tester must ground to an appropriate ground. Turn **OFF** and **ON** the tail to confirm the correct wire. Label the wire **TAIL LIGHTS** and turn **OFF** the tail lights.
4. Turn **ON** the left turn signal and use the continuity tester to locate the **HOT** wire. The continuity tester will blink to confirm the correct wire. Label the wire **LEFT TURN**. Repeat the process to locate the right turn signal wire, but label the **HOT** wire **RIGHT TURN.**
5. Turn **ON** the tail light and locate the wire labeled **TAIL LIGHTS**. Cut the wire and confirm tail lights have **GONE OUT**. Turn **OFF** the tail lights.
6. Strip each wire 1/4" and crimp a female terminal to each wire.
7. Connect the wire that comes from the tail light assembly to the **OUT** terminal of the diode. Connect the remaining wire to either **IN** terminal of the diode.
8. Turn **ON** the left turn signal and locate the wire labeled **LEFT TURN**. Cut the wire and confirm left turn signal light has **GONE OUT**. Turn **OFF** the left turn signal.
9. Strip each wire 1/4" and crimp a female terminal to each wire.
10. Connect the wire that goes to the turn signal bulb to the **OUT** terminal of the diode. Connect the remaining wire to either **IN** terminal of the diode.
11. Turn **ON** the right turn signal and locate the wire labeled **RIGHT TURN**. Follow the same procedure as the left turn signal.



INSTALLATION OF DIODES FOR TOWED VEHICLES WITH 4-WIRE SYSTEMS

1. Access the driver's side tail light wires by removing tail light assembly or through the trunk.

2. Turn tail lights **ON**.

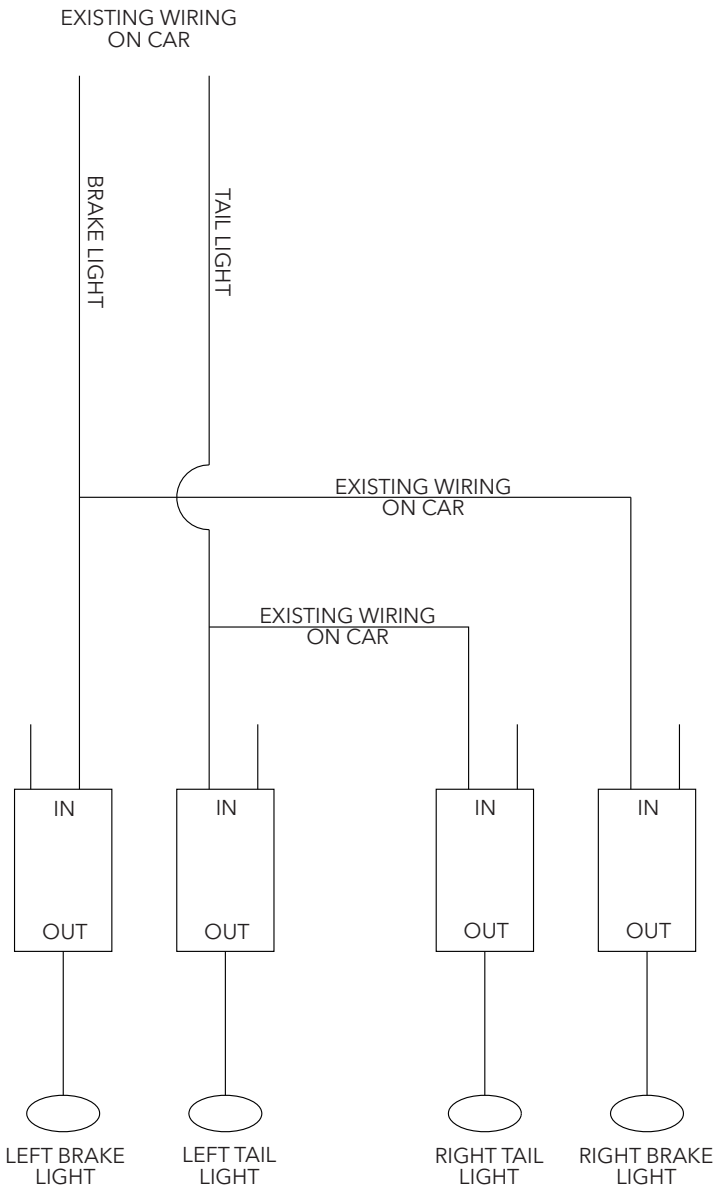
3. Using continuity tester, probe each wire to locate a **HOT** wire. **NOTE**: The continuity tester must ground to an appropriate ground. Turn **OFF** and **ON** the taillights to confirm the correct wire. Label the wire **LEFT TAILLIGHTS**. Repeat this procedure for the passenger side taillight assembly, but label the HOT wire RIGHT TAILLIGHT. Turn **OFF** the taillights.
4. Have an assistant depress the brake pedal during the following step. On the driver's taillight assembly, probe each wire for a **HOT** wire. Have the assistant depress the brake pedal **ON** and **OFF** to confirm the correct wire. Label the wire **LEFT TURN/BRAKE**. Repeat this procedure for the passenger side taillight assembly, but label the **HOT** wire **RIGHT TURN/ BRAKE**.

5. Turn **ON** the taillight and locate the wire labeled **LEFT TAILLIGHTS** inside the driver's side taillight assembly. Cut the wire and confirm taillights have **GONE OUT**. Turn **OFF** the tail lights. Strip each wire 1/4" and crimp a female terminal to each wire. Connect the wire that comes from the taillight bulb to the **OUT** terminal of the diode. Connect the remaining wire to either **IN** terminal of the diode. Repeat the same procedure for the wire labeled **RIGHT TAILLIGHTS** in the passenger taillight assembly.

6. Have an assistant depress the brake pedal and locate the wire labeled **LEFT TURN/BRAKE** inside the driver's side taillight assembly. Cut the wire and confirm taillights have **GONE OUT**. Release the brake pedal. Strip each wire 1/4" and crimp a female terminal to each wire. Connect the wire that comes from the brake light bulb to the **OUT** terminal of the diode. Connect the remaining wire to either **IN** terminal of the diode. Repeat the same procedure for the wire labeled **RIGHT TURN/BRAKE** in the passenger taillight assembly.

7. Install conductor cable.

INSTALLATION OF DIODES FOR TOWED VEHICLES WITH 4-WIRE SYSTEMS



AMBER LIGHTS ARE NOT SHOWN BECAUSE THEY ARE NOT USED

INSTALLATION OF CONDUCTOR CABLE FOR 3-WIRE AND 4-WIRE SYSTEMS

MAKING A CONNECTOR CABLE

1. The conductor cable has plug socket and a mold socket at either ends of the wire loop. Decide which one will be used at the front of the towed vehicle and cut 6-7 ft. from the opposite plug or socket. This 6-7 ft. section will be wired to the motorhome.

2. Conductor cable coiled up in towed vehicle's engine compartment.

3. Allow 7-9 ft. of the conductor cable between the towed vehicle and motorhome. Be sure you allow enough conductor cable between the motorhome and the towed vehicle when the towed vehicle is coupled to the motorhome with a tow bar.

INSTALLATION OF CONDUCTOR CABLE FOR 3-WIRE

1. Route the cut end of the conductor cable to the diodes.
2. Separate the towed conductor cable an amply amount.
3. Strip each wire 1/4", crimp 1/4" female terminals onto the yellow, green, and brown conductor wires. **Crimp a seamed spade terminal onto the white conductor wire.**
4. Locate the **TAILLIGHT** diode and connect the brown conductor wire to the **IN** terminal on diode.
5. Locate the **LEFT TURN** diode and connect the yellow conductor wire to the **IN** terminal on the diode.
6. Locate the **RIGHT TURN** diode and connect the green conductor wire to the **IN** terminal on the diode.
7. Ground the white conductor wire to an acceptable ground. Use an existing ground or drill a hole and use the self drilling metal screw.

INSTALLATION OF CONDUCTOR CABLE FOR 4-WIRE SYSTEMS AND DRIVER SIDE ROUTING

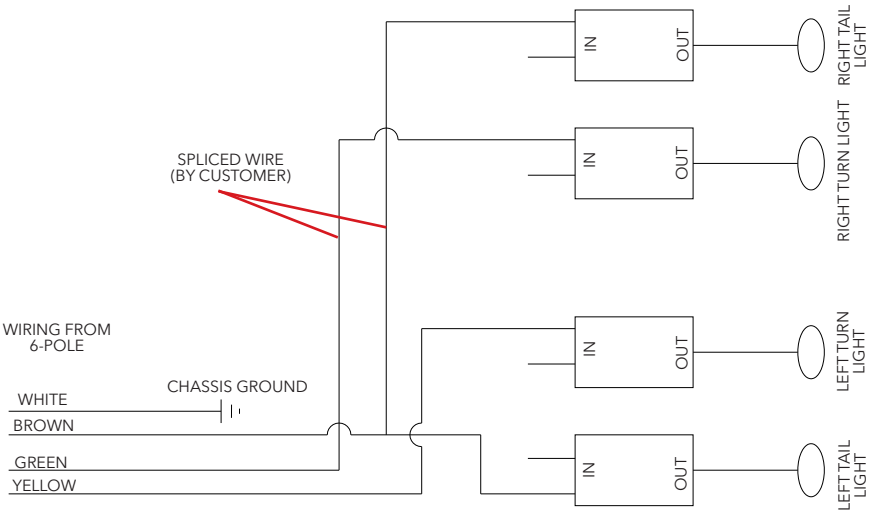
1. Route the cut end of the conductor cable from underneath the vehicle to the diodes at the driver's side taillight assembly.

2. Separate the towed conductor cable an amply amount. Strip each wire 1/4" and crimp 1/4" female terminal onto the yellow conductor wire. Connect the yellow conductor wire to the **IN** terminal of the **LEFT TURN/ BRAKE** diode.

3. Crimp a 1/4" female terminal onto the brown conductor wire. Connect the brown conductor wire to the **IN** terminal of the **LEFT TAILLIGHT** diode. Attach a separate wire onto the brown conductor wire and extend it to the **RIGHT TAILLIGHT** diode. Strip the separate wire 1/4" and crimp 1/4" female terminal on to the wire. Connect the wire to the **IN** terminal of the diode.

4. Attach a separate wire to the green conductor wire. Extend the separate wire to the passenger side taillight assembly. Strip the separate wire 1/4" and crimp 1/4" female terminal on to the wire. Connect the wire to the **IN** terminal of the **RIGHT TURN/BRAKE** diode.

5. Ground the white conductor wire to an acceptable ground. Use an existing ground or drill a hole and use the supplied self drilling metal screw.



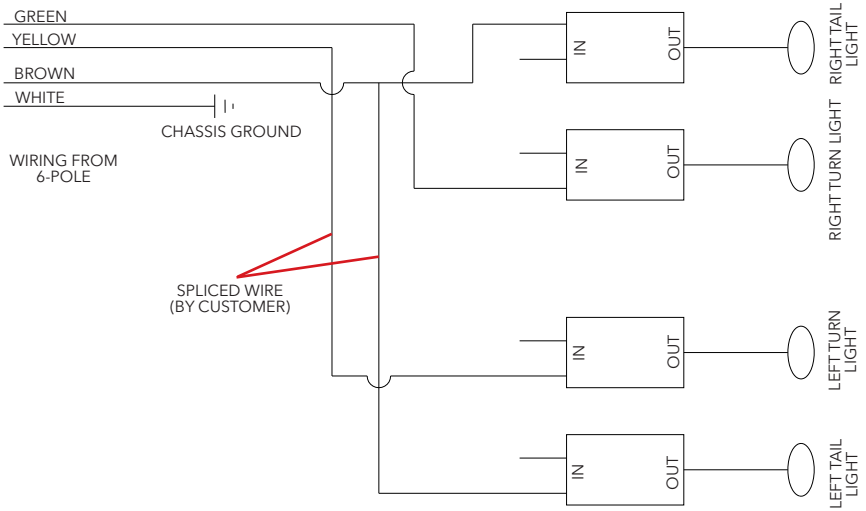
INSTALLATION OF CONDUCTOR CABLE FOR 4-WIRE SYSTEMS AND PASSENGER SIDE ROUTING

1. Route the cut end of the conductor cable from underneath the vehicle to the diodes at the passenger's side taillight assembly.

2. Separate the towed conductor cable an amply amount. Strip each wire 1/4" and crimp 1/4" female terminal onto the green conductor wire. Connect the green conductor wire to the **IN** terminal of the **RIGHT TURN/BRAKE** diode.

3. Crimp a 1/4" female terminal onto the brown conductor wire. Connect the brown conductor wire to the **IN** terminal of the **RIGHT TAILLIGHT** diode. Attach a separate wire onto the brown conductor wire and extend it to the **LEFT TAILLIGHT** diode. Strip the separate wire 1/4" and crimp 1/4" female terminal on to the wire. Connect the wire to the **IN** terminal of the diode.
4. Attach a separate wire to the yellow conductor wire. Extend the separate wire to the driver side taillight assembly. Strip the separate wire 1/4" and crimp 1/4" female terminal on to the wire. Connect the wire to the **IN** terminal of the **LEFT TURN/BRAKE** diode.

5. Ground the white conductor wire to an acceptable ground. Use an existing ground or drill a hole and use the self drilling metal screw.



TESTING OF DIODES AND CONDUCTOR CABLE

1. Plug the connector cable, 6-7 ft. length of cable cut earlier, into the conductor cable using the molded plug and socket on each cable.
2. Separate the wires on the connector cable 1-2" and strip each wire 1/4".
3. Using the towed vehicle battery, find the brown wire and touch the stripped end of the wire to the positive terminal of the battery. Confirm the tail lights light up.
4. Repeat the process with the yellow wire. Confirm the left turn signal lights up. For 4-wire systems confirm that the left turn/brake lights up.
5. Repeat the process with the green wire. Confirm the right turn signal lights up. For 4-wire systems confirm that the right turn/brake lights up.
6. Route the conductor cable to the front of the towed vehicle and complete installation of the tail light kit on the towed vehicle.
7. The end of the conductor cable with the molded plug/socket can now be cut off to adapt it to an appropriate socket or it can be left alone.

MOTORHOME WIRING

1. Some motorhomes have separate turn signal and brake lights, that is identified by amber turn signals and red brake lights (a 4-wire tail light system). This type of system will require the use of an additional tail light convertor. It converts 4-wire system to a 3-wire system, which combines turn signals and brake lights. This convertor is not supplied in this kit.

TESTING MOTORHOME WIRES

1. Find the motorhome tail light harness wires at the back of the motorhome underneath the bumper.
2. Have an assistant turn **ON** the tail lights.
3. Connect a continuity tester to a ground source and probe each wire to locate the **HOT** wire. Turn **ON** and **OFF** the tail lights to confirm the wire is correct. Label the wire **TAIL LIGHTS**. Turn **OFF** the tail lights.
4. Have an assistant turn **ON** the left turn signal.
5. Probe each wire to find the **HOT** wire and watch the tester to blink confirming the correct wire. Label the wire **LEFT TURN**. Follow the same process to the right turn signal but label the wire **RIGHT TURN**.
6. If the motorhome has separate turn signal and brake lights, have an assistant depress the brake pedal and probe each wire to find the **HOT** wire. Label the wire **BRAKES**.

WIRING MOTORHOME WITH CONDUCTOR CABLE

1. Use the 6-7 ft. conductor cable used in testing the diodes. Use a wire splicer to attach the brown conductor wire onto the wire labeled **TAIL LIGHTS**.

2. Use a wire splicer to attach the yellow conductor wire onto the wire labeled **LEFT TURN**.

3. Use a wire splicer to attach the green conductor wire onto the wire labeled **RIGHT TURN.**

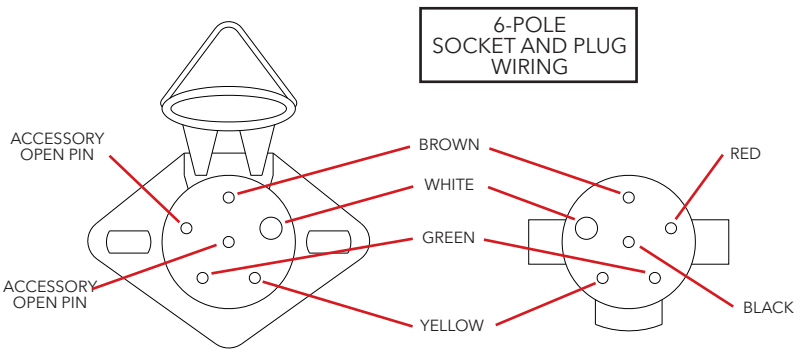
4. Ground the white conductor wire to an acceptable ground. Use an existing ground or drill a hole and use the self tapping metal screw.

5. Connect the towed vehicle to the motorhome to check the installation of the tail light kit.

WIRING SOCKETS FOR COILED CABLE

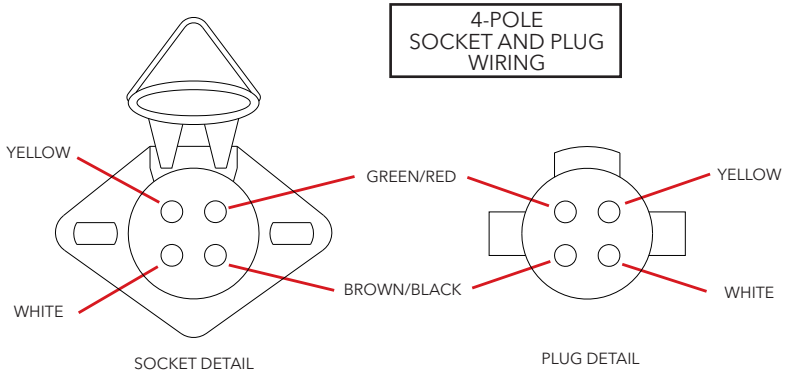
1. Connect the **LEFT, RIGHT TURN** and **TAIL LIGHT** wires as shown in the diagram. (6-pole, below and 4-pole next page) Using a 4ft. length of 14awg white wire, connect the wire to the ground terminal of the socket.
2. Cut the white wire to a suitable length, strip and crimp a spade wire terminal onto the wire.

3. Ground the white wire to an acceptable ground. Use an existing ground or drill a hole and use the self tapping metal screw.



RT TURN	RIGHT TURN	GREEN
TM PIN	TAIL LIGHTS	BROWN
LT PIN	LEFT TURN	YELLOW

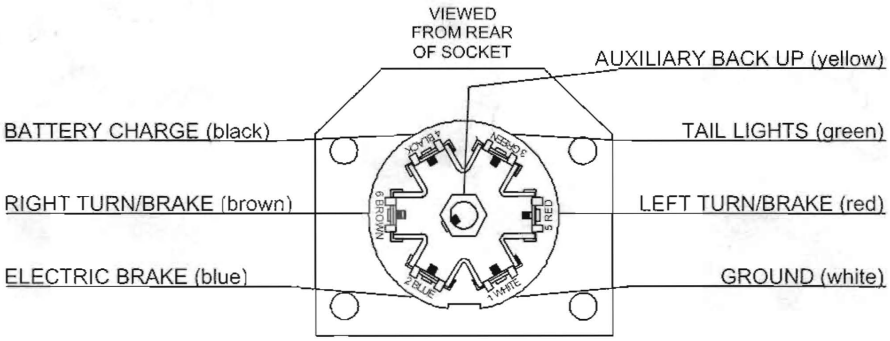
GD	GROUND	WHITE
A	OPEN ACCESSORY	BLACK
S	OPEN ACCESSORY	RED



RETROFIT

If your motorhome is already wired with two plug system and when plugged in, the coiled cable does not work for any reason, pull the socket on the towing vehicle and rearrange the four (4) wires to correspond with the other vehicles.

7 DIGIT SOCKET



DEMCO

4010 320th St., Boyden, IA. 51234
Phone: (712) 725-2311
Fax: (712) 725-2380
Toll Free: 1-800-54DEMCO (1-800-543-3626)

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www.demco-products.com