

Thank you for purchasing the

# **SWAPHelper.COM HEADLIGHT HELPER**

Please solder all wire connections and cover in the included shrink wrap for best performance. Wire nuts, butt connectors and other similar connection methods can lead to intermittent signal issues. These methods are only suitable in temporary testing situations.



## **Warnings:**

- 1. Disconnect battery prior to installation! Failing to disconnect the battery could result in damage to your truck and/or Headlight Helper!*
- 2. Do NOT start your swap under a tight timeline, e.g. starting Sunday afternoon and you need your truck for work Monday morning. You need to plan to take your time, including double checking your work and diagnosing any issues after install.*
- 3. Do NOT plug the USB into a computer that is also connected to a 120v inverter in the vehicle! Doing so could cause damage to the Headlight Helper!*
- 4. Do NOT plug in the USB cable to a computer while the truck is underway or while using the headlights! Doing so may cause the headlights to turn on and off, creating a potentially unsafe situation!*

## Opening the box:

Depending on the headlight switch year selected at checkout, you will receive a different plug and play harness for your Headlight Helper.

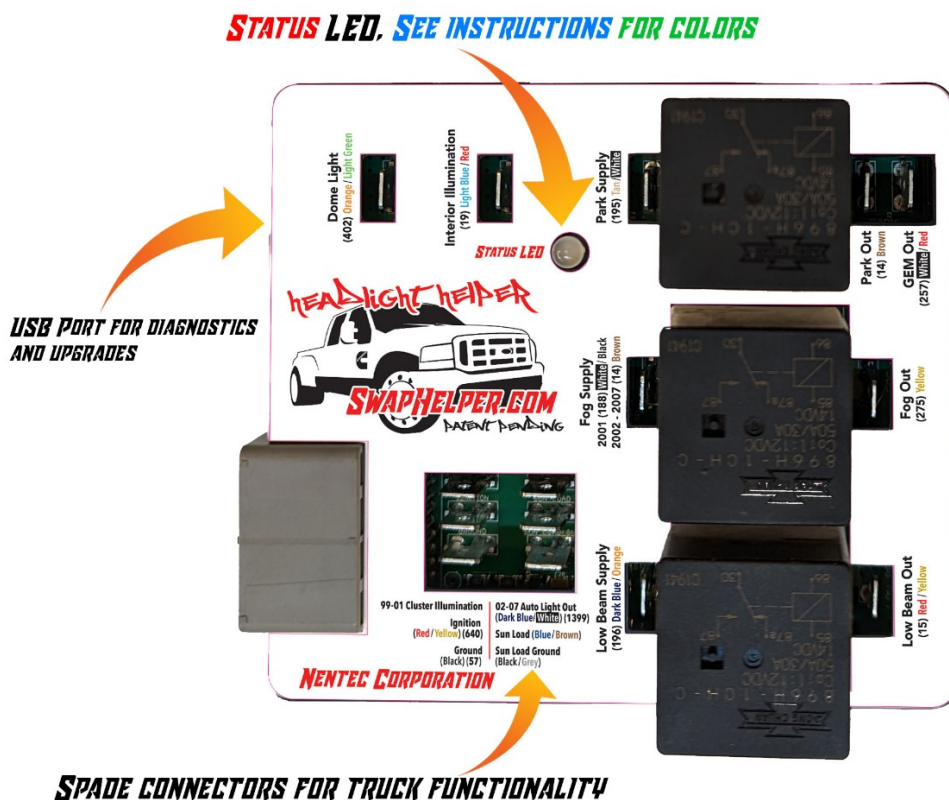
The following items are included with your Headlight Helper:

1. Headlight Helper
2. Plug and Play harness for headlight switch (08 - 10 or 11 - 16)
3. 4x Relays (3x Pre-installed, 1x spare)
4. USB cable
5. 1999 and 2000 fog light retrofit kit
6. Auto lights retrofit kit w/ fuse tap kit
7. 1999 – 2001 Cluster Helper illumination wiring kit
8. 18x Female spade connectors, 10x Marine grade shrink wraps and 2x zip ties

Review the included items prior to installation and become familiar with them. If any items are missing, please contact us and we will assist you.

## Getting to know your Headlight Helper:

Your Headlight Helper is a sophisticated device that allows you to install a 2008 to 2016 headlight switch in a 2002 to 2007 Ford Super Duty or Excursion:



### *Installation:*

**Disconnect battery prior to starting installation!**

It is HIGHLY recommended you watch our unboxing and installation video(s) and read these instructions in their entirety prior to starting your installation! The installation and unboxing video(s) are available here:



Or

<https://www.SwapHelper.com/HeadlightHelper>

Since many customers purchasing the Headlight Helper have already swapped their dash and interior, we designed the Headlight Helper to conveniently mount on the driver's side of the dash, just below the headlight switch on the inside of the dash against the dash skin. If you have a higher optioned dash with removable dash end caps, you will remove the drivers side end cap, hold the Headlight Helper against the outer portion of the dash skin and mark the two mounting tab holes. You will drill those two holes, and two just outside of the original two. When your wiring is complete and you are ready to install the Headlight Helper, attach it on the inside of the dash skin using the four holes and the two zip ties, and reinstall the dash cap. If you have a lower optioned dash with non-removable end caps, you will need to use double sided tape to install the Headlight Helper. Lastly, if this is a fresh build with the dash out of your truck, you can mount the Headlight Helper where it is convenient using the two mounting tabs.

For the main circuits which come directly from the two original headlight switch connectors, you will cut each wire, one at a time, strip and install one of the included spade connectors using a quality hand crimper and find its corresponding circuit on the Headlight Helper. You will most likely be left with two unused wire positions on the old dimmer switch connector, as they are duplicates from the main

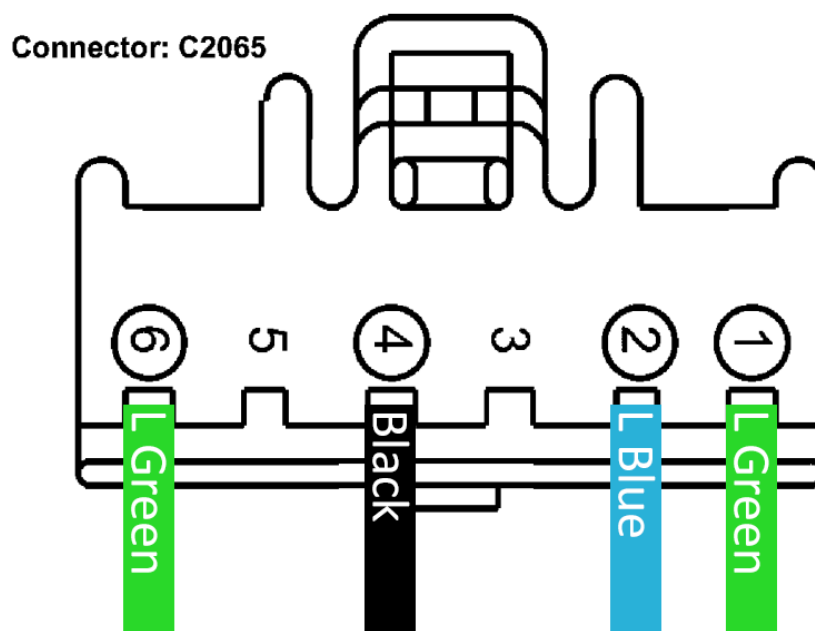
headlight switch (**Black**/Ground, circuit 57 and **Brown**/Park Out, circuit 14). Cap them off with two of the included shrink wraps. In '99 and '00, you will have a third wire which is unused, **Black**/**Pink**/Ignition, circuit 1002; cap it off, as well.

In the following pages are a number of different wiring configurations for the Headlight Helper "Truck Functionality" spade connectors (as seen on the previous pages, *Getting to know your Headlight Helper*). Your application may use one, more than one, or none of these configurations, but no matter your setup, you **MUST** connect **Ground, Black, Circuit 57** to the Headlight Helper as shown in these diagrams.

### 2008 to 2010 Headlight Switch Harness

Due to the dimmer switch connector on the 2008 to 2010 headlight switch no longer being made, the 2008 to 2010 headlight switch harness comes with four blunt cut wires to connect to your dimmer switch. There are four wires, 2x **L Green** for the dimmer, **L Blue** for the dome light switch and **Black** for the ground. Wire according to the diagram below (the **L Greens** can be mixed without issue, as they are the same circuit):

Pin	Circuit	Gauge	Circuit Function	
1	VLN18 (BU-WH)	20	DIMMER - IP/SWITCH ILLUMINATION	L Green
2	CLN28 (GN-BU)	20	SWITCH - DOME LAMP	L Blue
3	*	*	not used	
4	RLN29 (WH-OG)	20	CTRL MOD. - DOME LAMP	Black
5	*	*	not used	
6	VLN18 (BU-WH)	20	DIMMER - IP/SWITCH ILLUMINATION	L Green



## 2002 to 2007 OEM Auto Lights (originally equipped):

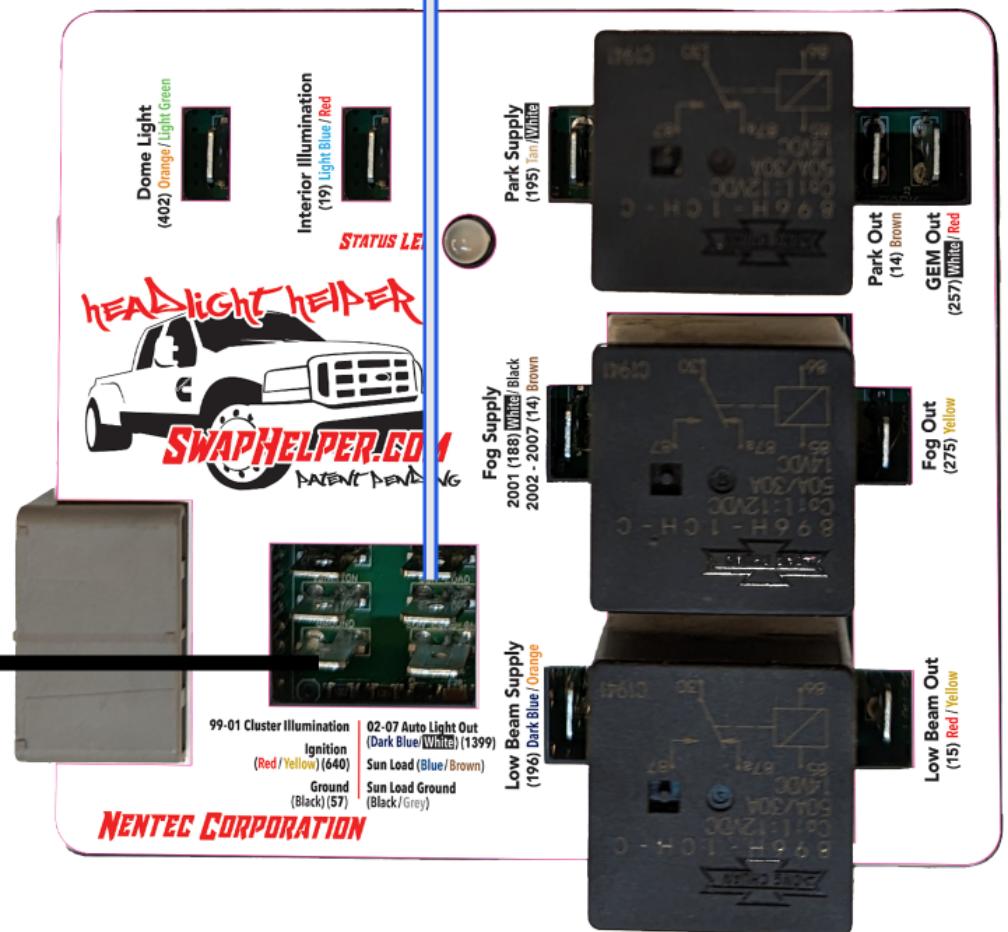
If your truck is a 2002 to 2007 and came from the factory with auto lights, connect the **Dark Blue/White** from the original headlight switch connector to the “02-07 Auto Lights Out” on the Headlight Helper:

### OEM AUTO LIGHTS CIRCUIT 1399

**DARK BLUE/WHITE**

**GROUND CIRCUIT 57**

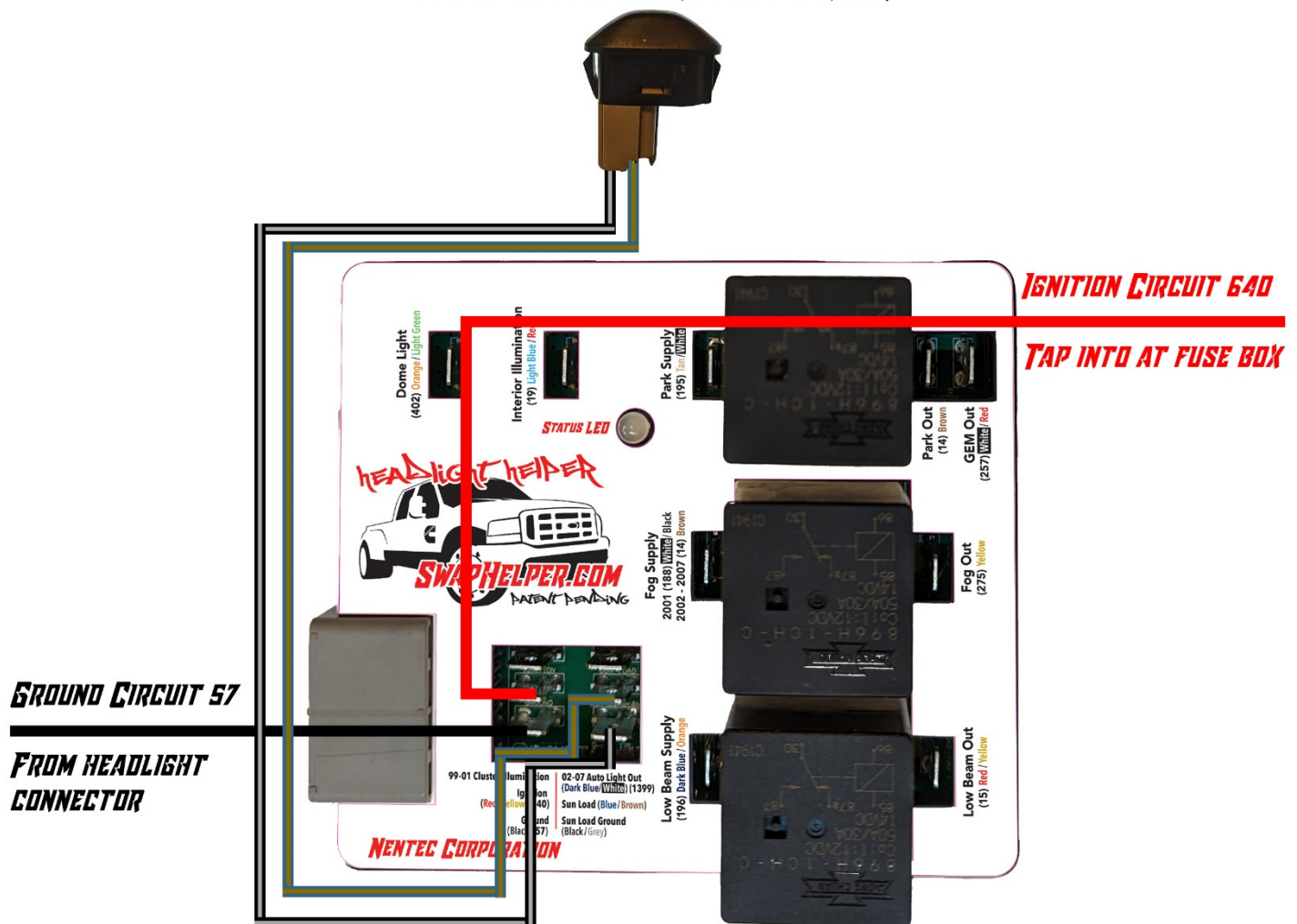
**FROM HEADLIGHT  
CONNECTOR**



## 1999 to 2007 Auto Lights Retrofit (for trucks not originally equipped):

If your truck was not originally equipped with auto lights and you would like to use the Headlight Helper to retrofit the functionality on your truck, you will wire according to the diagram below. The Headlight Helper makes use of the stock 2008 to 2016 sun load sensor located at the front center of the dash. Please note, if your sun load sensor pigtail is from an '08 to '10 harness, the Sun Load Ground will be solid **Black** instead of **Black/Grey**. The Headlight Helper will need to know when the ignition is on, so you will need to tap into circuit 640 at the central junction box (fuse panel under the dash) using the included fuse tap.

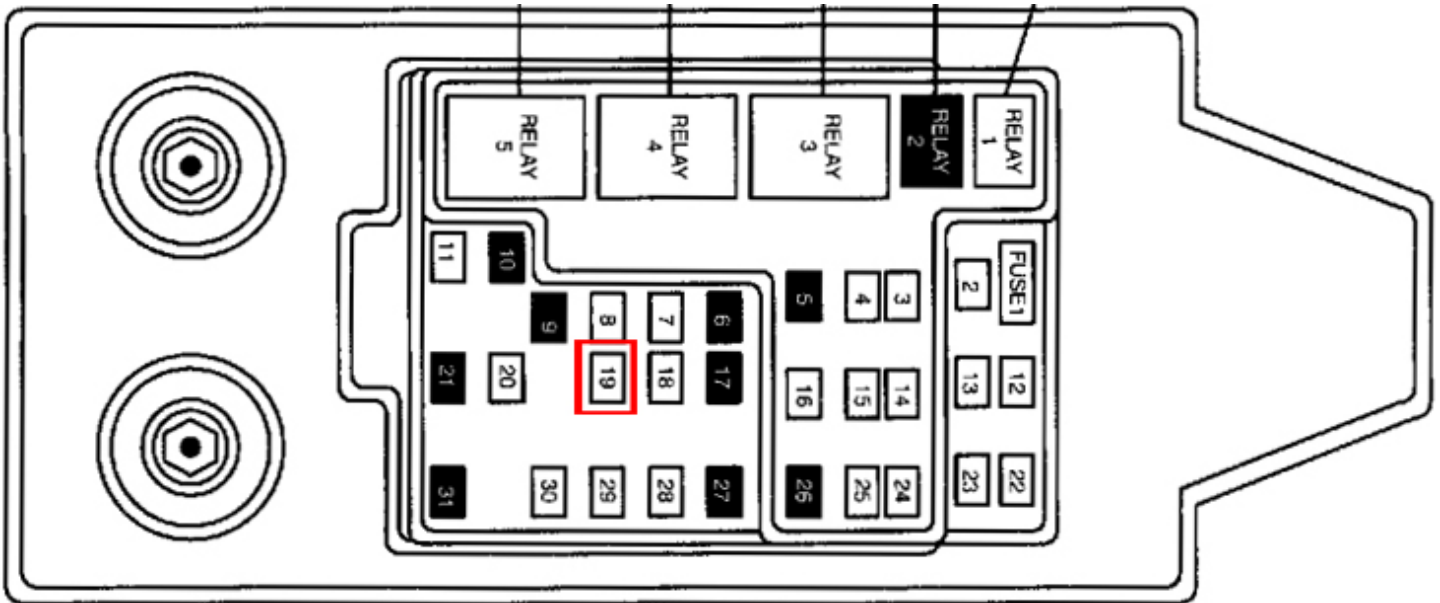
### 2008 TO 2016 SUN LOAD SENSOR



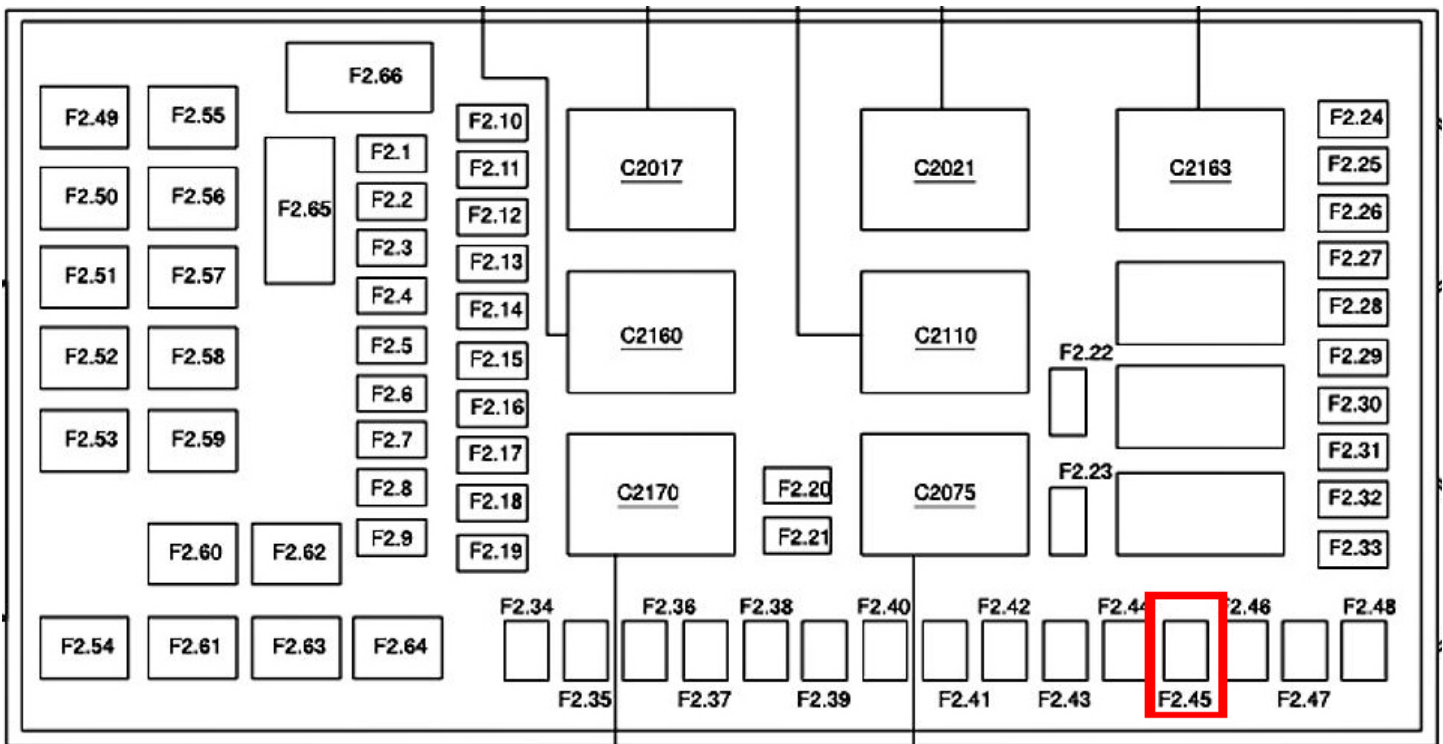


*Where to tap into Ignition Circuit 640 for auto lights retrofit:*

Tap into Circuit 640 in a 1999 to 2001 Super Duty or Excursion at **Fuse 19**:



Tap into Circuit 640 in a 2002 to 2007 Super Duty or Excursion at **Fuse F2.45**:

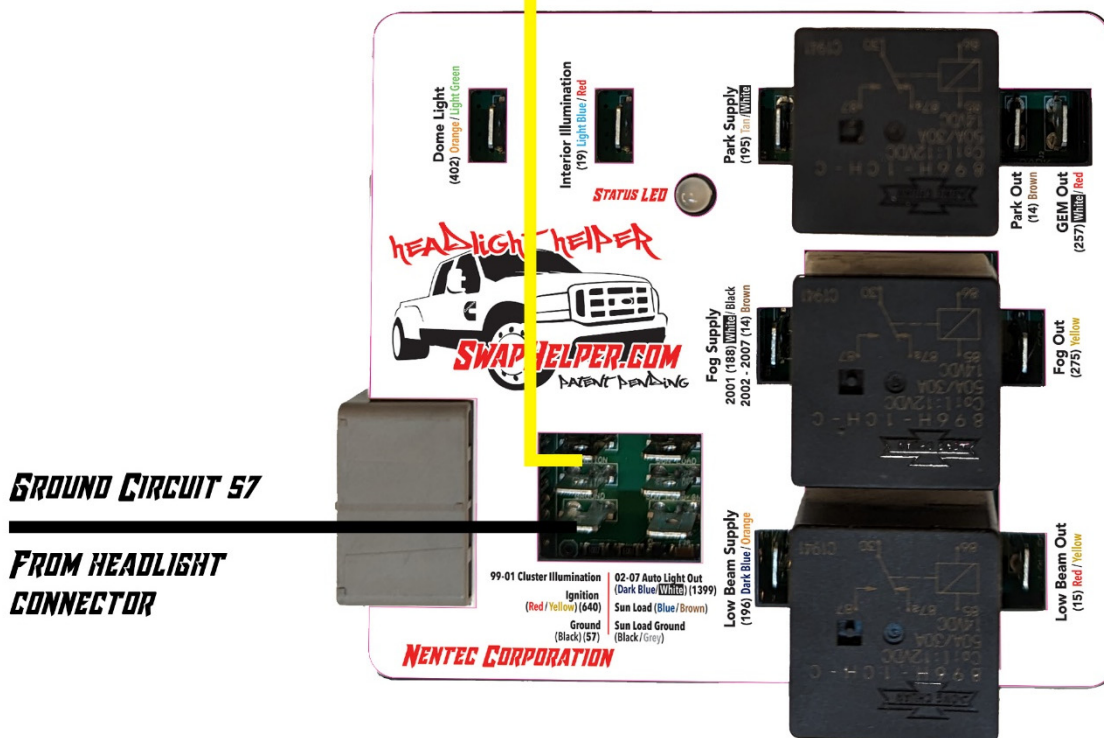


**\*\*Your 99-01 Cluster Helper will need an update to function properly with the Headlight Helper, please visit [www.SwapHelper.com/ClusterHelper](http://www.SwapHelper.com/ClusterHelper) for the latest update! Otherwise, you may see flashing and incorrect dimming on your cluster!\*\***

**FIRST, DISCONNECT CLUSTER HELPER YELLOW, D1, FROM L BLUE/RED AND THEN CAP OFF L BLUE/RED.**

***THEN, CONNECT DIRECTLY TO [DO NOT TAP IN]***

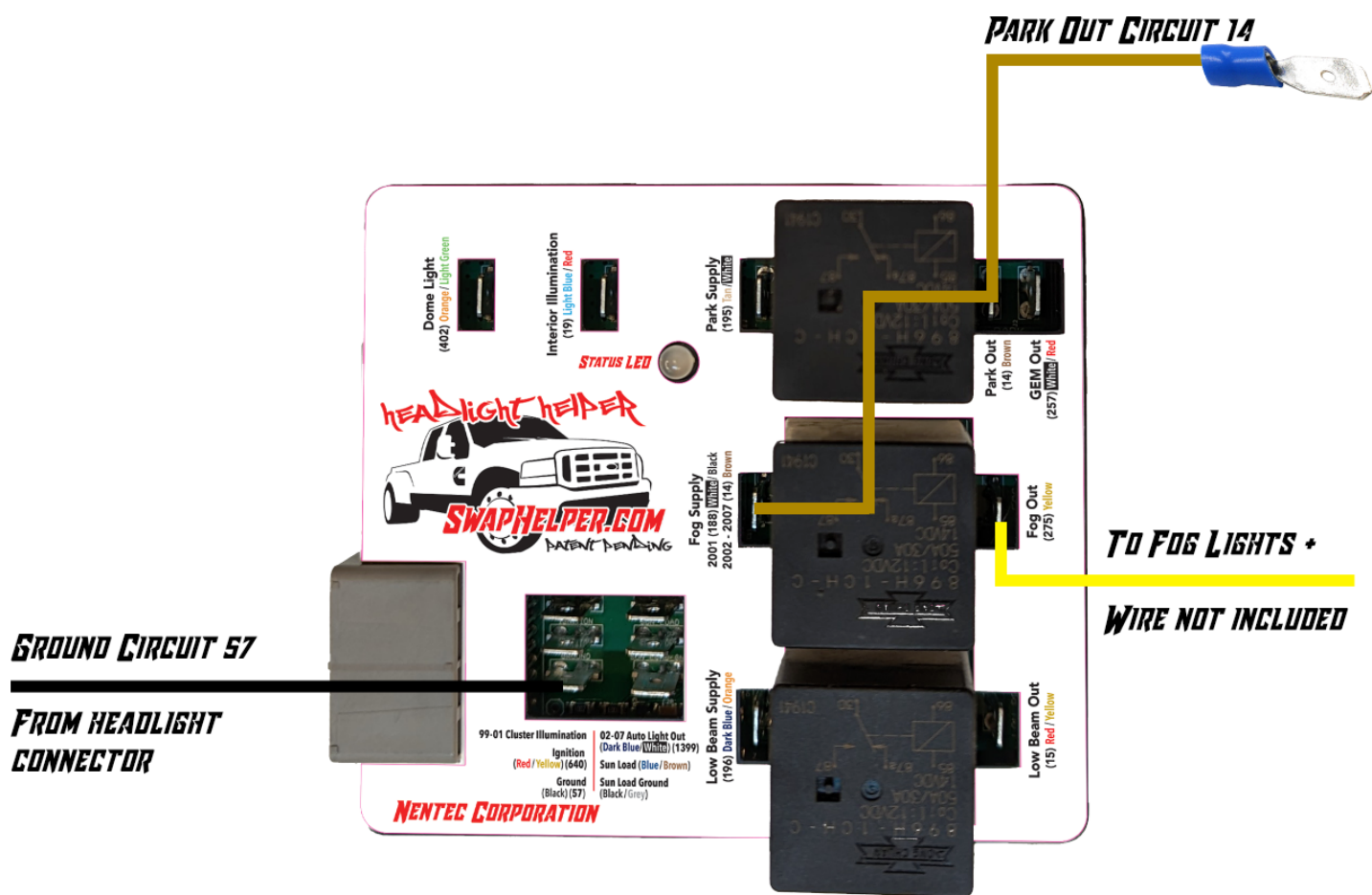
**99-01 CLUSTER HELPER YELLOW, 01, ILLUMINATION IN**





## 1999 to 2000 Fog Light Retrofit:

If you have a 1999 to 2000 Super Duty or Excursion without fog lights and would like to retrofit fog lights on to your vehicle, use the included “1999 and 2000 Fog Light Retrofit kit”. On the Headlight Helper you will connect the Park Out to the Fog Supply using the included jumper, and connect **Circuit 14, Brown** from the truck to the male spade connector. Then connect the positive side of your fog lights to **Fog Out, 275, Yellow** on the Headlight Helper:



Please note, in this retrofit application, the park lights and fog lights share the same circuit, so be careful to limit the current so as not to overload the circuit!

## *Diagnostic Software:*

We have written a Windows application that allows you to connect to your Headlight Helper and allows you to view diagnostic data and upgrade your Headlight Helper. This software is available for download from our website, [www.SwapHelper.com](http://www.SwapHelper.com)

## *Functionality:*

The Headlight Helper can display its current status via the Status LED, as follows:

### **11-16 Headlight Switch:**

Solid **Blue** – 11-16 headlight switch mode with Dome light off.

Solid **Purple** – 11-16 headlight switch mode with Dome light on.

Breathing from **Blue** to **Black** – 11-16 headlight switch mode with Auto lights active.

Breathing from **Purple** to **Red** – 11-16 headlight switch mode with Auto lights active and Dome light on.

### **08-10 Headlight Switch:**

Solid **Green** – 08-10 headlight switch mode with Dome light off.

Solid **Yellow** – 08-10 headlight switch mode with Dome light on.

Breathing from **Green** to **Black** – 08-10 headlight switch mode with Auto lights active.

Breathing from **Yellow** to **Red** – 08-10 headlight switch mode with Auto lights active and Dome light on.

### **Update mode:**

Solid **Red** – Headlight Helper is in flashing/update mode.

### **Safety Mode:**

If you retrofitted your vehicle with auto lights, when the Headlight Helper senses the Ignition is “on”, it will then check the status of the Sun Load sensor. If the sensor is operating properly, it will run its auto lights logic accordingly, but if the sensor is shorted or disconnected (“open”), the Headlight Helper will enter a safety “error” mode, turning on the headlights until either the ignition is turned “off”, or the headlight switch is moved from the “auto” position. Even reconnecting the sensor once the Headlight Helper is in the safety “error” mode, it will not turn off the auto lights; they will only be disengaged and reset by turning off the ignition or turning off the auto lights on the headlight switch. This design feature was put in

place in case the sensor becomes disconnected or shorted during operation of the auto lights.

### ***USB Cable:***

Since the USB cable is used to connect to the software in the “*Diagnostic Software*” section, we recommend installing the cable in the truck permanently and routing it so you can gain access to it at a later time. It is important you cap off the end of the cable to avoid it contacting another circuit and damaging the Headlight Helper. When the cable is connected to a laptop, it may cause the Headlight Helper to restart several times; this behavior is normal and is why it is important a laptop not be connected with the vehicle in use or using the headlights, specifically the auto lights.

### ***Replacement ‘08 – ‘16 Sun Load Sensor Part Numbers***

For the two-pin variant of the sun load sensor, the pigtail is Ford part number 3U2Z-14S411-CZB, and the sensor Ford part number is 7L1Z-13A018-A. For the four-pin variant (the Headlight Helper only uses two of the four pins), the pigtail is Ford part number WPT1013 and the sensor Ford part number is DG9Z-13A018-E.

### ***Troubleshooting:***

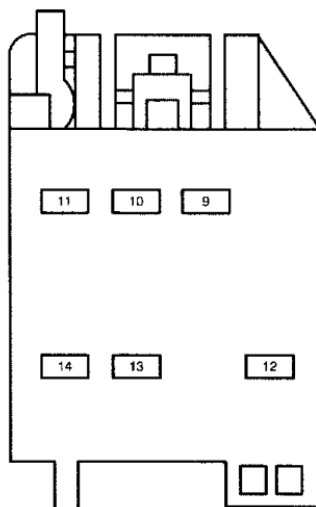
As mentioned above, it is recommended you visit our website and watch videos regarding the Headlight Helper installation and use. The information can be found at:

**<http://www.SwapHelper.com/headlighthelper>**

Still can't figure out your issue? Shoot us an e-mail for additional support:

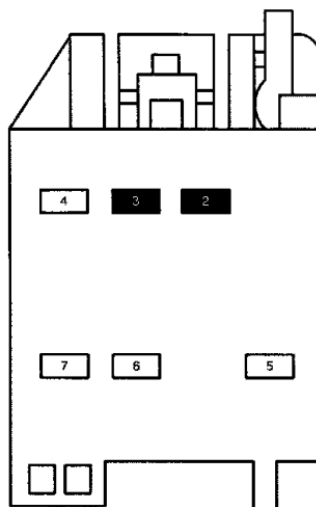
**[Contact@SwapHelper.com](mailto:Contact@SwapHelper.com)**

## Headlight switch connector pinout, 1999 - 2000 Super Duty & Excursion:



**C274 (GRAY)**  
**MAIN LIGHT SWITCH**

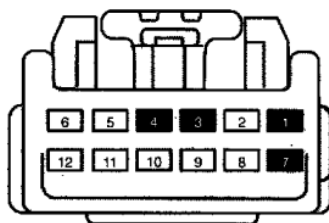
PIN	CIRCUIT	CIRCUIT FUNCTION
9	1002 (BK/PK)	Ignition in (Hot in Run)
10	257 (W/R)	Lamps ON Output to GEM
11	14 (BR)	Power (Hot in Park or Head)
12	402 (O/LG)	Dome Lamp Switch
13	195 (T/W)	Power (Hot at All Times)
14	14 (BR)	Exterior Lamps Output



**C273 (BLACK)**  
**MAIN LIGHT SWITCH**

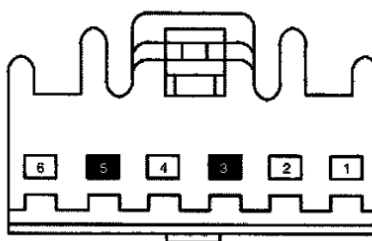
PIN	CIRCUIT	CIRCUIT FUNCTION
2	—	NOT USED
3	—	NOT USED
4	57 (BK)	Ground
5	19 (LB/R)	Switch Illumination Circuit
6	15 (R/Y)	Headlamps Output
7	196 (DB/O)	Power (Hot at All Times)

## Headlight switch connector pinout, 2001 Super Duty & Excursion:



**C273a**  
**MAIN LIGHT SWITCH**

PIN	CIRCUIT	CIRCUIT FUNCTION
1	–	NOT USED
2	188 (WH/BK)	Fog Lamps
3	–	NOT USED
4	–	NOT USED
5	275 (YE)	Fog Lamps
6	57 (BK)	Ground
7	–	NOT USED
8	196 (DB/OG)	Power (Hot at All Times)
9	15 (RD/YE)	Headlamps Output
10	195 (TN/WH)	Power (Hot at All Times)
11	257 (WH/RD)	Lamps on Output to GEM
12	14 (BN)	Exterior Lamps Output



**C273b**  
**MAIN LIGHT SWITCH**

PIN	CIRCUIT	CIRCUIT FUNCTION
1	19 (LB/RD)	Switch Illumination Circuit
2	402 (OG/LG)	Interior Lamp Switch
3	–	NOT USED
4	57 (BK)	Ground
5	–	NOT USED
6	14 (BN)	Power (Hot in Park or Run)

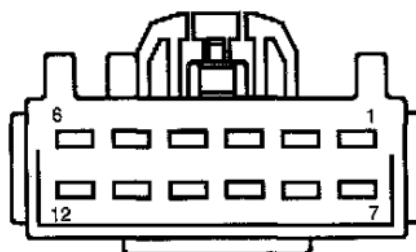


## Headlight switch connector pinout, 2002 - 2007 Super Duty & Excursion:

### **C205a** (GY)

#### **14401**

Main light switch  
(11854)



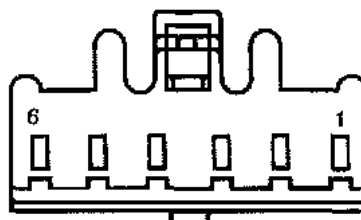
**FEMALE**

Pin	Circuit	Circuit function
1	–	not used
2	14 (BN)	Fog lamps, feed
3	–	not used
4	–	not used
5	275 (YE)	Fog lamp relay, feed
6	57 (BK)	Ground
7	1399 (DB/WH)	autolamps, On
8	196 (DB/OG)	Voltage supplied at all times (overload protected)
9	15 (RD/YE)	Power, Hot with Headlamps on
10	195 (TN/WH)	Voltage supplied at all times (overload protected)
11	–	not used
12	14 (BN)	Power, Exterior lamps

### **C205b** (BK)

#### **14401**

Main light switch  
(11854)

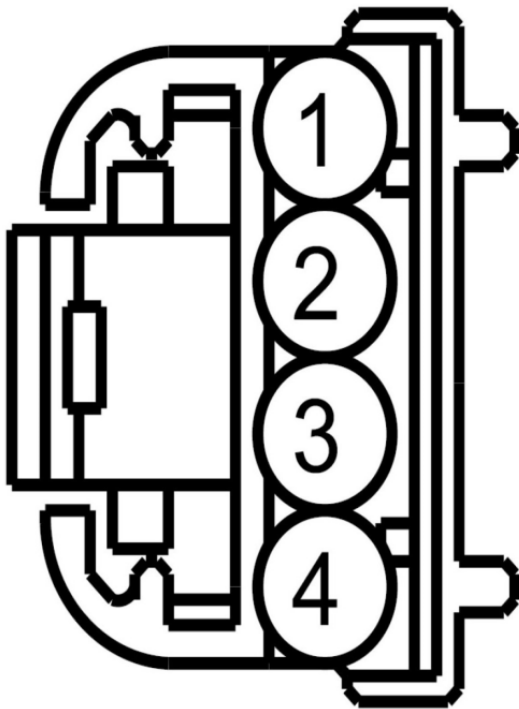


**FEMALE**

Pin	Circuit	Circuit function
1	19 (LB/RD)	Instrument illumination
2	402 (OG/LG)	Interior lamps control
3	–	not used
4	57 (BK)	Ground
5	–	not used
6	14 (BN)	Power, Exterior lamps

Four pin 2008 to 2016 Sun Load Sensor (note, 08-10 ground will be solid Black)

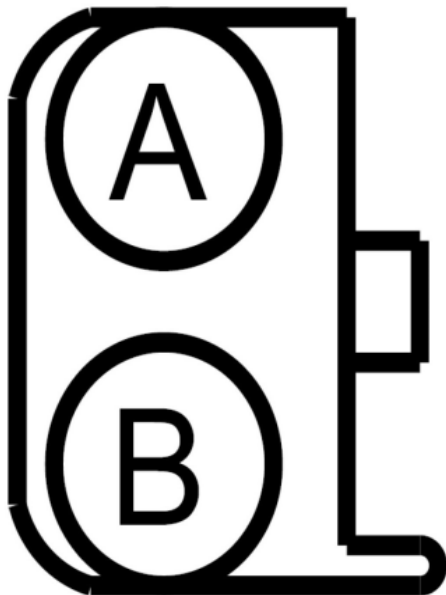
Connector: C287	Description AUTOLAMP / SUNLOAD SENSOR	Color GY	Harness 14401	Base Part # 13A018	Service Pigtail See Below
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Pin	Circuit	Gauge	Circuit Function
1	VH416 (VT-GY)	22	SENSOR - SUN LOAD # LEFT
2	VLF14 (BU-BN)	22	SENSOR - AUTOLAMP DAY/NIGHT
3	VH417 (YE-OG)	22	SENSOR - SUN LOAD # RIGHT
4	GD184 (BK-GY)	22	GROUND - CROSS CAR BEAM # 4TH POINT

Two pin 2008 to 2016 Sun Load Sensor (note, 08-10 ground will be solid Black)

Connector: C286	Description AUTOLAMP SENSOR	Color BK	Harness 14401	Base Part # 13A018	Service Pigtail See Below
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Pin	Circuit	Gauge	Circuit Function	Qualifier
A	VLF14 (BU-BN)	20	SENSOR - AUTOLAMP DAY/NIGHT	
B	GD184 (BK-GY)	20	GROUND - CROSS CAR BEAM # 4TH POINT	

## **Technical specs:**

<b>Operating temperature range</b>	<b>: -40°C to 85°C (-40°F to 185°F)</b>
<b>Quiescent Current Consumption</b>	<b>: 200 uA (.0002 amps) Maximum</b>
<b>Operating voltage range</b>	<b>: 6v to 18v, DC only</b>
<b>Reverse Polarity Protection</b>	<b>: Yes</b>
<b>Load dump protection</b>	<b>: Yes</b>
<b>Water Resistance</b>	<b>: IP20</b>

## **Return Policy:**

**Unopened, unused product(s) may be returned within 30 days of purchase date by original purchaser for a refund, minus original shipping charges and a 25% restocking fee. Customer is responsible for return shipping. Used products(s) are not eligible for return but may be repaired or replaced under Warranty policy. Return requests must be made by submitting a request to [Contact@SwapHelper.com](mailto:Contact@SwapHelper.com).**

## **Warranty:**

**Nentec Corporation (SwapHelper.com) warranties this product to be free of defects in material and workmanship for one (1) year from date of purchase. This warranty is limited to the correction of any such defect, or the replacement of any such defective item, provided that: (a) item(s) was/were purchased from SwapHelper.com or an authorized Nentec Corporation distributor; (b) we are properly notified and consent to the return of the item(s) in question; (c) the item(s) is/are returned with proof of purchase date; and (d) it is found upon inspection by us that the item(s) is/are defective as noted above; (e) the return request is made by original purchaser. This warranty does not cover labor costs, consequential damages, nor does it apply to any item(s) that have been improperly installed, overloaded, altered, or otherwise abused by the customer, its agent(s) or employee(s). Other than the described obligation, we assume no further liability with respect to the sale or use of our products. We make no warranty, expressed or implied, and disclaim any warranty of merchantability or fitness for a particular purpose. Warranty requests must be made by requesting a Return Merchandise Authorization from [Contact@SwapHelper.com](mailto:Contact@SwapHelper.com).**