

P-023



Police Modifier Bulletin

SVE BULLETIN

SPECIAL VEHICLE ENGINEERING – BODY BUILDERS ADVISORY SERVICE

E-Mail via website: www.fleet.ford.com/truckbbas (click "Contact Us")

Toll-free: (877) 840-4338

Date: 29 September, 2015

2016 and Beyond Utility Police Interceptor – Front Interior Visor Light Bar – Option 96W

Models Affected

2016MY and Beyond Utility Police Interceptor

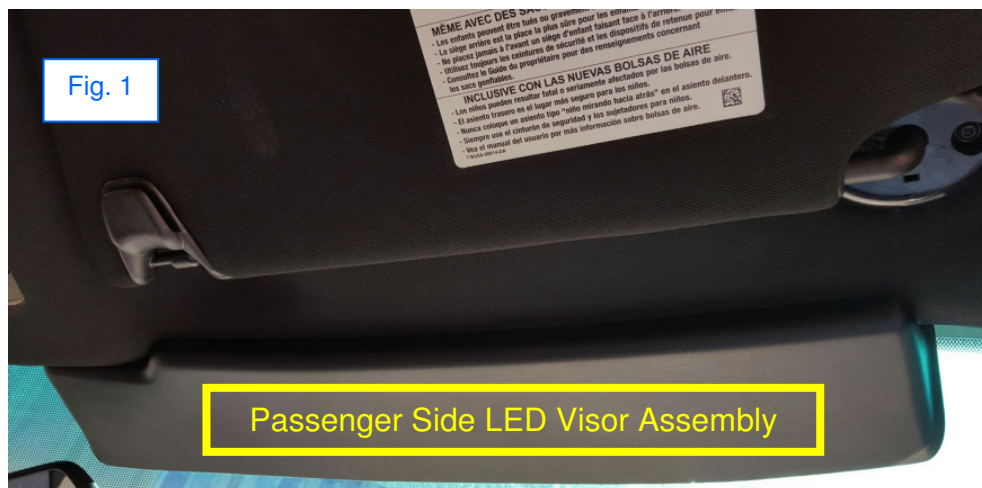
Purpose

Provide information describing the Front Interior Visor Light Bar and setting of LED light colors and flash patterns.

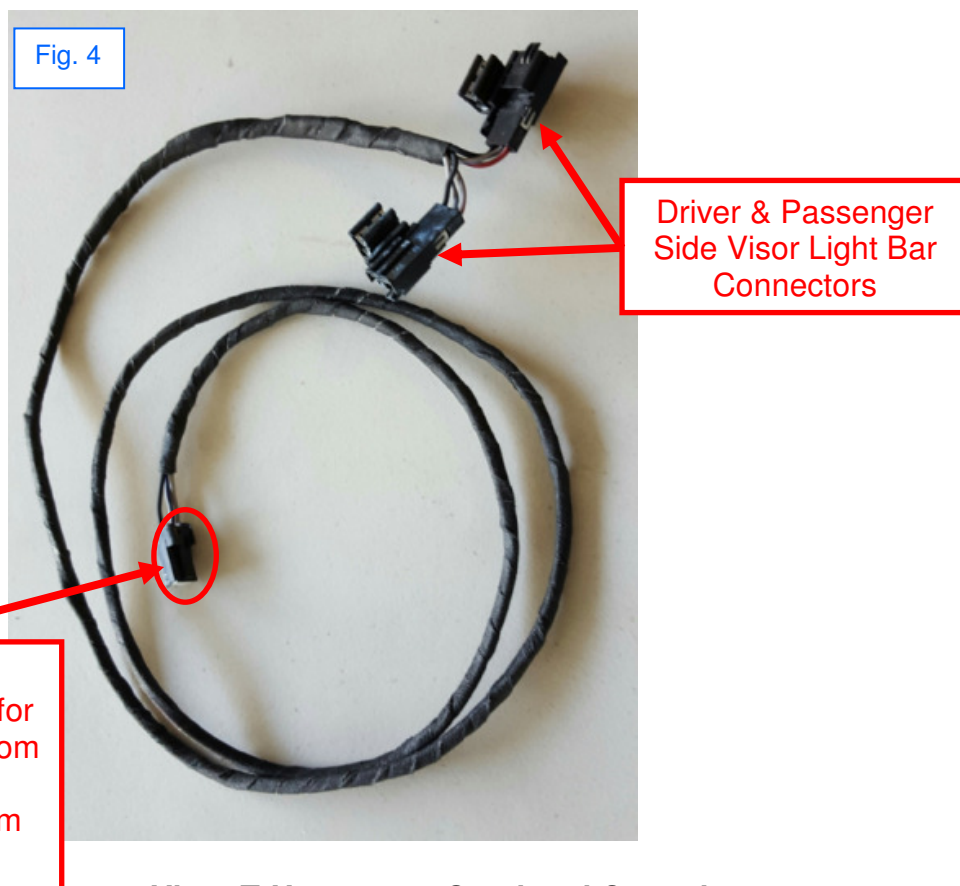
Front Interior Visor Light Bar – Option 96W

DESCRIPTION	<u>PAGE</u>
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• Driver Side LED Visor Assembly (Not Shown)	N/A
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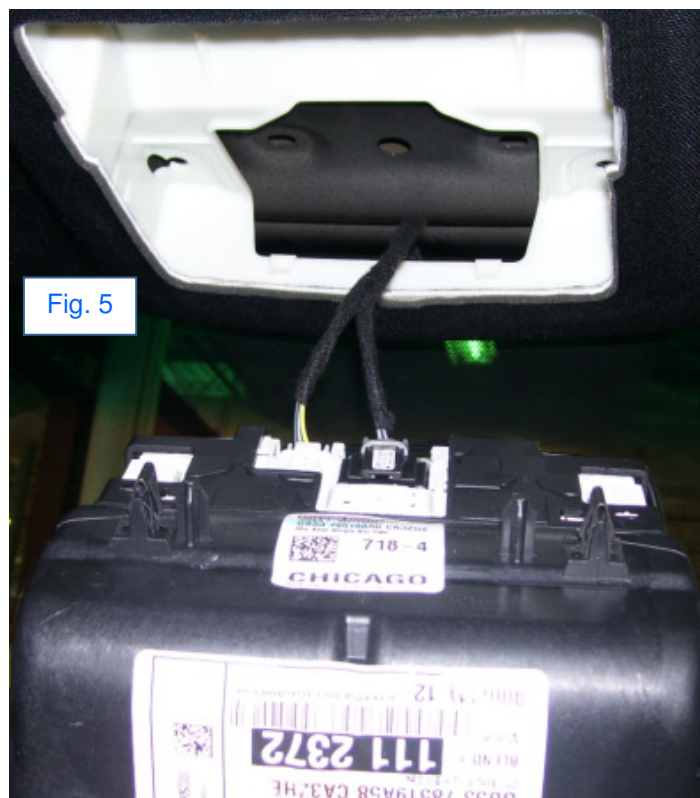
**Passenger Side LED Visor Assembly
(Driver Side Assembly is Mirror Image of Passenger Side Assembly – Not Shown)**



VISOR T-HARNESS

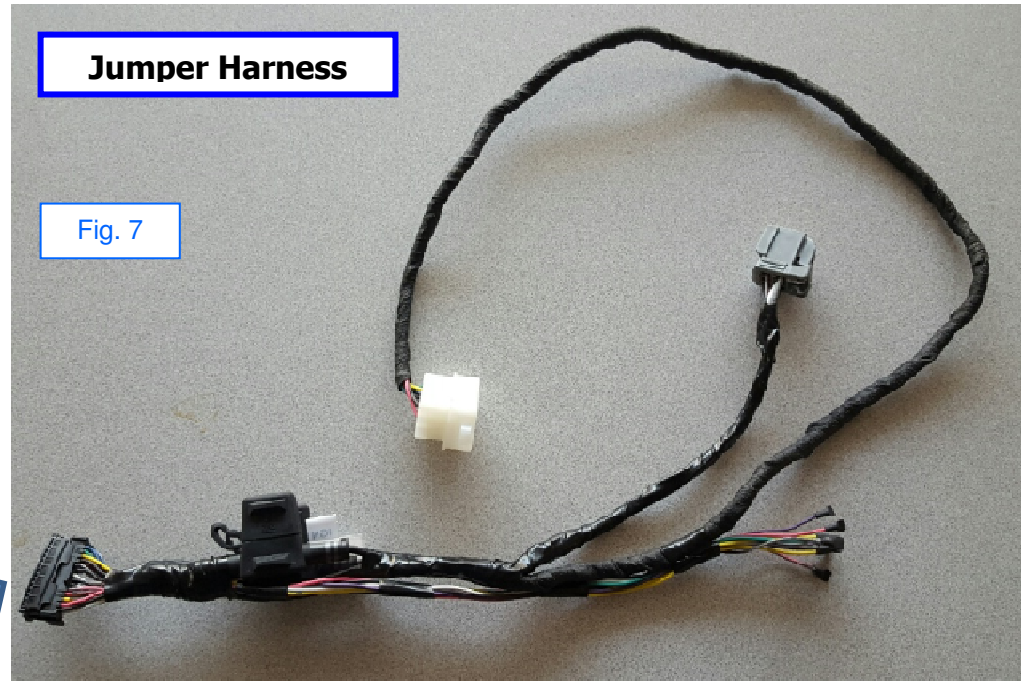


Visor T-Harness at Overhead Console



BREAKOUT BOX (B.O.B.) ASSEMBLY & COMPONENTS

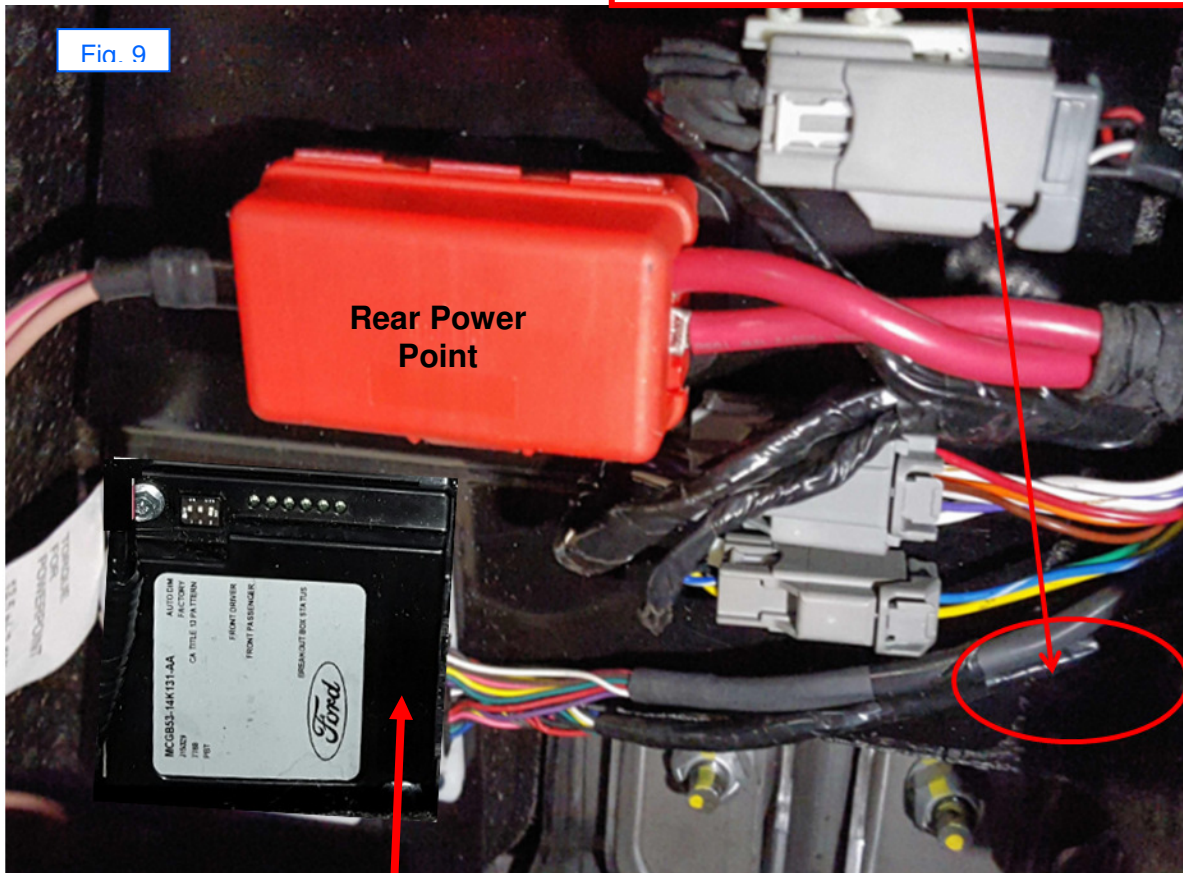
Front Interior Visor Light B.O.B. and Jumper Harness (Common for Rear Traffic Advisor Lights)



Breakout Box (B.O.B.) Module

BREAKOUT BOX (B.O.B.) ASSEMBLY LOCATION (Near Rear Power Point)

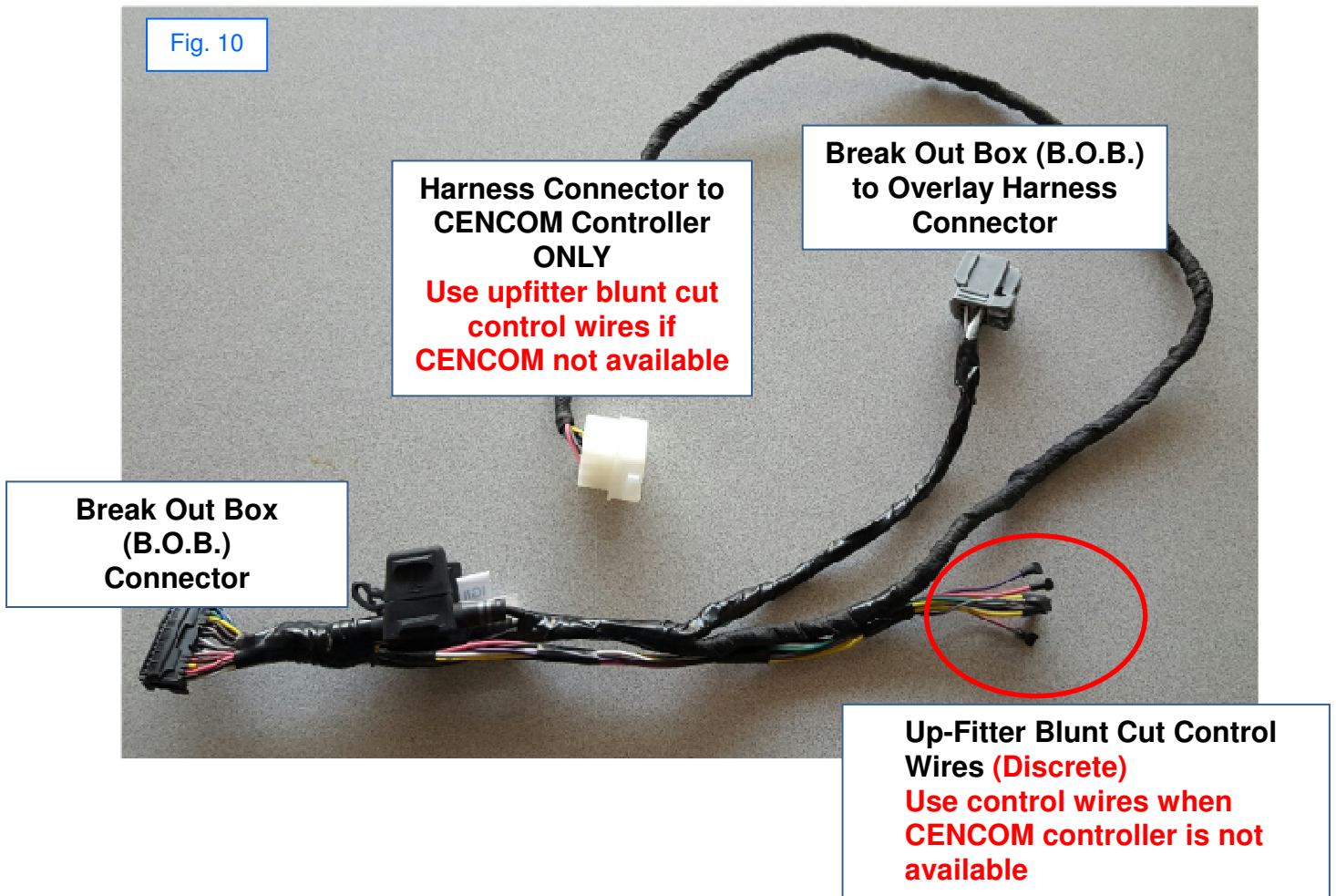
Discrete Wires for Up-Fitter use



Breakout Box (B.O.B.) Assembly

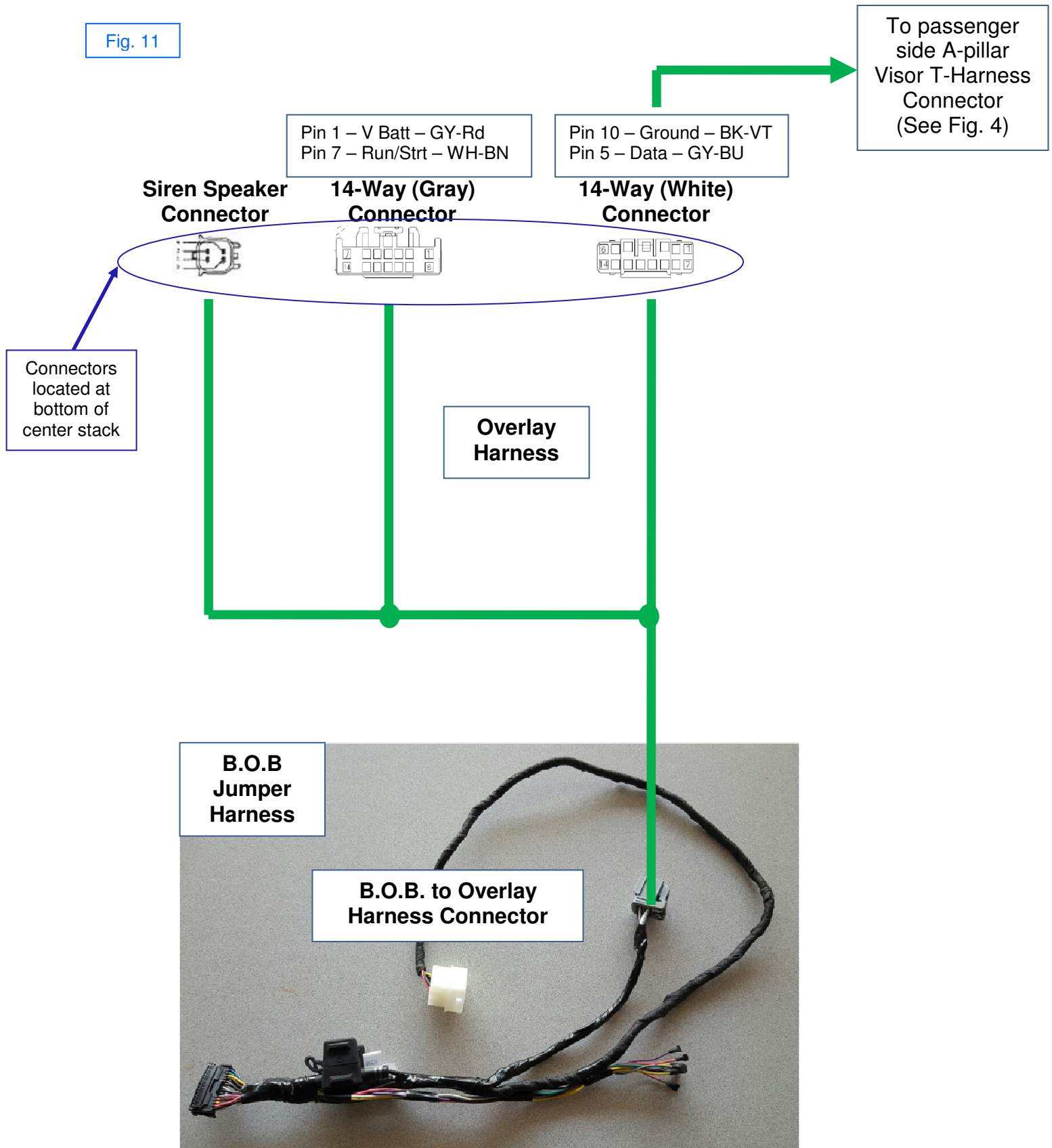
BREAK OUT BOX (B.O.B.) JUMPER HARNESS

Fig. 10



OVERLAY HARNESS

Fig. 11



BREAK OUT BOX (B.O.B.) ASSEMBLY (May also be called Control Module)

Fig. 12

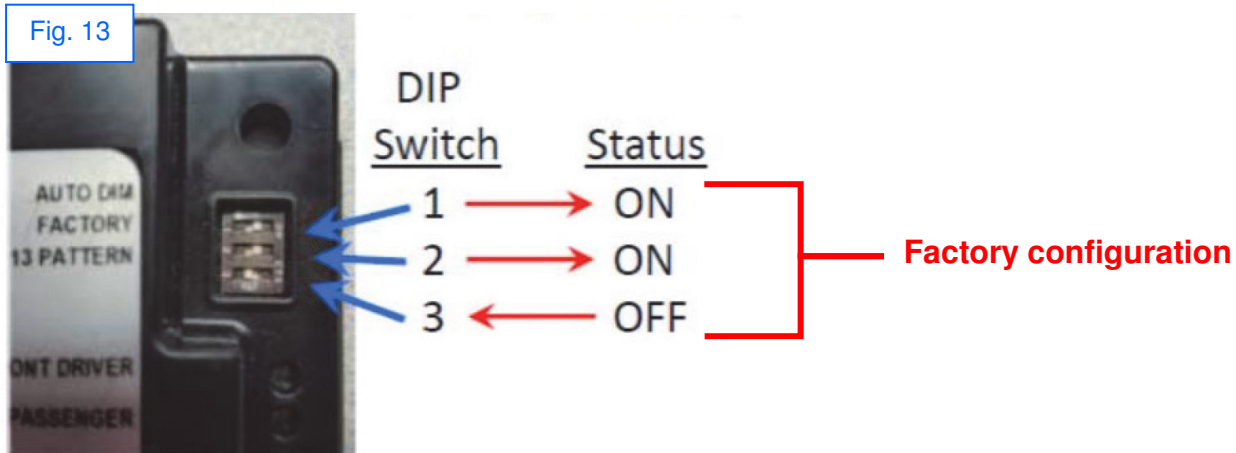


3 DIP switches

- Auto Dim function
- Factory default patterns
- CA Title 13 flash patterns

LED function / fault code indicator

BREAK OUT BOX (B.O.B.) MODULE DIP SWITCH SETTINGS



Switch Functions:

Switch 1: ON = Enable Autodim, OFF – Disable Autodim
Factory setting with Autodim switch 1 ON

Switch 2: ON = Factory Default Setting, OFF = Custom Settings Allowed
Factory setting with switch 2 ON

Switch 3: ON = Title 13 Pattern Active (requires Switch 2 OFF),
OFF = Alternative Pattern Active
Factory setting with Title 13 switch 3 OFF

Note: Low power can be selected using the discrete wire for testing lights

BREAK OUT BOX (B.O.B.) MODULE LED STATUS / FAULT CODES (LEDs 1 – 4)

Fig. 14



Visor Driver & Passenger (LED's 1 & 2)

Rear Traffic Advisor Driver & Passenger (LED's 3 & 4)

LED Status / Fault Codes for Module LEDs 1 – 4

<u>LED Display</u>	<u>Condition Description</u>
Steady ON	Module connected with no faults
OFF	Module is not connected (communication timeout of 1 second)
1 Wink	LED bank failure
2 Winks	Auto dimming sensor failure
3 Winks	Communication error
4 Winks	Low input voltage failure (below 10.5 volts)

BREAK OUT BOX (B.O.B.) MODULE LED STATUS / FAULT CODES LED 5



Control Module (B.O.B.) (LED 5)

LED Status / Fault Codes for BOB Module LED 5

<u>LED Display</u>	<u>Condition Description</u>
Steady ON	<OK> = Module is powered ON with no internal faults
OFF	Module is not powered ON
1 Wink	LED module LIN line shorted to ground
2 Winks	LED module LIN line shorted to 12 Volts
4 Winks	Low input voltage (below 10.5 Volts)

BREAK OUT BOX (B.O.B.) MODULE LED STATUS / FAULT CODES LED 6

Fig. 16



Rear Traffic Advisor Warning or Arrow (LED 6)

LED Status / Fault Codes for BOB Module LED 6

<u>LED Display</u>	<u>Condition Description</u>
Steady ON	B.O.B. module is decoding a valid flash pattern (Warning or Arrow)
OFF	B.O.B. module is decoding valid data for standby mode (no Flash pattern active)
1 Wink	B.O.B. module is detecting data ,but unable to decode

BREAKOUT BOX (B.O.B.) MODULE CHANGING LED FLASH PATTERNS

Changing Front Visor Light LED Flash Patterns

1. Turn on the Front Visor LED Lights
2. Momentarily apply 12 volts to the white wire to change flash patterns
3. Apply 12 volts to the control wire for the desired LEDs requiring revised flash pattern until the lights stop flashing
4. Remove power from that control wire and lights will now be in the next flash pattern
5. Continue until you have achieved the desired color and flash pattern for those LEDs

BREAKOUT BOX (B.O.B.) MODULE CHANGING LED FLASH PATTERNS

- To program **TURN OFF FACTORY DIP** switch
- To change flash patterns **locate the WHITE blunt cut discrete wire**
- Turn on the rear flashing LED lights
- Attach a 12 volt source momentarily to the white wire
- When the LEDs turn off, then release the 12 volt power from the wire
- This process will walk through each available flash pattern
- Pattern / color choices are grouped in 5 different patterns per section
- You will progress through 1 – 5, then 6 – 10 and so on to reach your desired pattern / color
- **Leave the Factory DIP switch set to OFF to retain the new program setting**
- If the Factory DIP switch is set to ON, the pattern / color will revert back to the factory setting

BREAKOUT BOX (B.O.B.) MODULE LED FLASH PATTERNS

Fig. 17

Table ID	Colors	ID	Name	Color Driver/Passenger	Flashes / Second	SAE Compliant?	CA Title 13 Compliant?
1*	1	SC1	Random	Red / Blue (default SAE)	1.1 1 – 3.13	✓	
2	1	SC4	Quad 2	Red / Blue	1.14	✓	
3	1	SC6	Double	Red / Blue	1.92	✓	
4	1	SC7	Power Pulse	Red / Blue	3.13	✓	
5**	1	SC8	Road Runner	Red / Blue (default Title 13)	1.92	✓	✓
6	1	SC1	Random	Red / Red	1.1 1 – 3.13	✓	
7	1	SC4	Quad 2	Red / Red	1.14	✓	
8	1	SC6	Double	Red / Red	1.92	✓	
9	1	SC7	Power Pulse	Red / Red	3.13	✓	
10	1	SC8	Road Runner	Red / Red	1.92	✓	✓
11	1	SC1	Random	Blue / Blue	1.1 1 – 3.13	✓	
12	1	SC4	Quad 2	Blue / Blue	1.14	✓	
13	1	SC6	Double	Blue / Blue	1.92	✓	
14	1	SC7	Power Pulse	Blue / Blue	3.13	✓	
15	1	SC8	Road Runner	Blue / Blue	1.92	✓	✓
16	2	DC1	Random	Red-Blue / Red-Blue	1.1 1 – 3.13	✓	
17	2	DC4	Quad 2	Red-Blue / Red-Blue	1.14	✓	
18	2	DC6	Double	Red-Blue / Red-Blue	1.92	✓	
19	2	DC7	Power Pulse	Red-Blue / Red-Blue	3.13	✓	
20	2	DC8	Road Runner	Red-Blue / Red-Blue	1.92	✓	✓
21	2	DC1	Random	Red-White / Red-White	1.1 1 – 3.13	✓	
22	2	DC4	Quad 2	Red-White / Red-White	1.14	✓	
23	2	DC6	Double	Red-White / Red-White	1.92	✓	
24	2	DC7	Power Pulse	Red-White / Red-White	3.13	✓	
25	2	DC8	Road Runner	Red-White / Red-White	1.92	✓	✓
26	2	DC1	Random	Blue-White / Blue-White	1.1 1 – 3.13	✓	
27	2	DC4	Quad 2	Blue-White / Blue-White	1.14	✓	
28	2	DC6	Double	Blue-White / Blue-White	1.92	✓	
29	2	DC7	Power Pulse	Blue-White / Blue-White	3.13	✓	
30	2	DC8	Road Runner	Blue-White / Blue-White	1.92	✓	✓
31	3	TC4	Quad 2	Red-Blue-White / Red-Blue-White	1.14	✓	
32	3	TC6	Double	Red-Blue-White / Red-Blue-White	1.92	✓	
33	3	TC7	Power Pulse	Red-Blue-White / Red-Blue-White	3.13	✓	
34	3	TC8	Road Runner	Red-Blue-White / Red-Blue-White	1.92	✓	✓

Front Visor Light Operation WITH CENCOM Controller

CENCOM Control Head – typically located by upfitter near driver seat position

Fig. 18



Control Head Button Functions:

AUX1 (Highlighted in BLUE) – Controls Visor Light Red/Blue Lighting – Output 9 to Break Out Box (BOB) module

LP Button (Highlighted in RED) – Controls White Scene Lighting – Output 10 to Break Out Box (BOB) module

Note: If both buttons are pressed, White light overrides Red/Blue lighting

Front Visor Light Operation WITH CENCOM Controller

Control Head Button Functions:

AUX1 (Highlighted in BLUE) – Controls Visor Light Red/Blue Lighting – Output 9 to Break Out Box (BOB) module

LP Button (Highlighted in RED) – Controls White Scene Lighting – Output 10 to Break Out Box (BOB) module

CENCOM Control Head – typically located by upfitter near driver seat position

Fig. 19



CENCOM Controller – Located under hinged floor panel behind 2nd row seat

Fig. 20

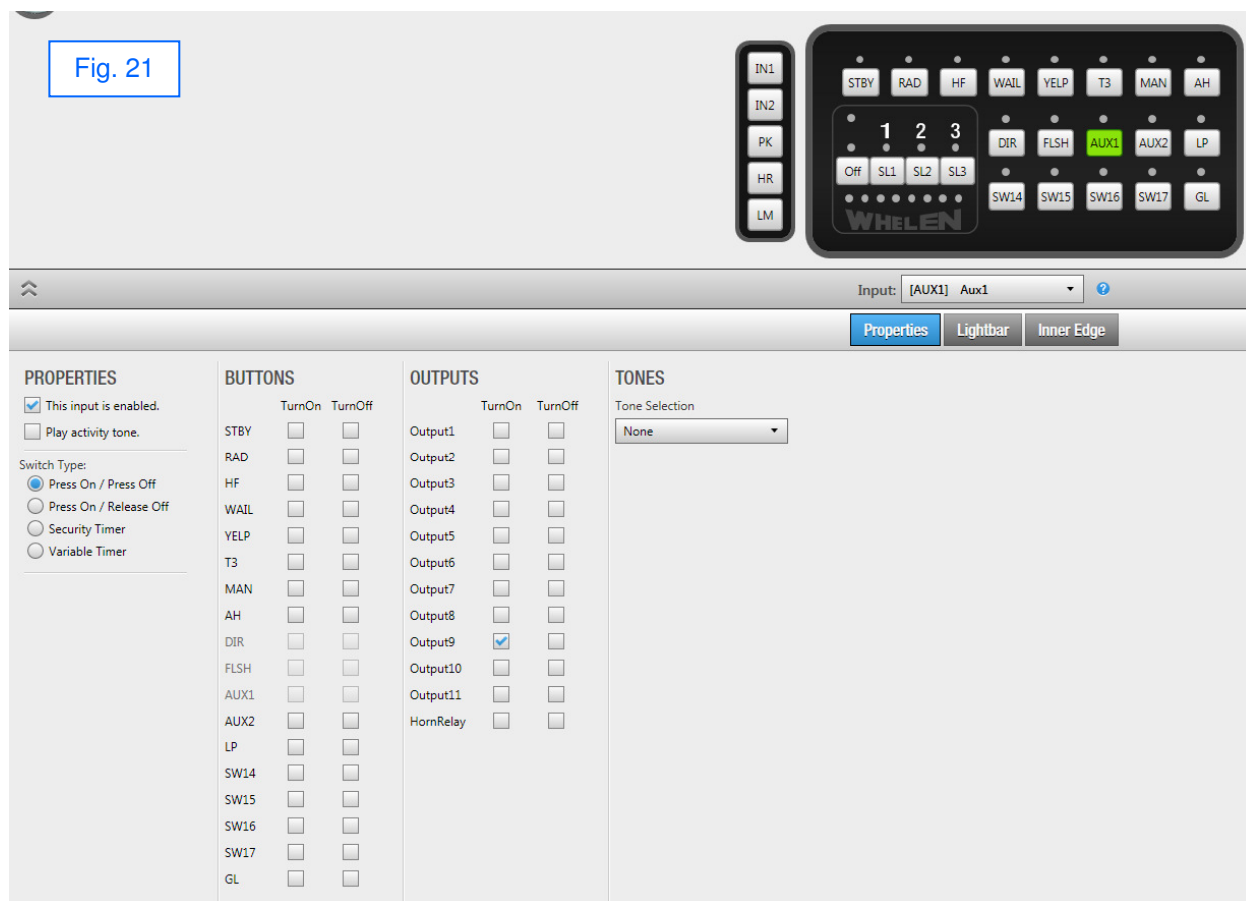


CENCOM controller included with Options: 67H

CENCOM controller provides 12V to the Front Visor Break Out Box (B.O.B) via outputs 9 and 10.

Front Visor Light Operation WITH CENCOM Controller

Fig. 21



The image shows a physical keypad and a software configuration interface for a CENCOM controller. The keypad has buttons for IN1, IN2, PK, HR, LM, and a grid of function buttons including STBY, RAD, HF, WAIL, YELP, T3, MAN, AH, DIR, FLSH, AUX1 (highlighted in green), AUX2, LP, SW14, SW15, SW16, SW17, and GL. The software interface below the keypad has a dropdown menu set to 'Input: [AUX1] Aux1'. It features three tabs: 'Properties', 'Lightbar', and 'Inner Edge'. The 'Properties' tab is active, displaying four sections: 'PROPERTIES', 'BUTTONS', 'OUTPUTS', and 'TONES'.

PROPERTIES

- ☒ This input is enabled.
- ☐ Play activity tone.

Switch Type:

- ☒ Press On / Press Off
- ☐ Press On / Release Off
- ☐ Security Timer
- ☐ Variable Timer

BUTTONS

	TurnOn	TurnOff
STBY	<input type="checkbox"/>	<input type="checkbox"/>
RAD	<input type="checkbox"/>	<input type="checkbox"/>
HF	<input type="checkbox"/>	<input type="checkbox"/>
WAIL	<input type="checkbox"/>	<input type="checkbox"/>
YELP	<input type="checkbox"/>	<input type="checkbox"/>
T3	<input type="checkbox"/>	<input type="checkbox"/>
MAN	<input type="checkbox"/>	<input type="checkbox"/>
AH	<input type="checkbox"/>	<input type="checkbox"/>
DIR	<input type="checkbox"/>	<input type="checkbox"/>
FLSH	<input type="checkbox"/>	<input type="checkbox"/>
AUX1	<input type="checkbox"/>	<input type="checkbox"/>
AUX2	<input type="checkbox"/>	<input type="checkbox"/>
LP	<input type="checkbox"/>	<input type="checkbox"/>
SW14	<input type="checkbox"/>	<input type="checkbox"/>
SW15	<input type="checkbox"/>	<input type="checkbox"/>
SW16	<input type="checkbox"/>	<input type="checkbox"/>
SW17	<input type="checkbox"/>	<input type="checkbox"/>
GL	<input type="checkbox"/>	<input type="checkbox"/>

OUTPUTS

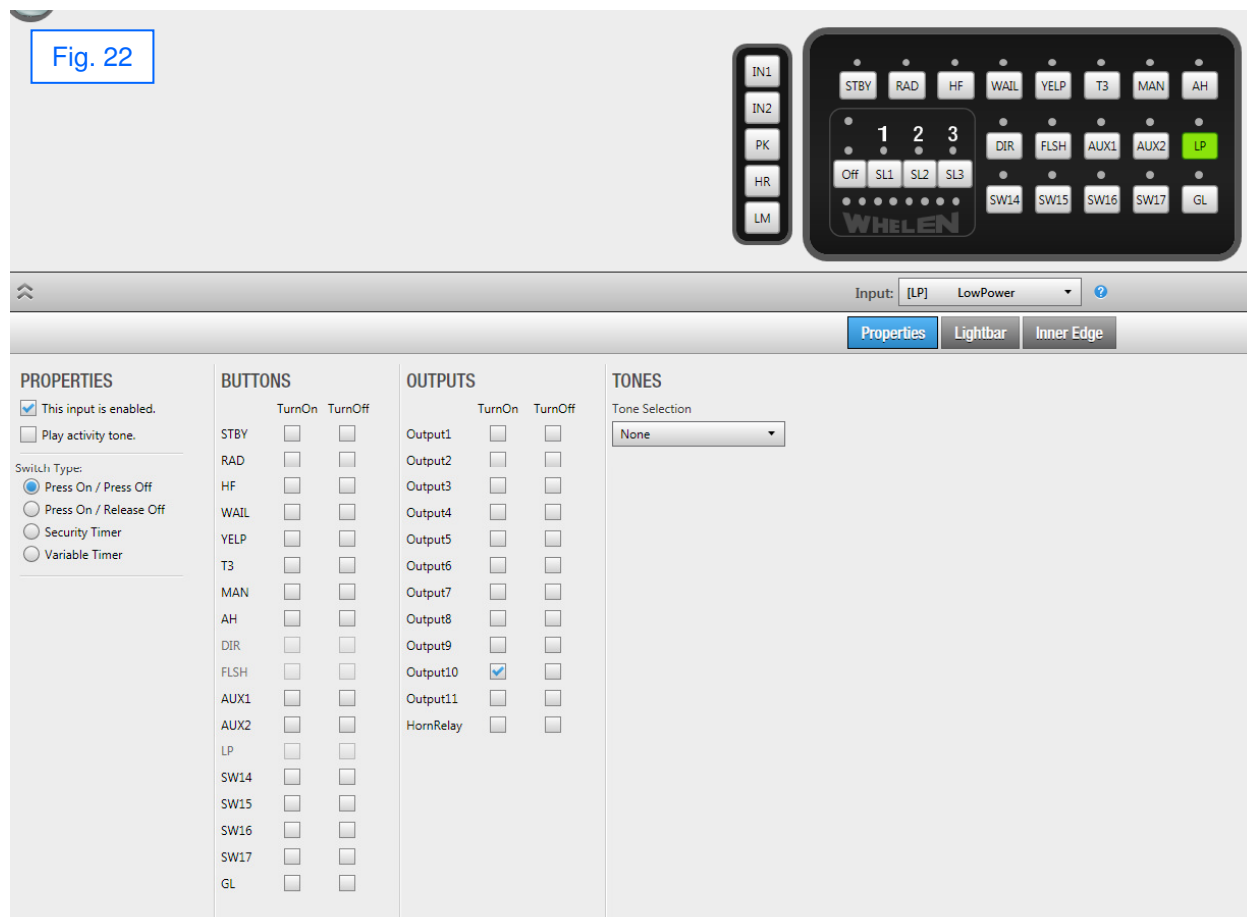
	TurnOn	TurnOff
Output1	<input type="checkbox"/>	<input type="checkbox"/>
Output2	<input type="checkbox"/>	<input type="checkbox"/>
Output3	<input type="checkbox"/>	<input type="checkbox"/>
Output4	<input type="checkbox"/>	<input type="checkbox"/>
Output5	<input type="checkbox"/>	<input type="checkbox"/>
Output6	<input type="checkbox"/>	<input type="checkbox"/>
Output7	<input type="checkbox"/>	<input type="checkbox"/>
Output8	<input type="checkbox"/>	<input type="checkbox"/>
Output9	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Output10	<input type="checkbox"/>	<input type="checkbox"/>
Output11	<input type="checkbox"/>	<input type="checkbox"/>
HornRelay	<input type="checkbox"/>	<input type="checkbox"/>

TONES

Tone Selection:

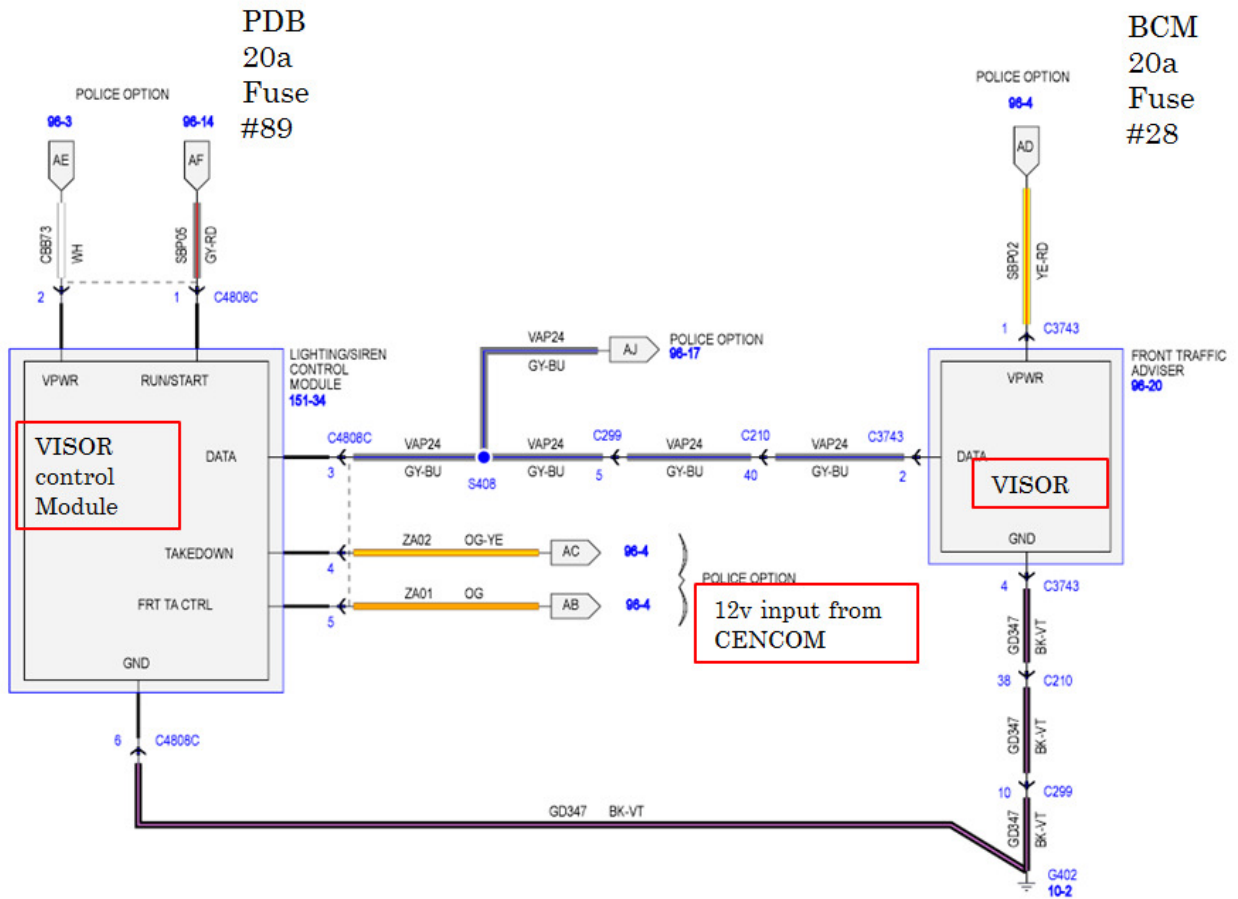
Front Visor Light Operation WITH CENCOM Controller

LP button (Highlighted in Green) – ON/OFF status is provided on output 10
Output 10 applies 12 volts to pin 4 of the 10-way connector – B.O.B. White light command that overrides the Red/Blue output



Front Visor Light Operation WITH CENCOM Controller

Fig, 23



Front Visor Light Operation WITHOUT CENCOM Controller USE OF DISCRETE WIRES

Using the Discrete blunt cut wires on the B.O.B. Jumper Harness:

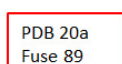
1. Find Factory Mode and Title 13 on the B.O.B. module and switch both switches from **ON to OFF.**
2. Apply a switched and fused (fuse to 80% of circuit capacity) 12 volt power to the discrete wire.
3. Modes 2 and 3 will allow user to change flash functions from one Color/Pattern selection to another by applying 12 volts to discrete pin 2 or 3 in the TBD Connector?

Front Visor Light Operation WITHOUT CENCOM Controller

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- Date Issued: 1/12/17

BCM 20a
Fuse 28



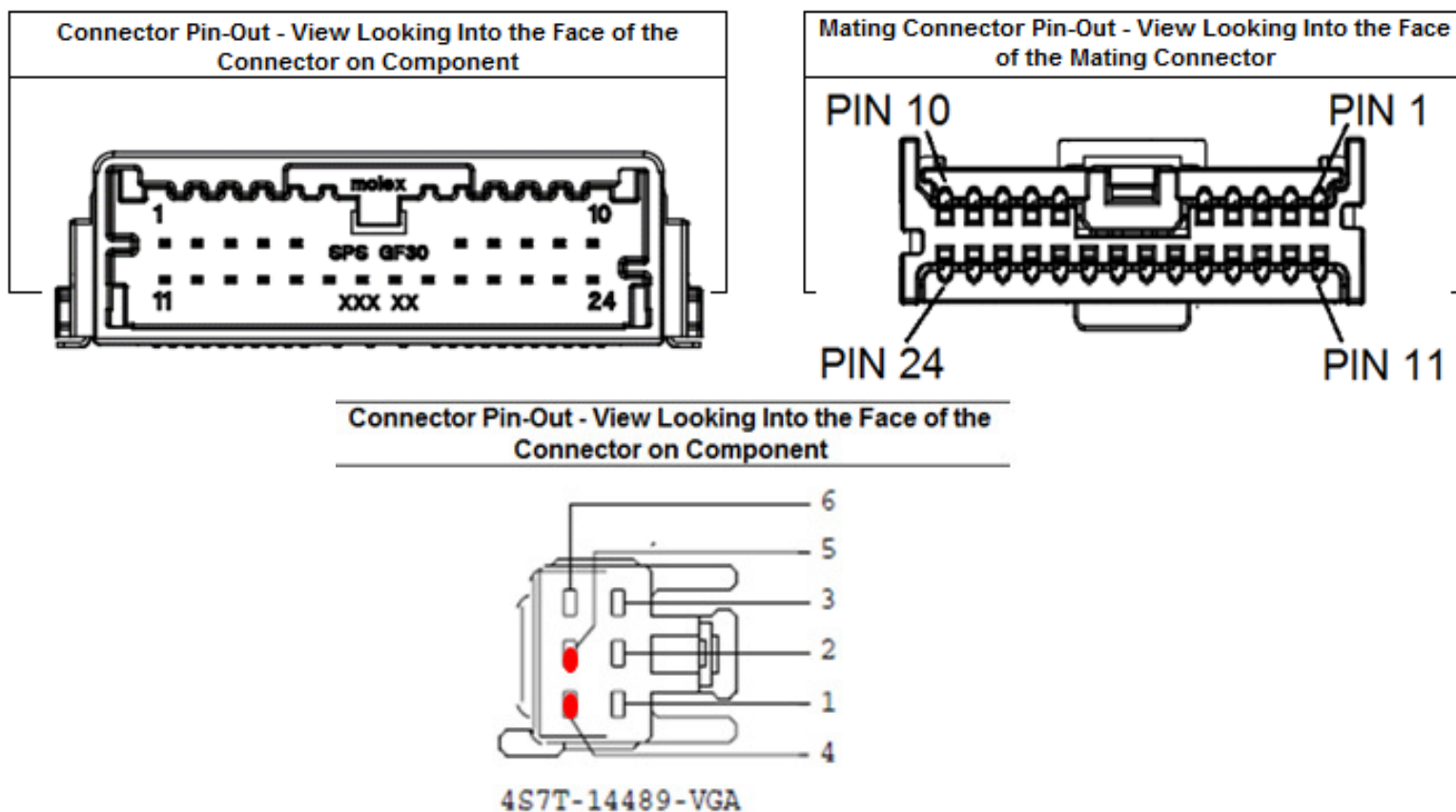
B.O.B. Control Module 12 Volt Power to Control Front Visor Light with Discrete Wires

Front Visor Light Bar Control Using Discrete Wires:

Place Factory Default Switch Setting to OFF Position

- Front Warning – IN11 Pin 23 – 6-way connector Pin 5
- Scene Light – IN5 Pin 20 – 6-way Connector Pin 4
- Pattern Select – IN12 Pin 10 – White (momentarily apply 12V to select desire patterns)
- Scent Light – IN4 Pin 6 – Violet
- Take Down Light – IN6 Pin 7 – Lt. Green
- Mode 3 – IN8 Pin 8 – Yellow
- Mode 2 – IN9 Pin 22 – Yellow/Black
- Low Power – IN7 Pin 21 – Pink/Black

Fig. 25



Front Visor Light Operation WITHOUT CENCOM Controller

Front Visor Control WITHOUT the CENCOM Controller

- Apply a switched fused (fused to 80% of circuit/load) 12 volts power to Pin 5 to select flash pattern.
- Apply a switched fused (fused to 80% of circuit/load) 12 volts power to Pin 4 to select white LED light.
 - Note: White LED light function over rides other LED flash patterns.

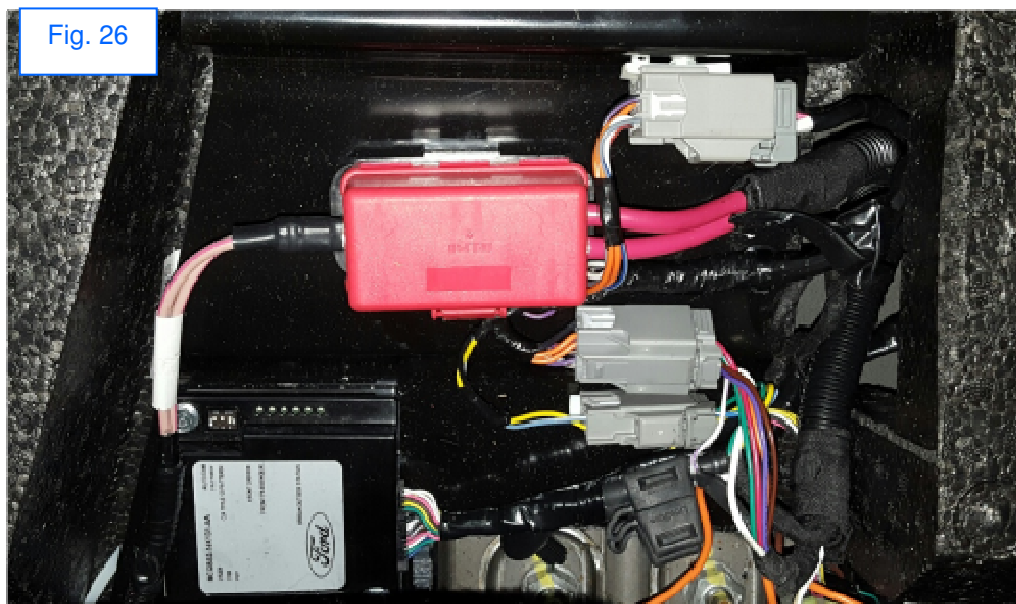


Fig. 27

Check for Terminal Part Numbers

Pin	Circuit	Gauge	Circuit Function	Qualifier
1	CBB73 (WH-BN)	14	FUSE - 73 OR CIRCUIT BREAKER	
2	SAP05 (VT)	18	POLICE - WIGWAG SWITCH POWER	
3	VAP08 (BN)	20	LOUDSPEAKER - POLICE +	
4	ZA02 (OG-YE)	16	Apply 12 volt power to control	
5	ZA01 (OG)	16	Apply 12 volt power to control	
6	VLN04 (VT-GY)	18	CTRL MOD - IP/SW TCH ILLUMINATION	
7	CAP10 (BN-VT)	20	POLICE - LAMP PACKAGE TRAY	
8	CAP12 (VT-OG)	20	POLICE - FLASHER REAR	
9	*	*	Not Used	
10	GD347 (BK-VT)	14	GROUND - PILLAR C OR QUARTER PANEL LEFT	

Apply 12 volt switched power to:
 Pin 5 Orange for Red/Blue flash
 Pin 4 Orange / Yellow for Solid White
 Note: White over rides flash

If you have any questions, please contact the Ford Truck Body Builders Advisory Service as shown in the header of this bulletin.