

**Toyota  
Land Cruiser**



**Lexus  
LX470**



***Rear Seat  
Entertainment System  
Diagnostic Manual***

## PROBLEM SYMPTOMS TABLE

Proceed with troubleshooting of each circuit in the table below.

	Symptom	Suspect Area	See Page
D1	<b>SYMPTOM: No Toyota/Lexus logo, no video, dark screen</b>	<ol style="list-style-type: none"> <li>1. Low battery voltage</li> <li>2. Fuse</li> <li>3. Connector/cable</li> <li>4. FPD</li> <li>5. Interconnect Box (ICB)</li> </ol>	1
D2	<b>No video play but Toyota/Lexus logo appears on screen.</b>	<ol style="list-style-type: none"> <li>1. Remote/batteries</li> <li>2. DVD player</li> <li>3. Connector/cable</li> <li>4. ICB</li> </ol>	8
D3	<b>Poor video quality</b>	<ol style="list-style-type: none"> <li>1. DVD disc</li> <li>2. DVD player</li> <li>3. FPD assembly</li> </ol>	11
D4	<b>No video in AUX or S-Video mode when external source is provided but DVD mode functions properly.</b>	<ol style="list-style-type: none"> <li>1. FPD assembly</li> </ol>	12
D5	<b>No audio on vehicle speakers, audio on wireless IR and or wired headphones is OK.</b>	<ol style="list-style-type: none"> <li>1. FM Modulator (FMM) is OFF</li> <li>2. Radio is not tuned to FMM frequency</li> <li>3. Antenna cable from FMM is not plugged into radio.</li> <li>4. FM Modulator</li> <li>5. Connector/cable</li> </ol>	13
D6	<b>No audio on Toyota/Lexus brand wireless IR headphones</b>	<ol style="list-style-type: none"> <li>1. Batteries in wireless headphones</li> <li>2. Wireless IR headphones</li> <li>3. FPD assembly</li> </ol>	15
D7	<b>No audio on wired headphones</b> Audio sound on vehicle speakers and wireless IR headphones is OK.	<ol style="list-style-type: none"> <li>1. Wired headphones</li> <li>2. FPD assembly</li> </ol>	16
D8	<b>DVD plays disc but will not eject disc.</b>	<ol style="list-style-type: none"> <li>1. DVD player</li> </ol>	17
D9	<b>DVD player will not accept disc. The Toyota/Lexus logo appears on the screen.</b>	<ol style="list-style-type: none"> <li>1. DVD player</li> <li>2. Defective connector/cable</li> </ol>	18
D10	<b>DVD system will not respond to all the remote control functions. Toyota/Lexus logo appears on screen or DVD disc auto starts or shows disc menu when the IG/ACC is on.</b>	<ol style="list-style-type: none"> <li>1. Batteries in remote</li> <li>2. Remote Control</li> <li>3. FPD assembly</li> </ol>	20

## SYSTEM DESCRIPTION

The RSE (Rear Seat Entertainment) system consists of five basic components:

1. The Flat Panel Display (FPD) screen
2. The DVD player, located in the right rear quarter panel
3. FM Modulator, located in the right rear quarter panel
4. Interconnect Box (ICB)
5. Remote Control
6. Wireless IR (Infra-red) headphones.

The RSE system can display video from three sources: DVD video disc, AUX and S-Video inputs. Audio can be heard on the vehicle speakers, wireless headphones and wired headphones. AUX video, S-Video and Audio input jacks are located at the bottom of the FPD display unit.

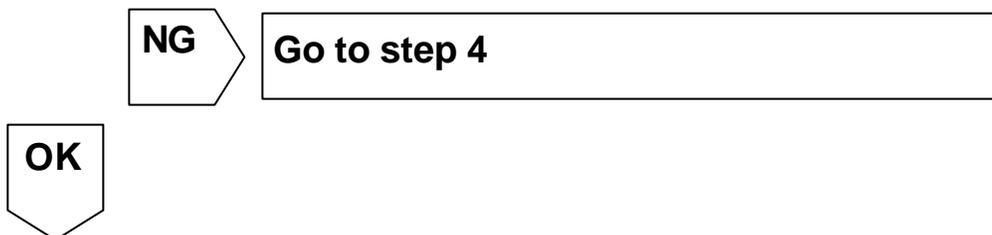
For disassembly instructions, refer to RSE installation instructions PT296-6002D/L

### Pre-Check

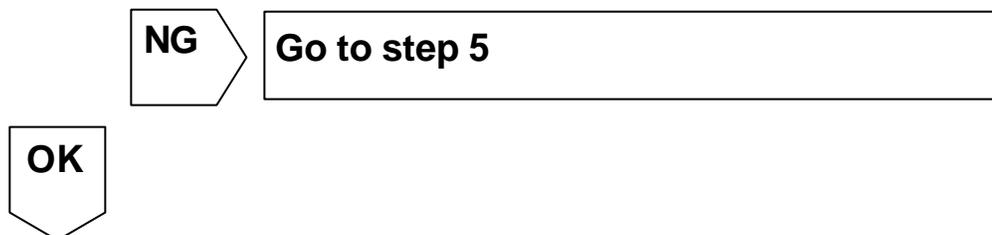
1. Confirm that the battery voltage is 11.0 volts minimum. If the battery is below 11.0 volts, the system is designed to shut down to avoid discharging the battery.
2. Turn the ignition switch to the ACC/ON position, turn system on by opening the FPD screen or by pressing the ON/OFF button on the remote control. Check that the Toyota/Lexus logo appears on the screen.

<b>D1</b>	<b>SYMPTOM: No Toyota/Lexus logo, no video, dark screen</b>
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<b>1</b>	<b>Check the vehicle radio for power and sound.</b>
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<b>2</b>	<b>Check that the DVD player (located in the right rear quarter panel) back light turns ON when depressing the Eject button. Ignition switch must be in ACC/ON position and screen down.</b>
----------	--



3	Check B+ and ACC voltage on pins 11, 12 and 14 and continuity to ground on pin 3 and 4 of connector P2 located in passenger side "A" pillar.
---	--

NG

Go to step 12

OK

Go to step 9

4	Check vehicle 20 A radio fuse and 15 A cigarette fuse.
---	--

NG

Replace fuse and retest

OK

Go to step 7

5	Check B+ and ACC voltage on pins 2 and 3 of connector J8 located behind the glove box. Voltage should be 11.0 volts minimum with ignition switch in ACC/ON.
---	---

NG

Go to step 7

OK

Go to step 16

<b>6</b>	<b>Re-connect and retest</b>
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**NG****Replace adapter harness****OK****End**

<b>7</b>	<b>Check B+ and ACC voltage on pins 1 and 11 and continuity to ground on pin 20 of connector R2 located behind radio between adapter wire harness and vehicle harness.</b>
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**NG****Check base vehicle wiring****OK**

<b>8</b>	<b>Check B+ and ACC voltage on pins 1 and 11 and continuity to ground on pin 20 of connector R1 located behind radio between adapter wire harness and vehicle radio.</b>
----------	--

**NG****Go to 6****OK****End**

9	Remove the overhead FPD assembly (Fig. 1) and connect the pigtail connector (J1) of the FPD to the mating connector P2 located in the "A" pillar. Check operation of system
---	---

NG

Replace the FPD assembly

OK

Replace the OE (roof wire)  
vehicle harness  
(P/N 08689-60810)

10	Reinstall the FPD assembly
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11	Retest the system
----	-------------------

End

12	Remove the overhead FPD assemble (Fig. 1) and connect the pigtail connector (J1) of the FPD to the mating connector P2 located in the "A" pillar. Check operation of system
----	---

NG

Go to step 14

OK

13

Check B+ and ACC voltages on pins 11, 12 and 14 and continuity to ground on pins 3 and 4 of connector P3 of the ICB.

NG

Replace ICB

OK

Replace the RSE main video harness

End

14

Check for backed out pins on connector J8 and/or P8.

NG

Repair and reconnect J8 and/or P8

OK

15

Reconnect and retest.

NG

Replace the RSE Power/Radio harness

OK

End

**16****Check the 7.5 A and 1 A in-line fuses behind the glove box near cowl cover. (Fig. 2B)****NG****Replace ICB****OK****Go to step 12**

**D2****SYMPTOM: No video play but Toyota/Lexus logo appears on screen.**

If the logo appears this signifies that B+ and AC power are available at the FPD. This condition focuses our attention on the DVD player or wire harness.

**1****Check the DVD system response to the remote control commands. Each button DVD, AUX and S-Video will display the corresponding mode DVD, AUX and S-Video on the bottom of the screen for about 4 seconds.****NG****Go to D8 Remote Functions****OK****2****Check the backlight function on the DVD player eject button. Depress the Eject Button, if the light comes on this indicates that the DVD player has power.****NG****Go to D8 Remote Functions****OK****3****Check that a DVD disc is accepted. Insert a disc into the player. The video will start playing or the disc menu will appear on screen.****NG****Go to D8 Remote Functions****OK**

4	<b>Check that the connector J5 is properly connected to the DVD player. The DVD player can be removed from the trim panel with the DVD keys included in the DIO installation kit.</b>
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**NG****Reconnect and retest the player function if there is still no power go to step 5****OK****System functions properly****End**

5	<b>Check B+ voltage on pin 11 and continuity to ground on pin 3 of connector J5.</b>
---	--

**NG****Go to step 7****OK**

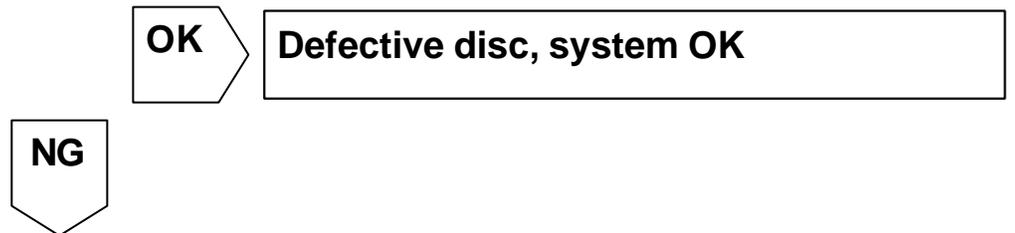
6	<b>Reconnect and retest.</b>
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**NG****Replace DVD player****OK****End**

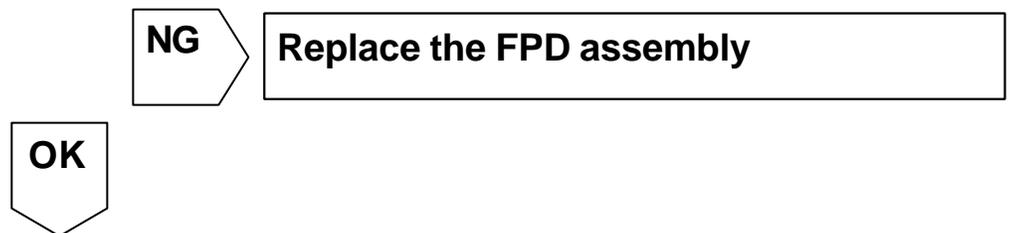
**7****Check B+ power on pin 11 and continuity to ground on pin 3 of connector P4 of ICB.****NG****Replace ICB****OK****8****Reconnect and retest.****NG****Replace DVD harness and retest****OK****End**

<b>D3</b>	<b>SYMPTOM: Poor video quality.</b>
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<b>1</b>	<b>Check video performance with various DVD discs.</b>
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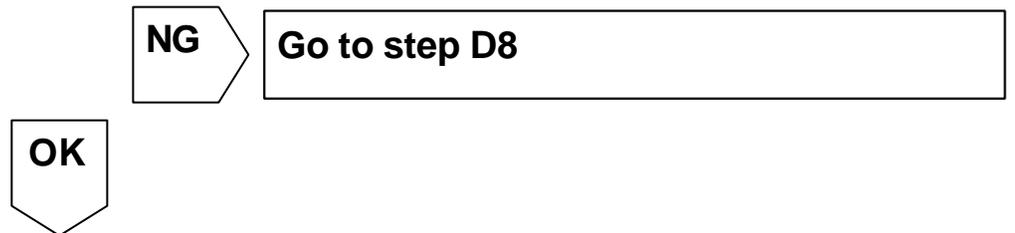
<b>2</b>	<b>Check video performance with external video source in AUX or S-Video mode.</b>
----------	---



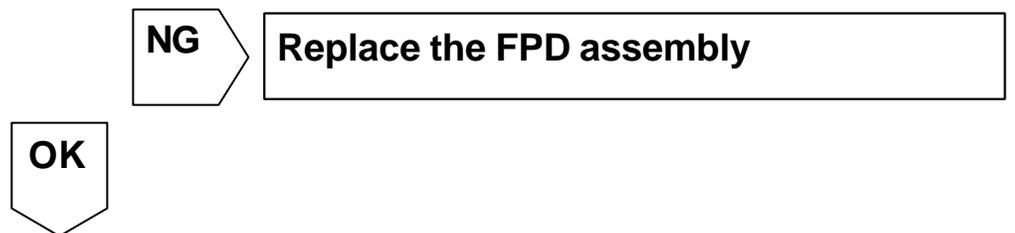
<b>3</b>	<b>End.</b>
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<b>D4</b>	<b>SYMPTOM: No video in AUX or S-Video mode when external source is provided but DVD mode functions properly.</b>
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<b>1</b>	<b>Check that the remote control can select DVD, AUX and S-Video.</b>
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<b>2</b>	<b>Check the AUX or S-Video with external source and confirm video appears on screen.</b>
----------	---



<b>3</b>	<b>End. Refer customer use of DVD, AUX and S-Video functions in owner's manual.</b>
----------	---

<b>D5</b>	<b>SYMPTOM: No audio on vehicle speakers, audio on wireless IR and or wired headphones are OK.</b>
-----------	--

<b>1</b>	<b>Check if the FM Modulator is turned ON. Use the remote to access the Setup menu.</b>
----------	---

**NG**

<b>Select any one of the FM frequencies listed on the FMM menu and retest</b>
---

**OK**

<b>2</b>	<b>Check if the radio is ON and tuned to the same frequency as listed in the FMM Setup menu..</b>
----------	---

**NG**

<b>Tune radio to the same frequency as listed in the Setup menu and retest</b>
--

**OK**

<b>3</b>	<b>Check if audio is present on vehicle speakers.</b>
----------	---

**NG**

<b>Go to step 4</b>
---------------------

**OK**

<b>End</b>
------------

4

Check that connectors J6 and J7 are properly connected to the ICB and FM modulator.

NG

Reconnect and retest

OK

5

Check B+ voltage pin 1 and continuity to ground on pin 2 of connector J7.

NG

Go to step 6

OK

End

6

Check B+ voltage pin 1 and continuity to ground on pin 2 of connector P6 of the ICB.

NG

Replace ICB

OK

Replace wire harness

<b>D6</b>	<b>SYMPTOM: No audio on Toyota/Lexus brand wireless IR headphones.</b>
-----------	--

<b>1</b>	<b>Check that the Red LED indicator goes on when the IR headphones are turned on.</b>
----------	---

**NG****Replace batteries and retest****OK**

<b>2</b>	<b>Check audio with second wireless IR headphone.</b>
----------	---

**NG****Go to step 3****OK****Replace defective wireless  
headphone**

<b>3</b>	<b>Check audio on wired headphones. Note: wired headphone jacks are located on FPD</b>
----------	--

**NG****Replace FPD****OK****End**

**D7 SYMPTOM: No audio on wired headphones.**

**1 Check audio on the wireless IR headphones.**

**NG**

**Replace FPD**

**OK**

**2 Check left and right headphone jack outputs with an alternate wired headphone.**

**NG**

**Replace FPD**

**OK**

**Problem is with the wired  
headphone. Cust responsible**

**End**

<b>D8</b>	<b>SYMPTOM: DVD plays disc but will not eject disc..</b>
-----------	--

<b>1</b>	<b>Power system ON-OFF-ON with the remote or by pressing the button on the FPD case and check if the DVD player will eject the disc by depressing the eject button.</b>
----------	---

**NG**

**Replace DVD Player**

**End**

<b>D9</b>	<b>SYMPTOM: DVD player will not accept disc. The Toyota/Lexus logo appears on the screen.</b>
-----------	---

<b>1</b>	<b>Check that the backlight on the eject button can be turned ON by pressing the eject button.</b>
----------	--

**NG****Go to step 4****OK**

<b>2</b>	<b>Power system ON-OFF-ON with the remote or by pressing the button on the FPD case and check if the DVD player will eject the disc by depressing the eject button.</b>
----------	---

**NG****Replace the DVD player****End**

<b>3</b>	<b>Check that the backlight on the eject button can be turned ON with the remote or by pressing the button on the screen case.</b>
----------	--

**NG****Reconnect and retest****OK****End**

**4** Check B+ voltage on pin 11 and continuity to ground on pin 3 of connector P4 of ICB.

**NG**

**Replace ICB**

**OK**

**5** Check that the backlight on the eject button can be turned ON with the remote or by pressing the button on the screen case.

**NG**

**Replace DVD harness**

**OK**

**Replace DVD player**

**End**

<b>D10</b>	<b>SYMPTOM: DVD system will not respond to the remote control. Toyota/Lexus logo appears on screen or DVD disc auto starts or shows disc menu when the IG/ACC is on.</b>
------------	--

<b>1</b>	<b>Check that all the remote buttons light up for approximately five seconds after depressing the Light button on the remote.</b>
----------	---

**NG** → **Go to 2**

**OK**

**Go to 3**

<b>2</b>	<b>Install new batteries in the remote and retest</b>
----------	---

**NG** → **Replace Remote Control**

**OK**

<b>3</b>	<b>Check that the remote control can select DVD, AUX and S-Video modes, and all other button functions. After depressing the DVD, AUX and S-Video buttons on the remote, the display will show DVD, AUX and S-Video on screen.</b>
----------	--

**NG** → **Go to 4**

**OK**

**End**

**4** Check that all other buttons on the remote function properly.

**NG**

Replace remote

**OK**

**5** Check if system responds to a new/alternate remote.

**NG**

Replace FPD

**OK**

Replace the defective  
remote

End



# RSE Component Layout

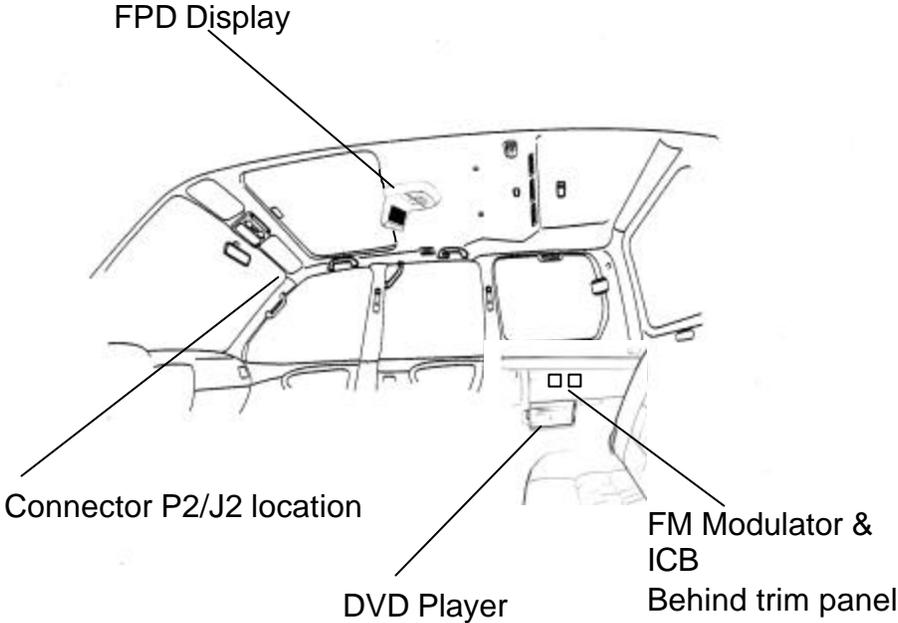


Fig.2A

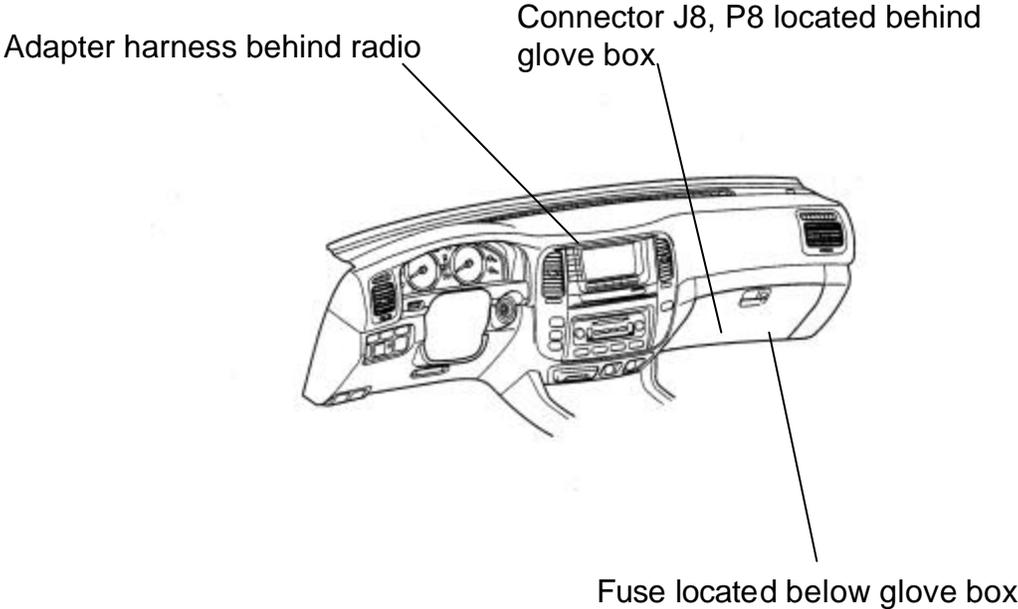


Fig.2B

### Connector Locations for FM Modulator and ICB

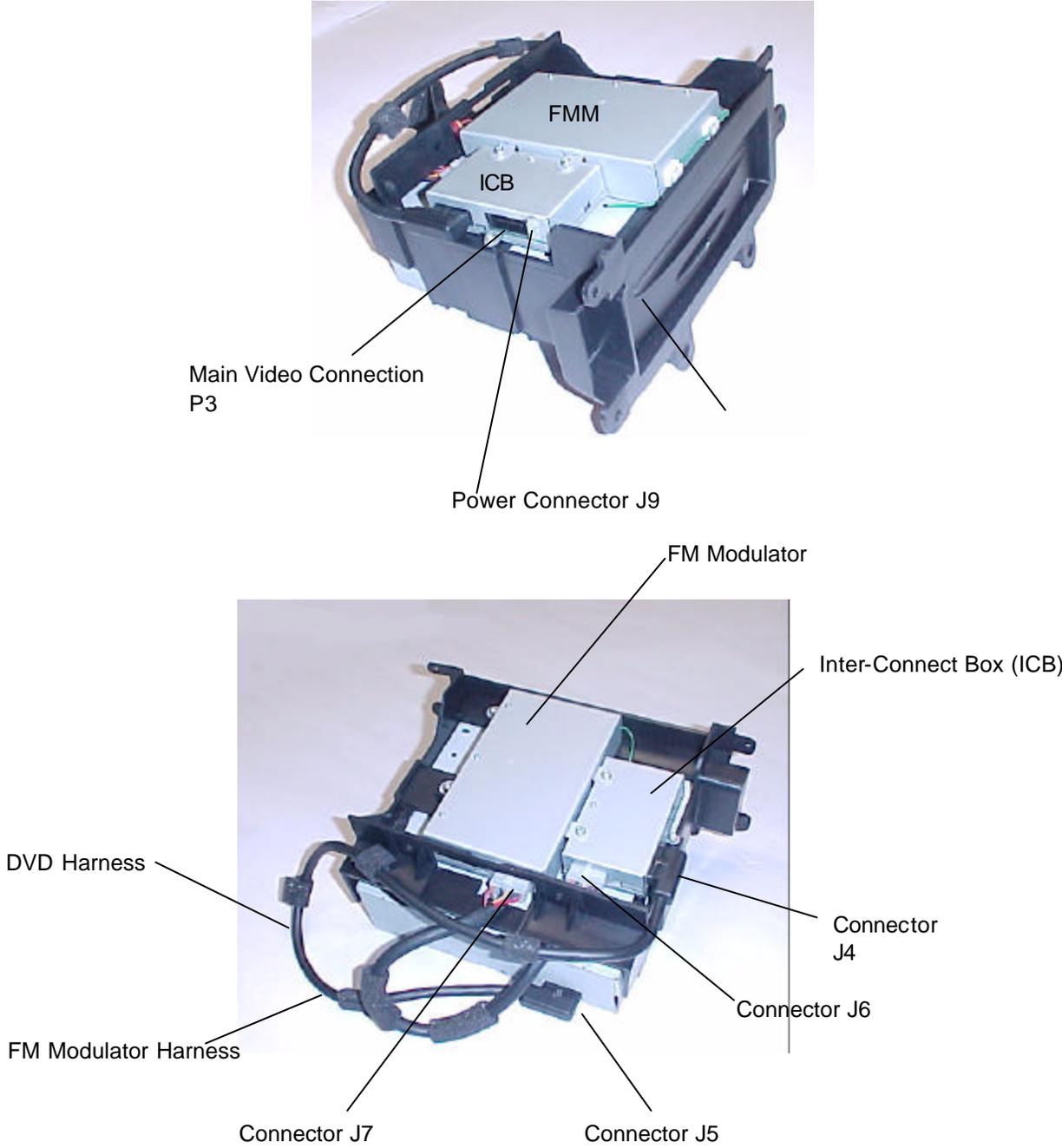


Fig.3

### RSE Connector/Wire Harness Location

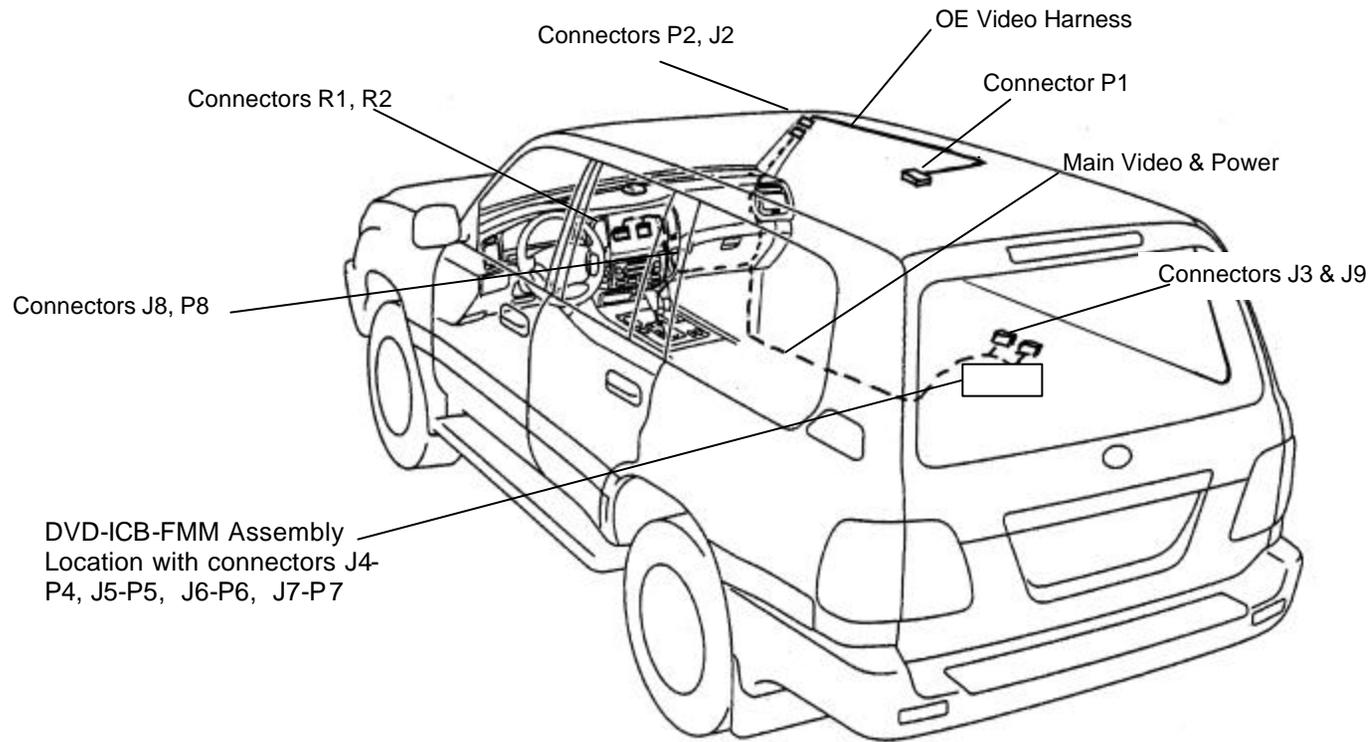


Fig.4

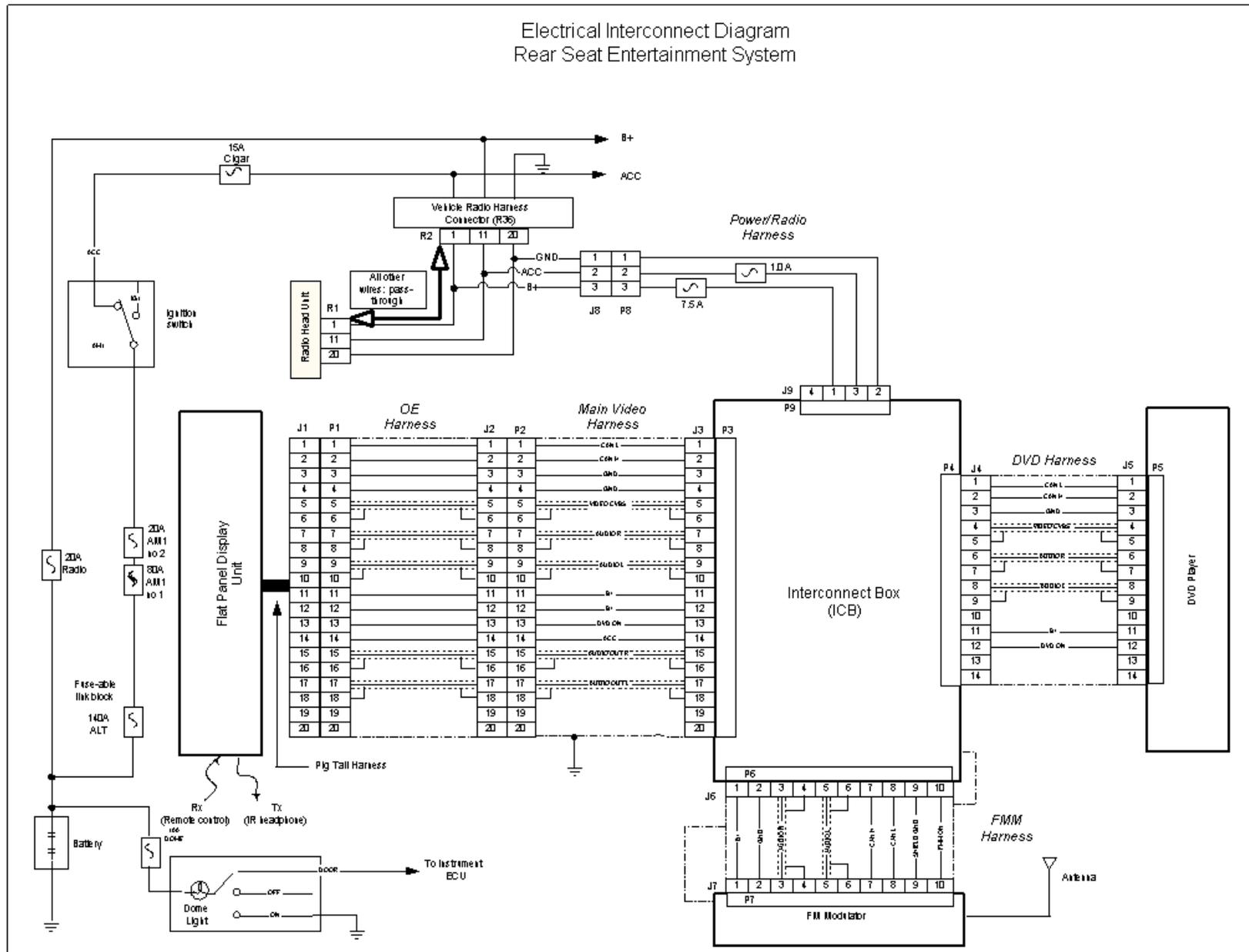


Fig. 5

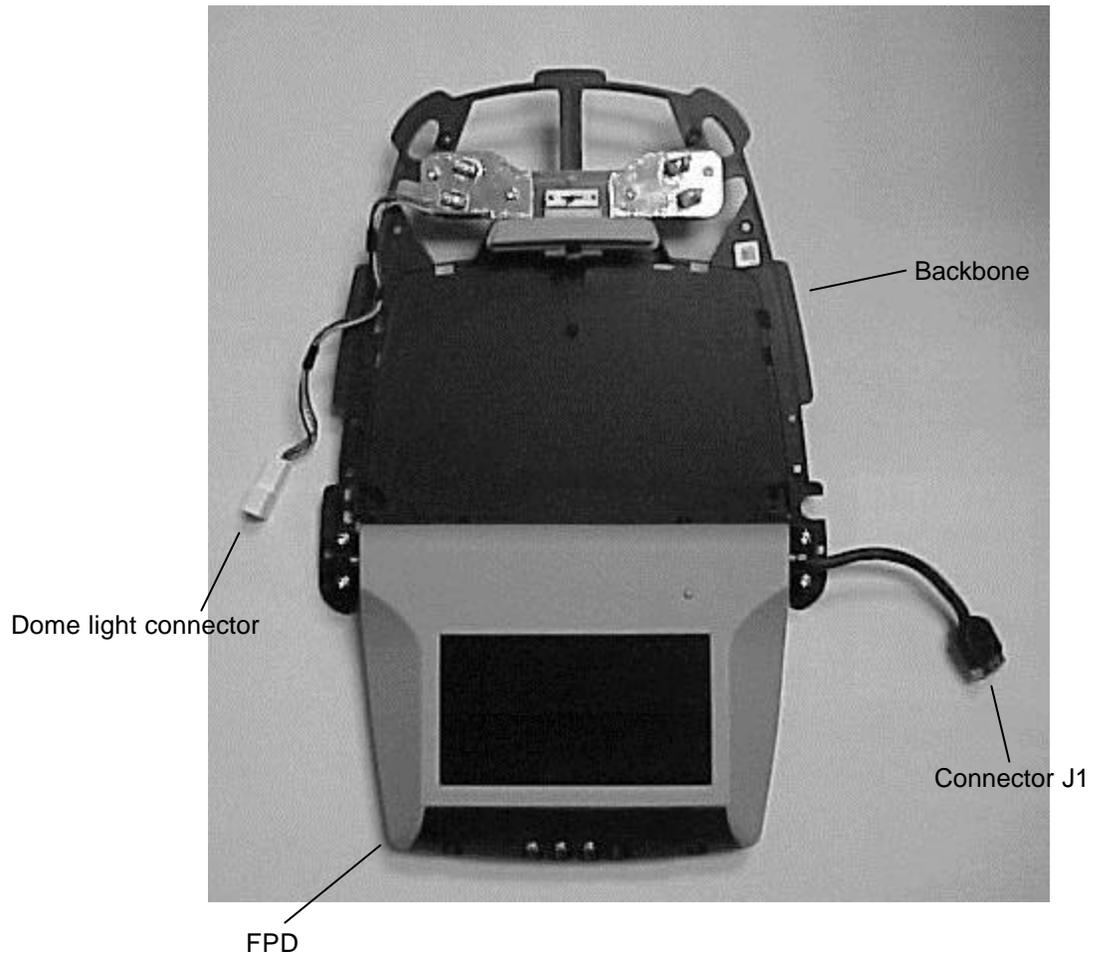
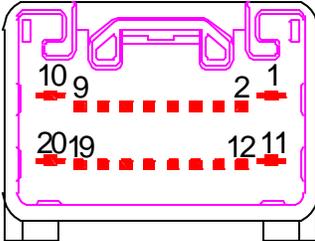
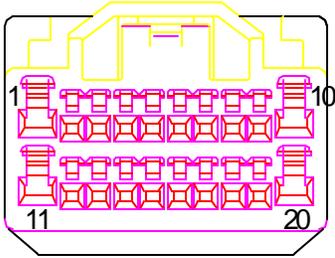
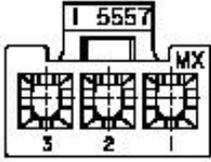


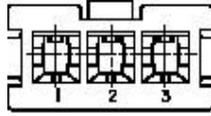
Fig.1

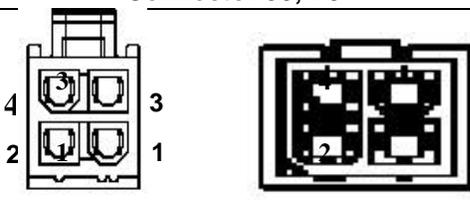
### Connector Tables

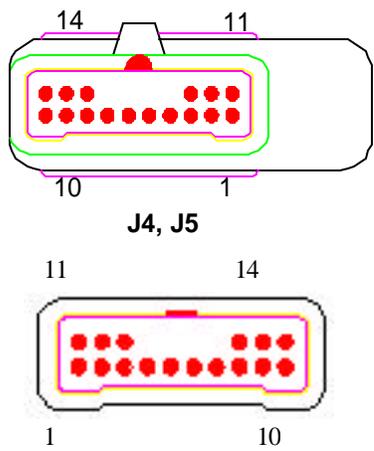
PIN #	Function	Connector # R2	Color/Gauge
1	B+	 <p style="text-align: center;"><b>R2</b></p> <p style="text-align: center;"><b>Terminal Side</b></p>	red 16#
2	ILL+		white 22#
3	AMP+		white 22#
4	N/A		
5	TX+		white 22#
6	N/A		
7	MUTE		white 22#
8	R+		white 22#
9	L+		white 22#
10	SLD		white 22#
11	ACC		orange 20#
12	ILL-		white 22#
13	ANT+		white 22#
14	N/A		
15	TX-		white 22#
16	SGND		white 22#
17	N/A		
18	R-		white 22#
19	L-		white 22#
20	GND		black 16#

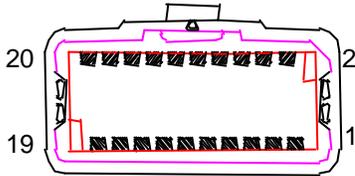
PIN #	Function	Connector # R1	Color/Gauge
1	B+	 <p style="text-align: center;"><b>R1</b></p> <p style="text-align: center;"><b>Terminal Side</b></p>	red 16#
1	B+		red 16#
2	ILL+		white 22#
3	AMP+		white 22#
4	N/A		
5	TX+		white 22#
6	N/A		
7	MUTE		white 22#
8	R+		white 22#
9	L+		white 22#
10	SLD		white 22#
11	ACC		orange 20#
11	ACC		orange 20#
12	ILL-		white 22#
13	ANT+		white 22#
14	N/A		
15	TX-		white 22#
16	SGND		white 22#
17	N/A		
18	R-		white 22#
19	L-	white 22#	
20	GND	black 16#	
20	GND	black 16#	

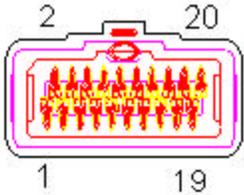
PIN #	Function	Connector J8	Color/Gauge
1	GND	 <p style="text-align: center;"><b>J8</b> Terminal Side</p>	black 16#
2	ACC		orange 16#
3	B+		red 16#

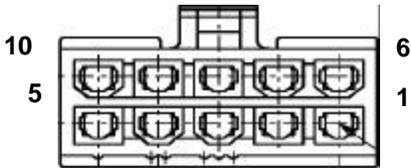
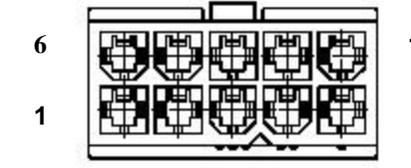
PIN #	Function	Connector P8	Color/Gauge
1	GND	 <p style="text-align: center;"><b>P8</b> Terminal Side</p>	black 16#
2	ACC		orange 16#
3	B+		red 16#

PIN #	Function	Connector J9, P9	Color/Gauge
1	B+	 <p style="text-align: center;"><b>J9</b>                      <b>P9</b> Terminal Side</p>	red 16#
2	GND		black 16#
3	ACC		orange 16#
4	N/C		

PIN #	Function	Connector J4, J5, P4, P5	Color/Gauge
1	CAN L	 <p style="text-align: center;"><b>J4, J5</b>  <b>P4, P5</b> Terminal Side</p>	brown 22#
2	CAN H		gray 22#
3	GND		yellow 19#
4	VIDEO CVBS		cx red 30#
5	VIDEO GND		cx spiral 30#
6	AUDIO R		cx green 30#
7	AUDIO R GND		cx green spiral 30#
8	AUDIO L		cx blue 30#
9	AUDIO L GND		cx blue spiral 28#
10	N/C		
11	B+		orange 18#
12	DVD ON		violet 22#
13	N/C		
14	N/C		

PIN #	Function	Connector J1, J2, J3	Color/Gauge
1	CAN L	 <p style="text-align: center;"><b>J1, J2, J3</b> <b>Terminal Side</b></p>	pink 28#
2	CAN H		l-green 28#
3	GND		brown 22#
4	GND		black 22#
5	VIDEO CVBS		cx conductor 30#
6	VIDEO GND		cx spiral 30#
7	AUDIO R		cx yellow 28#
8	AUDIO R GND		cx yellow spiral 28#
9	AUDIO L		cx white 28#
10	AUDIO L GND		cx white spiral 28#
11	B+		orange 22#
12	B+		green 22#
13	DVD ON		violet 28#
14	ACC		gray 28#
15	AUDIO OUT R		cx blue 28#
16	AUD OUT R GND		cx blue spiral 28#
17	AUDIO L OUT		cx red 28#
18	AUD L OUT GND		cx red spiral 28#
19	N/C		N/A
20	N/C		N/A

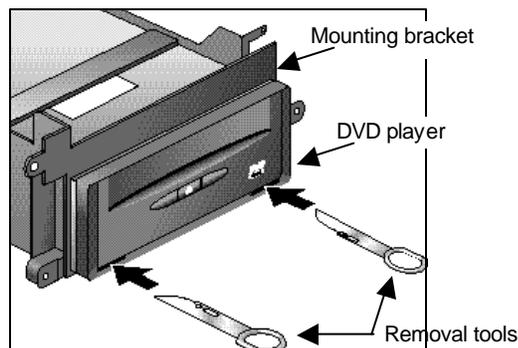
PIN #	Function	Connector P1, P2, P3	Color/Gauge
1	CANL	 <p style="text-align: center;"><b>P1, P2, P3</b> <b>Terminal Side</b></p>	pink 28#
2	CAN H		l-green 28#
3	GND		brown 22#
4	GND		black 22#
5	VIDEO CVBS		cx conductor 30#
6	VIDEO GND		cx spiral 30#
7	AUDIO R		cx yellow 28#
8	AUDIO R GND		cx yellow spiral 28#
9	AUDIO L		cx white 28#
10	AUDIO L GND		cx white spiral 28#
11	B+		orange 22#
12	B+		green 22#
13	DVD ON		violet 28#
14	ACC		gray 28#
15	AUDIO OUT R		cx blue 28#
16	AUD OUT R GND		cx blue spiral 28#
17	AUDIO L OUT		cx red 28#
18	AUD L OUT GND		cx red spiral 28#
19	N/C		N/A
20	N/C		N/A

PIN #	Function	Connector J7, J6	Color/Gauge
1	B+	 <p data-bbox="792 390 873 415">J7, J6</p>	red 18#
2	GND		black 18#
3	AUDIO R		cx green 22#
4	AUDIO R GND		cx green spiral 22#
5	AUDIO L		cx blue 22#
6	AUDIO L GND		cx blue spiral 22#
7	CAN H	 <p data-bbox="808 642 889 667">P7, P6</p> <p data-bbox="760 699 938 724">Terminal Side</p>	brown 18#
8	CAN L		yellow 18#
9	SHIELD GND		outer bd
10	FMM ON		orange 18#

## Attachment A

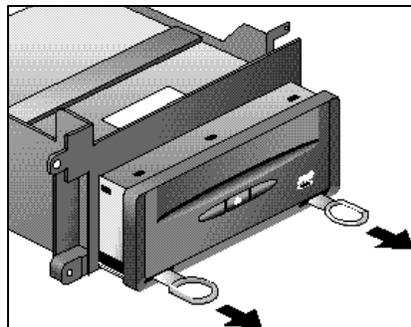
To remove the DVD player from the mounting bracket:

1. Locate two DVD removal tools provided in the DIO installation kit P/N PT296-60021, labelled "TOP L" and "TOP R."
2. Insert the removal tools in the horizontal slots on each side of the DVD player front faceplate. The removal tool label side should face up. Insert the "TOP L" removal tool in the left slot and the "TOP R" removal tool in the right slot.



**NOTE:** You will feel some resistance when you insert the removal tools. Push past the resistance until the tool is completely inserted.

3. To pull the DVD player out of the mounting bracket, pull straight out on the removal tools.



4. To release the removal tools from the DVD player, press the lock mechanism and pull out the removal tool.

