

September 2002



Safety Upgrade Instruction Manual



Revision B

SEGA ENTERPRISES, INC. USA

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This Derby Owners Club (DOC) Safety upgrade kit is an addendum to the original installation instructions and process. The kit material included must be installed as soon as possible to insure proper operation of the equipment. For safety reasons, at the completion of the installation process a site inspection will be conducted to assure all work has been done and all components are functioning properly.

Materials Included in this kit

DOC Safety Kit Contents	Quantity
Marquee Section	
24" pre-heat fluorescent fixture assembly	3
24" fluorescent bulb for ST120	3
Bond Harness #DOC6	1
#8 x 3/4" Pan Head Wood Screws	6
Miscellaneous Parts	
Bond Harness DOC3	1
Bond Harness DOC5	1
M4 nuts	6
M4 star washer	6
3/8" star washers (external tooth)	2
Tie Downs	10
Tie Wraps	10
DOC7 Main Projection AC Tap Harness	1
Incandescent Enclosure	
Incandescent Main harness left (Yellow)	1
Incandescent Main harness right (White)	1
Incandescent socket termination	6
M3 x 10mm, M3 Screw	12
M3 flat washer	12
Side Fluorescents	
18" pre-heat fluorescent fixture assembly	2
M4 x 10mm Screws with flat washers	4
Satellites	
15" pre-heat fluorescent fixture	8
15" fluorescent bulb for ST114	8
5 amp UL approved fast blow fuse	8
1/16" Aluminum plate 2" x 1" with holes	8
#6 x 1/2 self tapping screws	16
DOC8 Satellite AC tap harness	8
Installation instructions	1

Please check that all listed items are included in your kit before starting. The amount of time required for installing this kit is in the neighborhood of 3 – 5 man-hours. It is recommended that at least two or more service persons do the work at one time to keep the installation time to a minimum.

Task instructions and respective locations in the manual:

Replacement of 24” fluorescent fixtures in upper center marquee.	Page 3
Installation of Earth Ground Bonding Harness’ in the Main projection unit	Page 4
Replacement of incandescent lamp sockets in incandescent light enclosures.	Page 8
Replacement of 18” fluorescent fixtures in Main projection unit side panels	Page 9
Replacement of fuses in satellite cabinets’	Page 10
Replacement of 15” fluorescent fixtures in satellite cabinets’	Page 11
Removal of non-UL accessory power socket in satellite cabinets (if applicable)	Page 12
Installation of DOC7 AC Tap Harness	Page 13
Installation of DOC8 Satellite AC tap Harness	Page 16

Tools required:

- #2 Phillips Screw Driver
- #2 Short Phillips Screw Driver
- 13mm Socket Wrench
- 7mm Socket Wrench or nut driver
- Sega #5575 standard lock key
- Pliers
- Work light or Flashlight

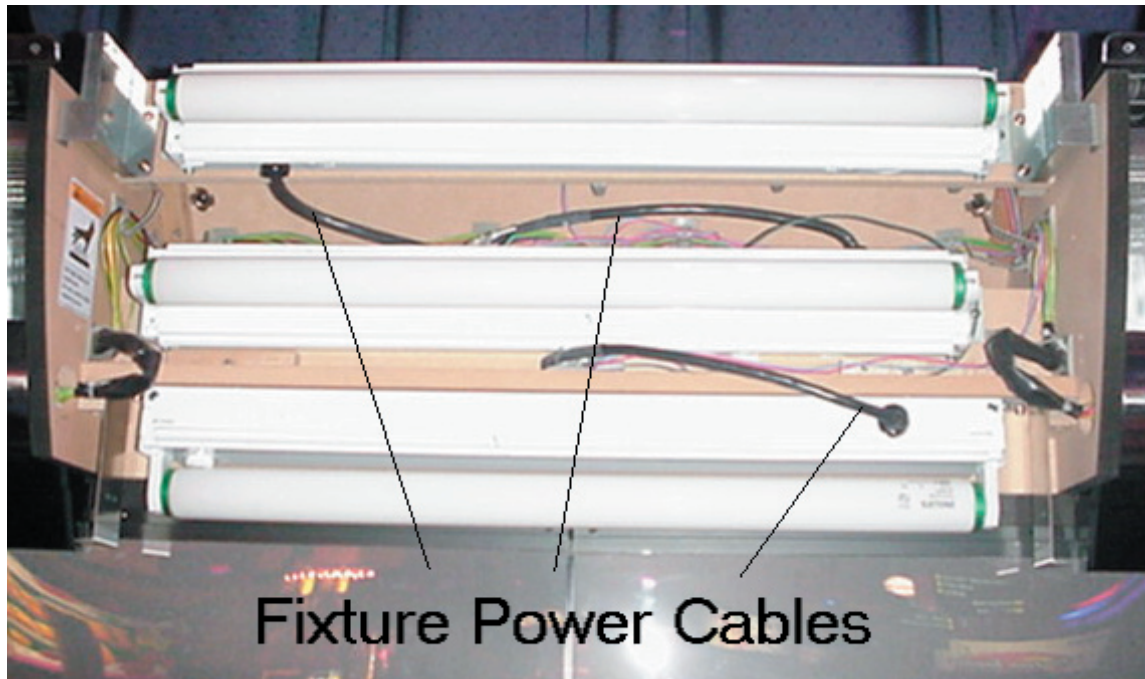
Installation Notes

- 1) Before starting any work on these units it is imperative that all equipment is powered off and unplugged from main power to insure against the chance of electric shock.
- 2) All fluorescent fixtures being installed are domestic brands and therefore associated replacements lamps can be replaced with standard size bulbs available in local stores.
- 3) At completion of the Bond Harnessing installation, continuity must be tested from earth ground (the earth ground prong on the power plug) to all locations being bonded.
- 4) All M4 nuts are tightened with the 7mm driver.

1) Replacement of fluorescent fixtures in Center Marquee

The existing fixtures are physically attached by metric machine screws and electrically attached by 3-pin U-Power connectors. Remove the screws and disconnect wires to remove fixtures.

Install the new 24" fixtures in the positions shown using #8 x 3/4" wood screws through holes in attached mounting brackets. Use the included picture below to properly orient the locations of the fixture power cords. Once completed, connect the fixture power connectors to respective supply power connectors.

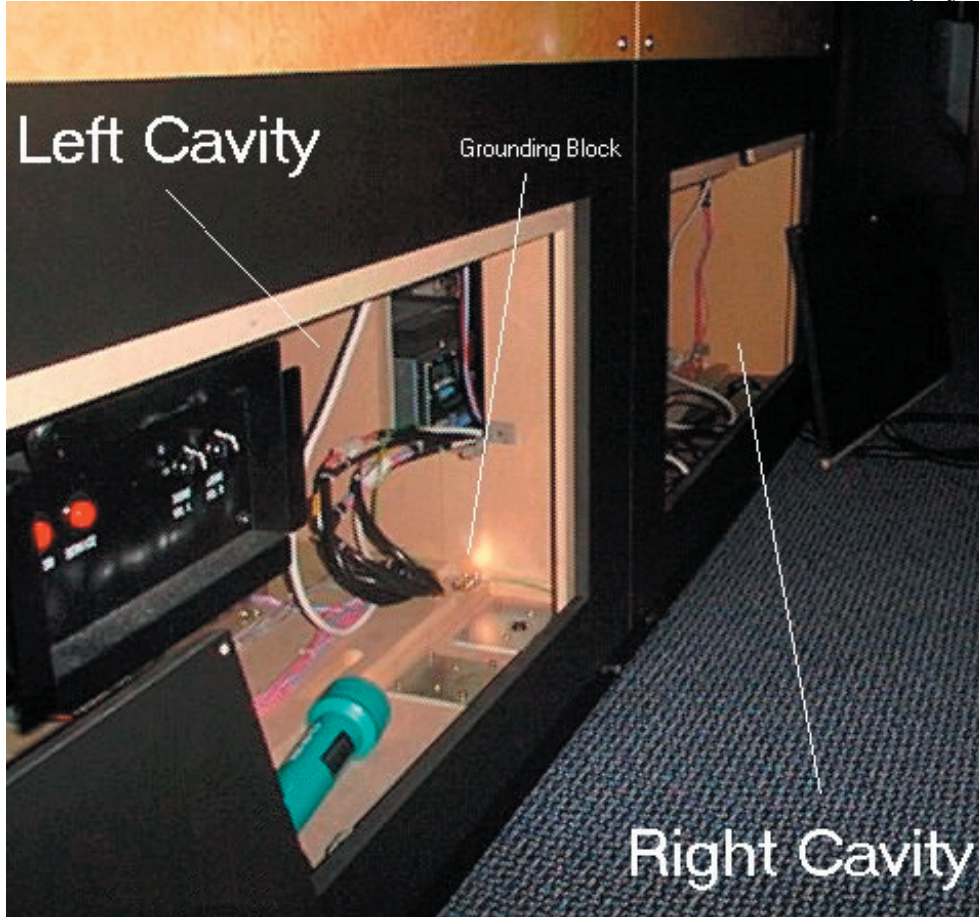


Note: When installing the lower fixture there may be some overlap between the fixture and existing bracket, but plenty of exposed wood to attach with wood screws.

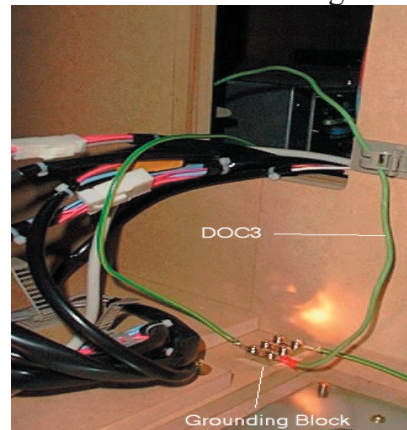
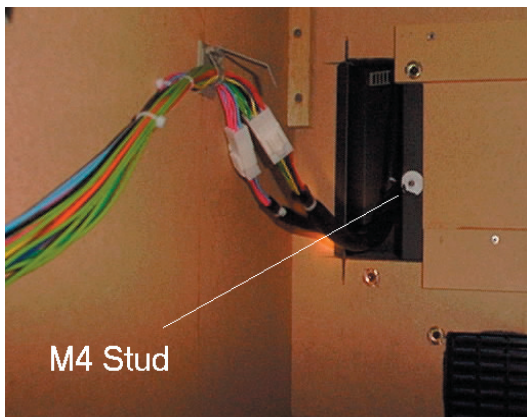
2) Installation of Earth Ground Bonding Harnessing

3 Bonding harnesses are provided to properly earth ground various external items on the main projection unit. These harnesses are labeled **DOC3**, **DOC5** and **DOC6**.

DOC3 is to be installed on the inside of the two lower cavities of the main projection unit.

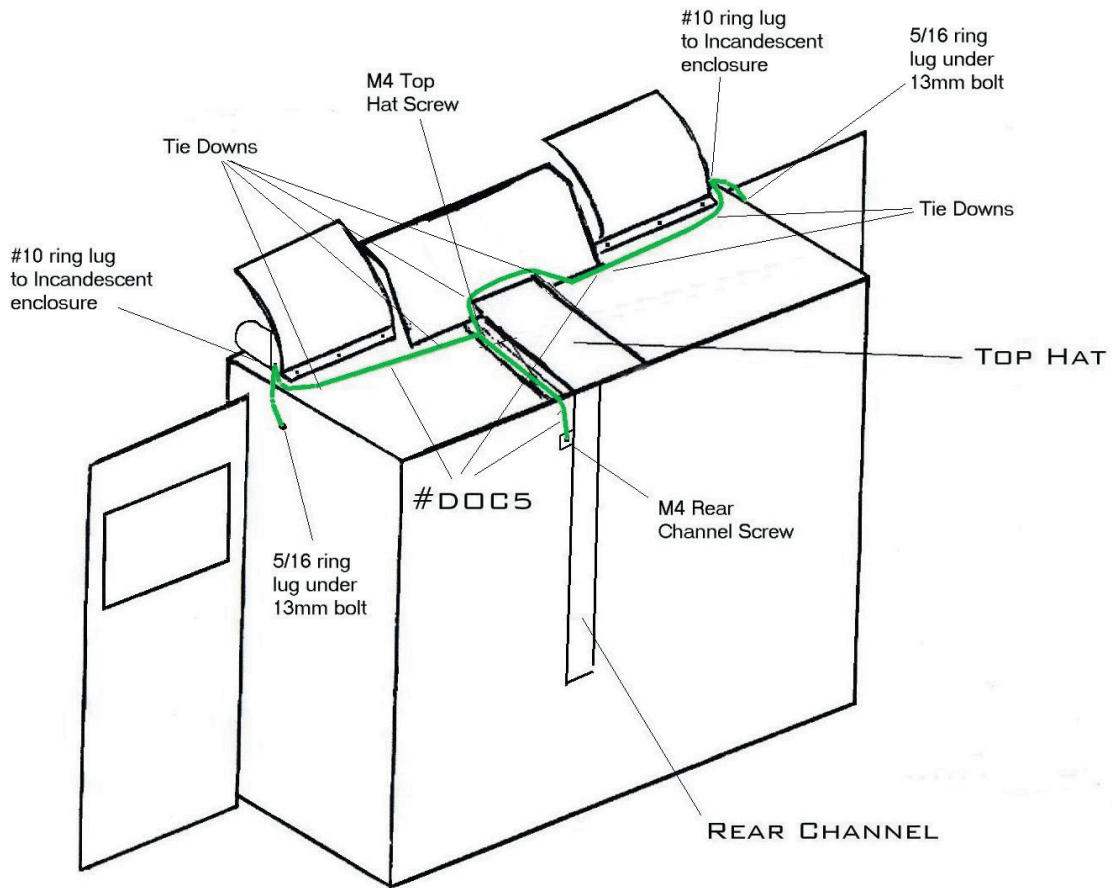


One end of DOC#3 is to attach to an M4 stud located to the rear left of the right cavity,

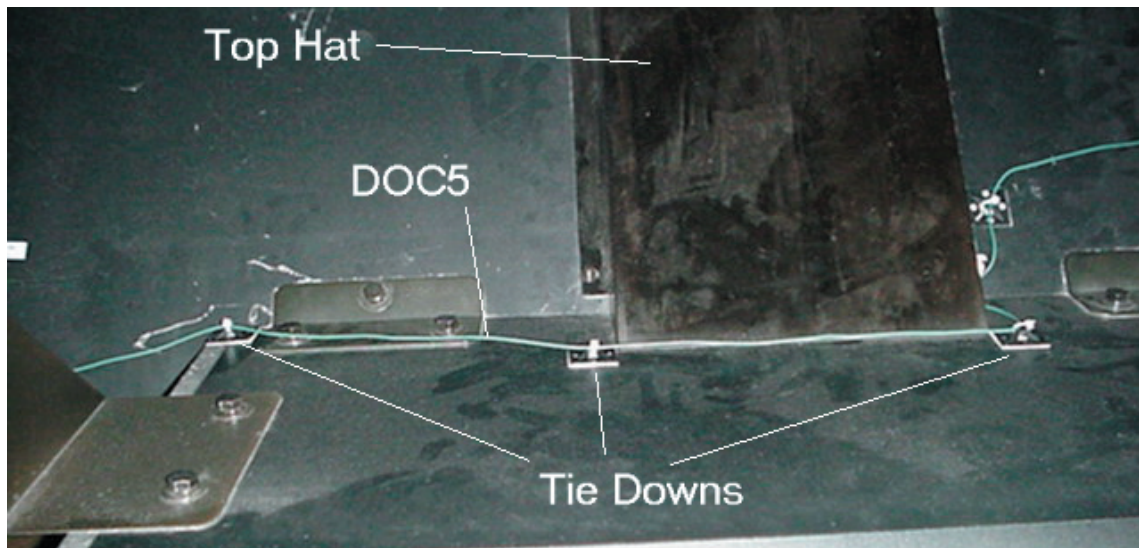


while the other is to be connected to existing screws on a terminal block located on the floor of the left cavity in the right front.

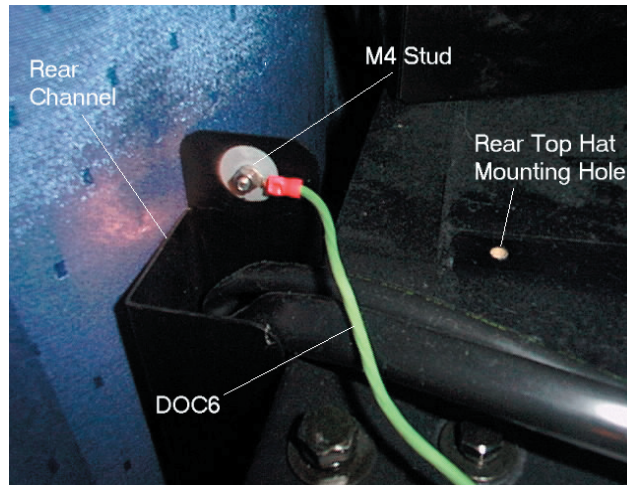
DOC5 is to be positioned on the top of the main projection unit as shown.



Once DOC5 is in position, the harness must be secured to the cabinet using included tie downs & wraps.



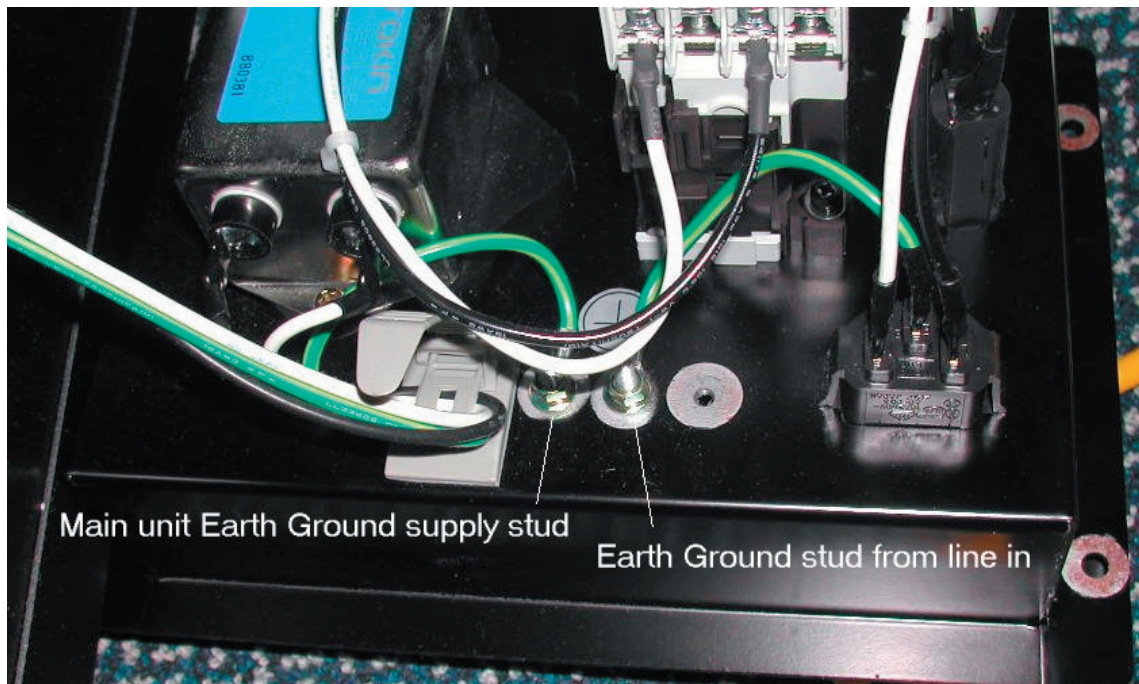
DOC6 must be mounted inside the center marquee enclosure. The Top Hat must be removed to attain this part of the installation. The ring lug is to be mounted to the M4 stud located on the top inside of the rear channel.



At the other end of DOC6 are three 1-pin Molex connectors that are each to be connected to the opposite gender coming off each of the 24" fluorescent fixtures to provide earth ground to the fixtures.

Note: All screw or bolt positions being secured during installation require a relative size star washer be positioned between the ring lugs and related metal surfaces for correct operation. Star washers provide necessary conductivity between rings lugs and painted surfaces.

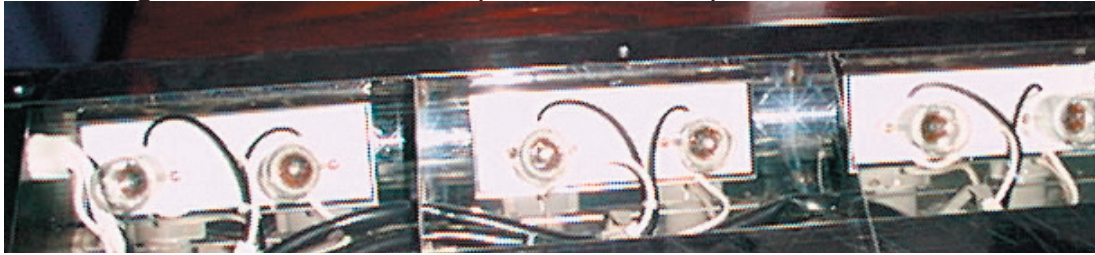
Check the input earth-grounding scheme on your main projection unit. Most of these units utilize a "double stud" system



These studs are located on the power input assembly on the rear of the unit (where the power cord is attached). This scheme of bonding is acceptable and no alteration or change is required. Some units use a single stud rather than double, and while a single stud is acceptable, having both rings lugs held by the same nut is not. An extra M4 nut is included in the kit for this purpose. To accomplish this, remove the top secure nut on the stud. Remove the Main unit Earth Ground supply wire and leave the Earth Ground line in wire and re-secure the removed nut. After securing the Line in Earth Ground, slide the Main Unit Earth Ground supply ring lug onto the stud and secure with the included M4 nut from the kit.

3) Replacement of incandescent sockets and harnessing in incandescent light enclosures

Located on each side of the upper center marquee are incandescent light enclosures that include Non-UL light sockets that must be replaced with those provided.

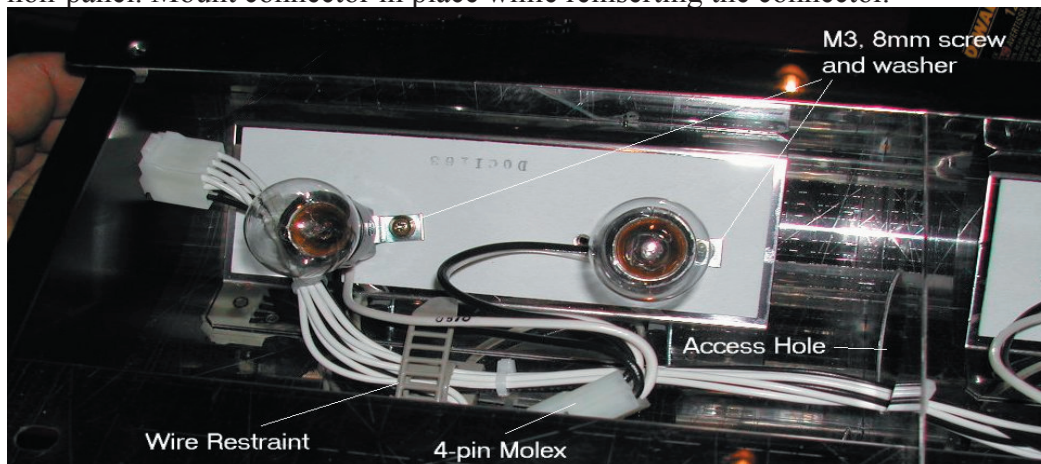


To remove these enclosures, two screws on the top of the enclosure hold a diffusion plex over the lamps. Once removed will expose three main mounting screws in the rear of the enclosure. Using a “stubby” screwdriver here is recommended because of height restrictions. The main enclosure can then be pulled away from the cabinet and complete removal is attained after disconnecting the 12-pin U-Power connector. Once the enclosure has been removed to a safe work area, carefully remove the light bulbs and store in a safe place to be re-used after the socket replacement. Remove all sockets, harnessing and panel mount U-Power connector and discard. Using the new incandescent socket pairs, reinstall new sockets using included 8 mm screws and washers to attach as shown.



Install main incandescent harness DOC1L (for the left side) and DOC1R (for the right side) respectively. Run harnessing through access holes utilizing existing wire restraints. Connect 4-pin Molex's. Reinsert existing incandescent lamps. Reverse removal instructions to reattach the enclosure, being careful to insure the previously installed bonding harness has been properly re-attached into place.

Note – You may notice the 12-pin U-Power connectors being installed are not Panel mount as those removed. When reattaching the cable to the enclosure the installer will need to hold the non-panel. Mount connector in place while reinserting the connector.



4) **Replace 18" fluorescent fixtures in Side panels of Main Projection Unit.**

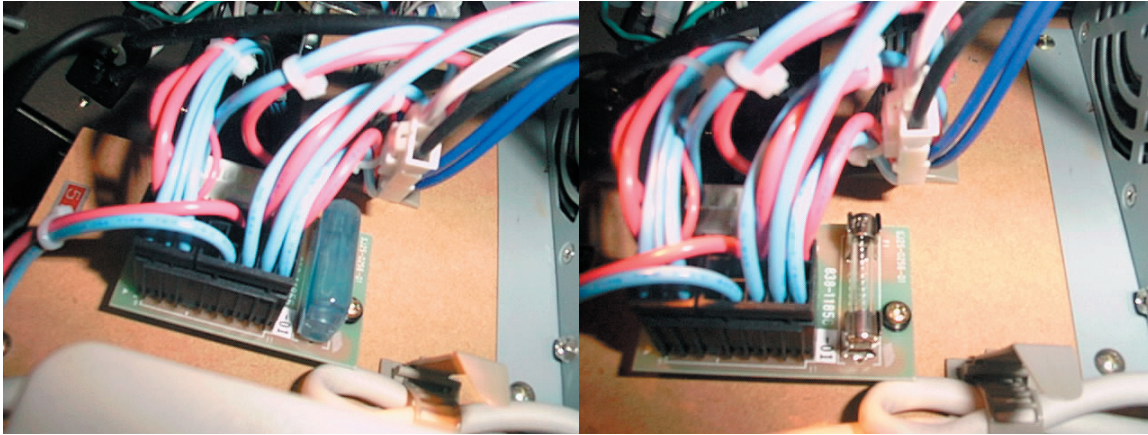


To gain access to the 18" fixture located in the side section, 4 (four) Phillips head screws must be removed from the rear of the side panel and fixture shroud will slide out to the front exposing the fixture. To remove fixture, extract fluorescent bulb, two machine screws and disconnect the 3-pin U-Power connector. The replacement fixture # 49-4027-00-B can be attached in the reverse order of removal using the provided 18" fluorescent bulb.

Note: Be sure when installing this fixture to include a star washer in between the fixture bracket and structure to insure a good electrical bond to the new fixture. The fixture shroud can now be set back into position being careful not to pinch any wiring before tightening.

5) Replace Non-UL 5 Amp fuses in Satellite Cabinets

On the inside of each satellite cabinet is a 5 Amp @ 250 VAC fuse protecting line voltage components within the system. This fuse must be replaced with those provided to satisfy appropriate safety specification. To do this, remove the rear panel from the cabinet and locate the 5 amp AGC fuse located on the power distribution PCB.



Fuse Covered

Fuse Exposed

On locating the power distribution PCB, remove the translucent self-forming cover placed over the fuse. Once the new fuse is in place the self-forming cover must be replaced and the metal rear cabinet cover reattached.

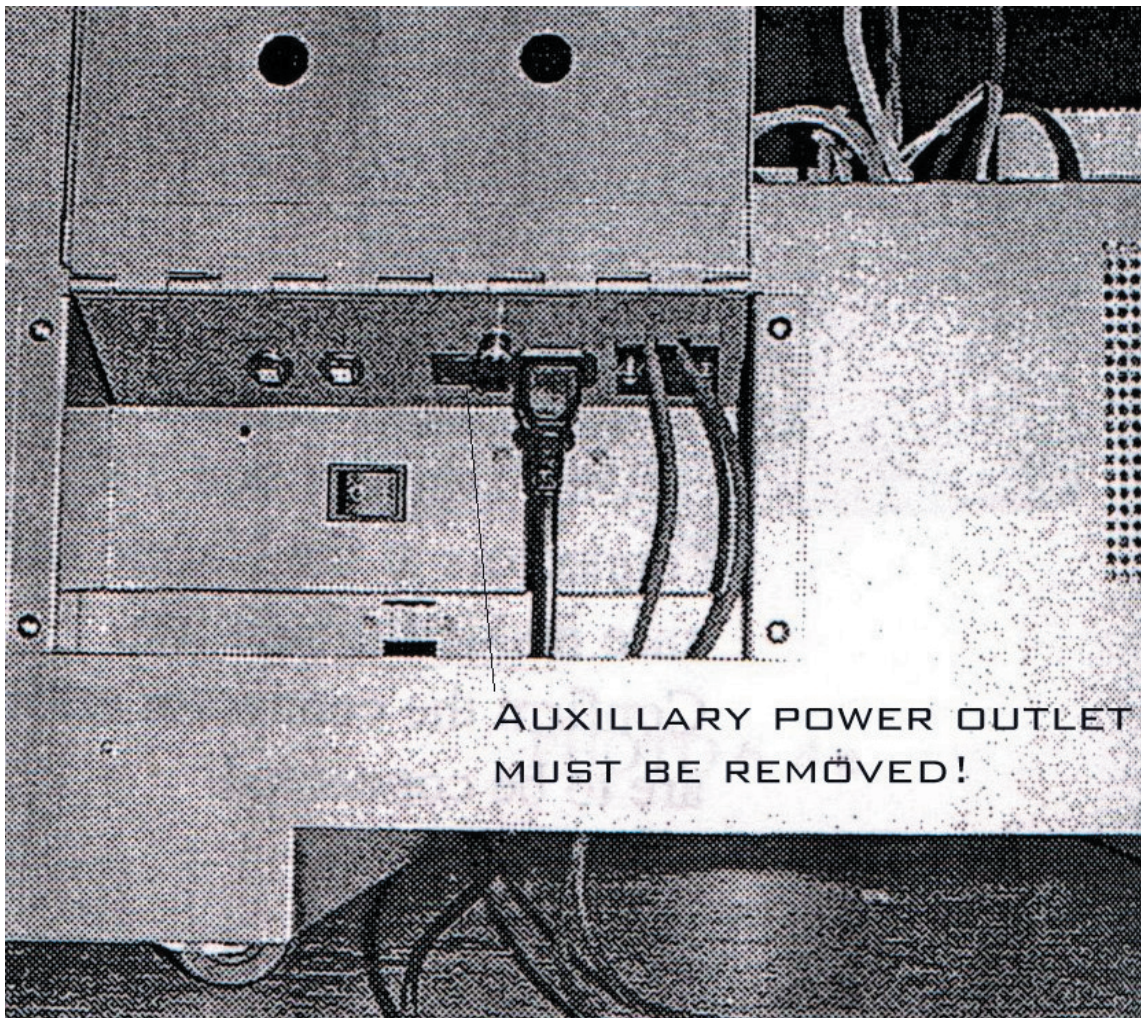
6) Replace 15" Fluorescent fixture underneath satellite player control panel.

Located under the player control panel is a Plexiglas decorative panel held in by 6 screws. Inside this cavity is a 15" fluorescent fixture that must be replaced with the included 15" fluorescent fixture (#AF15). The removal of this fixture is much the same as the previous regarding hardware but the existing electrical source connection will be abandoned and plugged with a provided 3-pin Cap. (harnessing for the AF15 will be added in a later section). The mounting brackets on the AF15 are to be lined up with the existing holes and attached using the existing machine screws. A star washer must be inserted between the screw head and the fixture bracket to insure good electrical connectivity.



7) Accessory power socket removal

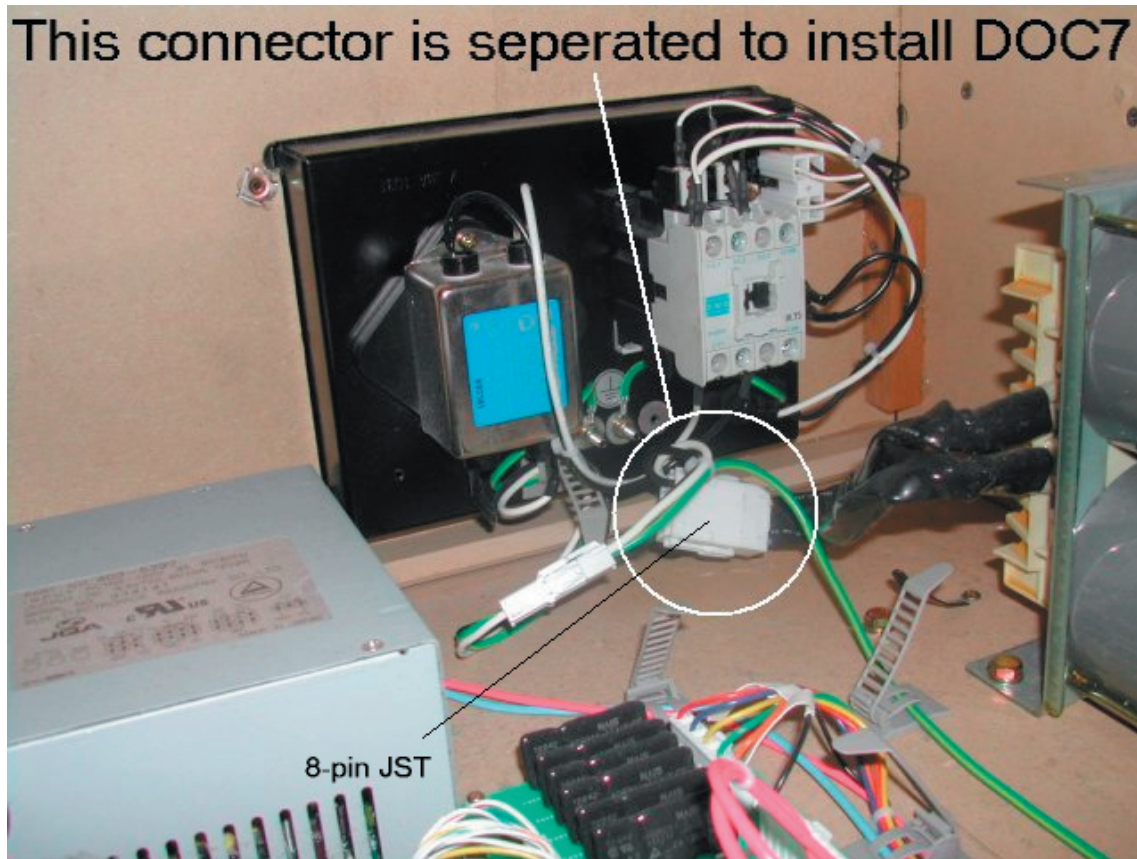
Some Derby Owners club Satellites are fitted with an accessory power outlet socket located where the power cord enters the unit. Because these sockets are Non-UL, they must be removed from the system. To attain this removal, these sockets must be popped out of their respective mounting holes and either cut out of the circuit or removed via fast on connector. Care must be taken that regardless of the chosen method of circuit removal, wires removed that are still “hot” or connected to the input power circuit must be taped off or terminated in a way short circuits can not take place. An aluminum plate cover can then be mounted in place to cover the vacated hole using the two #6 self-tapping screws. As always care should be taken to make sure remaining wires are not being drilled into by the self-tap screws.



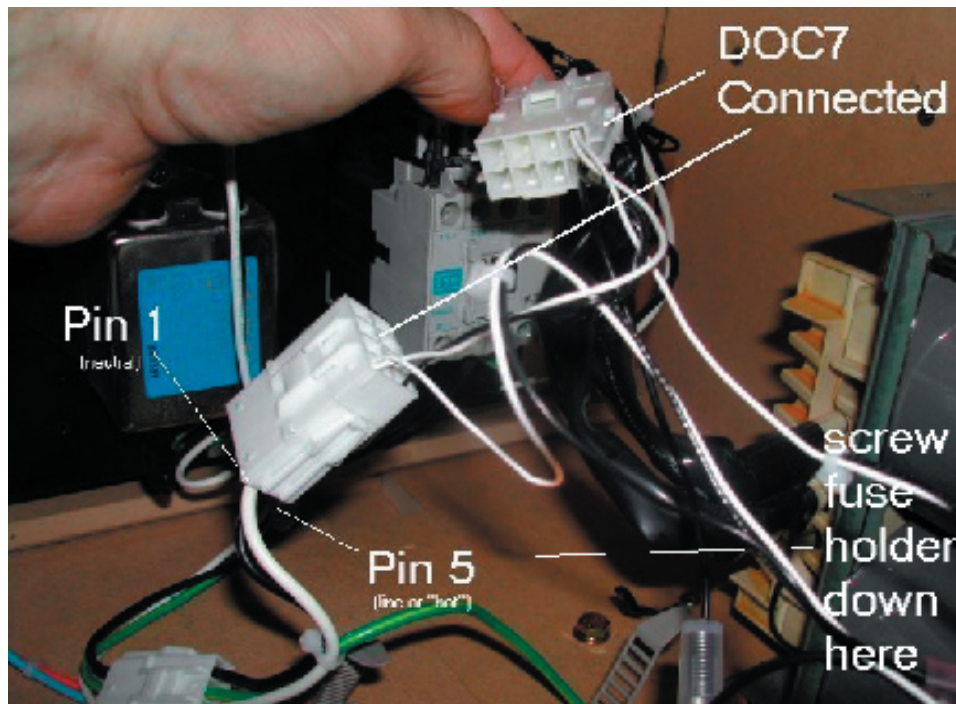
8) Installation of DOC7 power tap harness

Power in Japanese Equipment is rated at 100 VAC as opposed to the 120 VAC operated in the USA. Because the Fluorescent fixtures are being replaced they must have 120VAC run to them to properly operate. This instruction will allow for you the installer to correctly install these harnesses quickly and safely.

The DOC7 harness is provided to power three fluorescent fixtures in the marquee and two fixtures located one on each side panel in the Main Projection Unit. It is to be connected into the primary power circuit at the 8 pin connector of the isolation transformer located deep in the right cavity on the right side looking in (where the power cord enters).



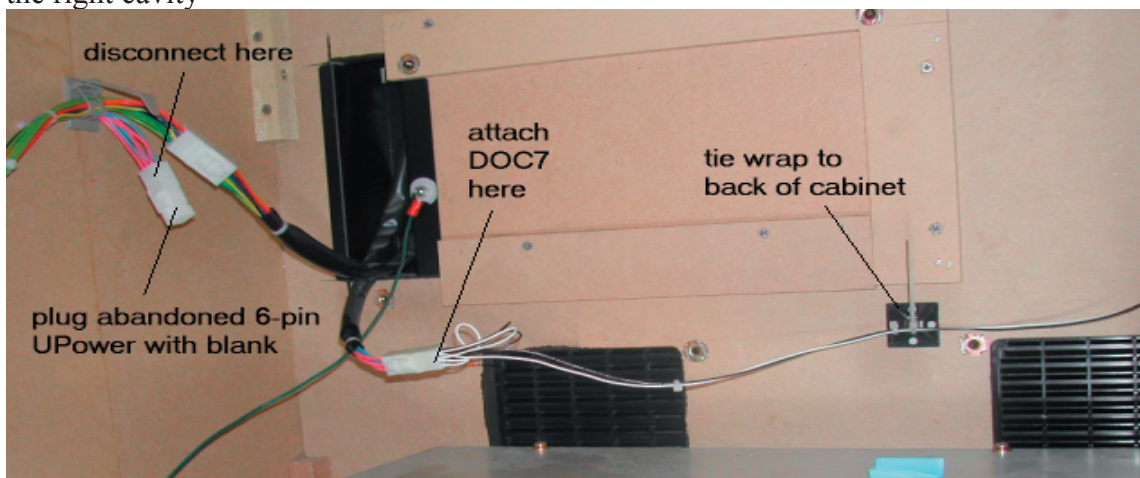
Disconnect the 8 pin JST power connector located on the primary of the transformer and connect the provided relative connectors to the appropriate gender as shown.



Note1: After connecting DOC7 into the circuit, it is imperative the connector supplying power to this circuit be correctly wired with the white (neutral) to pin 1 and the black (line or “hot”) to pin 5 (See page 106 in the user manual). Any other configuration of wiring must be corrected or the equipment will not operate. If this configuration is to be corrected, be sure that appropriate personnel conduct the rewire operation.

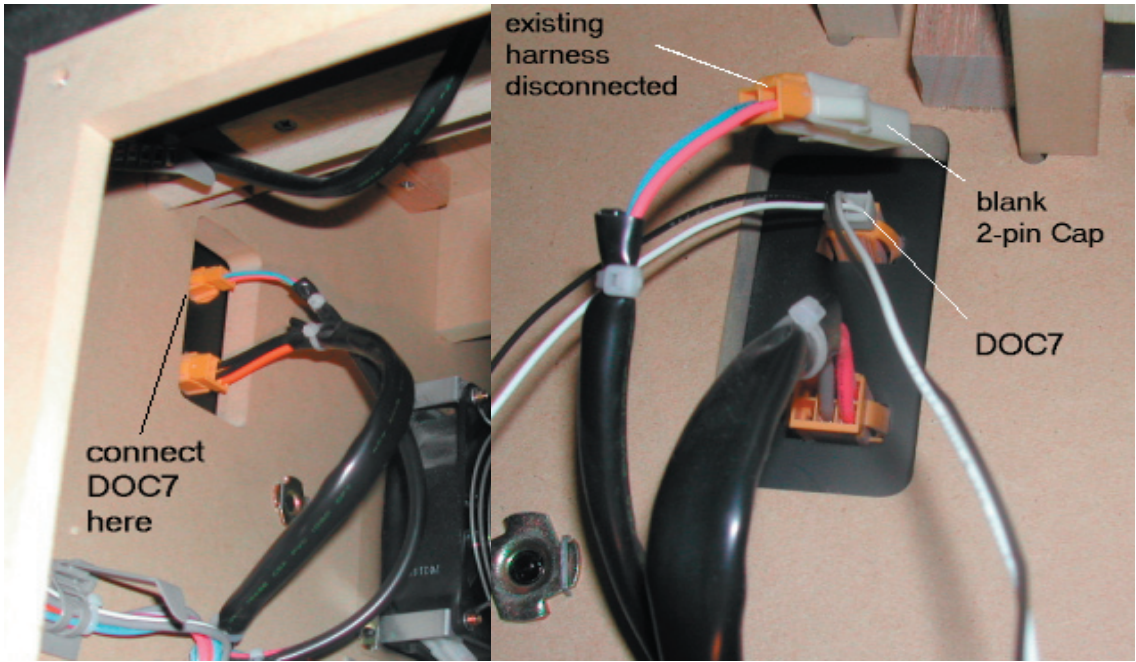
Note2: Included in this harness is a 5 Amp fuse in a littlefuse series 354 socket. With the included screw, attach the fuse socket to the floor of the Main Projection unit and attach next to it the included fuse replacement label. So it can be easily accessed from the power access plate.

The six-pin U-Power plug of DOC7 is to be run to a connection point located deep in the left side of the right cavity





Use a tie down and tie wrap to mount this harness to the back of the cabinet, safely out of the way. Plug the abandoned connector with the provided 6-pin cap (no pins or wires) to terminate / protect. Two 2-pin U-Power connectors remain to power the 18" side fluorescents. This is attained by disconnecting the harness connected to the lamp connection plates located in the upper shallow right of the right cavity and upper shallow left of the left cavity.

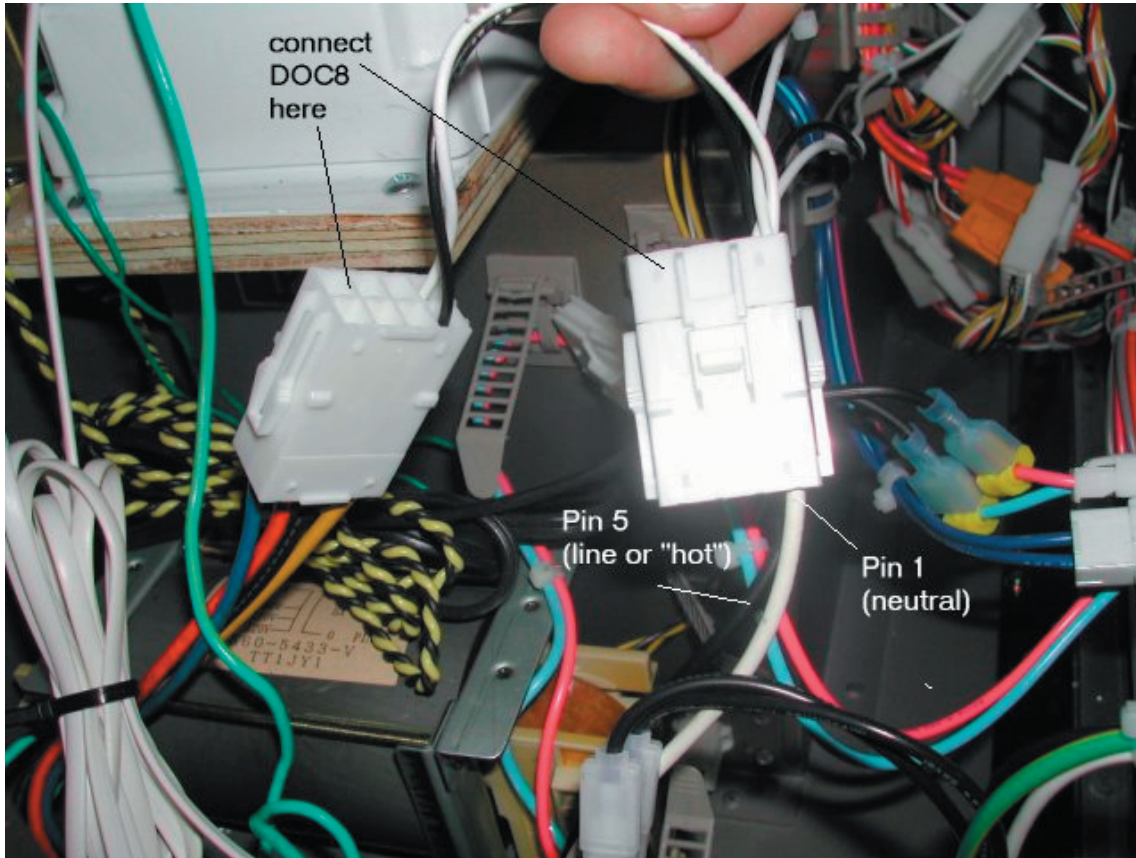


left side

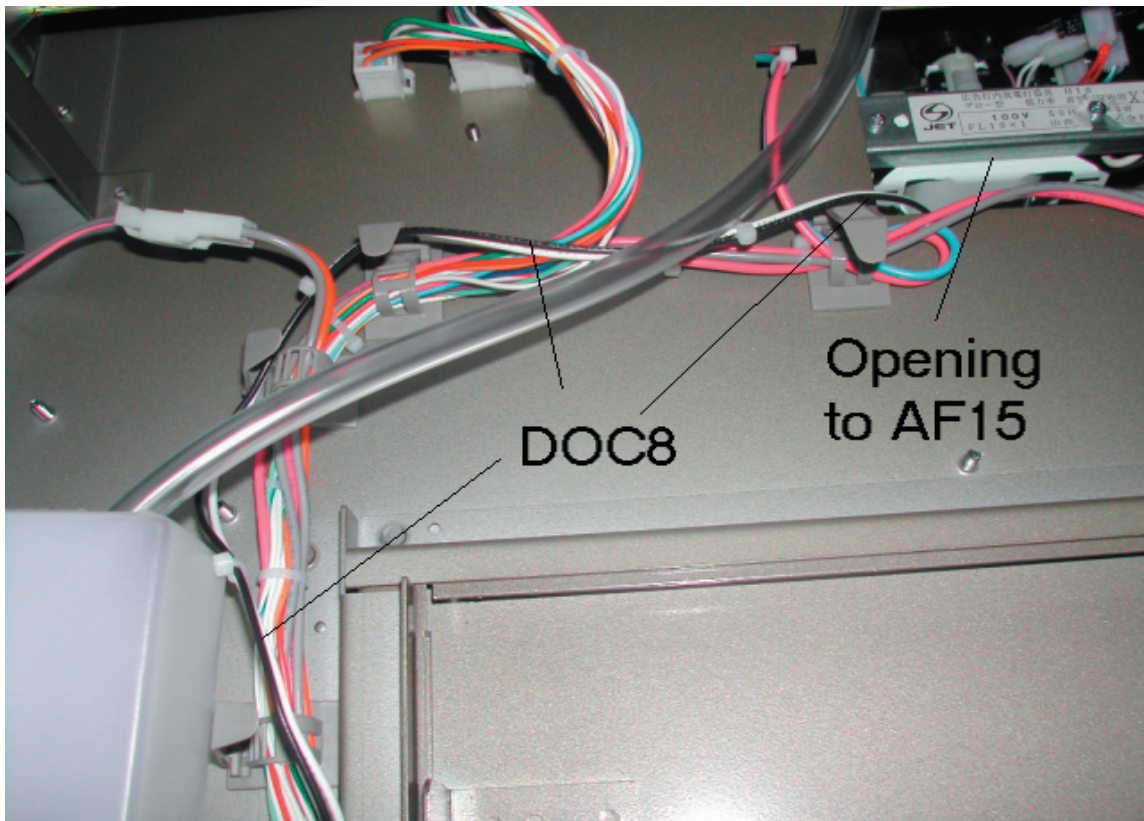
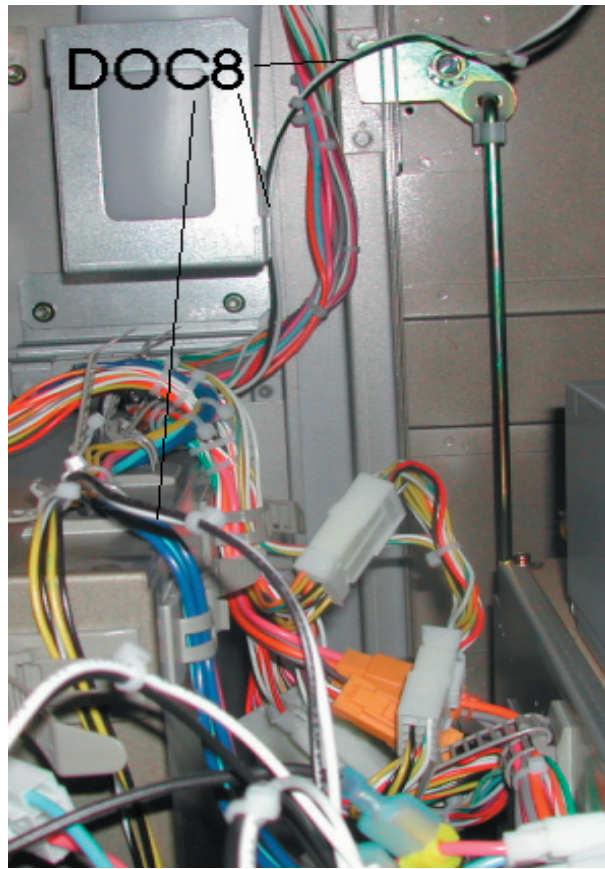
right side

9) Installation of DOC8 power tap harness

The DOC8 harnesses are included in your kit to power the 15" AF15 fixtures installed under the player control panels in the satellite units. The connection to the 120 VAC power in the satellites are the same as in the Main Projection Unit, and the same criteria pertaining to it must be followed. Be sure the primary input is wired to pins 1 & 5



Once DOC8 is connected to the primary, the 3-pin U-Power plug connector is to be run to the #AF15 located under the player control panel. It is important to run this wire along existing wire ties and delivered to its final destination.



Notes:

Warranty

Your new Sega Product is covered for a period of 90 days from the date of shipment. This certifies that the Printed Circuit Boards, Power Supplies and Monitor are to be free of defects in workmanship or materials under normal operating conditions. This also certifies that all Interactive Control Assemblies are to be free from defects in workmanship and materials under normal operating conditions. No other product in this machine is hereby covered.

Sellers sole liability in the event a warranted part described above fails shall be, at its option, to replace or repair the defective part during the warranty period. For Warranty claims, contact your Sega Distributor.

Should the Seller determine, by inspection that the product was caused by Accident, Misuse, Neglect, Alteration, Improper Repair, Installation or Testing, the warranty offered will be null and void.

Under no circumstances is the Seller responsible for any loss of profits, loss of use, or other damages.

This shall be the exclusive written Warranty of the original purchaser expressed in lieu of all other warranties expressed or implied. Under no circumstance shall it extend beyond the period of time listed above.



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