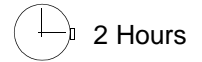


SUBJECT: VL2201™ to VL2202™ Conversion	SERIES: 2000
DISTRIBUTION: Service Centers, End Users	STATUS: Routine

## Introduction




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### Purpose

This technical bulletin describes the procedure required to convert a VL2201™ luminaire to a VL2202™ luminaire.

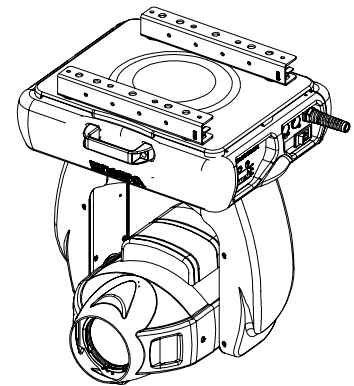
The primary differences between the two luminaire models are as follows:

#### VL2201 Luminaire

- 400 watt arc source.
- Zoom optics system which provides an adjustable field angle from 13° to 35°.
- Smooth reflector which produces a peaked or flat field.

#### VL2202 Luminaire

- 700 watt arc source.
- Zoom optics system which provides an adjustable field angle from 19° to 43°.
- Faceted reflector designed for an optimal flat field.




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### Before You Start

The VL2201 luminaire to be converted should be in proper working order before installing the VL2202 luminaire conversion kit. Before starting the conversion procedure, apply power to the luminaire and check for proper calibration. Repair any problems before converting the luminaire.

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## Summary of Procedures

The following is a list of procedures required for the conversion:

- Dis-assemble Luminaire Head Assembly
- Convert Dimmer Bulkhead
- Convert Color/Gobo/Link Iris Bulkhead
- Covert Fan Cover Assembly
- Covert Front Assembly
- Convert Reflector Assembly
- Re-assemble Luminaire Head Assembly
- Convert Upper Enclosure Assembly
- Apply New Labels
- Re-assemble Enclosure
- Install New Lamp and Align

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## Spare Parts

After converting a luminaire, you will have some left over parts. These can be used as VL2201 spares.

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## Tools and Supplies

Screwdriver, #2, Phillips, long handle  
Screwdriver, #2, Phillips  
Screwdriver, #1, Phillips  
Screwdriver, small flat  
Wrench, open-ended, 1/4"  
Nutdriver, 5/16"  
Needle Nose Pliers  
X-Acto knife  
Cotton gloves or finger cots  
RTV 108

## Parts

### **(28.5003.2202)KIT, VL2202 LUMINAIRE CONVERSION**

04.9673.0035	1 EA	LABEL, 700W ARC - VL2202/VL2402
04.9673.0040	1 EA	LABEL, COMPLIANCE - VL2202/VL2402
04.9673.1201	1 EA	LABEL, AC INPUT RATING MODEL 2202
10.9673.0215	1 EA	DIMMER HEATSHIELD
10.9673.1352	1 EA	DUCT, W/HOLE - UPPER ENCLOSURE AIR
12.9671.0192	1 EA	BAFFLE COVER, MACHINED
12.9671.0505	1 EA	MODIFIED, CHOKE POTTED 700W APS
21.9660.0340.03	1 EA	ASSY, REFLECTOR LUMINAIRE
21.9671.0058	1 EA	ASSY, LARGE FAN DUCT
21.9673.0306	1 EA	ASSY, LENS BARREL
23.9661.1534	1 EA	FAN ASSEMBLY, HIGH SPEED
23.9671.1250	1 EA	ASSY, BALLAST MODULE - 700W ARC POWER SUPPLY
23.9673.0026	1 EA	ELEC ASSY, 80MM FAN HIGH SPEED
53.6594.0003	1 EA	SCREW, 10-32 X 1-1/2" PPZ
55.2186.0001	2 EA	CABLE TIE, .10"WD 4.00"LG SMALL
67.4015.0001	1 EA	FILTER, EMI 16A 250V SINGLE PHASE
68.9661.1113	1 EA	CHOKE, BUCK, 3.15mH, 4" CORE 12AWG WIRE
71.2528.0700	1 EA	LAMP, 700 WATT SHORT ARC - PHILIPS MSR700
74.1034.0001	1 EA	SWITCH, THERMAL 15AMP 315 DEGREE F OPEN

## Procedures

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### Dis-assemble Luminaire Head Assembly

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**WARNING:** All maintenance procedures are to be performed with power removed from the luminaire.

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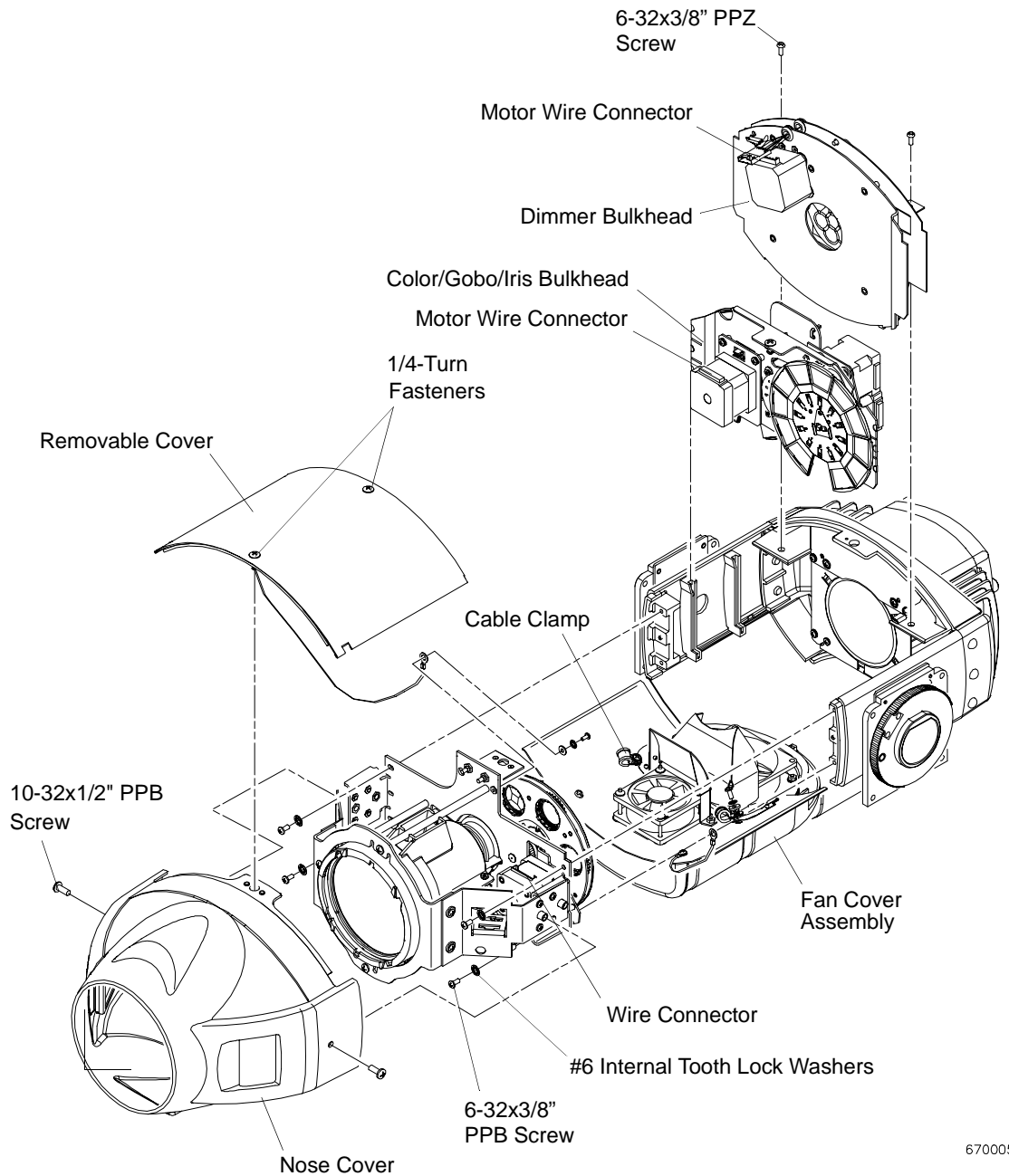


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**To dis-assemble luminaire:**

- Step 1. Disconnect luminaire AC input cable from power source.
- Step 2. At removable cover, release two 1/4-turn fasteners and remove cover. (It will remain attached by tether.) **(Figure 1)**.
- Step 3. Remove color/gobo/link iris bulkhead as follows:
  - a. At color/gobo/link iris bulkhead, disconnect wiring harness connectors from color wheel motor, iris motor, and color sensor. (Remaining motor and sensor connections will have to be disconnected in Step c.)
  - b. At color/gobo/link iris bulkhead, turn captive screw one-quarter turn to release bulkhead.
  - c. Slide bulkhead partially out of head assembly and disconnect gobo wheel motor and gobo sensor connectors.
  - d. Remove bulkhead from head assembly
- Step 4. Remove dimmer bulkhead as follows:
  - a. At dimmer bulkhead, remove two 6-32x3/8" PPZ screws.
  - b. Disconnect motor wire connector from motor.
  - c. Disconnect sensor/thermal switch connector.
  - d. Slide bulkhead out of head assembly.
- Step 5. Remove front assembly as follows:
  - a. Remove front nose cover by removing two 10-32x1/2" PPB screws (one on each side).
  - b. At front assembly, disconnect wire connectors from rotating gobo index motor and rotating gobo wheel motor.
  - c. At junction connector, disconnect edge motor and zoom motor wires.

- d. At sensor, disconnect wire connector.
- e. Face head nose upward. At front of bulkhead, remove four 6-32x3/8" PPB screws.
- f. Remove front assembly.



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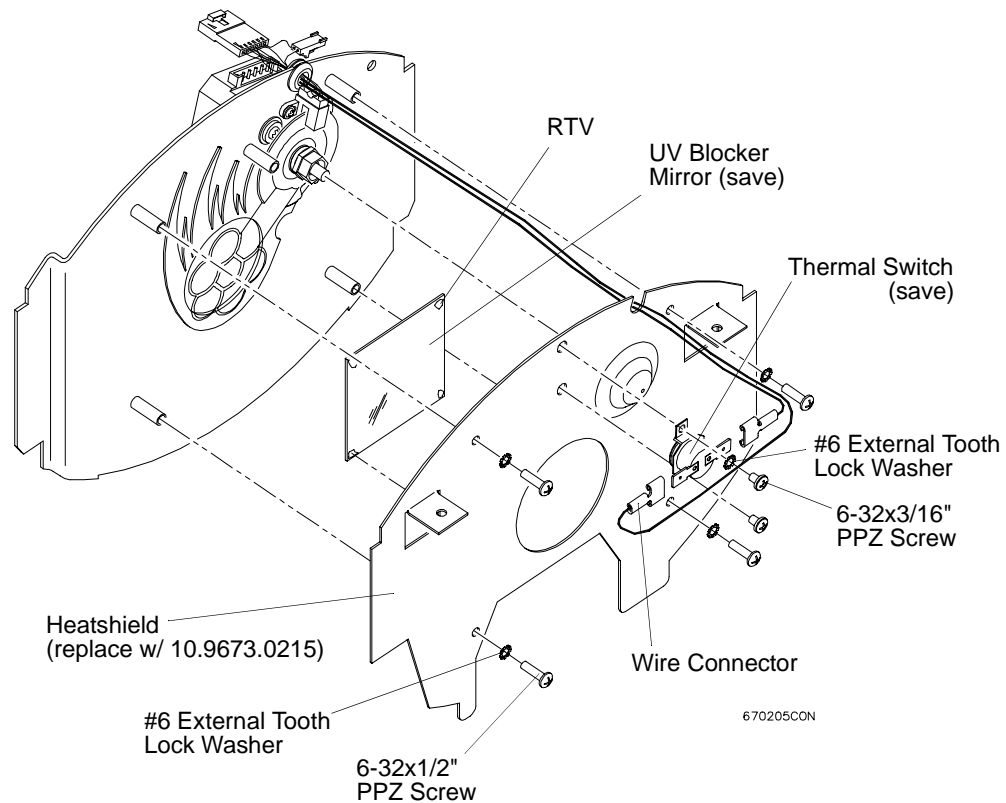
**Figure 1: Dis-Assembling VL2201 Luminaire**

- Step 6. Remove fan cover assembly as follows:
- a. At two large cable clamps, remove one 6-32x5/16" PPZ screw and #6 internal tooth lock washer.
  - b. Disconnect fan connector.
  - c. Carefully slide assembly out of rails.

## Convert Dimmer Bulkhead

### To convert dimmer bulkhead:

- Step 1. At dimmer blade assembly, separate two halves by removing four 6-32x1/2" PPZ screws and #6 external tooth lock washers. (They will still be connected by wiring.) **(Figure 2).**



**Figure 2: Disassembling Dimmer Bulkhead**

Step 2. Remove thermal switch as follows:

- a. Disconnect two wire connectors.
- b. Remove two 6-32x3/16" PPZ screws and #6 external tooth lock washers and remove switch (*save*).




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**CAUTION:** Do not touch UV blocker mirror with bare hands. Clean with soft cloth and alcohol if touched.

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Step 3. At dimmer heatshield, remove UV mirror by carefully cutting RTV under four corner of mirror with X-Acto knife (*save mirror*). Discard heatshield.

Step 4. Install UV mirror (removed in previous step) on new dimmer heatshield (10.9673.0215) using RTV 108. Cure in UV oven if possible or allow to dry at least one hour.

Step 5. Install new thermal switch (74.1034.0001) on new dimmer heatshield.

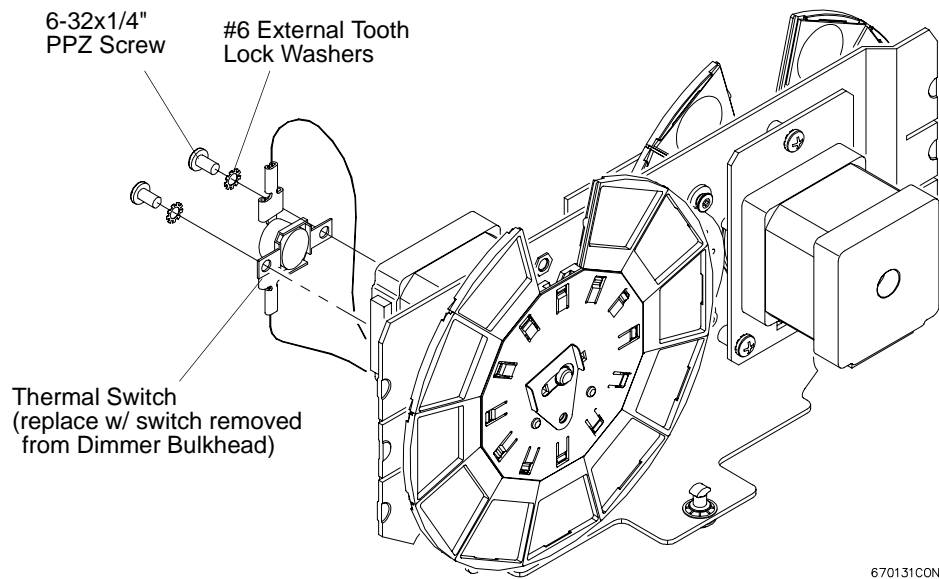
Step 6. Re-assemble dimmer bulkhead halves, reconnecting wiring.

## Convert Color/Gobo/Link Iris Bulkhead

### To convert color/gobo/link iris bulkhead:

Step 1. At heatshield, swap thermal switch as follows:

- a. Disconnect two wire connectors (**Figure 3**).
- b. Remove two 6-32x1/4" PPZ screws and #6 internal tooth lock washers and remove switch (*discard*).
- c. Install thermal switch removed from dimmer bulkhead (refer to [“Convert Dimmer Bulkhead”](#) on page 6).



**Figure 3: Converting Color/Gobo/Link Iris Bulkhead**



## Covert Fan Cover Assembly

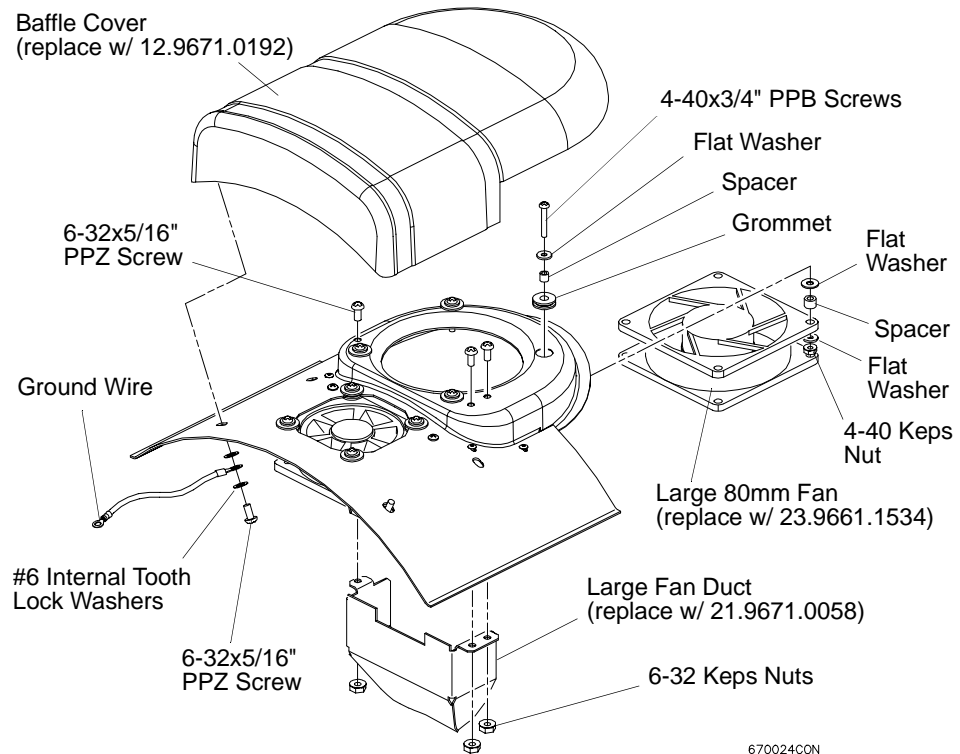
### To convert fan cover assembly:

- Step 1. At fan cover assembly, remove baffle cover by removing two (remaining) 6-32x5/16" PPZ screws and #6 internal tooth lock washers (ground strap will come loose also). (**Figure 4**).
- Step 2. Remove large fan duct assembly by removing three 6-32x5/16" PPZ screws and 6-32 Keps nuts.
- Step 3. Remove large (80mm) fan as follows:
  - a. At large fan, disconnect wire connector (black and red wires).
  - b. Remove four 4-40x3/4" PPB screws and 4-40 Keps nuts (flat washers and spacers will come loose also) and remove fan.



**CAUTION:** Be careful not to pinch wires when installing new air duct.

- Step 4. Install new fan (23.9661.1534), fan duct assembly (21.9671.0058) and baffle (12.9671.0192) using hardware removed in previous steps. (Wiring that comes with new fan can be discarded.)

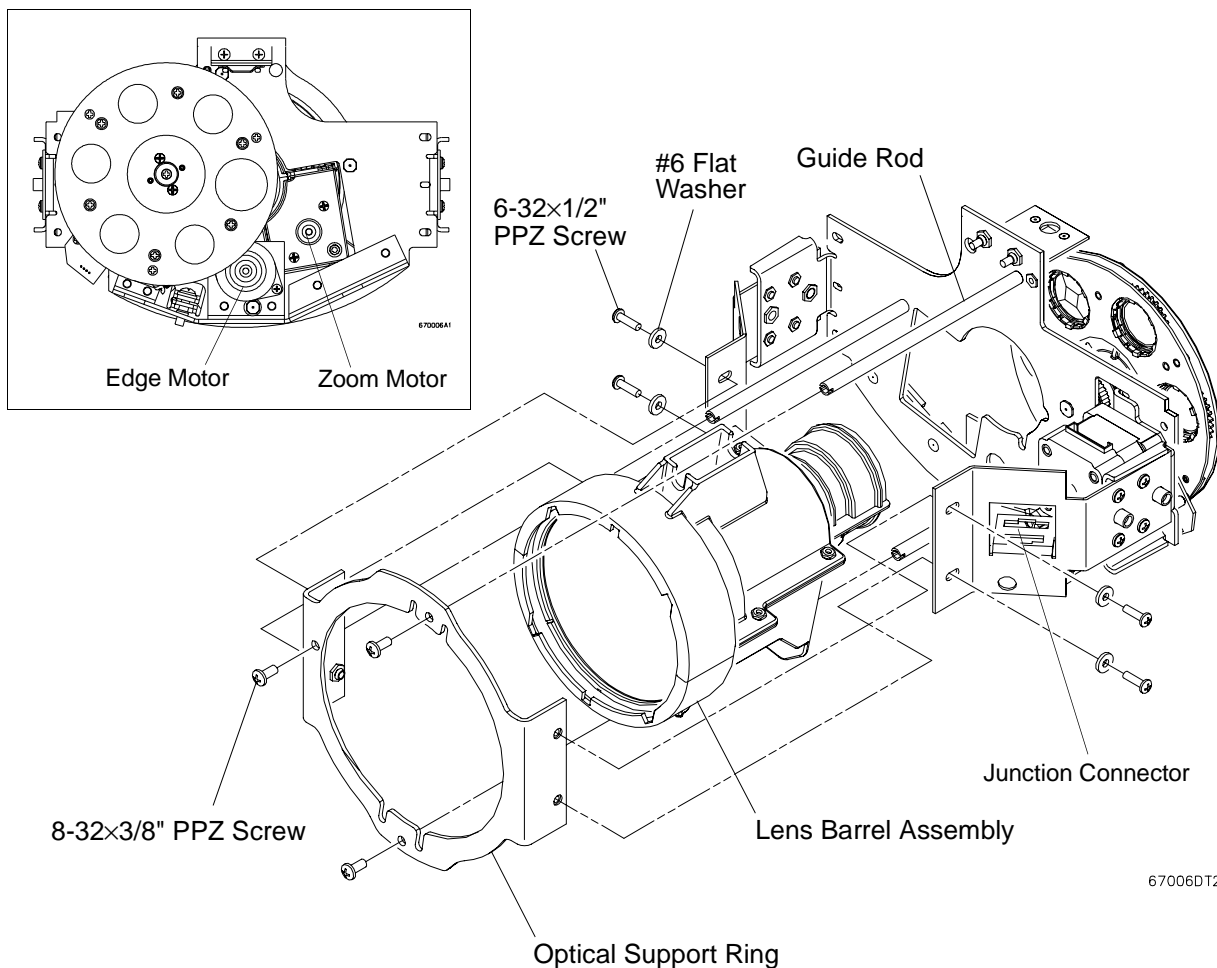


**Figure 4: Converting Fan Cover Assembly**

## Covert Front Assembly

### To convert front assembly:

- Step 1. At front assembly, cut cable ties which secure zoom optics motor wires to front assembly. (Zoom optics motor is smaller of two linear actuator motors.)
- Step 2. At edge motor (large motor), use pliers to hold standoff on edge motor shaft, and using 1/4" open-ended wrench remove 4-40 SS KEPS nut from end of motor shaft (**Figure 5**).
- Step 3. Disconnect zoom optics motor (small motor) wire connector from junction connector and move wiring out of way.
- Step 4. At front of optical support ring, remove three 8-32x3/8" PPZ screws.



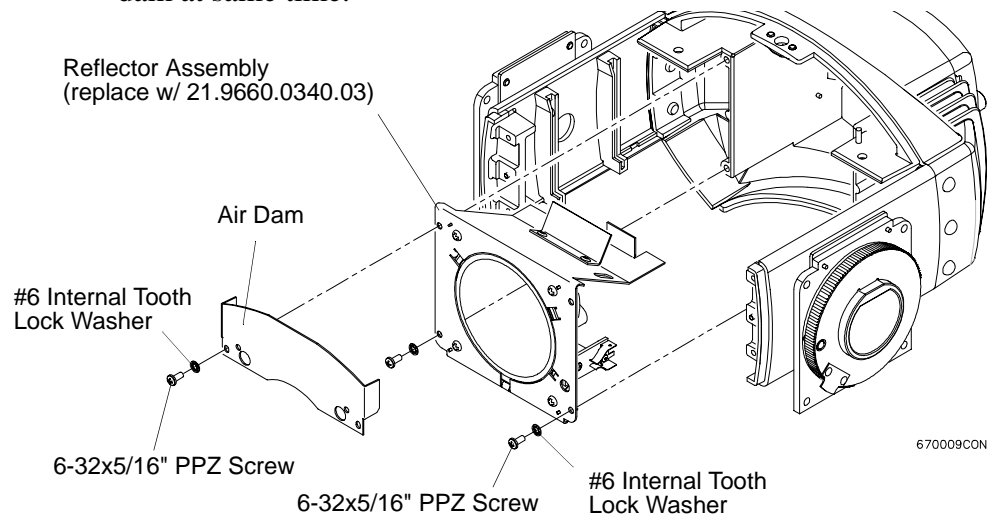
**Figure 5: Lens Barrel Assembly Replacement**

- Step 5. At each side of optical support ring, remove two 6-32x1/2" PPZ screws and #6 flat washers. Remove optical support ring.
- Step 6. Remove lens barrel assembly by pulling straight out from front assembly along guide rods.
- Step 7. Install new lens barrel assembly (21.9673.0306) and re-assemble front assembly.

## Convert Reflector Assembly

### To convert reflector assembly:

- Step 1. Remove air dam as follows:
  - a. At rear assembly, remove two 6-32x5/16" PPZ screws (outer positions) and #6 internal tooth lock washers (**Figure 6**).
  - b. Remove 6-32 Keps nut and remove ground strap.
  - c. Remove air dam.
- Step 2. Remove reflector as follows:
  - a. At reflector, remove two additional 6-32x5/16" PPZ screws (outer positions) and #6 internal tooth lock washers.
  - b. Disconnect relay wire.
  - c. Remove reflector assembly.
- Step 3. Install new reflector assembly (21.9660.0340.03), re-installing air dam at same time.



**Figure 6: Replacing Reflector**

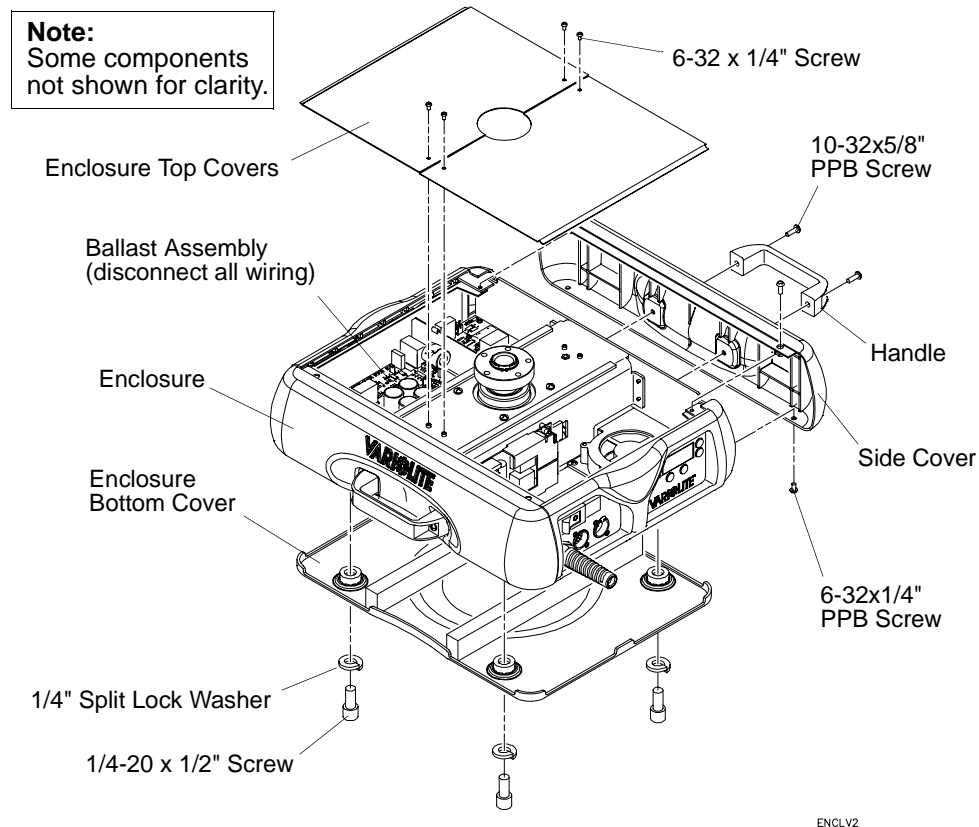
## Re-assemble Luminaire Head Assembly

Re-assemble luminaire head by doing steps of the "Dis-assemble" section in reverse. Refer to ["Dis-assemble Luminaire Head Assembly"](#) on page 4.

## Convert Upper Enclosure Assembly

### To convert upper enclosure assembly:

- Step 1. At top covers, remove two 6-32x1/4" screws each and remove covers (**Figure 7**).
- Step 2. At ballast assembly, disconnect all wiring.
- Step 3. Carefully lay luminaire on its side. At bottom cover, remove four 1/4-20x1/2" screws and washers and remove bottom cover.



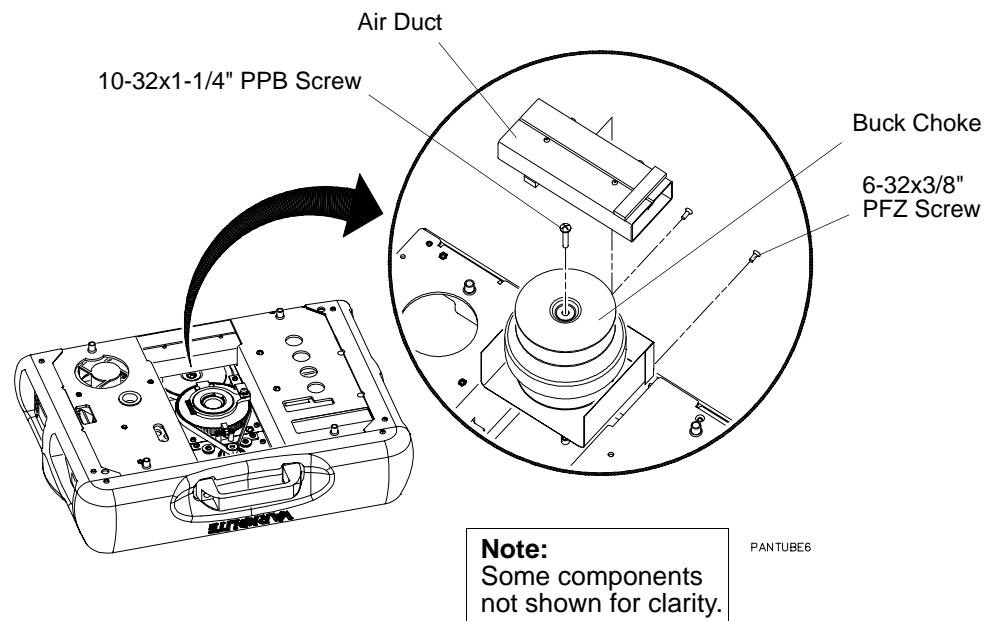
**Figure 7: Removing Enclosure Covers**

Step 4. Remove side cover as follows:

- a. At side shown in **Figure 7**, remove two 10-32x5/8" PPB screws and remove handle.
- b. At four corners of side cover, remove 6-32x1/4" PPB screw and remove side cover by pulling outward.

Step 5. Remove air duct by removing two 6-32x3/8" PFZ screws (**Figure 8**).

Step 6. At buck choke, remove one 10-32x1-1/4" PPB screw (*discard*). Cut cable tie from wires and pull wiring through enclosure cutout to remove choke.



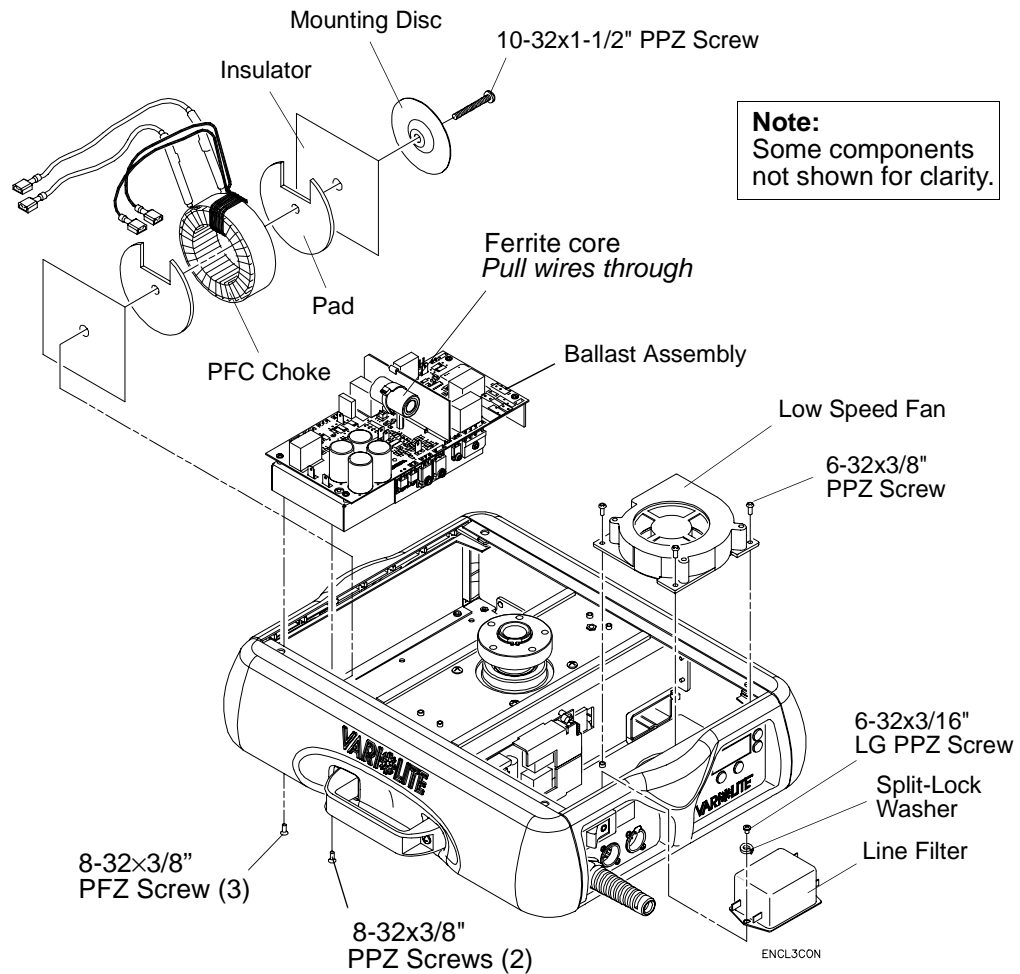
**Figure 8: Removing Air Duct and Buck Choke**

Step 7. Turn enclosure back upright and remove line filter by removing two 6-32x3/8" PFZ screws and two split lock washers (**Figure 9**).

Step 8. Remove low speed fan by removing three 6-32x3/8" PPZ screws.

Step 9. Remove ballast by removing remove three 8-32x3/8" PFZ screws and two 8-32x3/8" PPZ screws at bottom of enclosure.

Step 10. Remove PFC choke by removing one 10-32x1-1/2" PPZ screw, one mounting disc and two choke pads.



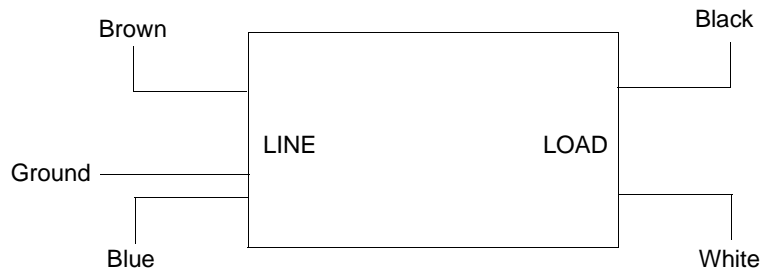
**Figure 9: Removing PFC Choke, Line Filter, Fan and Ballast Assembly**

Step 11. Install new 700W potted choke (12.9671.0505).

Step 12. Install new Ballast Assembly (23.9671.1250). Connect as follows:

Location	Connector
J102	2-Pos Connector
J103	3-Pos Mate N Lok
J108	Red 1+ (Choke)
J109	Dark Blue 2- (Choke)
J110	Orange 3+ (Choke)
J111	Orange 4- (Choke)
J112	8-Pos MTA
J113	3-Pos MTA
J202	Lamp Wires (Black)
J203	Lamp Wires (White)
J204	Light Blue (Choke)
J205	Red (Choke)

Step 13. Install new EMI filter (67.4015.0001). Connect as follows:



Step 14. Install new high speed fan (23.9673.0026).

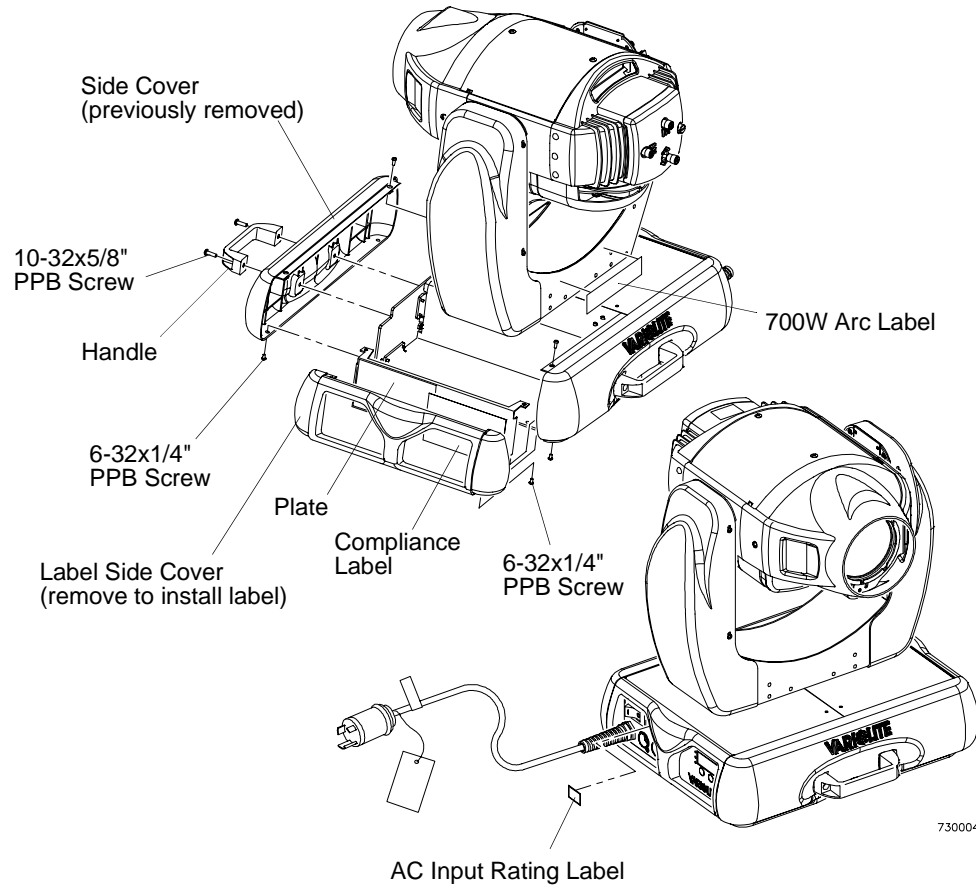
Step 15. Turn luminaire over and install new buck choke (68.9661.1113) using new 10-32x1-1/2" PPB screw (53.6594.0003) (**Figure 8**).

Step 16. Install new air duct (10.9673.1352).

Step 17. Install new labels as follows:

- a. At enclosure, remove label side cover by removing additional 6-32x1/4" PPZ screws and sliding out (**Figure 10**). At plate, remove old label and install new compliance label (04.9673.0040).
- b. At yoke cross member, remove old label and install new 700W arc label (04.9673.0035).

- c. At display panel, remove old label and install new AC input rating label (04.9673.1201).



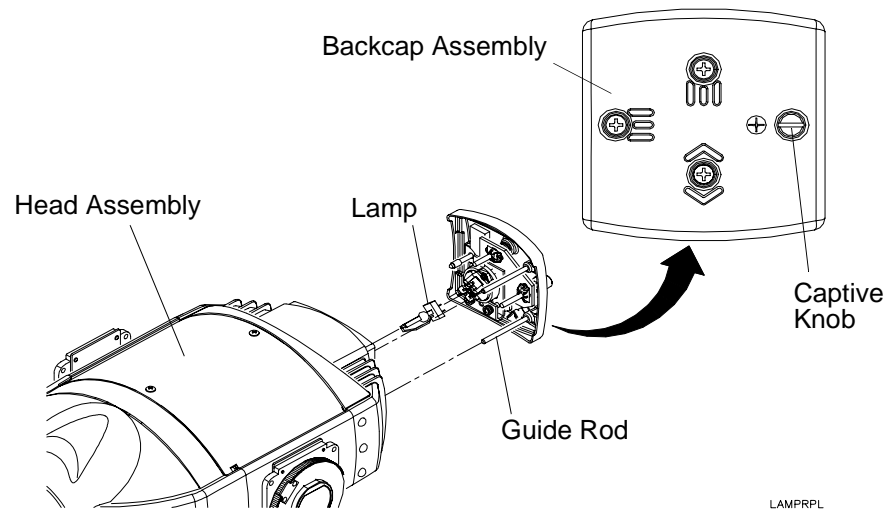
**Figure 10: Applying New Labels**

- Step 18. Re-install handle and side covers.
- Step 19. Re-install and bottom cover (**Figure 7**).
- Step 20. Ensure all cables are reconnected and re-install top covers.



## Install New Lamp and Align

- Step 1. At backcap, using screwdriver or fingers, turn captive knob until loose (**Figure 11**).
- Step 2. Slide backcap away from head assembly (it will remain attached by tether).



**Figure 11: Lamp Replacement**



**CAUTION:** Wear cotton gloves or other covering while servicing lamp. Touching lamp glass with bare fingers will leave oil and cause the lamp to explode or burn out early. If touched, use alcohol to thoroughly clean glass.

- Step 21. Remove lamp by pulling straight out of socket.
- Step 3. Install new lamp, pressing firmly into socket.
- Step 4. Align guide rods in guide holes and slide backcap into head assembly. Re-tighten captive knob.
- Step 5. Align lamp. (Refer to service manual.)

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Notes