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VARI***LITE** VL5™ WASH LUMINAIRE

SERVICE MANUAL

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VL5™ Wash Luminaire Service Manual

Version as of: October 26, 2011

PRG part number: 02.9634.0010 F

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FOREWORD

Compliance Notice

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference, and 2) This device must accept any interference received, including interference that may cause undesired operation.

Conforms to:

UL STD 1573

Certified to:

CAN/CSA STD E598-1

CAN/CSA STD E598-2-17



Safety Notice

It is extremely important to read ALL safety information and instructions provided in this manual and any accompanying documentation before installing and operating the products described herein. Heed all cautions and warnings during installation and use of this product.

Safety symbols used throughout this manual are as follows:



CAUTION advising of potential damage to product.



WARNING advising of potential injury or death to persons.

GENERAL INFORMATION PERTAINING TO PROTECTION AGAINST ELECTRICAL SHOCK, FIRE, EXPOSURE TO EXCESSIVE UV RADIATION, AND INJURY TO PERSONS CAN BE FOUND BELOW.

WARNING: INSTRUCTIONS FOR CONTINUED PROTECTION AGAINST FIRE

- 1) PRG luminaires have been designed for use only with specific lamps. Note lamp type before replacing. Installing another type of lamp may be hazardous.
- 2) PRG luminaires may be mounted on any type of surface as long as mounting instructions are followed. See instructions detailed in this manual.
- 3) Replace fuses with same type and rating only.
- 4) Minimum distance from head to any flammable object is 2m.

WARNING: INSTRUCTIONS FOR CONTINUED PROTECTION AGAINST ELECTRICAL SHOCK

- 1) PRG luminaires are designed for dry locations only. Exposure to rain or moisture may damage luminaire.
- 2) Disconnect power before servicing any PRG equipment.
- 3) Servicing to be performed by qualified personnel only.

WARNING: INSTRUCTIONS FOR CONTINUED PROTECTION AGAINST EXPOSURE TO EXCESSIVE ULTRAVIOLET RADIATION

- 1) PRG luminaires may use an HID type lamp which produces UV radiation. DO NOT look directly at lamp.
- 2) It is hazardous to operate luminaires without complete lamp enclosure in place or when lens is damaged. Lenses or UV shields shall be changed if they have become visibly damaged to such an extent that their effectiveness is impaired.



WARNING: INSTRUCTIONS FOR PROTECTION AGAINST INJURY TO PERSONS

- 1) Exterior surfaces of the luminaire will be hot during operation. Use appropriate safety equipment (gloves, eye protection, etc.) when handling and adjusting hot equipment and components. Service and maintenance should be performed only by qualified personnel as determined by the high pressure lighting fixture manufacturer.
- 2) Arc lamps generate intense heat. Disconnect power and allow lamp to cool for 15 minutes before relamping.
- 3) Arc lamps emit ultraviolet radiation which can cause serious skin burn and eye inflammation. Additionally, arc lamps operate under high pressure at very high temperatures. Should the lamp break, there can exist a danger of personal injury and/or fire from broken lamp particles being discharged.
- 4) The lamp shall be changed if it has become damaged or thermally deformed.
- 5) Wear eye protection when relamping.
- 6) If lamp is touched with bare hands, clean lamp with denatured alcohol and wipe with lint-free cloth before installing or powering up the luminaire.
- 7) Serious injury may result from the generation of ozone by this lamp system. A proper means of venting must be provided.

Notes de sécurité

Avant de procéder à l'installation des produits décrits dans ce guide et de les mettre en marche, il est extrêmement important de lire TOUS les renseignements et TOUTES les directives de sécurité contenues dans ce guide ainsi que toute documentation jointe. Tenir compte de tous les avertissements et suivre toutes les précautions pendant l'installation et l'utilisation de cet appareil.

Les symboles de sécurité utilisés dans ce guide sont les suivants :



ATTENTION Ce symbole annonce que l'appareil risque d'être endommagé.



AVERTISSEMENT Ce symbole annonce qu'il y a risque d'accident grave ou même fatal.

CETTE SECTION CONTIENT DES INFORMATIONS GÉNÉRALES POUR SE PROTÉGER CONTRE LES DÉCHARGES ÉLECTRIQUES, LES INCENDIES, L'EXPOSITION EXCESSIVE AUX RAYONS UV ET TOUT AUTRE ACCIDENT POUVANT ENTRAÎNER DES BLESSURES.

AVERTISSEMENT: Risque d' explosion.

- 1) Le service et le maintenance ne devront être assurés que par des personnes qualifiées comme précisé par le fabricant des lampes à haute pression.
- 2) Des vêtements de protection et les procédures précisées dans le manuel du fabricant doit être fournies.

AVERTISSEMENT: Réglage des lampes

- 1) Chaleur intense. Débrancher le matériel et laisser refroidir pendant 15 minutes avant de rallumer.
- 2) Risque l'incendie. N'utilise que des METAL HALIDE MSR 700 Watt G 22 Base.

AVERTISSEMENT: DIRECTIVES POUR SE PROTÉGER CONTRE UNE EXPOSITION EXCESSIVE AUX RAYONS UV

- 1) Risque d'explosion en cas de radiation ultraviolet imprantes.
- 2) Ne pas intervenir en l'absence de confinement de la lampe en place ou quand la lentille est abîmée.

AVERTISSEMENT: DIRECTIVES POUR SE PROTÉGER CONTRE LES ACCIDENTS POUVANT ENTRAÎNER DES BLESSURES

- 1) Chaleur intense. Eviter tout contact avec des personnes ou des tissus. Attention, de graves blessures peuvent résulter de production d'ozone par cette lampe. Un système de ventilation adapté doit être fournies
- 2) La température de surface = 300.c
La temperature de l'ambiance = 50.c
- 3) Ne convient pas pour un usage résidentiel.
- 4) Utilisable seulement dans les locaux secs



Revision History

This manual has been revised as follows:

Version	Release Date	Notes
C	January 28, 2004	Miscellaneous updates.
D	February 15, 2005	Miscellaneous updates.
E1	February 7, 2008	Miscellaneous updates.
E2	December 3, 2010	Updated book format. (No change to technical information.)
F	October 26, 2011	Added Yoke Leg Cover Assembly to IPB "Covers and Hooks Assy."

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Notes

INTRODUCTION

About This Manual

This manual provides testing, maintenance procedures, and illustrated parts breakdowns for the following equipment:

- + VARI*LITE VL5™ Wash Luminaire (20.9634.0001)
- + VARI*LITE VL5Arc™ Wash Luminaire (20.9647.0001)
- + VARI*LITE VL5B™ Wash Luminaire (20.9634.0201)



WARNING: It is important to read ALL accompanying safety and installation instructions to avoid damage to the product and potential injury to yourself or others.

Additional Documentation

For additional information regarding the use of VL5 series luminaires in lighting systems, refer to the following manuals:

- + VARI*LITE Interface Devices Service Manual (02.5014.0010)
- + VARI*LITE Series 300™ Modular Rack Service Manual (02.9640.0010)

Special Note

Customer support for this product is provided by Production Resource Group (not Vari-Lite). Refer to "[Customer Service](#)" on page 2.

Technical updates regarding this product are issued by the PRG Dallas office.



Customer Service

For technical assistance, contact the PRG International Service Center or contact your nearest PRG office. Contact information for all PRG office locations can be found on our website at: www.prg.com/about-us/locations/

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1.

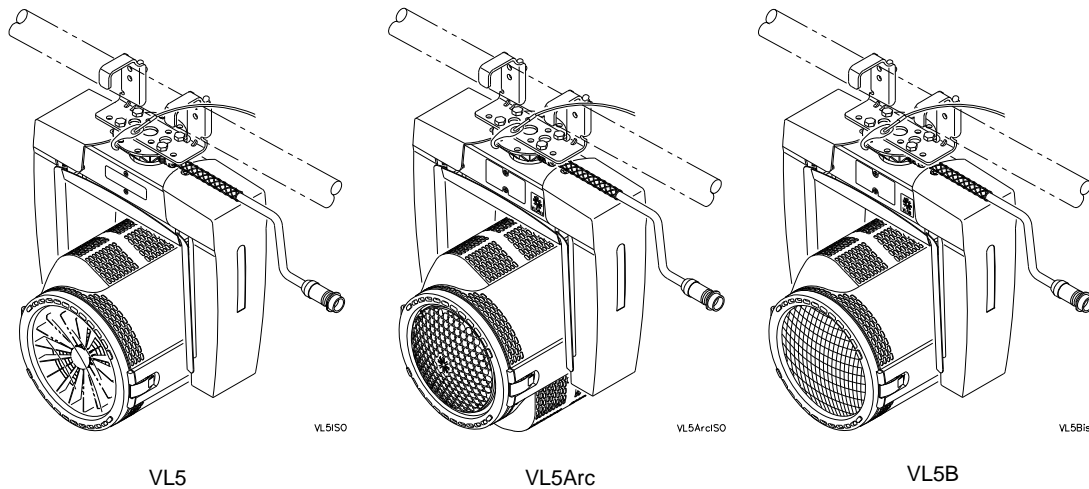
DESCRIPTION

- + FEATURES
- + MAJOR COMPONENTS
- + PRINCIPLES OF OPERATION

FEATURES

Overview

VL5 Wash Luminaires are available in three different configurations: VL5, VL5Arc, and VL5B wash luminaires. A label, located on the yoke, identifies the VL5Arc and VL5B luminaires.



Standard Features

VL5 wash luminaires contain the following standard features:

- + Enhanced DICHRO*TUNE cross-fadable dichroic colors feature independent cyan, magenta and amber color control. Smooth, timed color crossfades can occur in as little as 0.7 second.
- + Control by PRG consoles or a wide variety of DMX512 consoles.
- + Smooth, time controlled continuous 360° pan and 270° tilt movement.
- + Power is provided by a Smart Repeater unit to operate all luminaire systems except the lamp, which is powered by a specific external device, depending on which VL5 luminaire version is being operated.
- + 8-inch glass dichroic cold-mirror reflector.
- + A truss hook and floor stand allow flexible installation.

Specific Features

Each individual luminaire configuration has the following features:

VL5/VL5B models

- + 3200° tungsten halogen lamp source.
- + Lamps are powered by conventional dimmers or C3 dimmer modules through the smart repeater unit.
- + Interchangeable front lens work with the internal diffusing mechanism to provide a wide range of beam control sizes and shapes.
- + Textured diffusion panels intercept the beam providing a continuous, time variable diffusion range for each available lens.

Note: The only difference between the VL5 and VL5B luminaires, is that the VL5B luminaire is a pastel version of the VL5 luminaire.



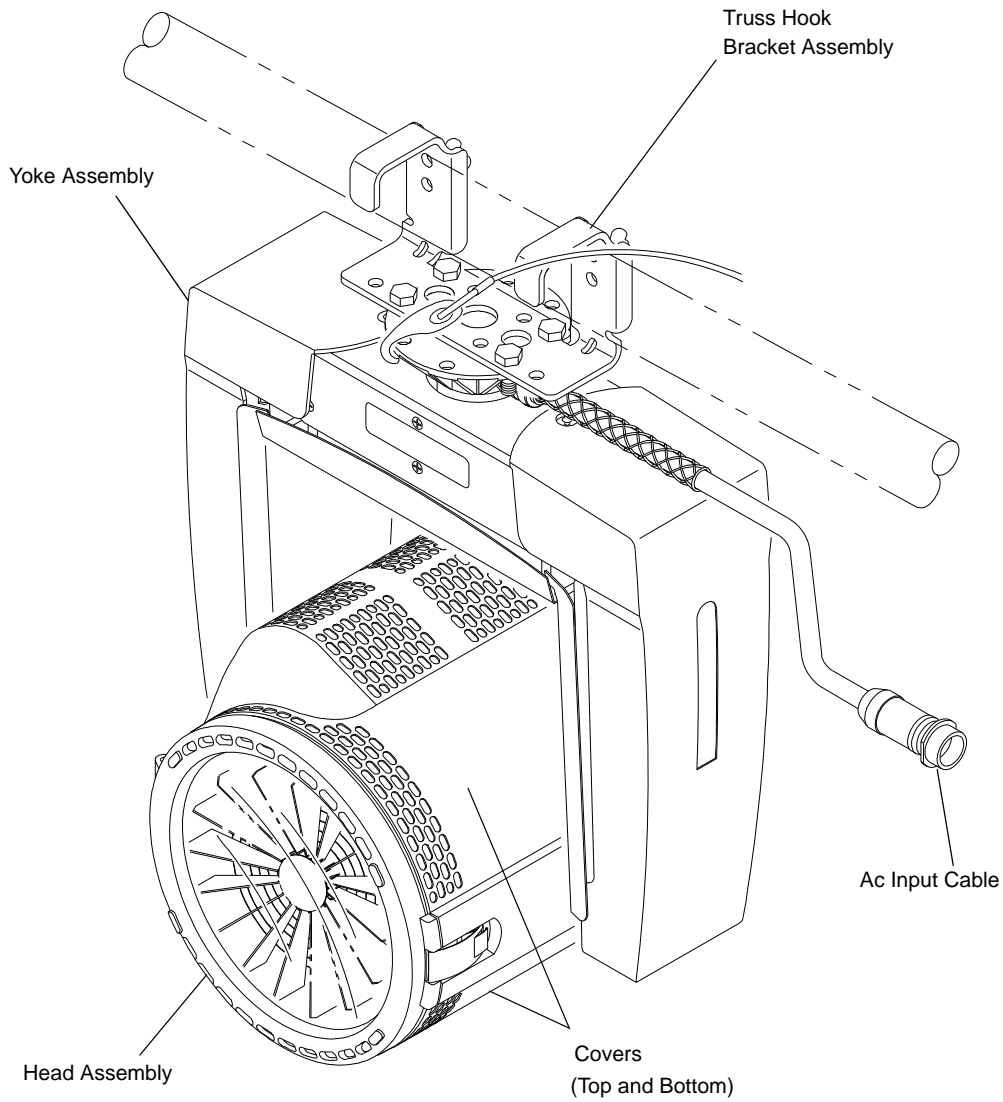
VL5Arc models

- + 575W arc lamp source.
- + Internal douser provides intensity control.
- + VARI*BEAM mechanism provides continuous time beam control or standard VL5Arc lenses may be used.
- + Lamps are powered by the APS6 module.

MAJOR COMPONENTS

Exterior Components

The following illustration shows the major VL5 series wash luminaire components:

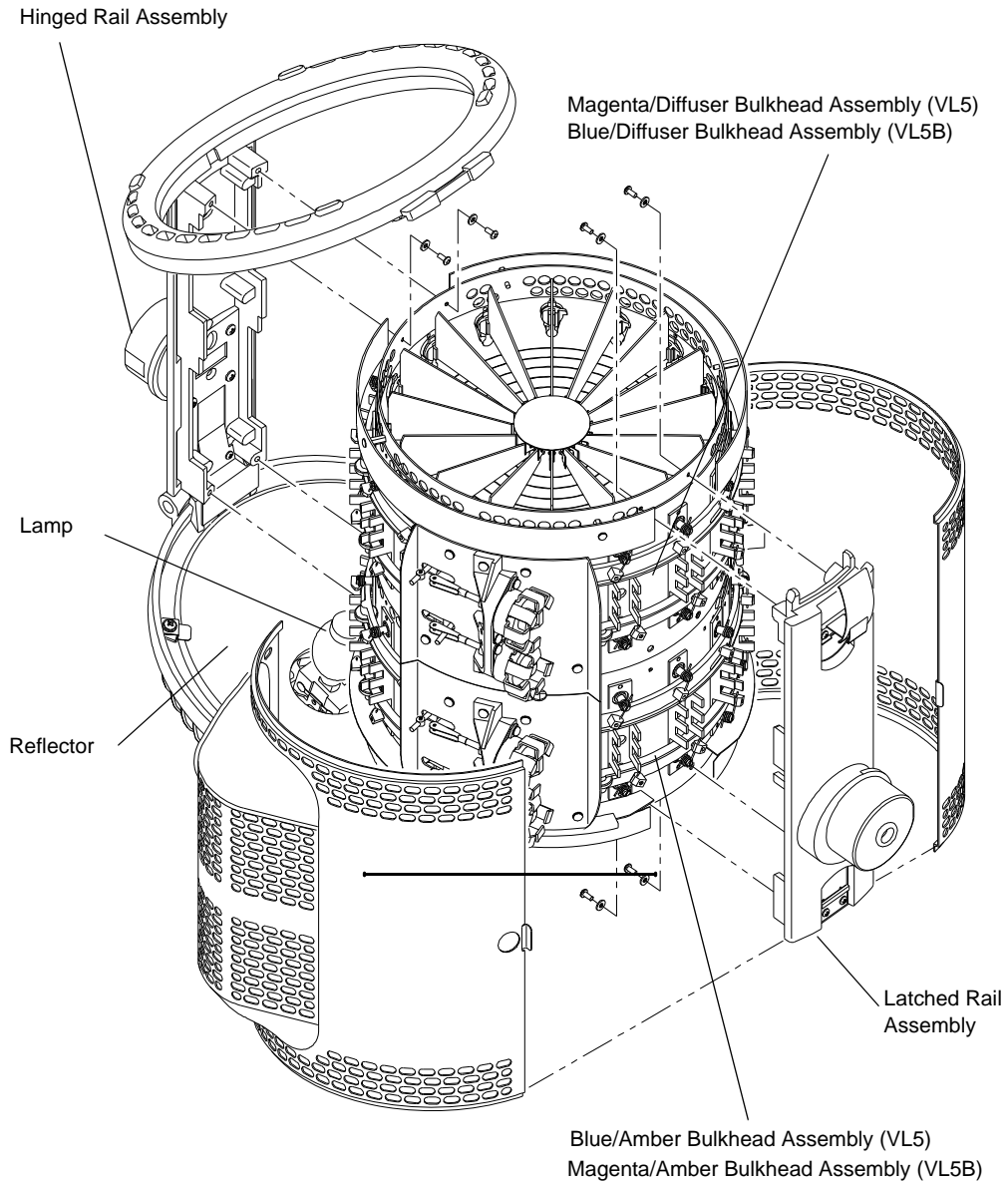


NOTE:
VL5 luminaire shown.

Head Components

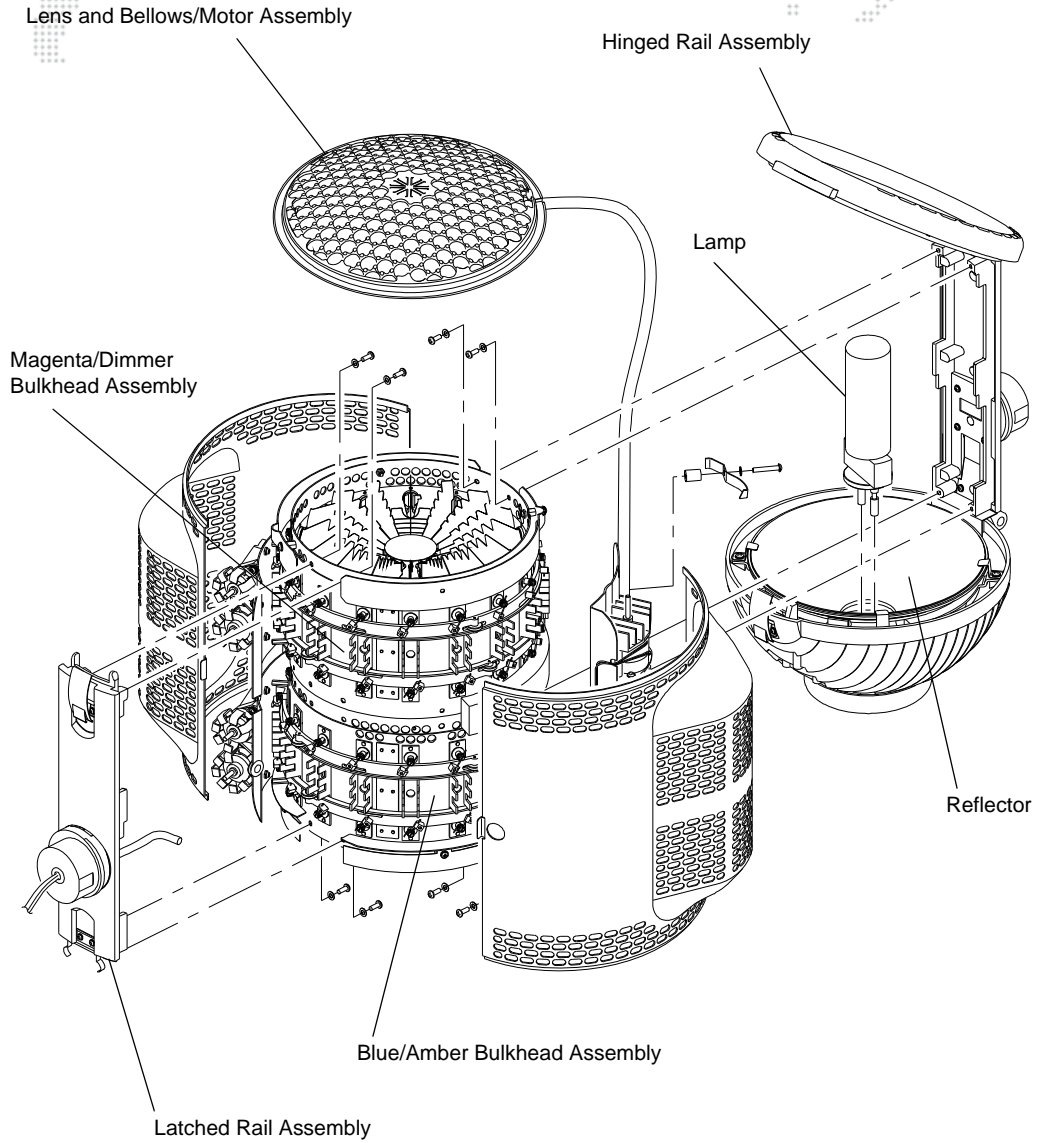
VL5/VL5B Luminaire Head Components

The following illustration shows the major sub-assemblies located in the VL5/VL5B luminaire head assemblies:



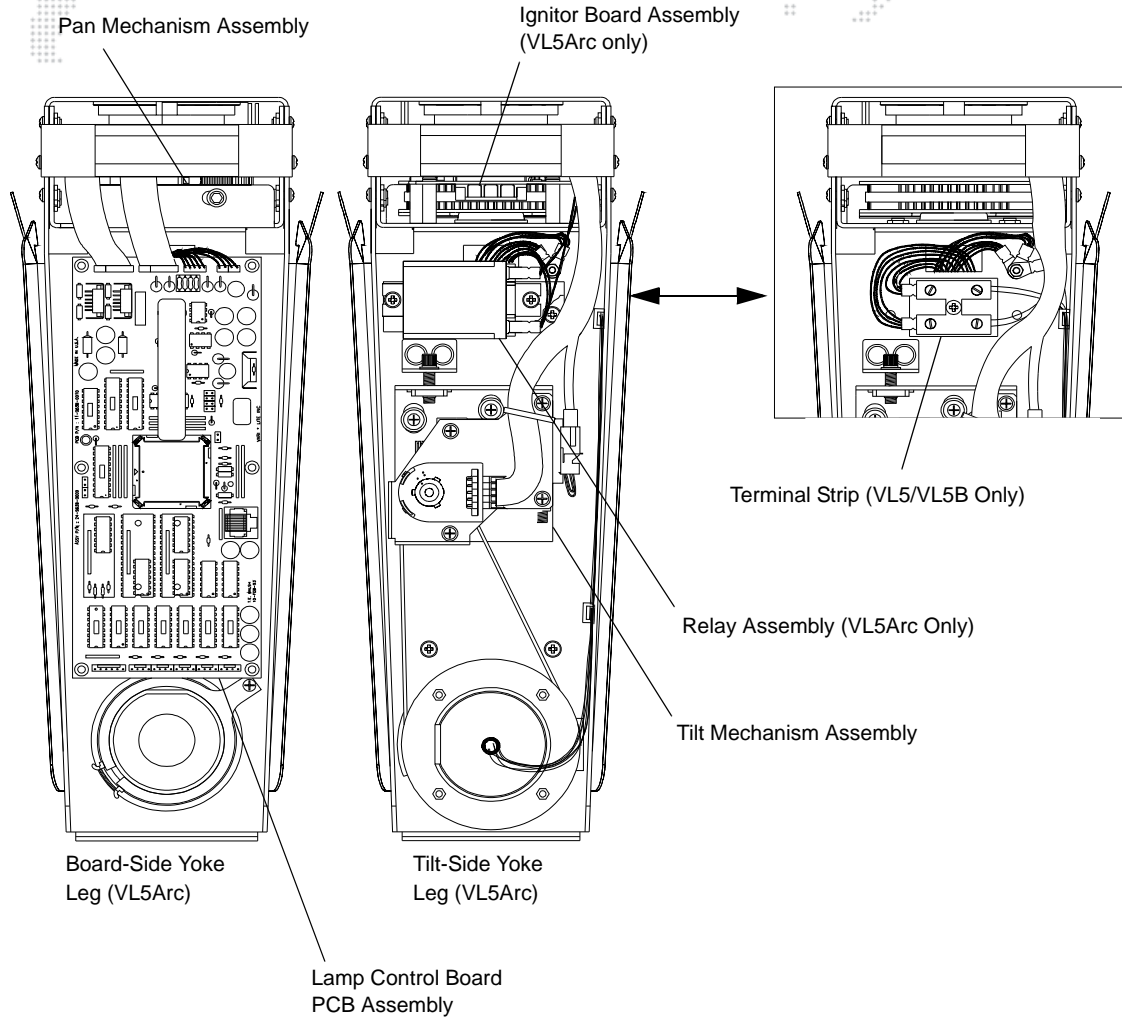
VL5Arc Luminaire Head Components

The following illustration shows the major sub-assemblies located in the VL5Arc luminaire head assembly:



Yoke Components

The following illustration shows the major sub-assemblies located in the VL5 series wash luminaire head assemblies:

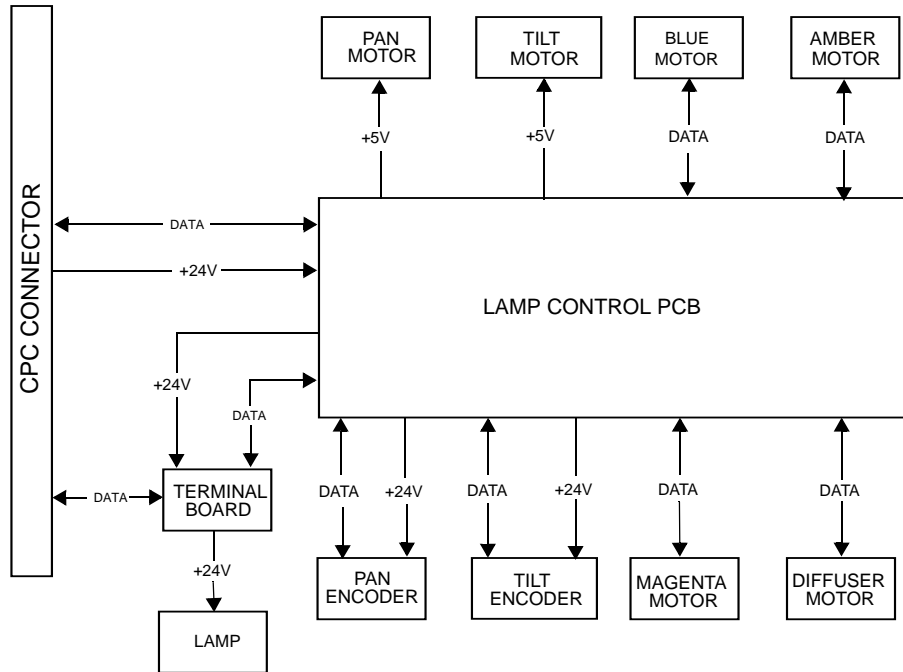


PRINCIPLES OF OPERATION

Power and Data Flow Diagrams

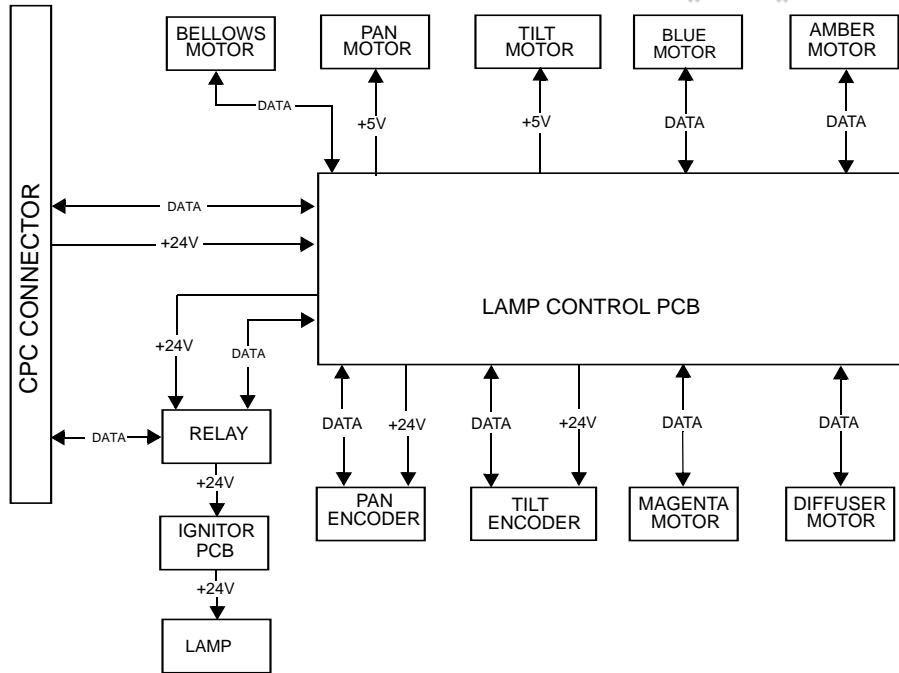
VL5/VL5B Luminaire

The following diagram shows how data and power are distributed in the VL5/VL5B luminaires:



VL5Arc Luminaire

The following diagram shows how data and power are distributed in the VL5Arc luminaire:





Notes



2.

MAINTENANCE

- + EQUIPMENT HANDLING
- + TESTING
- + MAINTENANCE PROCEDURES
- + SERVICING

EQUIPMENT HANDLING

Solid State Electronics

Electrostatic discharge (ESD) presents a significant danger to solid state electronic components (semiconductor devices and printed circuit board (PCB) assemblies). Static electricity can build on a variety of common objects (including people) simply by handling or moving. ESD rarely results in immediate failure of a component, but shows up later as an intermittent problem or severely reduces the life of the component. All VARI***LITE** equipment uses solid state electronics, and appropriate precautions to protect should be observed when servicing.

All parts in the following PRG part number groups should be considered ESD sensitive:

- + 23 - Electrical assemblies
- + 24 - PCB assemblies
- + 80 - Transistor
- + 81-Thyristors
- + 82 - Diodes
- + 83 -IC's:linear
- + 84 - IC's:digital
- + 85 - IC's:interface
- + 86 - Optoelectronic devices
- + 87 - Firmware
- + 88 - Light emitting diodes (LEDs), displays

All PCBs should be shipped in electrostatic shielding bags. When handling PCBs or components, devices such as conductive mats and conductive wrist straps should be used whenever possible. If these precautionary devices are not available, handling of PCBs and components should be avoided.



CAUTION: Black foam (used to package solid state electronics) should never be used for packing batteries or put in contact with PCBs which contain batteries.

TESTING

Smart Repeater Test Mode Operation

The Smart Repeater / Smart Repeater Plus unit provides test software stored in its EPROMs for testing all VARI*LITE Series 300 luminaires, including the VL5. The following section provides a brief explanation of Smart Repeater operations. For more detailed instructions on using a Smart Repeater to test luminaires, refer to the VARI*LITE Interface Devices Service Manual (02.5014.0010).

Thumbwheel Switch / Seven Segment Display

The Smart Repeater thumbwheel switch is used to control the test software (**Figure 2-1**). The switch notifies the unit to enter test mode (000), which ports are selected for testing, and which tests to run. It takes about three seconds for the unit to respond to thumbwheel changes, allowing time to enter the numbers for a test before it attempts to read them.

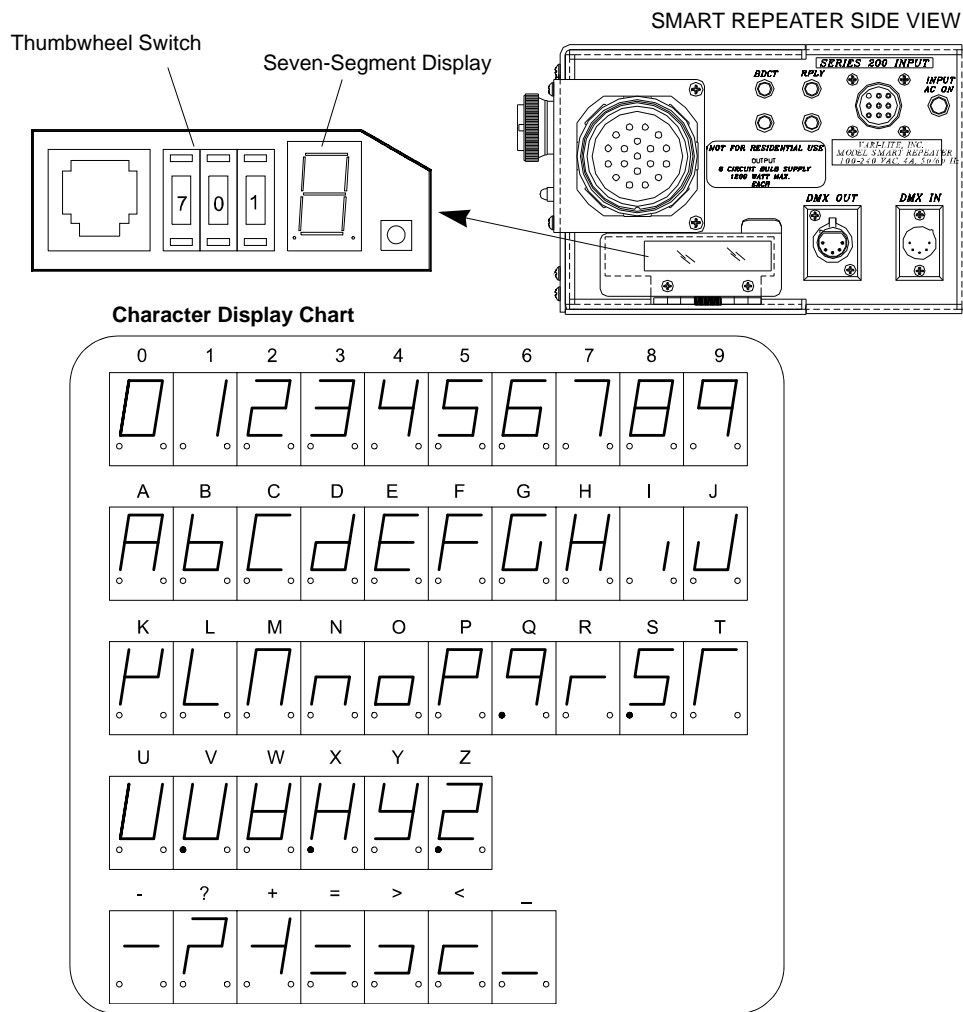
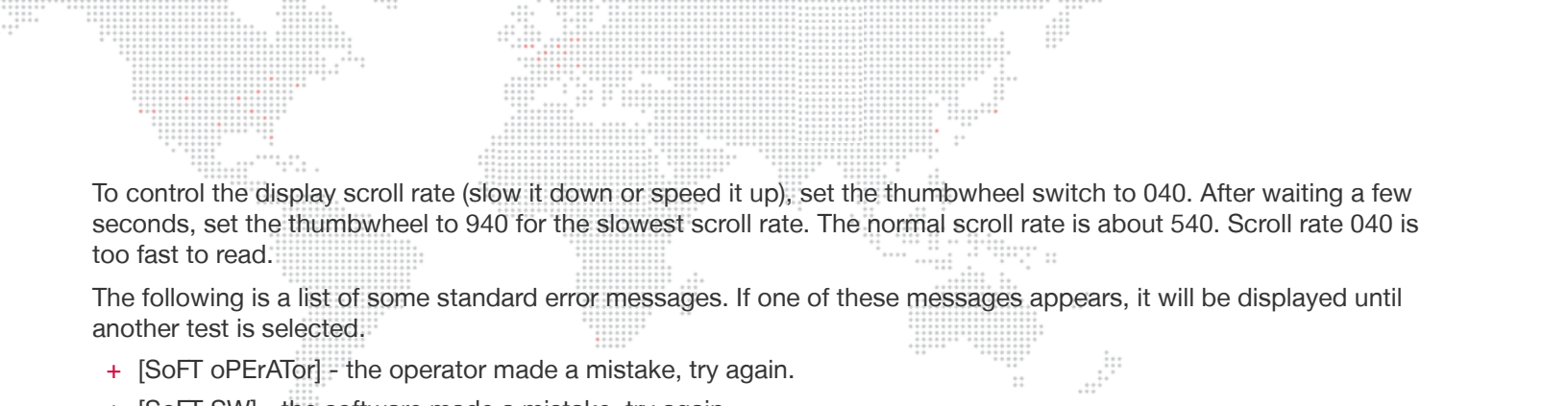


Figure 2-1: Smart Repeater Switch and Display

The seven-segment LED display scrolls the characters of its messages one-by-one. When a test is selected, the test number is displayed. If there is an error during a test, the error message begins with [P1 Er], meaning "Port 1 Error."

Some letters and numbers displayed on the seven-segment LED display may be difficult to recognize. Valid letters, numbers, and symbols are shown in the previous illustration (**Figure 2-1**). Some characters, such as U and V, are identical except that a dot is lit below one character to distinguish it from another (note dot under V).



To control the display scroll rate (slow it down or speed it up), set the thumbwheel switch to 040. After waiting a few seconds, set the thumbwheel to 940 for the slowest scroll rate. The normal scroll rate is about 540. Scroll rate 040 is too fast to read.

The following is a list of some standard error messages. If one of these messages appears, it will be displayed until another test is selected.

- + [SoFT oPErATor] - the operator made a mistake, try again.
- + [SoFT SW] - the software made a mistake, try again.
- + [HArD SW] - the software failed due to previously unknown bug, report the bug.
- + [HArD HW] - something is broken, repair it.

Port Selection

Each Smart Repeater unit has six luminaire input/output ports that are labeled 1 through 6. One or all ports can be selected for testing. The default setting is Port 1 only selected for test operations. To select ports for testing, set thumbwheel switch to 51, and use the test parameter place on the thumbwheel to select the desired ports: 0 for all ports, 1 through 6 for ports 1 through 6, respectively.

- + Port 1 only - 151
- + Port 2 only - 251
- + Port 3 only - 351
- + Port 4 only - 451
- + Port 5 only - 551
- + Port 6 only - 651

Only the Timer Test, RAM Test, Mechanics Tests, and Form and Function Test can be performed on all ports simultaneously. The Encoder Tests and Data Loopback Test (external form) can be performed only on one port at a time.

Programmed tests can be run on all ports simultaneously or on any one port. Port selection is not stored with the program. So, a test can be programmed with only one port selected and the test can be run later with all ports selected, or vice versa.

To operate the test software:

- Step 1. Set Smart Repeater thumbwheel switch to 000 and connect luminaire to be tested to Port 1. (Up to six luminaires may be connected, but at least one must be connected to start the test mode.)
- Step 2. Apply power to Smart Repeater unit.
- Step 3. Check LED display. Display should read [Sr uP], meaning "Smart Repeater Up."
- Step 4. Check LED display. Display should read [P1 F=n], which means "Port 1 Form and Function Value=n," which indicates luminaire is online at Port 1 (n=9 for VL6 luminaires). Luminaire will go through normal calibration, except for its ending position.
- Step 5. After calibration, press buttons above and below thumbwheel switch to enter desired test codes for testing particular luminaire functions (refer to "**Smart Repeater Test Codes**" on page 18 for a list of code numbers).

Step 6. To select other ports for testing, set the thumbwheel switch to 051 and use the test parameter place on the thumbwheels switch (the hundreds digit) to select the desired ports: 0 for all ports, 1 through 6 for ports 1 through 6 respectively.

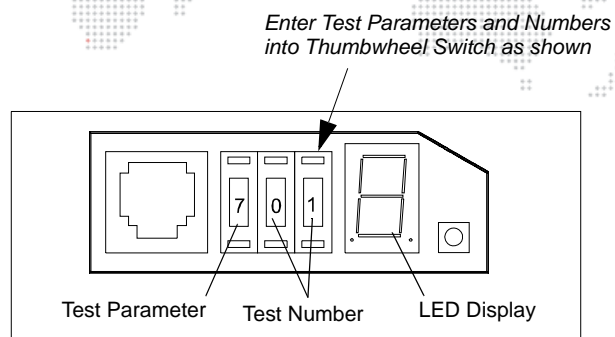


Figure 2-2: Entering Test Codes

Smart Repeater Test Codes

The following tables provide test numbers, parameters, error codes, and comments for running luminaire tests. Test numbers which are not listed are not valid.



CAUTION: Tests should not be run for more than 30 seconds, as this can further damage the luminaire. Any tests run at FULL SPEED should not be run for more than 15 seconds.

Table 2-1: VL5 Family Mechanical Tests

Test Number		Test Parameter		Error Codes/Comments	
000	Start Test	9	End Stop (Open)		
001	Pan Test	8	End Stop (Clsd)	103	No Reset (Pan)
002	Tilt Test	7	Speed 1 (25%)	203	No Reset (Tilt)
004	Diffuser Test	6	Speed 2 (35%)	104	No Change (Pan)
005	Intensity Test (VL5Arc Only)	5	Speed 3 (45%)	204	No Change (Tilt)
		4	Speed 4 (55%)		
006	Blue Filter Test	3	Speed 5 (65%)		
007	Amber Filter Test	2	Speed 6 (75%)		
008	Magenta Filter Test	1	Speed 7 (85%)		
		0	Speed 8 (Full Speed)		
012	All Motors (synchronized)				
013	All Motors (unsynchronized)				
912	End Motor (in calibration position)				

Table 2-2: VL5 Family Default Programs

Test Number		Test	Functions
31	Pan and Tilt	701	Pan 25% Speed
		702	Tilt 25% Speed
37	VL5 Functions	704	Edge 25% Speed
		706	Blue Filter Test 25% Speed
		707	Amber Filter Test 25% Speed
		708	Magenta Filter Test 25% Speed

MAINTENANCE PROCEDURES

The following maintenance procedures apply to all VL5 luminaire models unless otherwise noted.

Head Assembly

This section provides removal and replacement procedures for components found in the luminaire head assembly.

VL5/VL5B Lamp Replacement

Parts:

71.2526.0100	1 EA	LAMP,VL5 1000W 100V (Asia,) or
71.2526.0120	1 EA	LAMP, VL5 1000W 120V (U.S.), or
71.2526.0230	1 EA	LAMP, VL5 1000W 230V (Europe), or
71.2529.0120	1 EA	LAMP, 1200W 120V BLUE PINCH (U.S.)

Tools:

Cotton gloves or finger cots

To remove and replace lamp:



WARNING: All maintenance procedures are to be performed with power removed from the luminaire. Never remove covers or open front lens or back cap assemblies while lamp is in operation.

Step 1. Disconnect luminaire AC input cable from power source.



WARNING: Allow lamp to cool before replacing.

Step 2. Unlatch and swing open heatsink assembly. **Figure 2-3.**

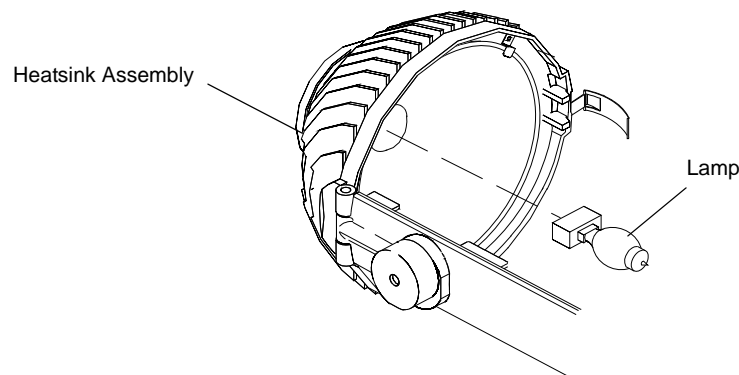


Figure 2-3: VL5/VL5B Lamp Replacement



CAUTION: Wear cotton gloves or finger cots 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 3. At lamp socket, remove lamp by gripping base and pulling lamp straight out of socket.

Step 4. Install new lamp, pressing firmly into socket.

Step 5. Close and latch heatsink assembly.

VL5 Arc Lamp Replacement

Parts:

71.2528.0575 1 EA LAMP, 575 WATT ARC - PHILLIPS MSR575HR

Tools:

Screwdriver, #1 Phillips
Cotton gloves or finger cots

To remove and replace lamp:



WARNING: All maintenance procedures are to be performed with power removed from the luminaire. Never remove covers or open front lens or back cap assemblies while lamp is in operation.

Step 1. Disconnect luminaire AC input cable from power source.



WARNING: Allow lamp to cool before replacing.

Step 2. Unlatch and swing open heatsink assembly. **Figure 2-4.**

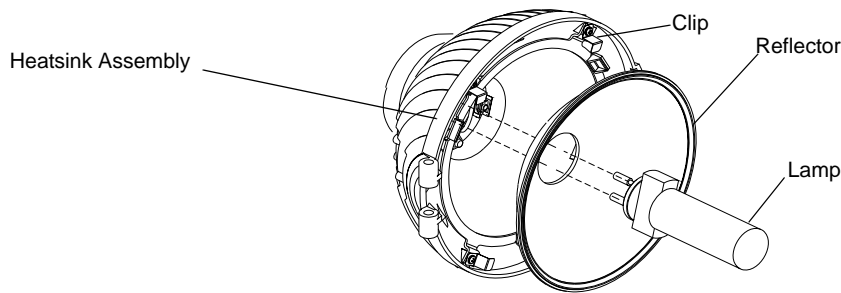


Figure 2-4: VL5Arc Lamp Replacement

Step 3. At four reflector mounting clips, using #1 Phillips screwdriver, loosen (but do not remove) one 6-32 X 5/16" PPSS screw.

Step 4. Turn clips to free reflector and remove reflector.



CAUTION: Wear cotton gloves or finger cots 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 5. At lamp socket, remove lamp by gripping base and pulling lamp straight out of socket.

Step 6. Install new lamp, pressing firmly into socket.

Step 7. Adjust lamp. Refer to "[VL5Arc Lamp Adjustment](#)" on page 21.

VL5Arc Lamp Adjustment

Note: The VL5Arc luminaire lamp requires adjustment to maximize beam intensity.

Tools:

- Screwdriver, #1 Phillips
- Cotton gloves or finger cots
- Clean, soft, lint-free cloth
- Glass cleaner (commercial grade)

To adjust Lamp:



WARNING: All maintenance procedures are to be performed with power removed from the luminaire. Never remove covers or open front lens or back cap assemblies while lamp is in operation.

Step 1. Disconnect luminaire AC input cable from power source.



WARNING: Allow lamp to cool before performing this procedure.

Step 2. Unlatch and swing open heatsink assembly.



CAUTION: Wear gloves or finger cots when handling lamp or reflector.

Step 3. Ensure the following:

- a. Reflector is mounted in center of rear casting and secure enough to prevent it from moving. If not, at four reflector mounting clips, using #1 Phillips screwdriver, loosen four 6-32 X 3/8" PPSS screws (but do not remove). Center reflector and retighten screws securely.
- b. Lamp is plugged into socket firmly and is centered in opening of reflector. Adjust as necessary.

Step 4. Using clean, lint-free, soft dry cloth, wipe lamp and reflector clean of any dust or fingerprints.

Step 5. Close and latch heatsink assembly.

Step 6. Supply power to luminaire.

Step 7. Set color to white and intensity to 100%.

Step 8. Unlatch and swing open front lens ring (this will make hot spot and halo easier to see).

Step 9. Shine lamp on flat surface 10-20 feet away.

Step 10. Using lamp adjustment screws, adjust lamp. **Figure 2-5.**

- a. Minimize size of halo around hot spot. It will not completely disappear, but should be even and symmetrical all the way around with no large blotches of color at any one point.
- b. Maximize spot intensity by making hot spot as small and tightly focused as possible. Hot spot should be centered in halo and in larger brownish circle surrounding it.

Note:

To start all lamp adjustment screws at an even point, drive all the way in.

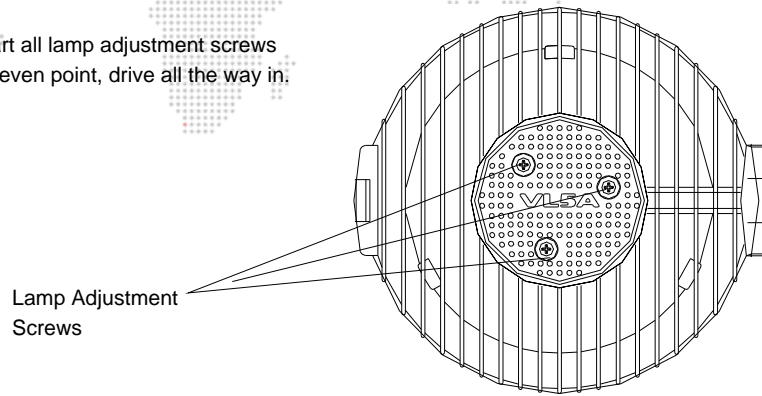


Figure 2-5: VL5Arc Lamp Adjustment Screws Location

Step 11. Close and latch front lens ring.

VL5Arc Lens and Bellows/Motor Assembly Replacement

Parts:

22.9647.0131 1 EA ASSY, VL5A LENS AND BELLOWS/MOTOR

Tools:

Screwdriver, #2 Phillips

To remove and replace VL5Arc lens and bellows/motor assembly:



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

Step 1. Disconnect luminaire AC input cable from power source.

Step 2. Unlatch and swing open heatsink assembly and front lens ring. **Figure 2-6.**

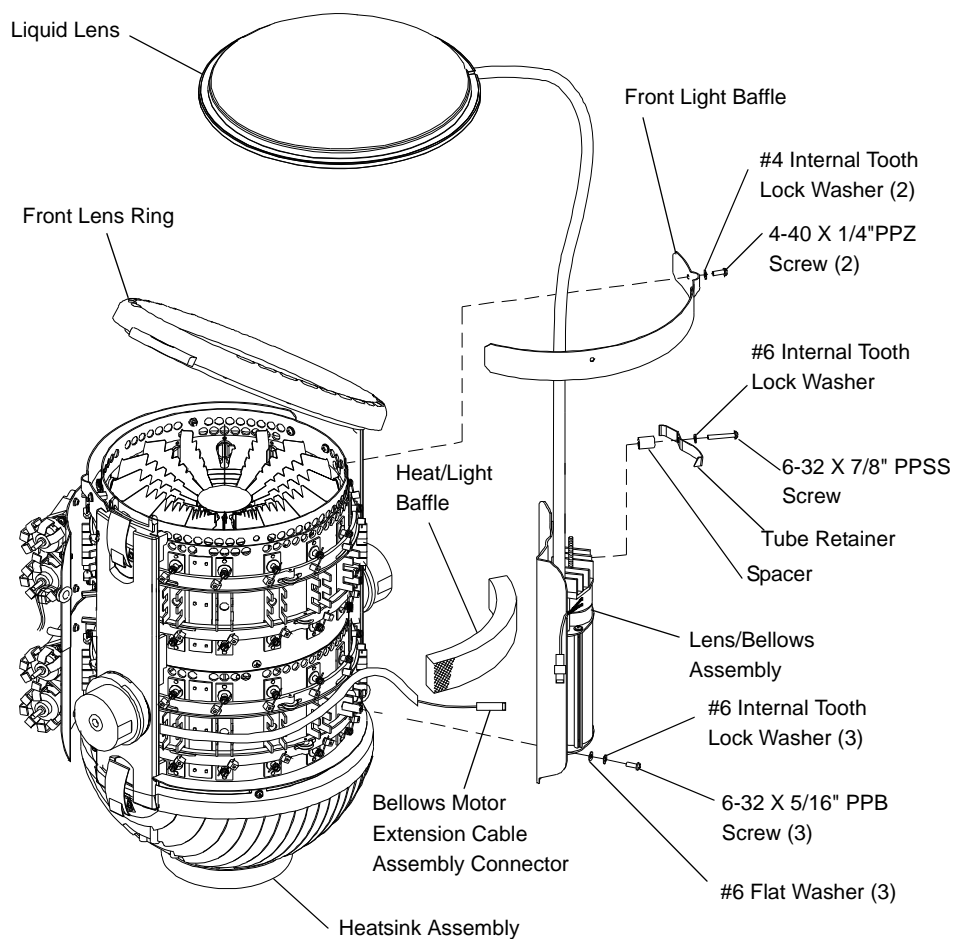


Figure 2-6: VL5Arc Lens and Bellows/Motor Assembly Replacement

Step 3. Remove bottom head cover.

Step 4. At bellows mounting plate, disconnect bellows motor extension cable assembly connector from motor-bellow assembly motor connector. Remove both connectors from clamp. **Figure 2-7.**

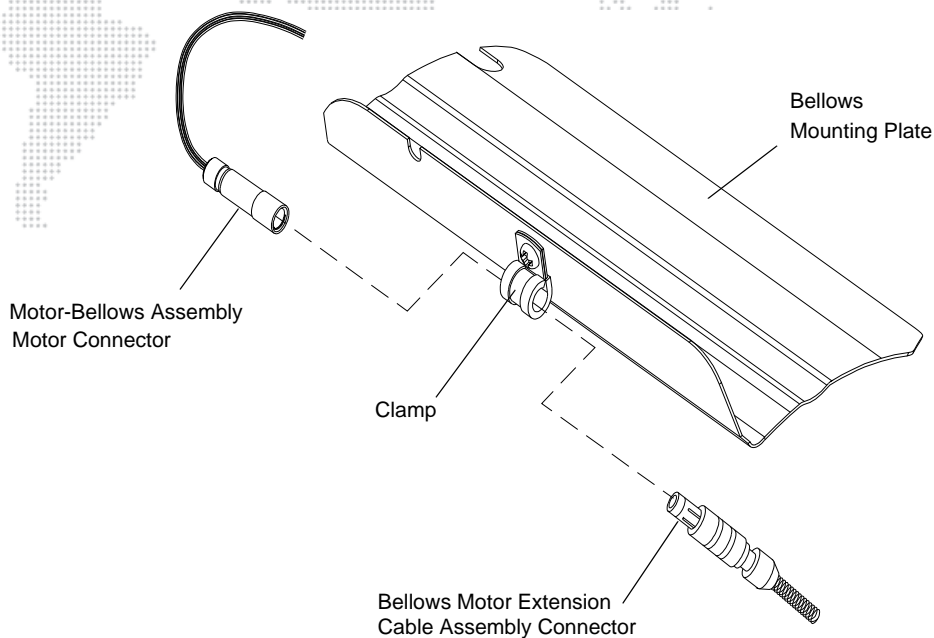


Figure 2-7: Disconnecting Bellows Motor Extension Cable

- Step 5. At front light baffle, using #2 Phillips screwdriver, remove two 4-40 X 1/4" PPZ screws and two #4 lock washers and remove baffle.
- Step 6. Using #2 Phillips screwdriver, remove one 6-32 X 7/8" PPSS screw and one #6 lock washer securing tube retainer and spacer to motor-bellows assembly and remove retainer and spacer.
- Step 7. At bellows mounting plate, using #2 Phillips screwdriver, remove three 6-32 X 5/16" PPB screws, three #6 flat washers, and three #6 lock washers securing motor-bellows assembly to bulkheads. (Heat/light baffle may come loose also.)
- Step 8. At liquid lens, from outside of front ring, carefully push glass inward to disengage glass from ring pad, and remove lens.
- Step 9. Remove lens and bellows/motor assembly from luminaire.
- Step 10. Replace lens and bellows/motor assembly by performing **Steps 2-9** in reverse order.

Separating VL5/VL5B Head and Yoke Assemblies

This procedure is required during some repairs and is referenced elsewhere in this chapter.

Tools:

- Screwdriver, #2 Phillips
- Screwdriver, #1 slotted
- Allen wrench, 5/32"
- Nutdriver, 5/16"
- Diagonal cutters

To separate VL5/VL5B head and yoke assemblies:



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

- Step 1. Disconnect luminaire AC input cable from power source.
- Step 2. Unlatch and swing open heatsink assembly and front lens ring. **Figure 2-6.**
- Step 3. Remove top and bottom head covers.
- Step 4. Remove both yoke leg covers.
- Step 5. Disconnect head assembly cables from yoke assembly.
 - a. At LCB, disconnect four 4-pin MTA connectors at STEP 1 through STEP 4. **Figure 2-8.**

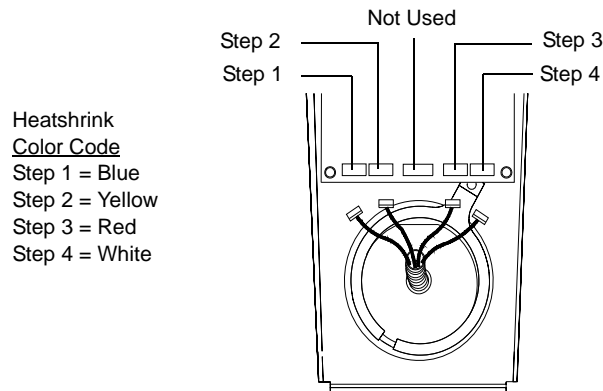


Figure 2-8: Disconnecting VL5/VL5B LCB Motor Wires

- b. At tilt-side yoke leg, using diagonal cutters, remove two cable ties securing lamp and ground wires to yoke leg. **Figure 2-9.**
- c. At terminal strip, using #1 slotted screwdriver, disconnect lamp wires extending from head.
- d. At ground stud, using 5/16" nutdriver, remove three 6-32 KEPS nuts securing ring terminals of three ground wires.
- e. Remove ring terminals from ground stud.

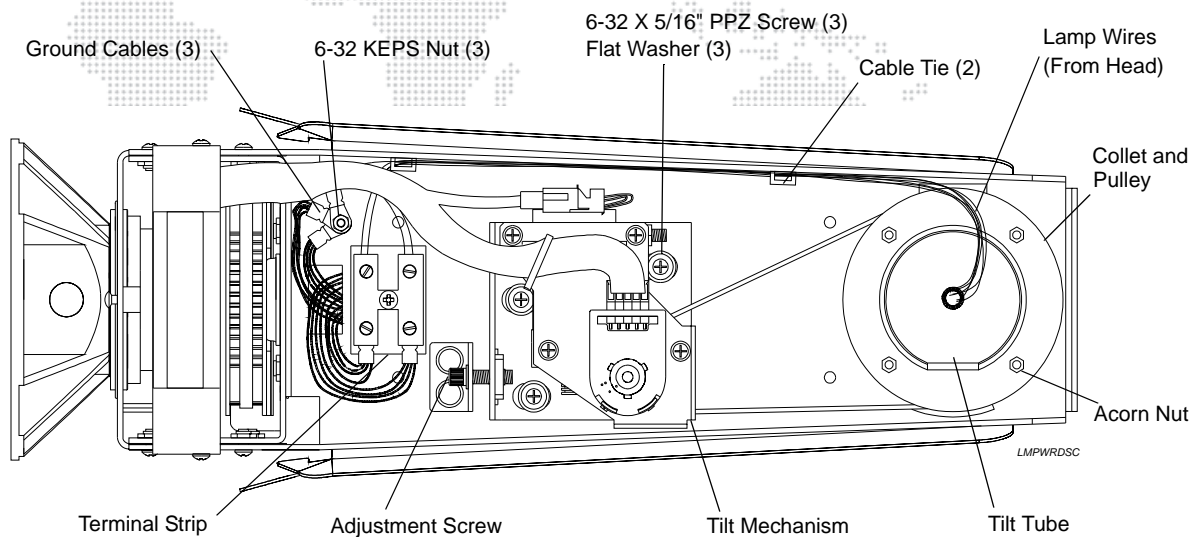


Figure 2-9: Disconnecting Wires at VL5/VL5B Tilt-Side Yoke Leg

Step 6. Remove pulley.

- a. At top of yoke, using 5/32" Allen wrench, insert wrench through hole in top of yoke cross member and into head of 10-32 X 1" SCSS belt tension and adjustment screw, and loosen screw to loosen tension on belt.
- b. Using #2 Phillips screwdriver, loosen three 6-32 X 5/16" PPZ screws and three flat washers securing tilt mechanism to yoke leg and push tilt mechanism as close to pulley as possible without removing.
- c. At pulley, using 5/16" nutdriver, gradually loosen four acorn nuts in cross pattern (to prevent pulley from cracking). Loosen until collet and pulley can be removed from tilt tube.

Step 7. Remove head assembly from yoke assembly.

- a. At top yoke cross member, using #2 Phillips screwdriver, remove four 6-32 X 5/16" PPZ screws and four #6 lock washers securing heatshield to yoke cross member, and remove heatshield. **Figure 2-10.**
- b. At tilt-side yoke leg, at corner of cross member, using #2 Phillips screwdriver, loosen, but do not remove, one 8-32 X 3/8" PPSS screw on each side of yoke leg closest to pan tube (for pivoting).
- c. Using #2 Phillips screwdriver, remove four remaining 8-32 X 3/8" PPSS screws (two on each side) securing leg to cross member. (Yoke cover bracket will also come loose.)
- d. At bottom of cross member, using #2 Phillips screwdriver, remove two 8-32 X 3/8" PPSS screws securing yoke leg to cross member and pivot leg away from luminaire head.

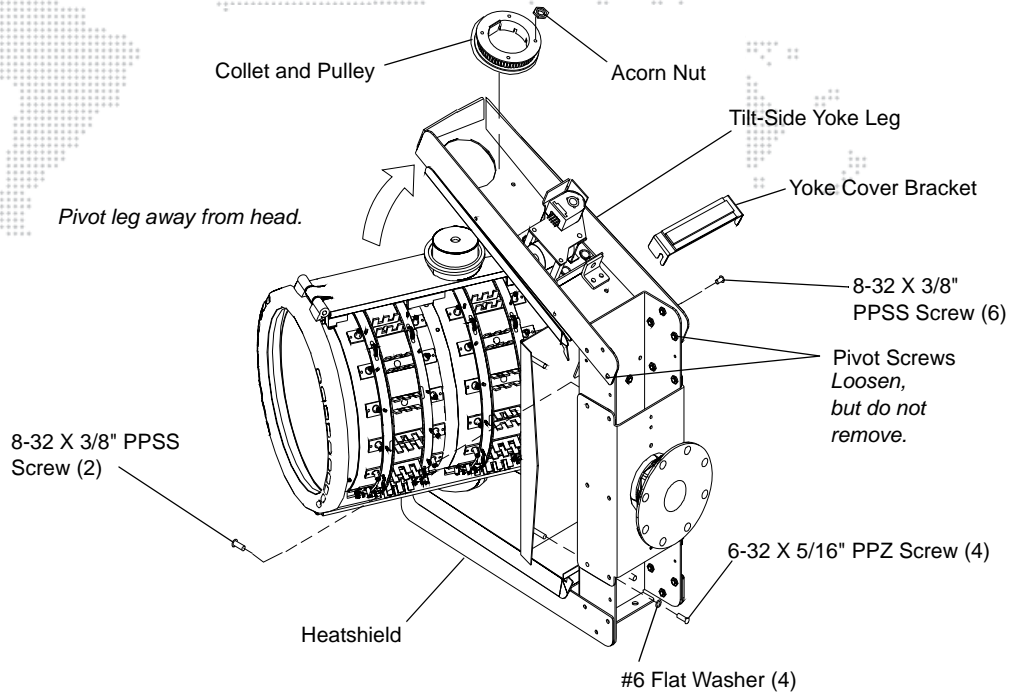


Figure 2-10: Separating VL5/VL5B Head and Yoke Assemblies



CAUTION: Ensure MTA connectors of motor wires are free when pulling head from yoke to avoid possible damage.

- e. Remove luminaire head from yoke.

Step 8. Reassemble head and yoke assemblies by performing Steps 4–7 in reverse order.

Separating VL5Arc Head and Yoke Assemblies

This procedure is required during some repairs and is referenced elsewhere in this chapter.

Tools:

- Screwdriver, #2 Phillips
- Nutdriver, 5/16"
- Allen wrench 5/32"
- Diagonal cutters

To separate VL5Arc head and yoke assemblies:



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

- Step 1. Disconnect luminaire AC input cable from power source.
- Step 2. Unlatch and swing open heatsink assembly and front lens ring. **Figure 2-6.**
- Step 3. Remove top and bottom head covers.
- Step 4. Remove both yoke leg covers.
- Step 5. Disconnect head assembly cables from yoke assembly.
 - a. At LCB, disconnect five 4-pin MTA connectors at STEP 1 through STEP 5. **Figure 2-11.**

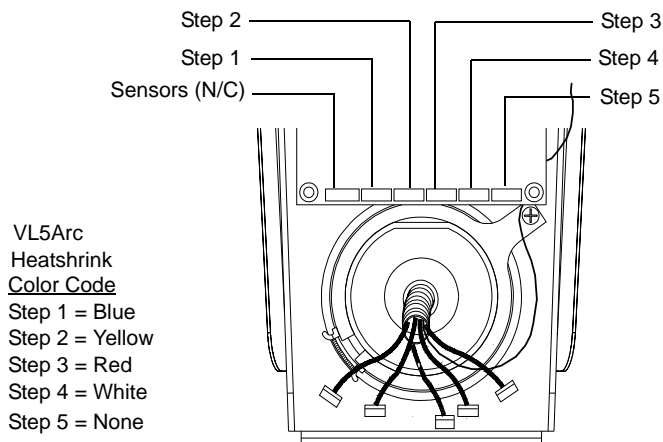


Figure 2-11: Disconnecting VL5Arc Motor Wires at LCB

- b. At tilt-side yoke leg, using diagonal cutters, remove cable tie securing tilt cable to tilt mechanism.
Figure 2-12.

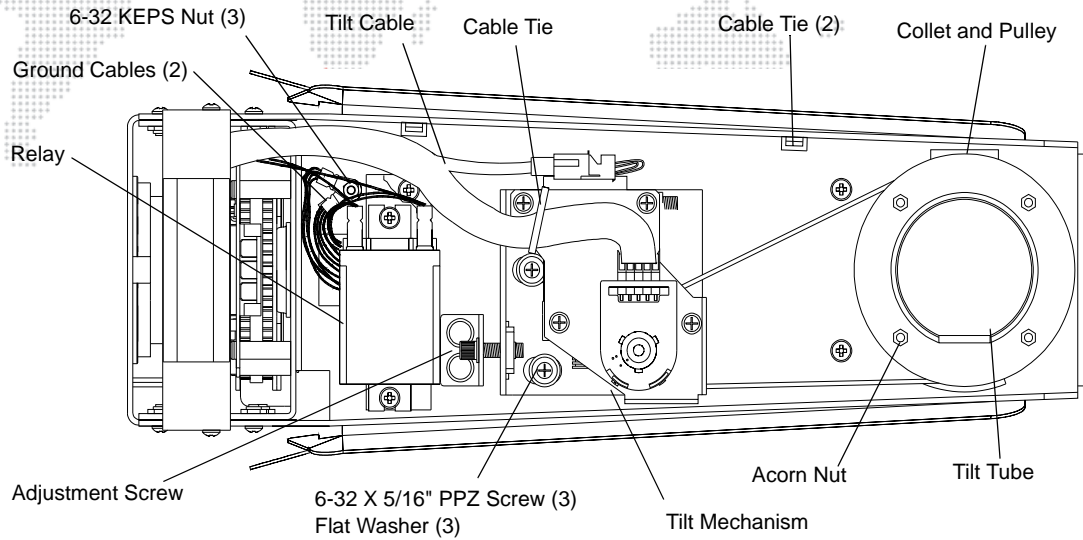


Figure 2-12: Disconnecting Wires at VL5Arc Tilt-Side Yoke Leg

- c. Partially remove relay.
- 1) At relay, using #2 Phillips screwdriver, remove two 6-32 X 5/8" PPZ screws and two #6 lock washers securing relay and top relay adapter plate to bottom relay adapter plate, and remove relay and top plate. **Figure 2-13.**

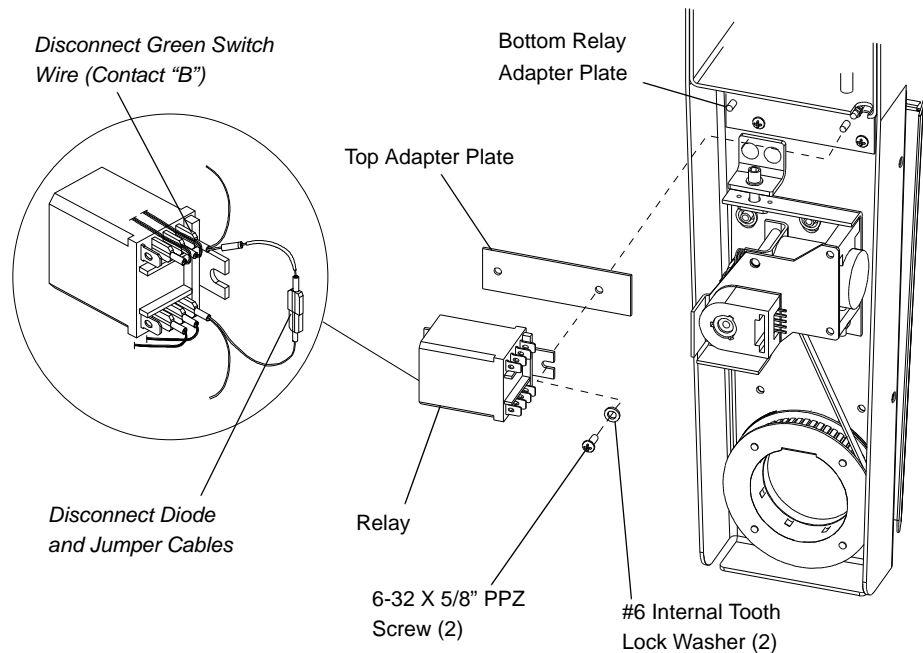


Figure 2-13: Removing Relay to Access Cables

- 2) At contact "B", disconnect green disconnect switch wire.
- 3) Disconnect diode and jumper cable assembly connectors.
- 4) Feed green disconnect switch wire back through yoke leg cutout and pull through to opposite yoke leg.

- d. Using diagonal cutters, remove cable ties securing lamp/ground wires to two yoke leg cable anchors. **Figure 2-12.**
- e. Disconnect lamp cable 3-position connector from ignitor board.
- f. At ground stud, using 5/16" nutdriver, remove three 6-32 KEPS nuts securing ring terminals of two ground wires. Remove ring terminals from stud (lamp/ground wires will come loose).

Step 6. Remove pulley.

- a. At top of yoke, using 5/32" Allen wrench, insert wrench through hole in top of yoke cross member and into head of 10-32 X 1" SCSS belt tension and adjustment screw, and loosen screw to loosen tension on belt.
- b. Using #2 Phillips screwdriver, loosen three 6-32 X 5/16" PPZ screws and three flat washers securing tilt mechanism to yoke leg and push tilt mechanism as close to pulley as possible without removing.
- c. At pulley, using 5/16" nutdriver, gradually loosen four acorn nuts in cross pattern (to prevent pulley from cracking). Loosen until collet and pulley can be removed from tilt tube.

Step 7. At LCB, pull up on lower corner and free disconnect switch wire. **Figure 2-14.**

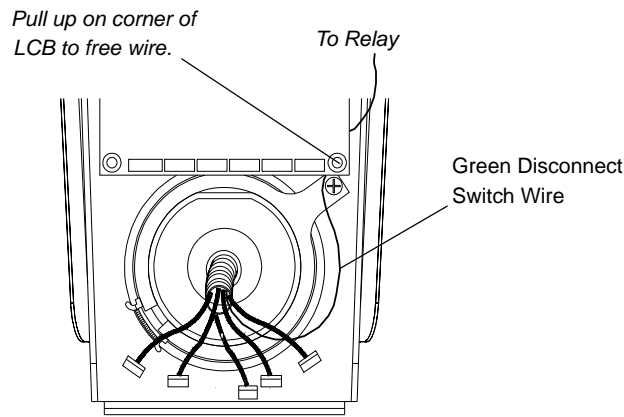


Figure 2-14: Freeing Disconnect Switch Wire

Step 8. Remove head assembly from yoke assembly.

- a. At top yoke cross member, using #2 Phillips screwdriver, remove four 6-32 X 5/16" PPZ screws and four #6 lock washers securing heatshield to yoke cross member, and remove heatshield. **Figure 2-15.**
- b. At tilt-side leg, using #2 Phillips screwdriver, remove six 8-32 X 3/8" PPSS screws (three on each side) securing leg to cross member. (Yoke cover bracket will come off.)
- c. At bottom of cross member, remove two 8-32 X 3/8" PPSS screws securing yoke leg to cross member and remove yoke leg by pulling straight up. Ensure bearing stays in yoke leg. (Leg will still be attached by wiring.)

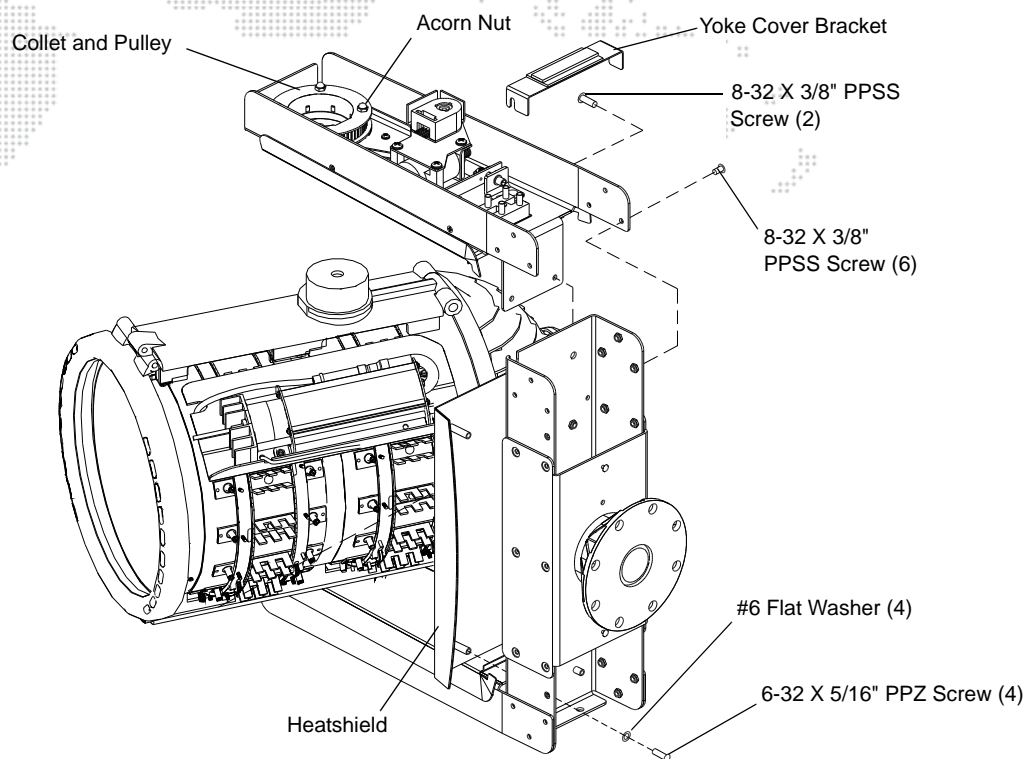


Figure 2-15: Separating VL5Arc Head and Yoke Assemblies



CAUTION: Ensure MTA connectors of motor wires are free when pulling head from yoke to avoid possible damage.

- d. Remove luminaire head from yoke by pulling up and out of other yoke leg. (Tilt tube cap will come loose from tilt tube on latched rail.)

Separating Front and Rear Bulkheads

This procedure is required during some repairs and is referenced elsewhere in this chapter.

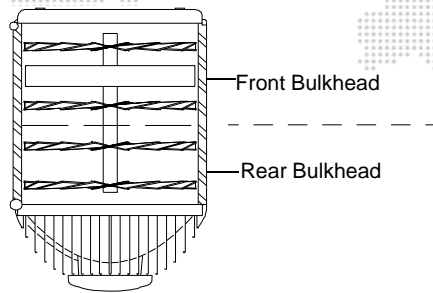


Figure 2-16: Head Assembly

Tools:

- Screwdriver, #1 Phillips
- Screwdriver, #2 Phillips
- Screwdriver, #2 Phillips, long
- Screwdriver, #2 slotted
- Nutdriver, 5/16"
- Wrench, Allen, 5/32"
- Diagonal cutters

To separate bulkheads:

- Step 1. Remove head assembly from yoke assembly. Refer to ["Separating VL5/VL5B Head and Yoke Assemblies"](#) on page 25 or ["Separating VL5Arc Head and Yoke Assemblies"](#) on page 28.
- Step 2. For VL5Arc luminaire, remove lens/bellows assembly. Refer to ["VL5Arc Lens and Bellows/Motor Assembly Replacement"](#) on page 23.
- Step 3. Remove hinge rail.
 - a. At each end of hinged rail, using long #2 Phillips screwdriver, remove two 6-32 X 5/16" PPSS screws and two #6 lock washers.
 - b. Remove hinged rail assembly. **Figure 2-17.**

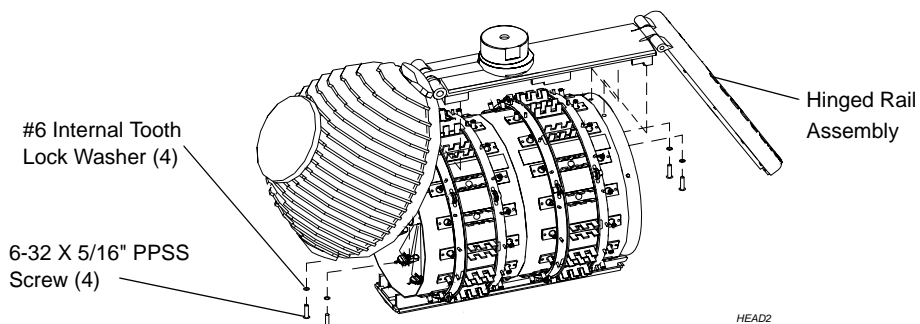


Figure 2-17: Removing Hinged Rail Assembly

- Step 4. Remove linear actuator motor assemblies and latched rail assembly.
 - a. At linear actuator motor assemblies, using #2 slotted screwdriver, disconnect actuator/drive ring links from swivel links on drive rings. **Figure 2-18.**

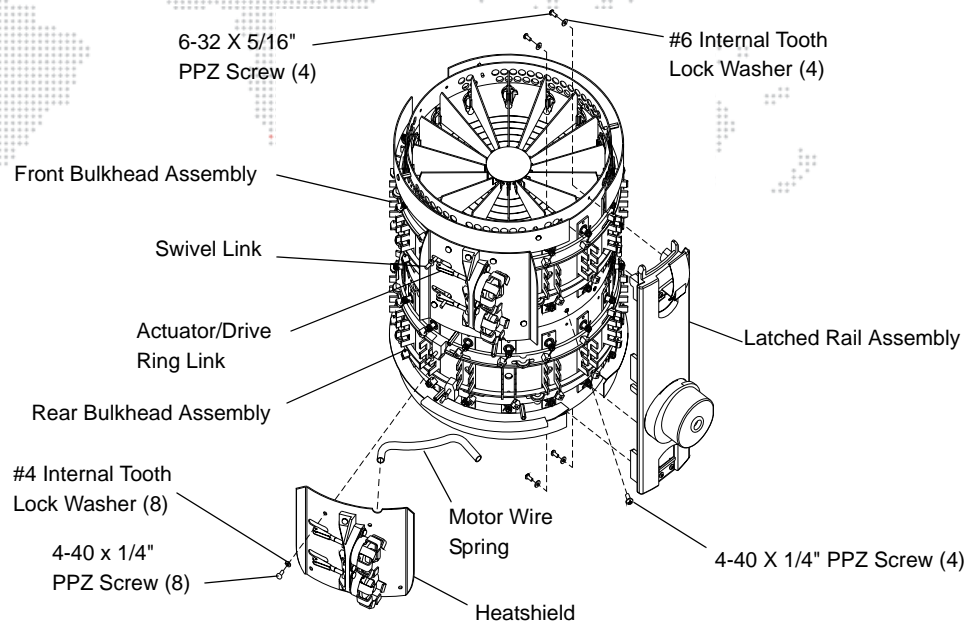


Figure 2-18: Linear Actuator Motor and Latched Rail Assemblies Replacement

- b. At each linear actuator motor assembly heatshield, using #1 Phillips screwdriver, remove four 4-40 X 1/4" PPZ screws and four #4 lock washers securing heatshield to luminaire head.
 - c. At each end of latched rail assembly, using long #2 Phillips screwdriver, remove two 6-32 X 5/16" PPSS screws and two #6 lock washers securing rail to head assembly.
 - d. While holding latched rail and linear actuator motor assemblies, remove both assemblies and set aside. (Linear actuator assemblies and latched rail assembly are connected by the motor wire spring. For the VL5Arc luminaire, the bellows motor wire spring is also connected and will come loose).
- Step 5. At middle of head assembly, using #1 Phillips screwdriver, remove four 4-40 X 1/4" PPZ screws securing front bulkhead assembly to rear bulkhead assembly.
- Step 6. Carefully separate bulkhead assemblies.
- Step 7. Reassemble luminaire by performing Steps 1–6 in reverse order.
- Step 8. Before replacing tilt-side yoke leg cover, adjust belt tension. Refer to **"Pan/Tilt Belt Tension Adjustment"** on page 49.)

Color Filter and Diffuser/Douser Panel Replacement

Parts:

22.9634.0123	1 EA	ASSY, VL5 SWP FILTER (BLUE) *
22.9634.0124	1 EA	ASSY, VL5 LWP FILTER (AMBER) **
22.9634.0126	1 EA	ASSY, VL5 DIFFUSER PANEL
22.9634.1183	1 EA	ASSY, VL5B FILTER SWP (BLUE)
22.9634.1185	1 EA	ASSY, VL5B FILTER CCF (MAGENTA)
22.9647.0074	1 EA	ASSY, CCF FILTER (MAGENTA)
22.9647.0136	1 EA	ASSY, DIMMER BLADE, VL5A

* 22.9661.0323, used in the VL2416 wash luminaire, may be substituted.

** 22.9661.0324, used in the VL2416 wash luminaire, may be substituted.

Tools:

Cotton gloves or finger cots
Screwdriver, tweaker

To remove and replace a color filter or diffuser/dimmer panel:

Step 1. Ensure filter and diffuser/dimmer panels are in open position.



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

Step 2. Disconnect luminaire AC input cable from power source.

Step 3. Unlatch and swing open heatsink assembly and front lens ring. **Figure 2-6.**

Step 4. Remove top and bottom head covers.

Step 5. Determine whether drive ring pin is missing from an inner or outer filter set. **Figure 2-19.**

- Position luminaire, with heatsink or front ring assembly swung open to access an outer filter set.
- Separate bulkheads to access inner filter sets. Refer to "[Separating Front and Rear Bulkheads](#)" on [page 32](#), as necessary.
- If any drive ring pins are missing, replace pins. Refer to "[Drive Ring Pin Replacement](#)" on [page 36](#).

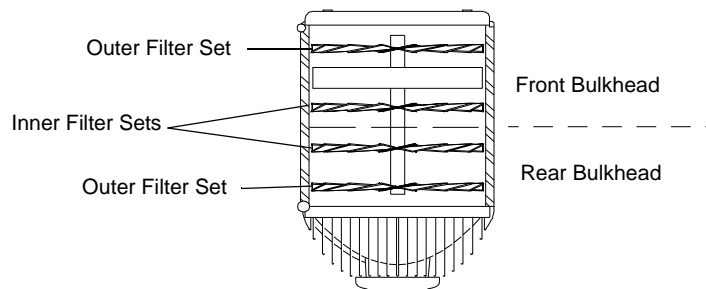


Figure 2-19: Inner and Outer Filter Set Locations



CAUTION: Wear cotton gloves or finger cots when handling filters.



CAUTION: Work carefully when removing filter and panels. Filters and panels are secured to silicone pad with UV-cured RTV and pad can become separated. If they become separated, a new filter or panel must be installed since RTV must be UV-cured.

Step 6. Remove filter or panel: **Figure 2-20.**

- a. At filter or panel to be replaced, gently push assembly (with silicone pad) in towards center hub (away from carrier) and work end of tweaker screwdriver between silicone pad and carrier.
- b. Gently work side of silicone pad not under carrier arch free.
- c. After side of silicone pad is free from carrier, remove silicone pad from under carrier arch and remove filter/panel.

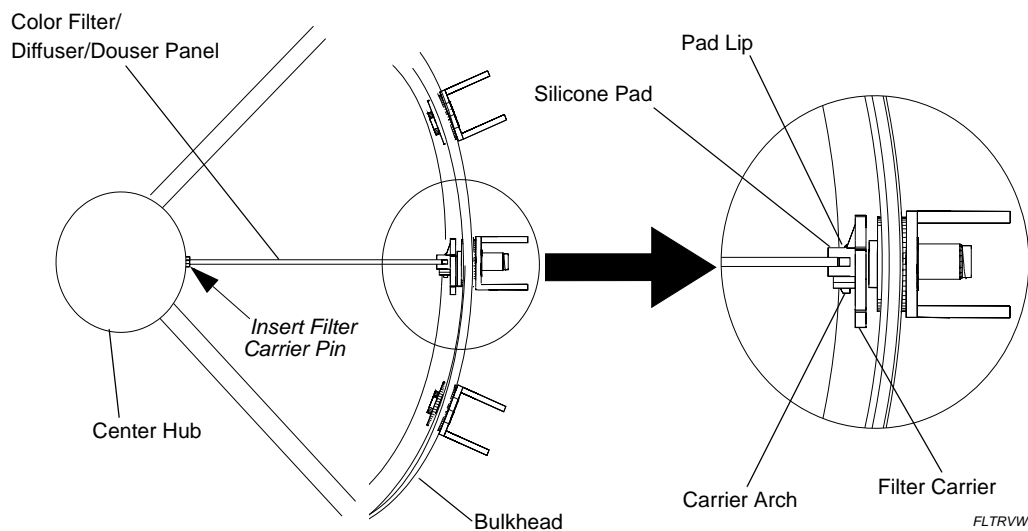


Figure 2-20: Color Filter and Diffuser/Douser Panel Removal and Replacement

Step 7. Insert filter carrier pin (of replacement filter or panel) into center hub. **Figure 2-20.**

Step 8. Place side of silicone pad with lip into arch on installed carrier.

Step 9. Using tweaker screwdriver, gently run screwdriver tip over silicone pad, driving silicone pad into carrier and fully seating silicone pad.

Step 10. Reassemble luminaire by performing Steps 3 and 4 in reverse order.

Drive Ring Pin Replacement

Parts:

55.6612.0008	1 EA	PIN, 1/8 OD X 3/8L TYPE-H, AL606-T6 DRIV-LOK
06.6041.0001	1 EA	COPPER POWDER

Tools:

Screwdriver, #2 Phillips
Screwdriver, #2 slotted
Screwdriver, tweaker
Needle-nose pliers
Rubber gloves
Cotton gloves or finger cots
Clean, lint-free cloth
Water, room temperature
Salt, granular
VL5 guide pin installation tool (10.9624.0109)
VL5 guide pin setting tool (10.9624.0110)

To remove and replace a drive ring pin:

Step 1. Ensure filter and diffuser/douser panels are in open position.



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

Step 2. Disconnect luminaire AC input cable from power source.

Step 3. Unlatch and swing open heatsink assembly and front lens ring. **Figure 2-6.**

Step 4. Remove top and bottom head covers.

Step 5. Determine whether drive ring pin is missing from an inner or outer filter set.

- a. Position luminaire, with heatsink or front ring assembly swung open to access an outer filter set.
- b. Separate bulkheads to access inner filter sets. Refer to "[Separating Front and Rear Bulkheads](#)" on [page 32](#), as necessary.

Step 6. At appropriate linear actuator motors, using #2 slotted screwdriver, disconnect actuator/drive ring links from swivel links on drive ring. **Figure 2-21.**

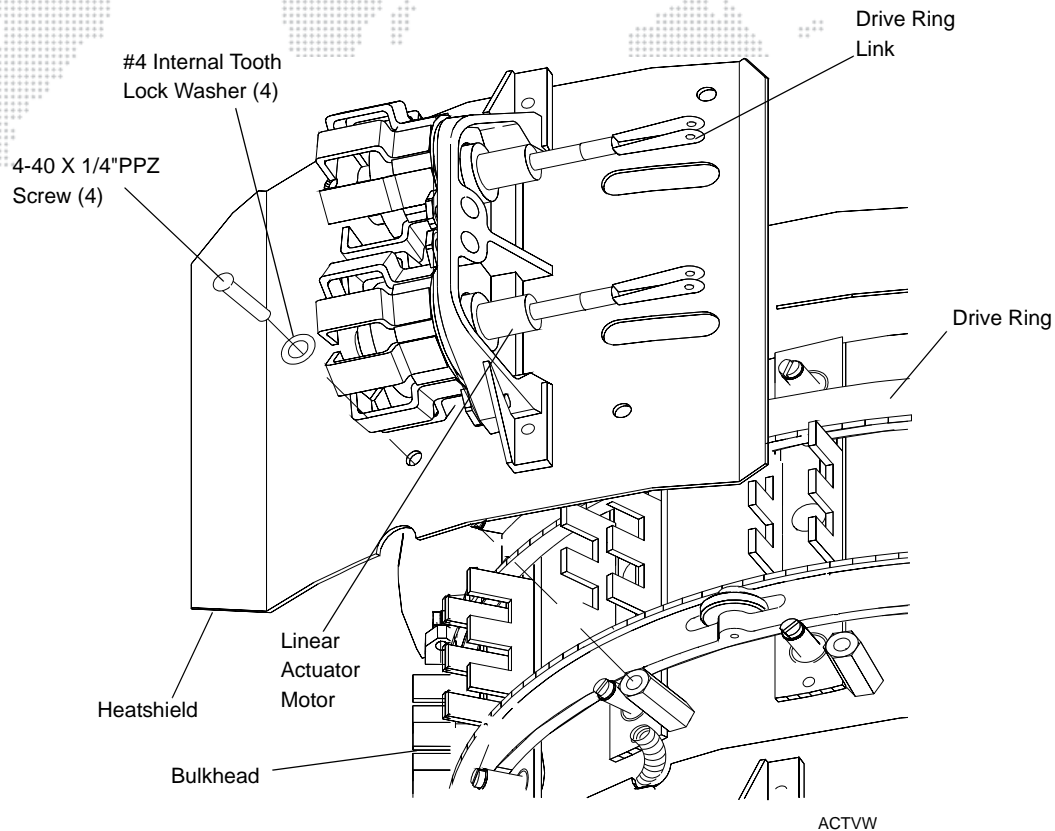


Figure 2-21: Linear Actuator Motor Assembly Replacement

Step 7. At linear actuator motor assembly heatshield, using #2 Phillips screwdriver, remove four 4-40 X 1/4" PPZ screws and four #4 lock washers securing heatshield to bulkhead, and remove linear actuator motor assembly.



CAUTION: Wear cotton gloves or finger cots when handling filters.

Step 8. Remove four filters located on the same carrier holder as the drive ring pins. Refer to "[Color Filter and Diffuser/Douser Panel Replacement](#)" on page 34.

Note: Only replace pins that are missing or those that can be removed with fingers. A slightly loose pin *is not* considered a failure.

Step 9. At drive ring, use fingers to remove loose drive ring pins, as necessary.



CAUTION: New drive ring pins should never be handled with pliers. Pliers will scar aluminum pin and could damage color changer mechanism.



CAUTION: Wear rubber gloves when working with copper paste.

Step 10. Prepare copper powder paste.

- a. Take room temperature water and mix in more salt than can be dissolved (i.e., there will be salt at bottom of container).
- b. Place some copper powder into another container and add enough salt water to form paste. If too much salt water is added, pour or blot it off.

Note: Install each pin separately. If copper paste sets before pin is inserted, drive ring will have to be replaced.

Step 11. Work copper paste into three grooves and around base of new pin.

Step 12. At drive ring, using installation tool (10.9624.0109), carefully press prepared pin through drive ring groove into carrier holder until tool is even with drive ring flange. **Figure 2-22.**

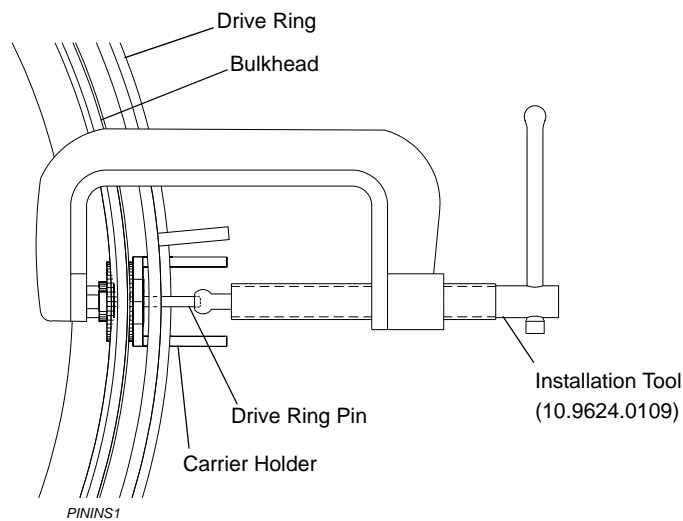


Figure 2-22: Drive Ring Pin Installation

Step 13. At newly installed pin location, using setting tool (10.9624.0110), press pin until it is flush with outer face of drive ring. Approximately 3/16" of pin should protrude from carrier holder. **Figure 2-23.**

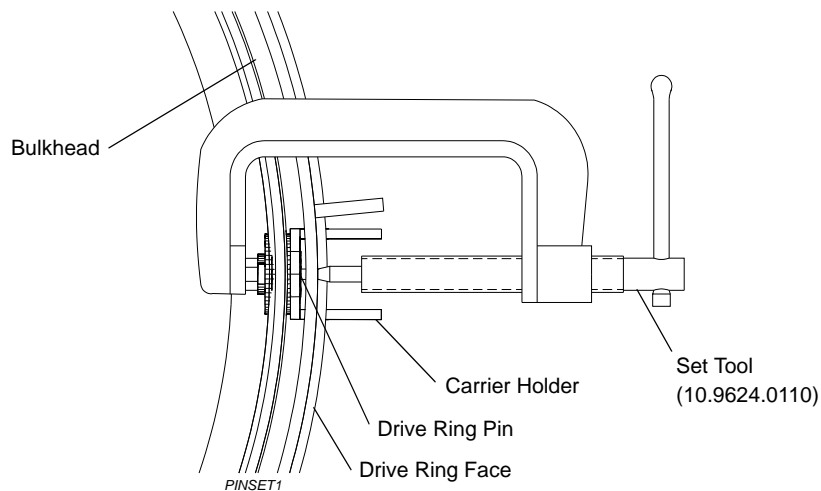
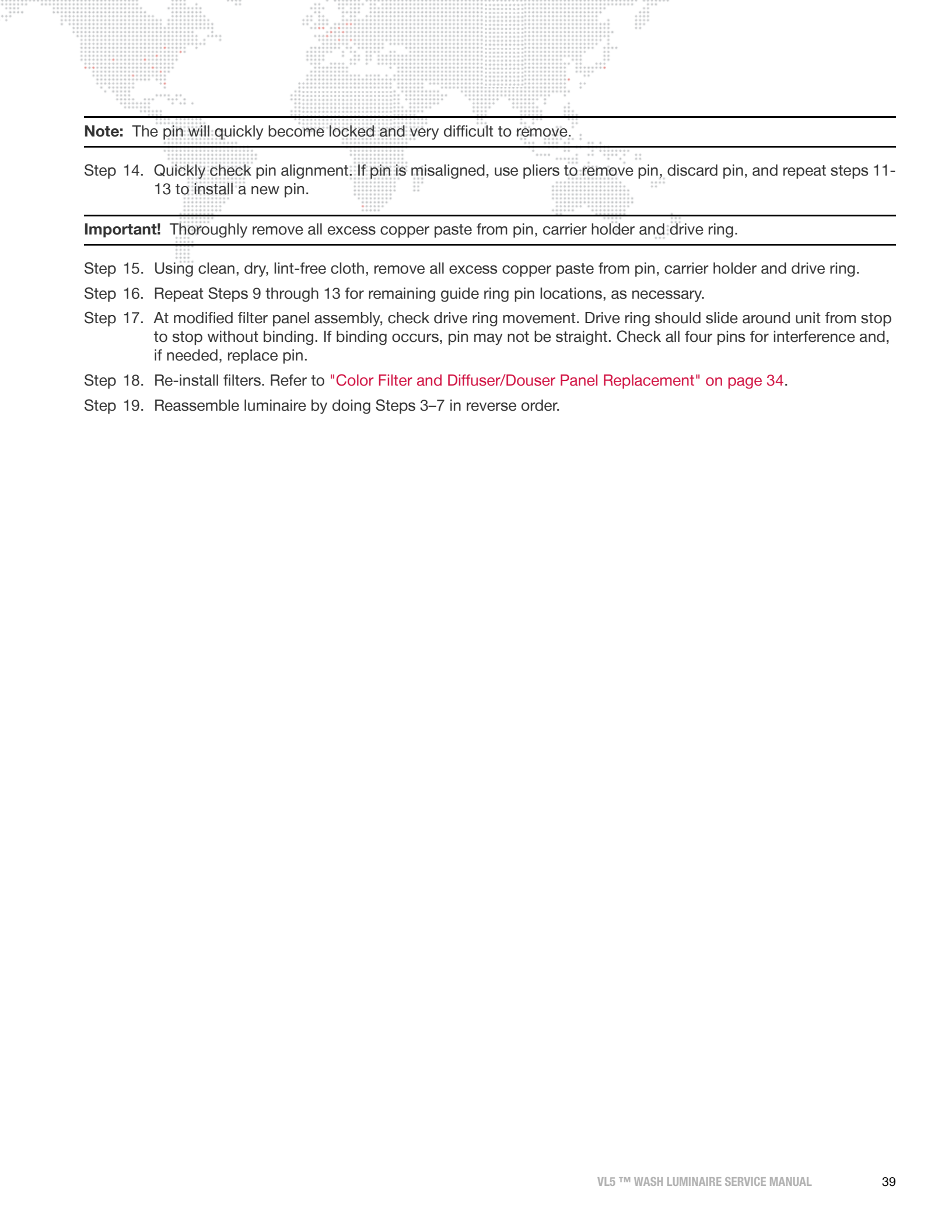


Figure 2-23: Drive Ring Pin Setting



Note: The pin will quickly become locked and very difficult to remove.

Step 14. Quickly check pin alignment. If pin is misaligned, use pliers to remove pin, discard pin, and repeat steps 11-13 to install a new pin.

Important! Thoroughly remove all excess copper paste from pin, carrier holder and drive ring.

Step 15. Using clean, dry, lint-free cloth, remove all excess copper paste from pin, carrier holder and drive ring.

Step 16. Repeat Steps 9 through 13 for remaining guide ring pin locations, as necessary.

Step 17. At modified filter panel assembly, check drive ring movement. Drive ring should slide around unit from stop to stop without binding. If binding occurs, pin may not be straight. Check all four pins for interference and, if needed, replace pin.

Step 18. Re-install filters. Refer to "[Color Filter and Diffuser/Douser Panel Replacement](#)" on page 34.

Step 19. Reassemble luminaire by doing Steps 3–7 in reverse order.

Linear Actuator Motor Replacement

Parts:

as needed:

22.9634.0121	1 EA	ASSY, VL5 BLU/AMB MOTOR
22.9634.0122	1 EA	ASSY, VL5 MAG/DIF MOTOR
44.5026.0001	1 EA	MOTOR, LINEAR ACTUATOR BLUE
44.9634.0128	1 EA	MOTOR, LINEAR ACTUATOR
52.6396.2804	1 EA	RECEPT. MTA100 W/TAB GRN 4-POS
52.6424.0004	1 EA	COVER, STRAIN RELIEF/4-POS MTA

Tools:

Screwdriver, #1 Phillips
Screwdriver, #2 slotted
Diagonal cutters
MTA crimp gun

To remove and replace linear actuator motor assembly:



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

- Step 1. Disconnect luminaire AC input cable from power source.
- Step 2. Unlatch and swing open heatsink assembly and front lens ring. **Figure 2-6.**
- Step 3. Remove top and bottom head covers.
- Step 4. Remove board-side yoke leg cover.
- Step 5. At LCB, disconnect 4-pin MTA connector for linear actuator motor assembly being replaced.

Note: Note that the blue filter motor is different from the others.

- Step 6. Using diagonal cutters, remove MTA connector from disconnected motor wires and pull wires through motor wire spring. **Figure 2-24.**

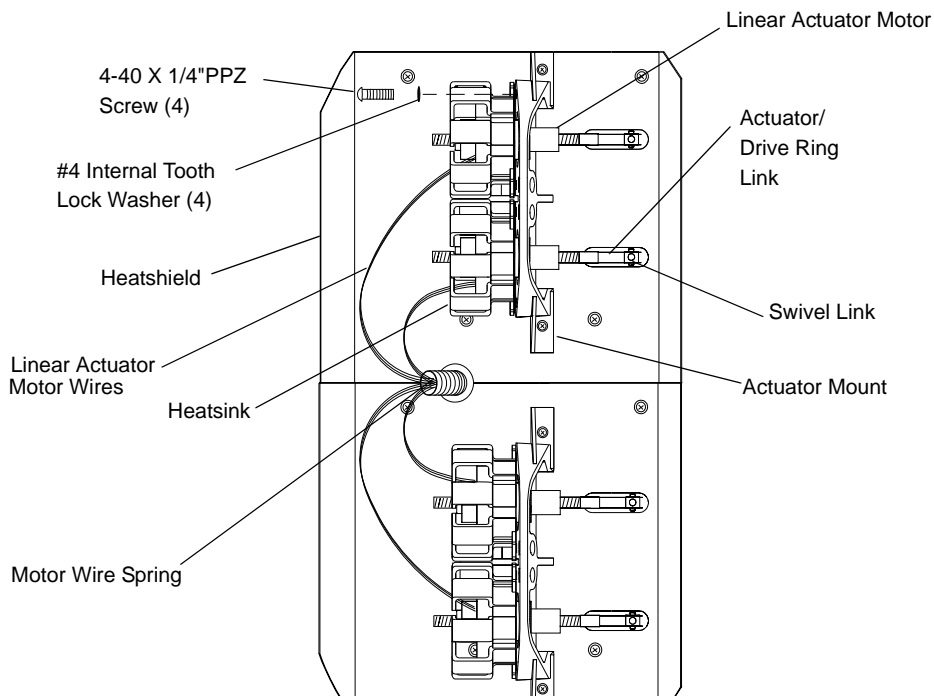


Figure 2-24: Linear Actuator Motor Assembly Removal and Replacement

- Step 7. Remove linear actuator motor assemblies.
- At linear actuator motor assemblies, using #2 slotted screwdriver, disconnect actuator/drive ring links from swivel links on drive rings.
 - At each linear actuator motor assembly heatshield, using #1 Phillips screwdriver, remove four 4-40 X 1/4" PPZ screws and four #4 lock washers securing heatshield to luminaire head.
- Step 8. At linear actuator motor, using #1 Phillips screwdriver, remove two 4-40 X 1/4" PPZ screws and two #4 lock washers securing linear actuator motor and heatsink to actuator mount, and remove motor and heatsink.
- Step 9. Separate heatsink from linear actuator motor.
- Step 10. Discard linear actuator motor.
- Step 11. Place heatsink on new linear actuator motor.
- Step 12. Place linear actuator motor and heatsink in place on actuator mount.
- Step 13. Re-install two 4-40 X 1/4" PPZ screws and two #4 lock washers and, using #1 Phillips screwdriver, tighten to secure linear actuator motor and heatsink to actuator mount.
- Step 14. Secure actuator/drive ring link to drive ring swivel link.
- Step 15. Feed linear actuator motor assembly wires into motor wire spring and push wires through spring until exposed at other end.
- Step 16. If linear actuator motor assembly wires have colored heatshrink markers to denote filter color (diffuser is white, bellows has none), replace heatshrink or use colored tape.
- Step 17. Using MTA crimp gun, crimp wires with a 4-pin MTA connector using the following pinouts:

Pin	Wire
4	Green
3	Blue
2	Black
1	Red

- Step 18. Install strain relief cover on MTA connector.
- Step 19. Connect MTA connector to LCB header.
- Step 20. Re-install board-side yoke leg cover.
- Step 21. Re-install top and bottom head covers.
- Step 22. Close and latch heatsink assembly and front lens ring.



Yoke Assembly

This section provides removal and replacement procedures for components found in the luminaire yoke assembly.

Tilt Mechanism Assembly Replacement

Parts:

22.9634.0009	1 EA	ASSY, PAN/TILT MECHANISM, VL5
55.2186.0001	2 EA	CABLE TIE, .10" WD 4.00" LG SMALL

Tools:

Screwdriver, #2 Phillips
Screwdriver, #1 slotted
Nutdriver, 5/16"
Diagonal cutters
Wrench, Allen, 5/32"
Loctite 242 removable-blue (06.6008.001)

To remove and replace tilt mechanism assembly:



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

- Step 1. Disconnect luminaire AC input cable from power source.
- Step 2. Remove tilt-side yoke leg cover.
- Step 3. At tilt-side yoke leg, disconnect head assembly lamp wires and ground cable. **Figure 2-25.**

VL5/VL5B:

- Using diagonal cutters, remove cable tie securing tilt cable to tilt mechanism.
- At terminal strip, using #1 slotted screwdriver, disconnect lamp wires extending from head.
- Using diagonal cutters, remove two cable ties securing lamp and ground wires to yoke leg.
- At ground stud, using 5/16" nutdriver, remove three 6-32 KEPS nuts securing ring terminals to ground stud, and remove ring terminals.

VL5Arc:

- Using diagonal cutters, remove cable tie securing tilt cable to tilt mechanism.
- Using #2 Phillips screwdriver, partially remove relay by removing two 6-32 X 5/8" PPZ screws and two #6 lock washers. **Figure 2-13.** (Relay will still be connected by wiring.) Top relay adapter plate will come loose also.
- At ignitor board, disconnect 3-pos lamp wire connector.
- Using diagonal cutters, remove two cable ties securing lamp and ground wires to yoke leg. **Figure 2-25.**
- At ground stud, using 5/16" nutdriver, remove three 6-32 KEPS nuts securing ring terminals of ground wires, and remove ring terminal of head assembly ground cable from stud.

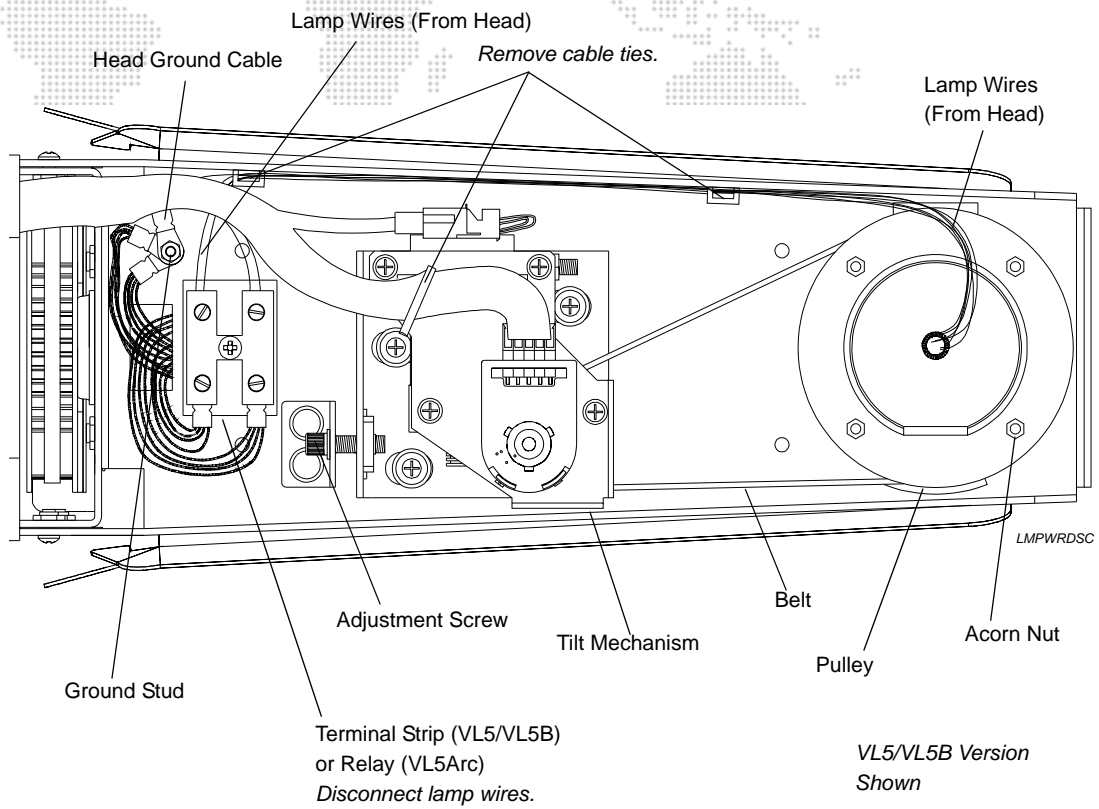


Figure 2-25: Tilt-Side Yoke Leg

- Step 4. At top of yoke, using 5/32" Allen wrench, insert wrench through hole in top of yoke cross member and into head of 10-32 X 1" SCSS belt tension and adjustment screw, and remove screw and #10 flat washer. **Figure 2-26.**

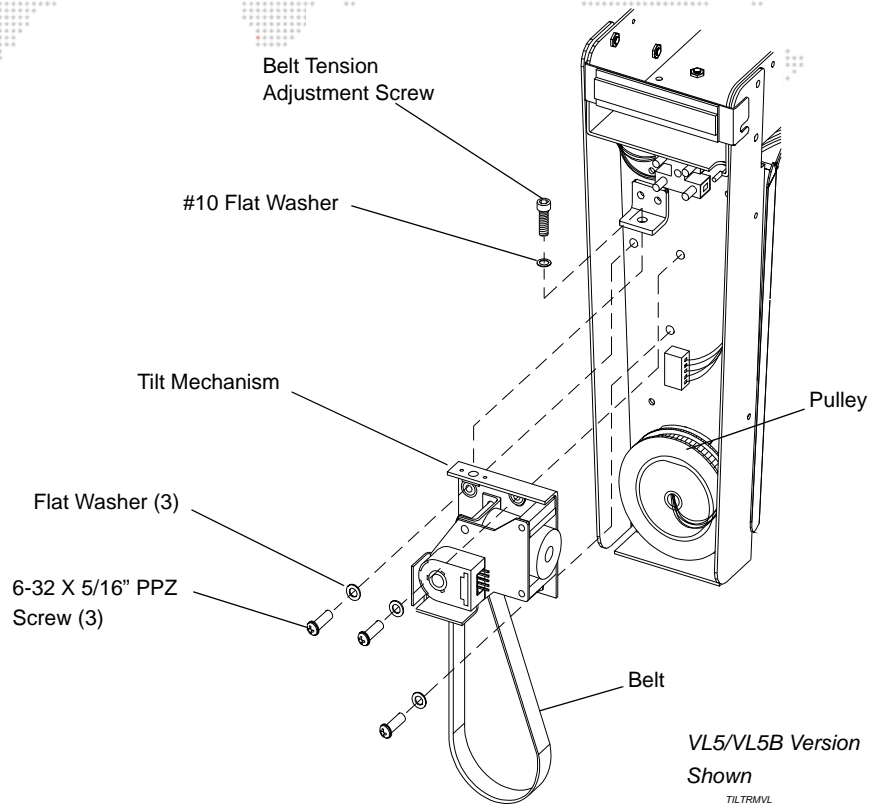


Figure 2-26: Tilt Mechanism Assembly Replacement

- Step 5. Remove belt from pulley.
- Step 6. At tilt mechanism assembly, disconnect 5-pin MTA connector from encoder, and 2-pin MTA connector from motor.
- Step 7. Using diagonal cutters, cut cable ties securing wires to mechanism.
- Step 8. At tilt mechanism assembly, using #1 Phillips screwdriver, remove three 6-32 X 5/16" PPZ screws and three flat washers securing mechanism to yoke, and remove mechanism.
- Step 9. Replace tilt mechanism assembly by performing Steps 4–8 in reverse order. Apply Loctite 242 to three 6-32 X 5/16" screws removed in step 8 before re-installing.
- Step 10. Adjust belt tension. Refer to "[Pan/Tilt Belt Tension Adjustment](#)" on page 49.
- Step 11. Re-assemble luminaire by performing Steps 2–3 in reverse order.

Pan Mechanism Assembly Replacement

Parts:

22.9634.0009	1 EA	ASSY, PAN/TILT MECHANISM, VL5
55.2186.0001	2 EA	CABLE TIE, .10" WD 4.00" LG SMALL

Tools:

- Screwdriver, #2 Phillips
- Screwdriver, #1 slotted
- Nutdriver, 5/16"
- Diagonal cutters
- T-wrench, long handled

To remove and replace pan mechanism assembly:



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

- Step 1. Disconnect luminaire AC input cable from power source.
- Step 2. Remove both yoke leg covers.
- Step 3. At yoke top cross member, using #2 Phillips screwdriver, remove four 6-32 X 5/16" PPZ screws and four #6 lock washers securing heatshield to cross member, and remove heatshield. **Figure 2-27.**
- Step 4. Disconnect input cable wiring.

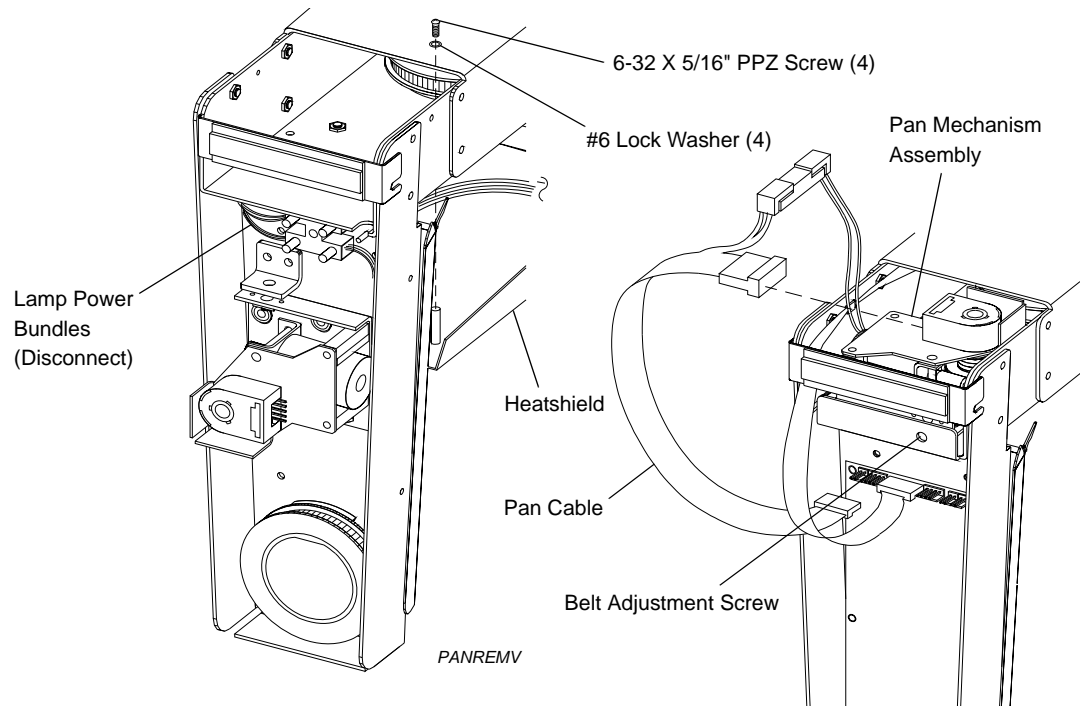


Figure 2-27: Disconnecting Pan Mechanism Assembly Wires

VL5/VL5B:

- a. At tilt-side yoke leg, at terminal strip, disconnect lamp power bundles (from input cable side). Slide wires back through yoke leg.
- b. At ground stud, using 5/16" nutdriver, remove three 6-32 Keps nuts securing ground cable ring terminals and remove ring terminals.
- c. Slide input cable ground wire back through yoke leg.

VL5Arc:

- a. Using diagonal cutters, remove cable tie securing pan cable to pan mechanism.
- b. Partially remove relay.
 - 1) At relay, using #2 Phillips screwdriver, remove two 6-32 X 5/8" PPZ screws and two #6 lock washers securing relay and top relay adapter plate to bottom relay adapter plate, and remove relay and top plate. **Figure 2-28.**

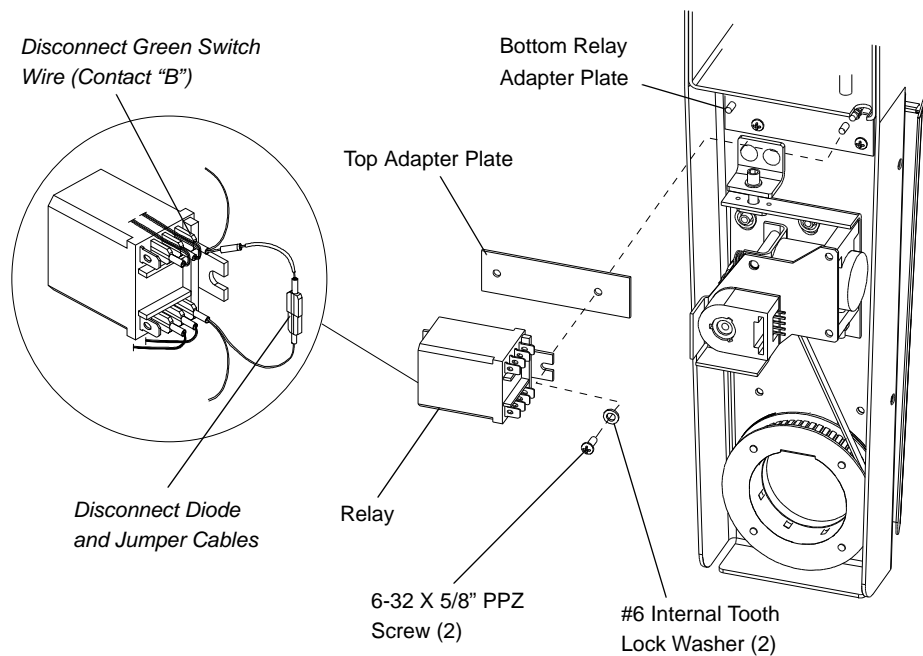


Figure 2-28: Removing Relay to Access Cables

- 2) At contact "B", disconnect green disconnect switch wire.
 - 3) Disconnect diode and jumper cable assembly connectors.
 - 4) Feed green disconnect switch wire back through yoke leg cutout and pull through to opposite yoke leg.
 - c. Using diagonal cutters, remove two cable ties securing lamp and ground wires to yoke leg. **Figure 2-25.**
 - d. At ground stud, using 5/16" nutdriver, remove three 6-32 KEPS nuts securing ring terminals of ground wires, and remove ring terminals from stud.
 - e. Slide input cable ground wires back through yoke leg.
- Step 5. At LCB, disconnect two 2-pin MTA connectors at POWER P11A/, and one 4-pin MTA connector at COMM P10.
- Step 6. Slide wires back through yoke leg.
- Step 7. Push all input cable wires up into pan tube.
- Step 8. Remove pan mechanism. **Figure 2-29.**
- a. At pan mechanism assembly, disconnect 5-pin MTA connector from encoder, and 2-pin MTA connector from motor. Cut cable ties securing wires to mechanism.
 - b. At top of board-side yoke leg, using long handled T-wrench, insert wrench through hole in side of yoke cross member and into head of 10-32 X 1" SCSS belt tension and adjustment screw, and remove screw and #10 flat washer.
 - c. Using #2 Phillips screwdriver, remove three 6-32 X5/16" PPZ screws and three #6 flat washers securing pan mechanism assembly to yoke and push mechanism toward pan tube.

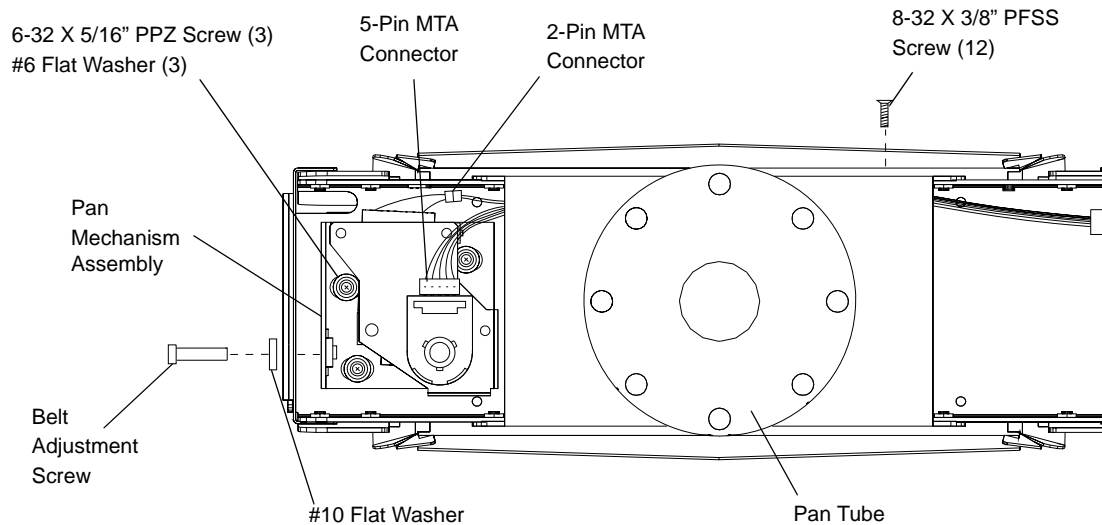


Figure 2-29: Disconnecting Pan Mechanism Assembly

Step 9. At cross member, using #2 Phillips screwdriver, remove twelve 8-32 X 3/8" PFSS screws securing top cross member to bottom cross member. **Figure 2-30.**

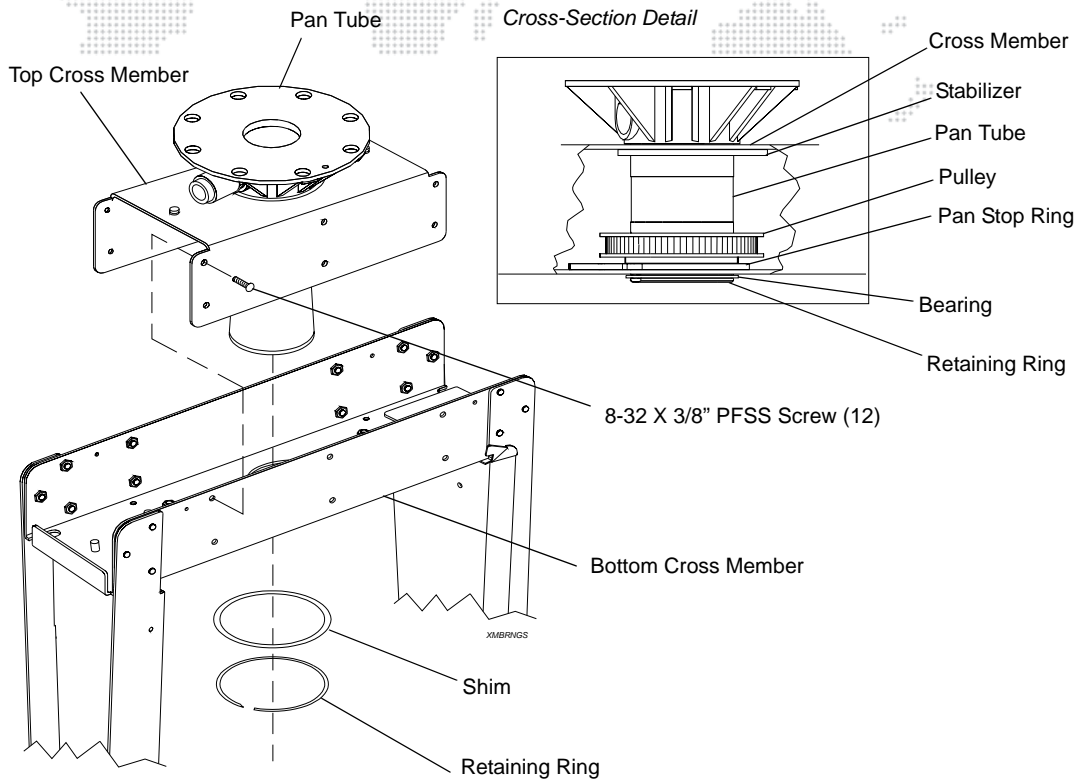


Figure 2-30: Removing Top Cross Member and Pan Tube

- Step 10. At bottom of pan tube, using slotted screwdriver, remove retaining ring and shim.
- Step 11. Pull up on top cross member and pan tube and remove belt from pulley.
- Step 12. Remove pan mechanism.
- Step 13. Position replacement pan mechanism in yoke cross member.
- Step 14. Apply Loctite 242 to three 6-32 X 5/16" PPZ screws removed in step 8.c.
- Step 15. Re-install three 6-32 X 5/16" PPZ screws and three #6 flat washers, and using #2 Phillips screwdriver tighten to secure pan mechanism assembly to yoke.
- Step 16. Re-install belt on pulley.
- Step 17. Re-install top cross member and pan tube luminaire, ensuring pan stop points towards pan mechanism.
- Step 18. Place shim on pan tube and secure pan tube in place with retaining ring.
- Step 19. Re-install twelve 8-32 X 3/8" PPSS screws, and using #2 Phillips screwdriver, tighten to secure top cross member to bottom cross member.
- Step 20. Using long handled T-wrench, re-install 10-32 X 1" SCSS belt adjustment screw and #10 flat washer.
- Step 21. Perform belt tension adjustment. Refer to **"Pan/Tilt Belt Tension Adjustment"** on page 49.
- Step 22. Reassemble remaining components by performing Steps 2–7 in reverse order.

Pan/Tilt Belt Tension Adjustment

Tools:

Wrench, Allen, 5/32", long handled
T-wrench, long handled

Loose pan/tilt drive belts can create calibration problems. When the luminaire reaches the end of travel, excess belt slack can produce a vibration causing the encoder to continue producing a movement output signal to the processor (even though the luminaire is at its stop).

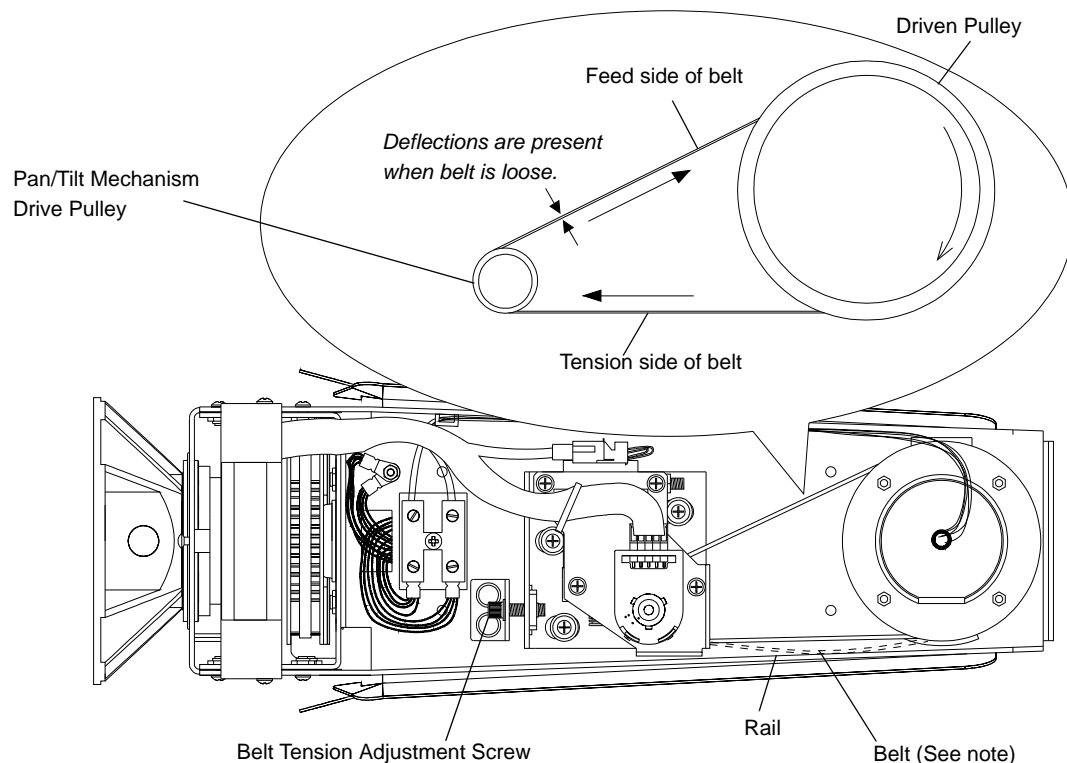
To fix this problem, slowly increase the belt tension until the vibration is dampened.



CAUTION: Do not overtighten belt, pulley will break.

To adjust either the pan mechanism or tilt mechanism pulley belt:

Step 1. Pan or tilt luminaire head back and forth, noting the tension created on one side of belt and deflections on the other. **Figure 2-31..**



NOTE: When pushed, belt should just touch rail when tension is adjusted correctly.

Figure 2-31: Belt Tension Adjustment

Note: Bilateral deflection may be observed by loosening the tension adjustment screw and rotating the head assembly. As the head is rotated back and forth, the tension is created on one side and deflections are created on the other.

- Step 2. Using 5/32" Allen wrench, tighten belt tension adjustment screw until no bilateral deflection occurs. For tilt mechanism, use long handled T-wrench going through hole in top of yoke cross member. (In VL5Arc luminaire, T-wrench also goes through ignitor board assembly.)
- Step 3. Using finger, test belt tension. With proper tension, you should be able to push the belt flat so that it just touches side rail.

LCB PCB Assembly Replacement

Parts:

24.9634.0070	1 EA	PCB ASSY, VL5
24.9634.0070.01	1 EA	PCB ASSY, VL5B LCB
24.9638.0009.02	1 EA	PCB ASSY, VL5A LAMP CONTROL BD W/EPROM

Tools:

None

To remove and replace LCB PCB assembly:



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

- Step 1. Disconnect luminaire AC input cable from power source.
Step 2. Remove board-side yoke leg cover.



CAUTION: Always use anti-static precautions when working with PCBs.

- Step 3. At LCB, disconnect all cables. **Figure 2-32.**

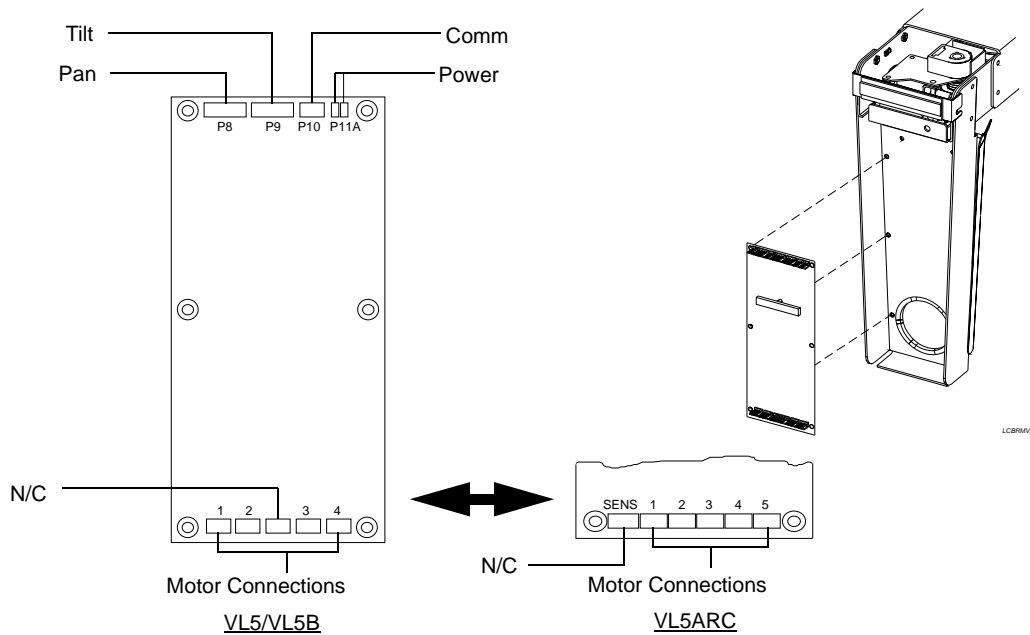


Figure 2-32: LCB PCB Replacement

- Step 4. At LCB, firmly grasp handle and pull LCB out from yoke leg, disengaging board from six friction clasps.
Step 5. Replace LCB by performing Steps 2–4 in reverse order.

VL5Arc Luminaire Ignitor Board Assembly Replacement

Parts:

23.9647.0047 1 EA ASSY, VL5A IGNITOR BOARD

Tools:

Screwdriver, #2 Phillips
Wrench, 7/16" open-ended

To remove and replace VL5Arc luminaire ignitor board assembly:



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

- Step 1. Disconnect luminaire AC input cable from power source.
- Step 2. Remove tilt-side yoke leg cover.
- Step 3. At yoke top cross member, using #2 Phillips screwdriver, remove four 6-32 X 5/16" PPZ screws and four #6 lock washers securing heatshield to cross member, and remove heatshield. **Figure 2-33.**

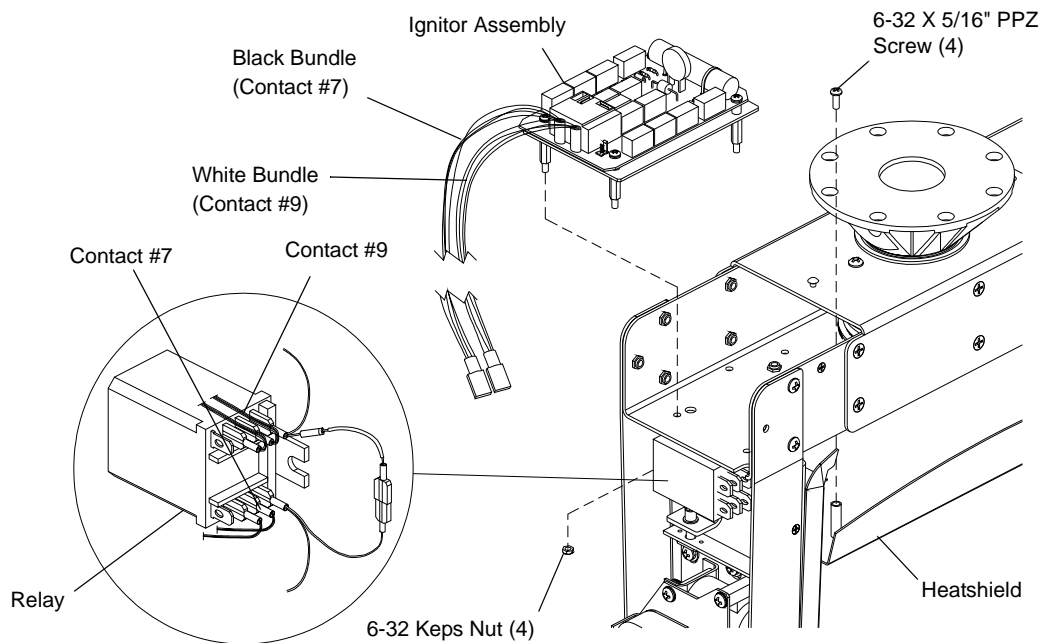


Figure 2-33: VL5Arc Ignitor Board Assembly Removal and Replacement



CAUTION: Always use anti-static precautions when working with PCBs.

- Step 4. At ignitor board, disconnect 3-pos lamp wire connector.
- Step 5. At relay, disconnect ignitor cable white and black wire bundles at contacts #7 and #9.
- Step 6. At yoke cross member, using 7/16" open-ended wrench, remove four 6-32 KEPS nuts securing ignitor board assembly to cross member.
- Step 7. Install replacement ignitor board assembly by performing Steps 2–6 in reverse order.

VL5Arc Luminaire Relay Replacement

Parts:

66.4510.0002 1EA RELAY, 20A 250VAC DPDT UL/CSA/VDE

Tools:

Screwdriver, #2 Phillips
Diagonal cutters

To remove and replace VL5Arc luminaire relay:



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

- Step 1. Disconnect luminaire AC input cable from power source.
- Step 2. Remove tilt-side yoke leg cover.
- Step 3. At tilt mechanism, using diagonal cutters, remove cable tie securing tilt cable to tilt mechanism. **Figure 2-13.**
- Step 4. At relay, disconnect all wires. **Figure 2-34.**

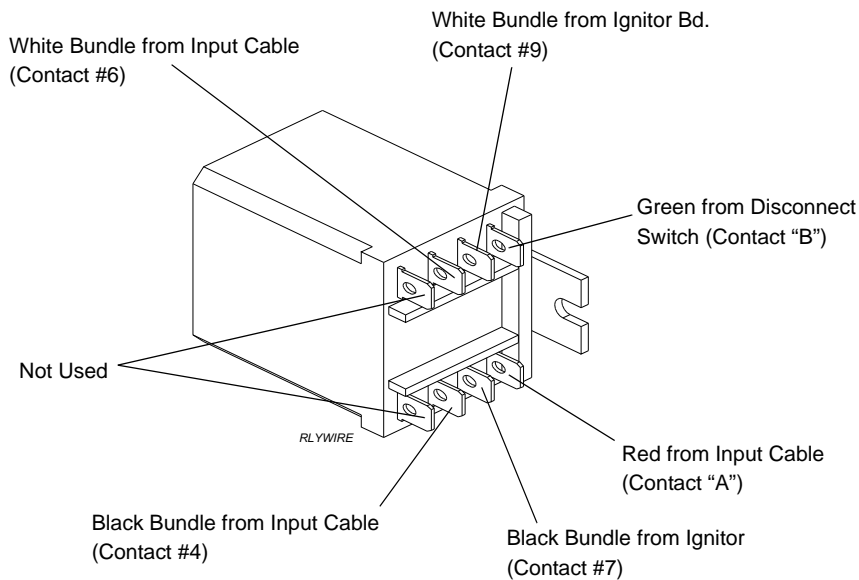


Figure 2-34: Disconnecting Relay Wires

Step 5. At relay, using #2 Phillips screwdriver, remove two 6-32 X 5/8" PPZ screws and two #6 lock washers securing relay and top relay adapter plate to bottom relay adapter plate, and remove relay and top adapter plate. Retain top relay adapter plate for reuse when installing replacement relay. **Figure 2-35.**

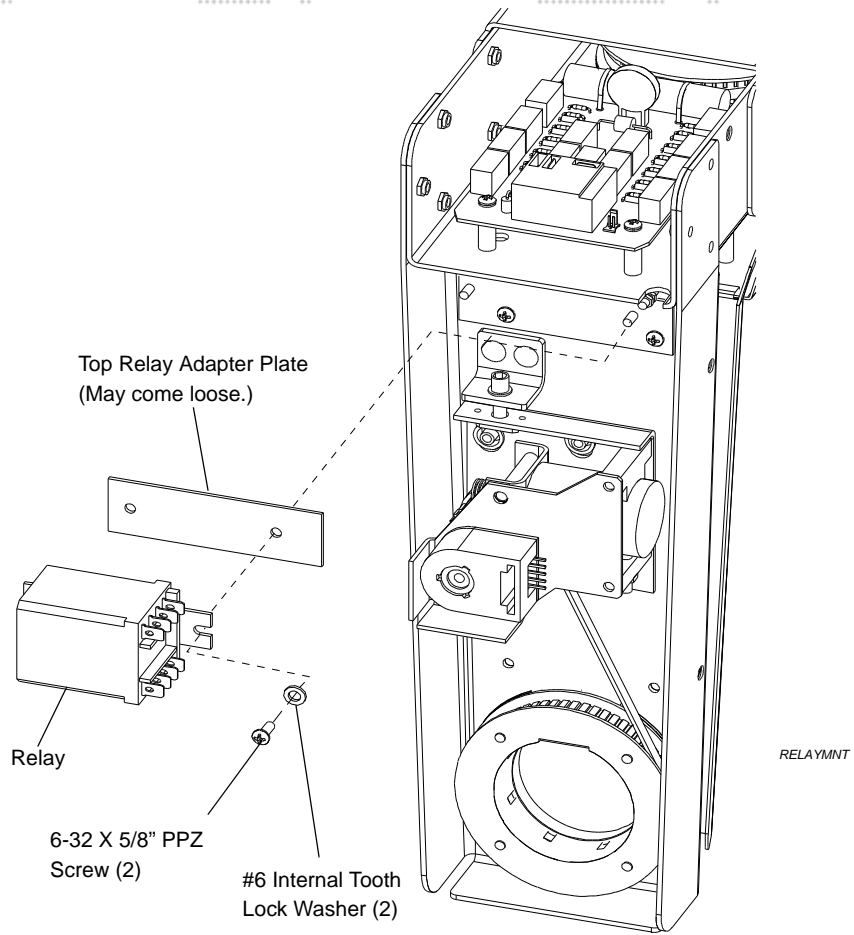


Figure 2-35: VL5Arc Relay Replacement

Step 6. Install replacement relay by performing Steps 2–5 in reverse order.

SERVICING

Cleaning

VL5Arc Lens Cleaning and Fluid Level Check

Tools:

- Glass cleaner (commercial grade)
- Clean, soft, lint-free cloth

To clean lens or check fluid:



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

- Step 1. Disconnect AC input cable from power source.
- Step 2. Using glass cleaner and clean, soft, lint-free cloth, clean both sides of lens.
- Step 3. Apply power to luminaire.
- Step 4. Allow luminaire to warm up at least 30 minutes with positive pressure on lens (bellows drive shaft all the way in).
- Step 5. Drive bellows shaft back out.
- Step 6. Check for air bubbles in lens. To remove bubbles, allow luminaire to stand in a vertical (nose up) position in full positive pressure with lamp on for several hours to force air out of lens.



CAUTION: Always store a VL5Arc luminaire with full positive pressure to avoid air bubbles.

- Step 7. Unlatch and open front lens ring.
- Step 8. Check for the following:
- Lens should contract enough to make the inside surface of lens look and feel smooth.
 - Lens honeycombs should not be convex, but may be slightly concave. (It is easier to determine by touching the lens.)

Color Filter and Reflector Cleaning

Tools:

- Glass cleaner (commercial grade)
- Cotton balls

To clean color filters or reflector:

- Step 1. Accessing reflector and filters:
- Access reflector by unlatching and opening heatsink assembly.
 - Access outer filter sets by unlatching and opening heatsink assembly and front lens ring.
 - Access inner filter sets by separating the front and rear bulkheads. Refer to "[Separating Front and Rear Bulkheads](#)" on page 32.
- Step 2. Using cotton balls, carefully clean dust, dirt, or other foreign materials from surface with glass cleaner.



Cleaning the Luminaire

Tools:

- Window cleaner (commercial grade)
- Clean, white, lint-free cloth
- Vacuum cleaner with brush nozzle

To clean the outside of the luminaire:



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

- Step 1. Disconnect AC input cable from power source.
- Step 2. Apply window cleaner sparingly to clean, white, lint-free cloth.
- Step 3. Wipe outside surface of luminaire with cloth.



Notes



3.

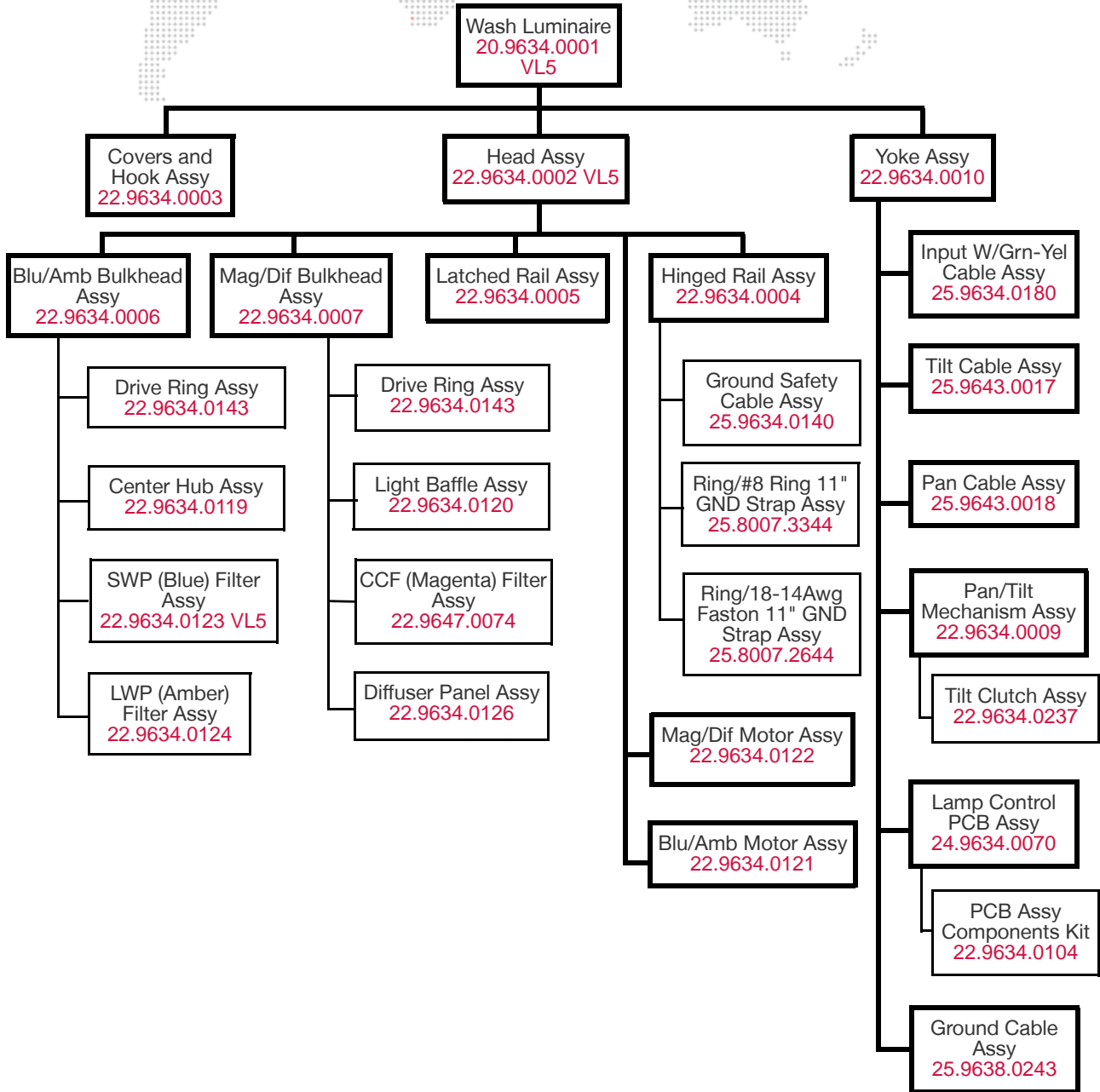
ILLUSTRATED PARTS BREAKDOWN

This chapter contains illustrated parts breakdown for assemblies contained in the VL5 series wash luminaires.

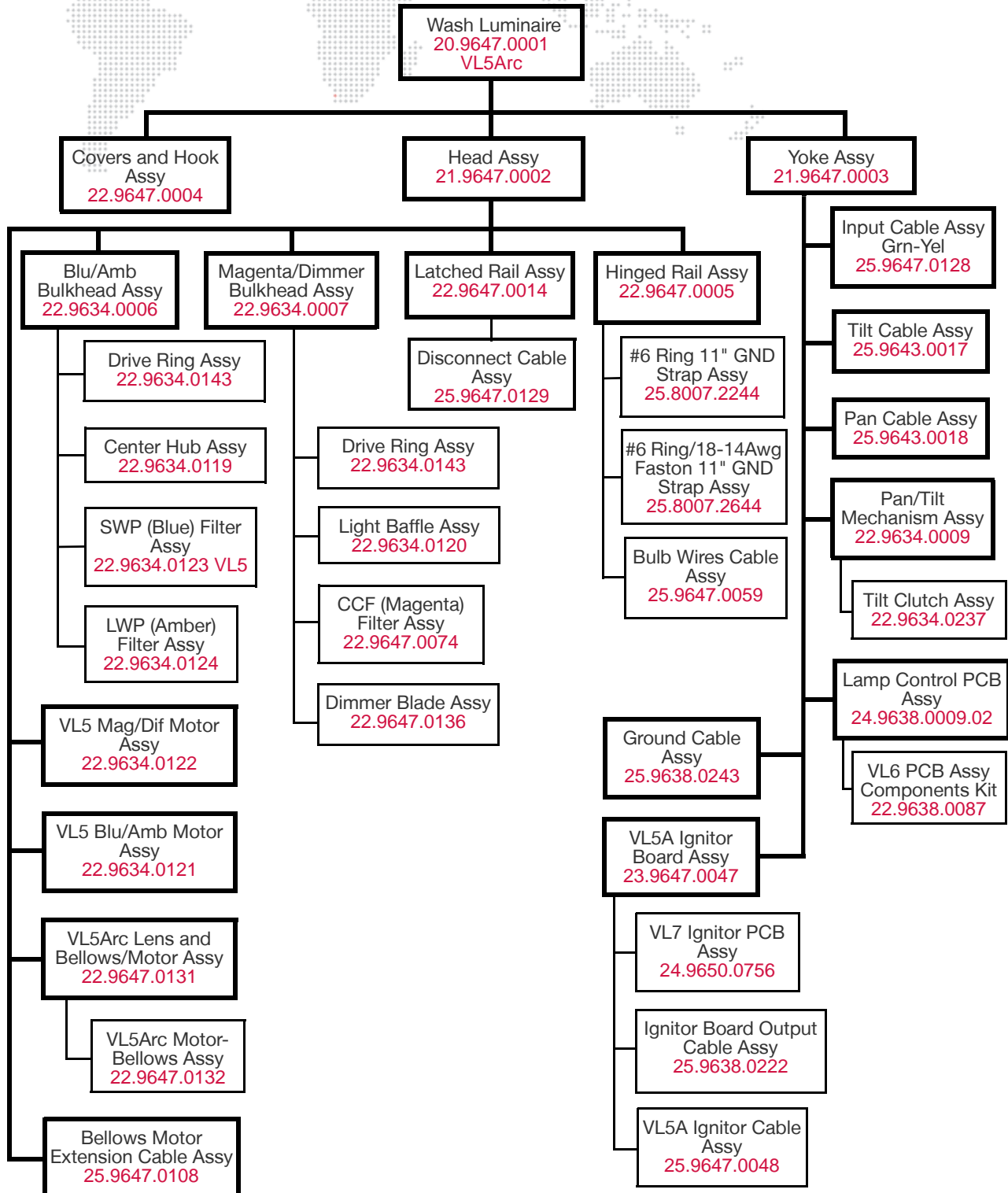
- + DRAWING TREES
- + TOP ASSEMBLY
- + COVERS AND HOOKS
- + HEAD
- + YOKE
- + CABLES

DRAWING TREES

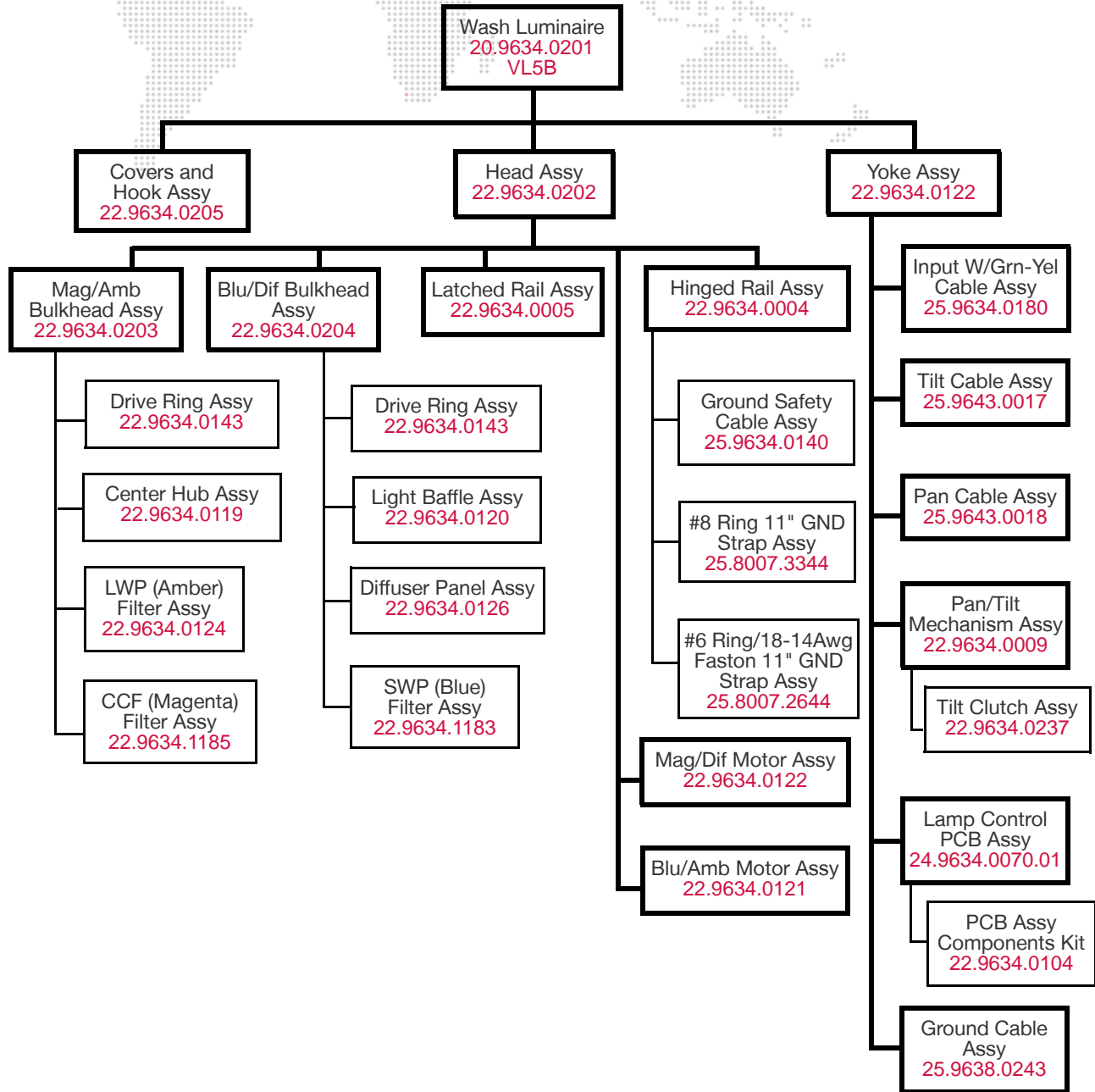
VL5 Drawing Tree



VL5Arc Drawing Tree



VL5B Drawing Tree



TOP ASSEMBLY

VL5 Series Wash Luminaire

20.9634.0001 VL5
 20.9647.0001 VL5Arc
 20.9634.0201 VL5B

Refer to **Figure 3-1**.

No.	Item	Qty.	UM.	Description
1	21.9647.0002	1	EA	ASSY, VL5A HEAD (VL5Arc only)
2	22.9660.0164	1	EA	ASSY, VL5A YOKE (VL5Arc only)
3	22.9660.0311	1	EA	ASSY, VL5 HEAD (VL5 only)
4	22.9634.0003	1	EA	ASSY, VL5 COVERS AND HOOK (VL5 only)
5	22.9638.0077	1	EA	ASSY, VL5 YOKE (VL5 only)
6	22.9634.0202	1	EA	ASSY VL5B HEAD (VL5B only)
7	22.9634.0205	1	EA	ASSY, VL5B COVERS AND HOOK (VL5B only)
8	22.9634.0222	1	EA	ASSY, VL5B YOKE (VL5B only)
9	22.9634.0004	1	EA	ASSY, VL5A COVERS AND HOOK (VL5Arc only)

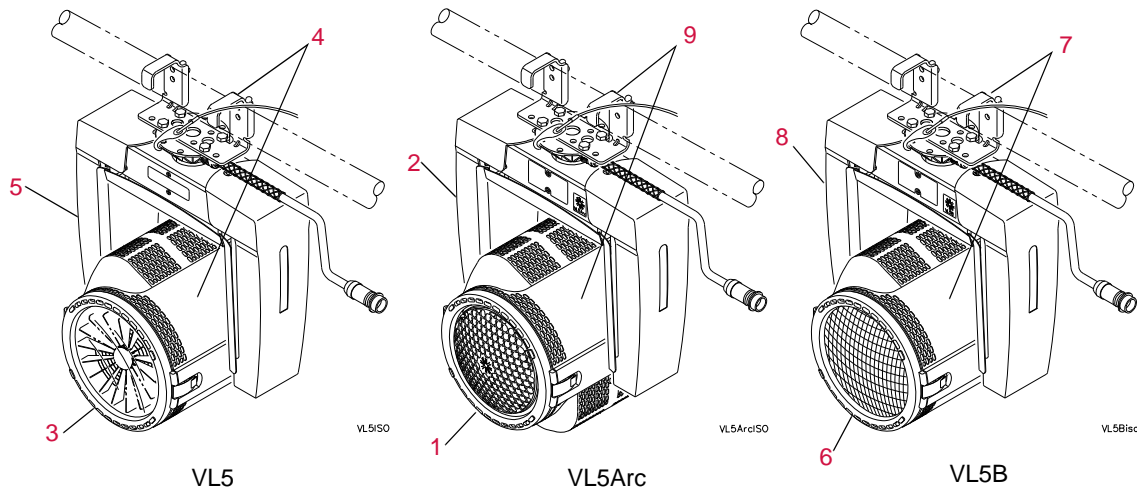


Figure 3-1: VL5/VL5Arc/VL5B Wash Luminaires

COVERS AND HOOKS

Covers and Hook Assembly

22.9634.0003 VL5
 22.9634.0205 VL5B
 22.9647.0004 VL5Arc

Refer to **Figure 3-2**.

No.	Item	Qty.	UM.	Description
1	04.3001.0005	1	EA	LABEL, VL5 ID TAG (PATENT & TRADEMARK) (VL5/VL5B only)
	04.9647.0070	1	EA	LABEL, VL5A ID TAG (VL5Arc only)
2	04.3001.0006	1	EA	LABEL, VL5 INPUT RATING (VL5/VL5B only)
	04.9647.0072	1	EA	LABEL, VL5A INPUT RATING (VL5Arc only)
3	04.3001.0007	1	EA	LABEL, VL5 RELAMPING (VL5/VL5B only) (not shown)
	04.9647.0073	1	EA	LABEL, VL5A RELAMPING (VL5Arc only) (not shown)
4	04.3001.0008	1	EA	LABEL, UL/CSA LISTED
5	04.3001.0010	1	EA	LABEL, CAUTION HAZARD OF ELECTRICAL SHOCK
6	04.3001.0011	1	EA	LABEL, DRY LOCATIONS EMPLACEMENTS SECS
7	04.4020.0001	1	EA	LABEL, GROUND
8	04.9634.0136 *	2	EA	LABEL, VARI*LITE, YOKE LEG COVER
9	04.9634.0181	2	EA	LABEL, VL5B (VL5B only)
	04.9647.0045	2	EA	LABEL, VL5A (VL5Arc only)
10	04.9634.0237	1	EA	LABEL, VL5 PATENT (VL5/VL5B only)
	04.9647.0171	1	EA	LABEL, VL5ARC PATENT (VL5Arc only)
11	06.6018.0002 *	0.58	FT	VELCRO HOOK, 1" BLK ADHESIVE BACKED
12	10.9634.0134 *	2	EA	COVER, VL5 YOKE LEG
13	10.9647.0148	2	EA	YOKE ARM RETAINER WASHER (VL5Arc only)
14	12.9647.0138	1	EA	VL5A LIGHT MASK FOIL (VL5Arc only)
15	22.9634.0086	1	EA	ASSY, VL5 TOP LAMP COVER (VL5/VL5B only)
	22.9634.0086	2	EA	ASSY, VL5 TOP LAMP COVER (VL5Arc only)
16	22.9634.0087	1	EA	ASSY, VL5 BOTTOM LAMP COVER (VL5/VL5B only)
17	22.9634.0145	1	EA	ASSY, VL5 LAMP SAFETY CABLE
18	22.9634.0217	1	EA	ASSY, S300 HOOK/WING BOLT
19	42.5002.0005	1	EA	GLASS, VL5 FRONT, STIPPLE (VL5/VL5B only)
20	52.6264.0003	1	EA	CONN HOUSING, 30 SERIES, W/ FLNGS 3-POS (VL5Arc only)
21	52.8330.0001	2	EA	TAB, FASTON .250" .145 STUD DIA (VL5/VL5Arc only)
22	53.2002.0001	2	EA	NUT, 6-32 KEP ZINC PLATED (VL5/VL5Arc only)
23	53.2025.0002	4	EA	NUT, 5/16-18 ZINC W/NYLON INSERT
24	53.6607.0001	2	EA	SCREW, 6-32 X 1/4" PPB (VL5/VL5Arc only)
25	53.6668.0001 *	4	EA	FASTENER, U-TYPE SPRG. STEEL, BLK, TINNERMAN
26	53.7001.0003	4	EA	SCREW, 5/16-18 X 1" HEX HD CS ZINC GRD5
27	55.2186.0001	3	EA	CABLE TIE, 10" WD 4.00" LG SMALL (VL5Arc only)
28	55.3303.0008	1	EA	WASHER, #8 LOCK INT. TOOTH SS (VL5Arc only)
	55.6538.0001		EA	WASHER, #6 LOCK INTERNAL TOOTH (VL5 only)

Covers and Hooks Assembly (cont)

* Order the following items as a complete assembly: **22.9634.0163** ASSY, VL5 YOKE LEG COVER (2 per luminaire)

No.	Item	Qty.	UM.	Description
8	04.9634.0136	1	EA	LABEL, VARI*LITE, YOKE LEG COVER
11	06.6018.0002	0.33	IN	VELCRO HOOK, 1" BLK ADHESIVE BACKED
12	10.9634.0134	1	EA	COVER, VL5 YOKE LEG
25	53.6668.0001	2	EA	FASTENER, U-TYPE SPRG. STEEL, BLK, TINNERMAN

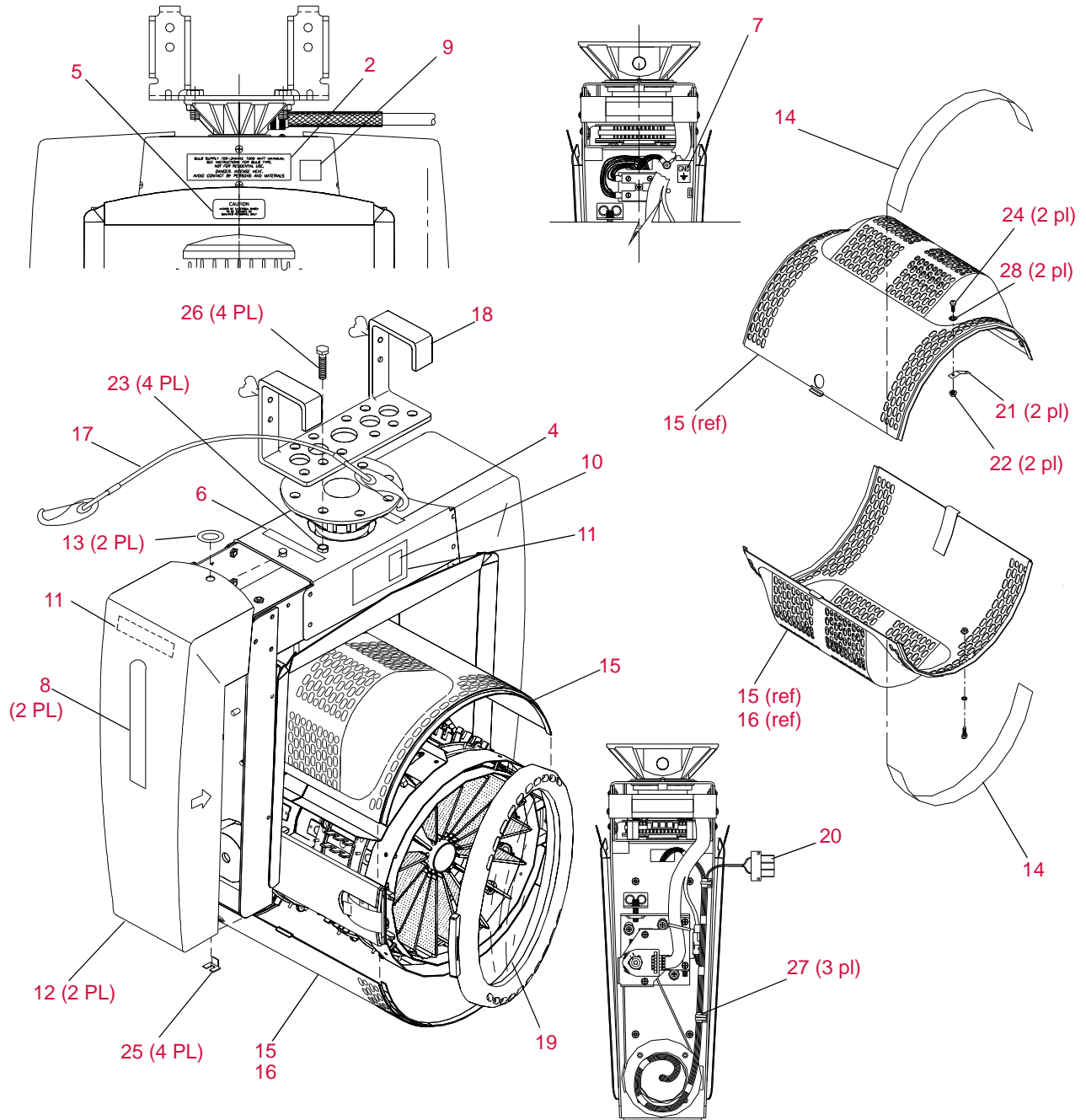


Figure 3-2: Covers and Hook Assembly



Notes

HEAD

VL5/VL5B Head Assembly

22.9634.0002 VL5

22.9634.0202 VL5B

Refer to **Figure 3-3**.

No.	Item	Qty.	UM.	Description
1	10.9634.0077	0.50	FT	PAD, EXTRUDED, SILICONE, BULKHEAD
2	22.9634.0004	1	EA	ASSY, VL5 HINGED RAIL
3	22.9634.0005	1	EA	ASSY, VL5 LATCHED RAIL
4	22.9634.0006	1	EA	ASSY, VL5 BLU/AMB BULKHEAD (VL5 only)
	22.9634.0203	1	EA	ASSY, VL5B MAG/AMB BULKHEAD (VL5B only)
5	22.9634.0007	1	EA	ASSY, VL5 MAG/DIF BULKHEAD (VL5 only)
	22.9634.0204		EA	ASSY, VL5B BLU/DIF BULKHEAD (VL5B only)
6	22.9634.0121	1	EA	ASSY, VL5 BLU/AMB MOTOR
7	22.9634.0122	1	EA	ASSY, MAG/DIF MOTOR
8	53.5506.0312	8	EA	SCREW, 6-32 X 5/16" PPSS
9	55.2203.0001	12	EA	SCREW, 4-40 X 1/4" PPZ
10	55.6537.0001	8	EA	WASHER, #4 LOCK INTERNAL TOOTH
11	55.6538.0001	8	EA	WASHER, #6 LOCK INTERNAL TOOTH
12	55.6706.0001	1	EA	GROMMET, 9/32" ID 9/16" OD 1/4T SILICONE RED
13	55.9634.0131	1	EA	SPRING, 7" MOTOR WIRE -VL5

VL5/VL5B Head Assembly (cont.)

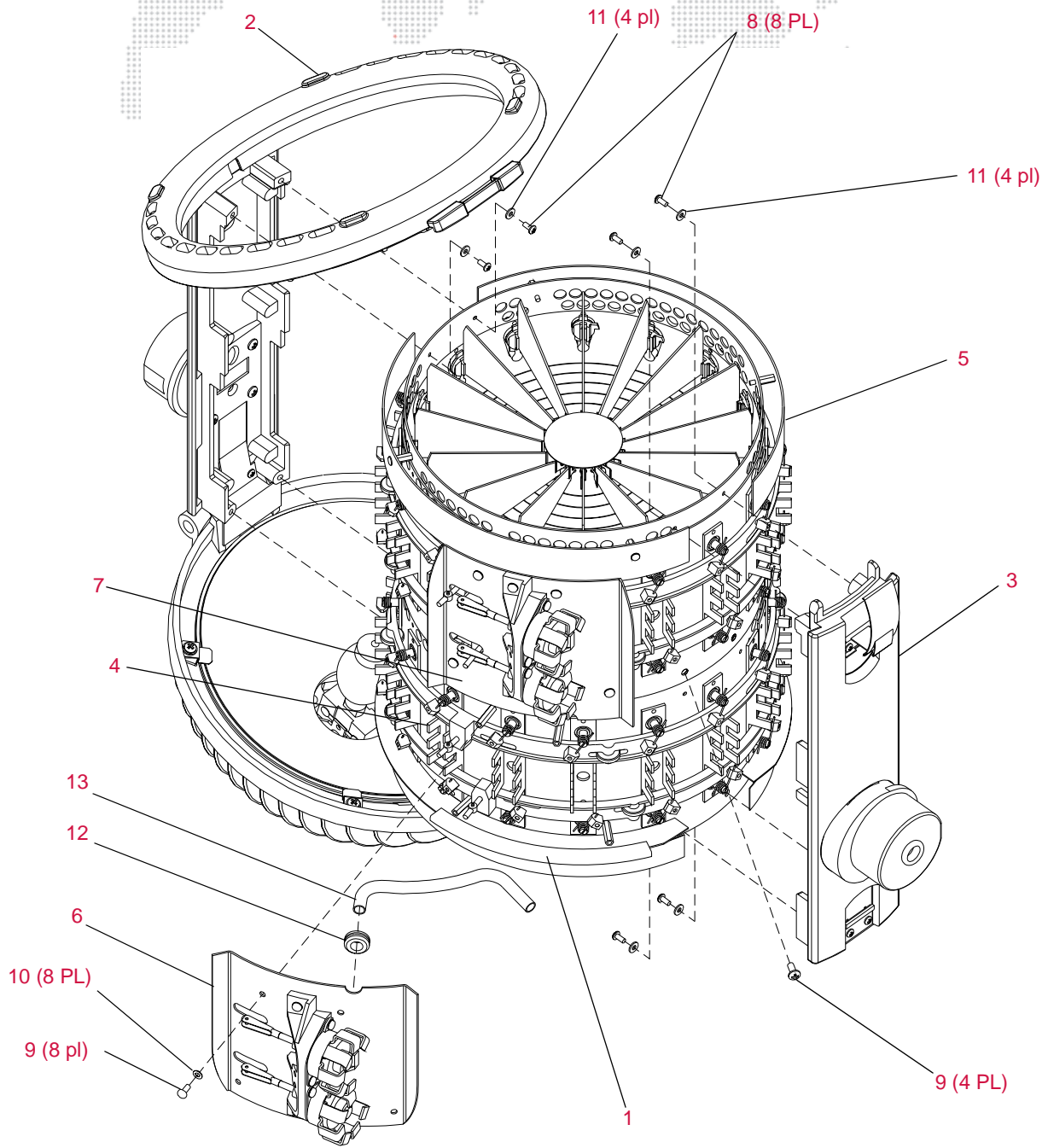


Figure 3-3: VL5/VL5B Head Assembly

VL5Arc Head Assembly

21.9647.0002

Refer to **Figure 3-4**.

No.	Item	Qty.	UM.	Description
1	10.9634.0077	1	FT	PAD, EXTRUDED SILICONE, BULKHEAD
2	10.9647.0044	1	EA	BAFFLE, VL5A FRONT LIGHT
3	10.9647.0092	1	EA	BAFFLE, HEAT/LIGHT, VL5A
4	10.9647.0097	1	EA	TUBE RETAINER, VL5A
5	22.9634.0006	1	EA	ASSY, VL5 BLU/AMB BULKHEAD
6	22.9634.0121	1	EA	ASSY, VL5 BLU/AMB MOTOR
7	22.9634.0122	1	EA	ASSY, VL5 MAG/DIF MOTOR
8	22.9647.0005	1	EA	ASSY, VL5A HINGED RAIL
9	22.9647.0007	1	EA	ASSY, VL5A MAGENTA/DIMMER BULKHEAD
10	22.9647.0014	1	EA	ASSY, LATCHED RAIL - VL5A
11	22.9647.0131	1	EA	ASSY, VL5A LENS AND BELLOWS/MOTOR
12	22.9647.0137	1	EA	ASSY, UV GLASS MOUNTING, VL5A
13	25.9647.0108	1	EA	CABLE ASSY, BELLOWS MOTOR EXTENSION
14	52.8244.0005	1	EA	FASTON RECEPT, INS .250" 22-18AWG STRIP
15	53.5506.0312	8	EA	SCREW, 6-32 X 5/16" PPSS
16	53.5506.0875	1	EA	SCREW, 6-32 X 7/8" PPSS
17	53.6524.0002	3	EA	SCREW, 6-32 X 5/16" PPB
18	55.2203.0001	14	EA	SCREW, 4-40 X 1/4" PPZ
19	55.3301.0004	2	EA	WASHER, #4 FLAT SS
20	55.3301.0006	3	EA	WASHER, #6 FLAT SS
21	55.6506.0003	1	EA	SPACER, 3/8" RND .500" LG .141" ID THRU TEFLON
22	55.6537.0001	10	EA	WASHER, #4 LOCK INTERNAL TOOTH
23	55.6538.0001	12	EA	WASHER, #6 LOCK INTERNAL TOOTH
24	55.6697.0012	2	EA	STANDOFF, 3/16" RND 4-40M 6-32F .625" LG SS SLOT
25	55.6706.0001	2	EA	GROMMET, 9/32" ID 9/16" OD 1/4T SILICONE RED
26	55.9634.0131	1	EA	SPRING, 7" MOTOR WIRE -VL5
27	55.9647.0075	1	EA	SPRING, BELLOWS MOTOR
28	71.2528.0575	1	EA	LAMP, 575 WATT ARC - PHILLIPS MSR575HR

VL5Arc Head Assembly (cont.)

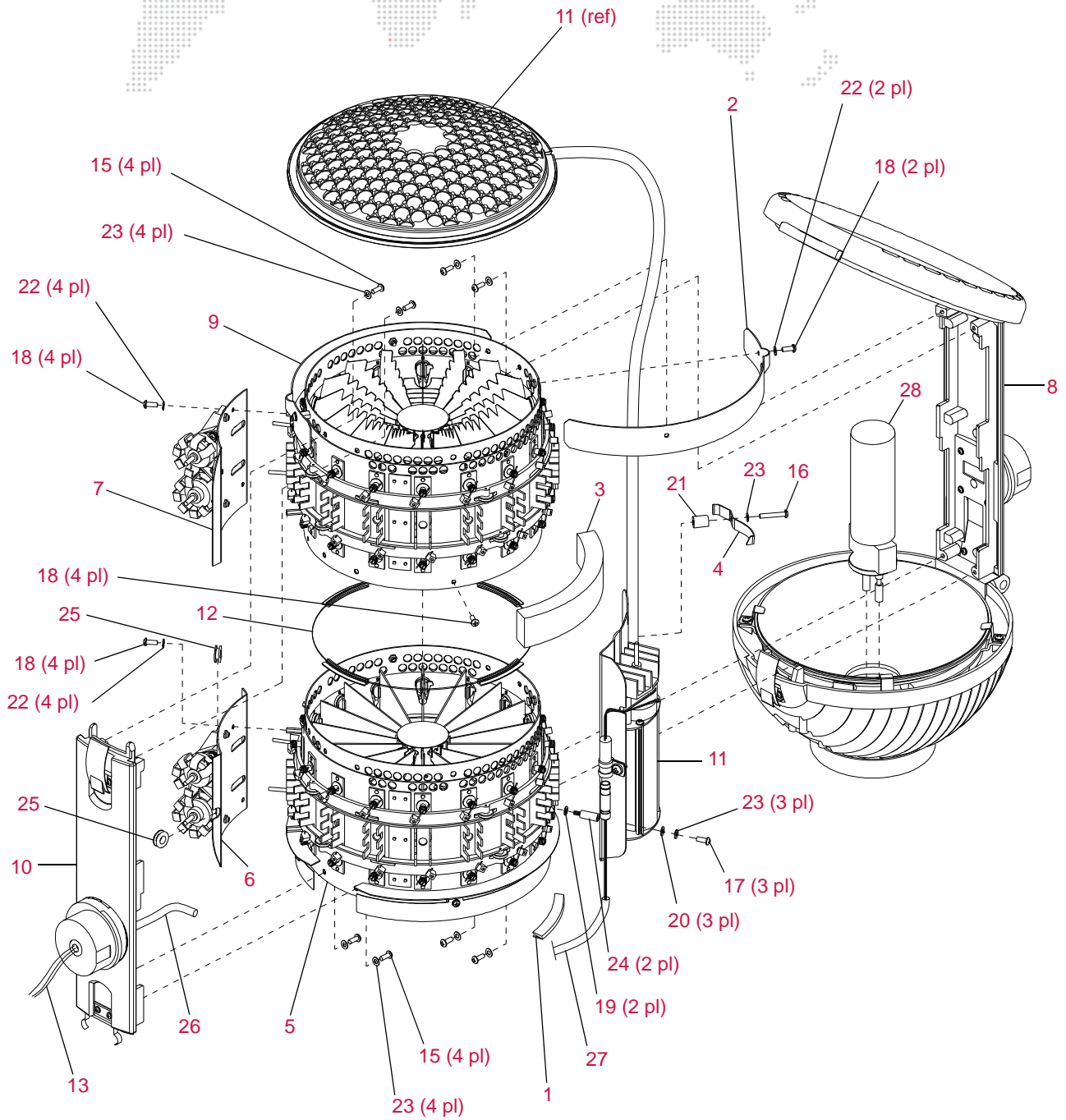


Figure 3-4: VL5Arc Head Assembly

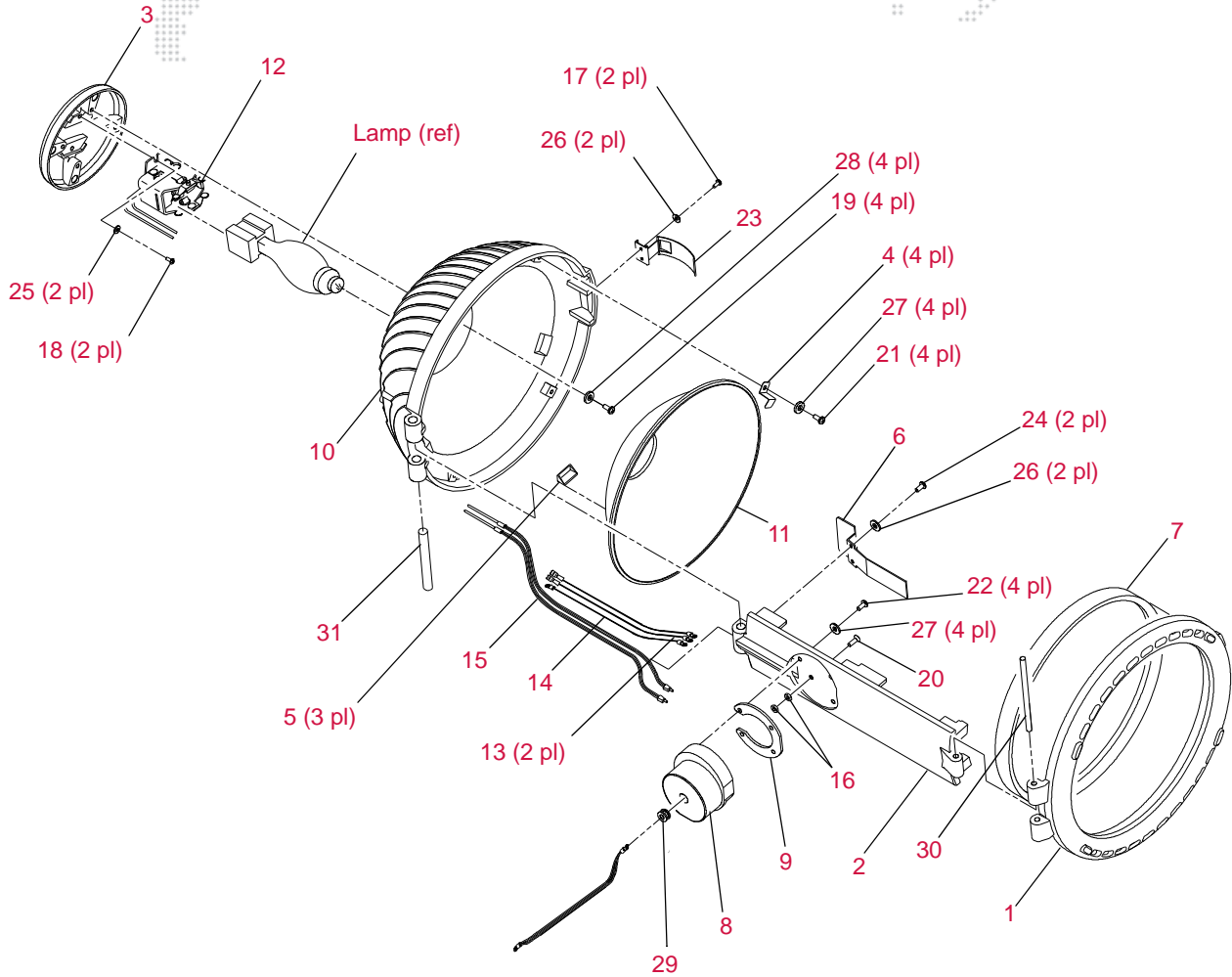
VL5/VL5B Hinged Rail Assembly

22.9634.0004

Refer to **Figure 3-5**.

No.	Item	Qty.	UM.	Description
1	10.9634.0088	1	EA	FRONT RING, VL5
2	10.9634.0090	1	EA	SIDE RAIL, VL5 HINGED
3	10.9634.0092	1	EA	CAP, HEATSINK
4	10.9634.0100	4	EA	CLIP, MOUNTING REFLECTOR
5	10.9634.0103	3	EA	PAD, MOUNTING, REFLECTOR
6	10.9634.0135	1	EA	PLATE, LAMP WIRE, VL5
7	10.9634.0162	2.17	FT	PAD, VL5 FRONT RING
8	10.9634.0226	1	EA	MACHINED TILT TUBE -VL5
9	10.9647.0084	1	EA	HEAT INSULATOR, MACHINED - VL5A
10	12.9634.0091	1	EA	HEATSINK, W/ POTBELLY BLACK PAINT
11	12.9634.0217	1	EA	REFLECTOR, BLK RIM PAR 64 CUSTOM COATED
12	23.9634.0232	1	EA	ASSY, LAMP SOCKET HIGH TEMPERATURE -VL5
13	25.8007.2644	2	EA	GND STRAP ASSY, #6 RING/18-14AWG FASTON, 11"
14	25.8007.3344	1	EA	GND STRAP ASSY, #8 RING/#8 RING, 11"
15	25.9634.0140	1	EA	CABLE ASSY, VL5 GROUND SAFETY
16	53.2002.0001	2	EA	NUT, 6-32 KEP ZINC PLATED
17	53.5504.0187	2	EA	SCREW, 4-40 X 3/16" PPSS
18	53.5508.0375	2	EA	SCREW, 8-32 X 3/8" PPSS
19	53.5508.0625	4	EA	SCREW, 8-32 X 5/8" PPSS
20	53.5536.0625	1	EA	SCREW, 6-32 X 5/8" PFSS
21	53.6607.0001	4	EA	SCREW, 6-32 X 1/4" PPB
22	53.6610.0003	4	EA	SCREW, 6-32 X 7/16" PPZ
23	54.1226.0001	1	EA	LATCH ASSY, VL5
24	55.2203.0001	2	EA	SCREW, 4-40 X 1/4" PPZ
25	55.3301.0008	2	EA	WASHER, #8 FLAT SS
26	55.3303.0004	4	EA	WASHER, #4 LOCK INT. TOOTH SS
27	55.3303.0006	8	EA	WASHER, #6 LOCK INT. TOOTH SS
28	55.3303.0008	4	EA	WASHER, #8 LOCK INT. TOOTH SS
29	55.6525.0004	1	EA	BUSHING, 3/8" ID FLIP-LOK
30	55.6612.0005	1	EA	PIN, 3/16 OD X 2 3/4L TYPE C LOW CARBON STEEL
31	55.6612.0009	1	EA	PIN, 5/16" DIA X 2-3/4" L SPRING ZINC PLT

VL5/VL5B Hinged Rail Assembly (cont.)



34004K3

Figure 3-5: VL5 Hinged Rail Assembly

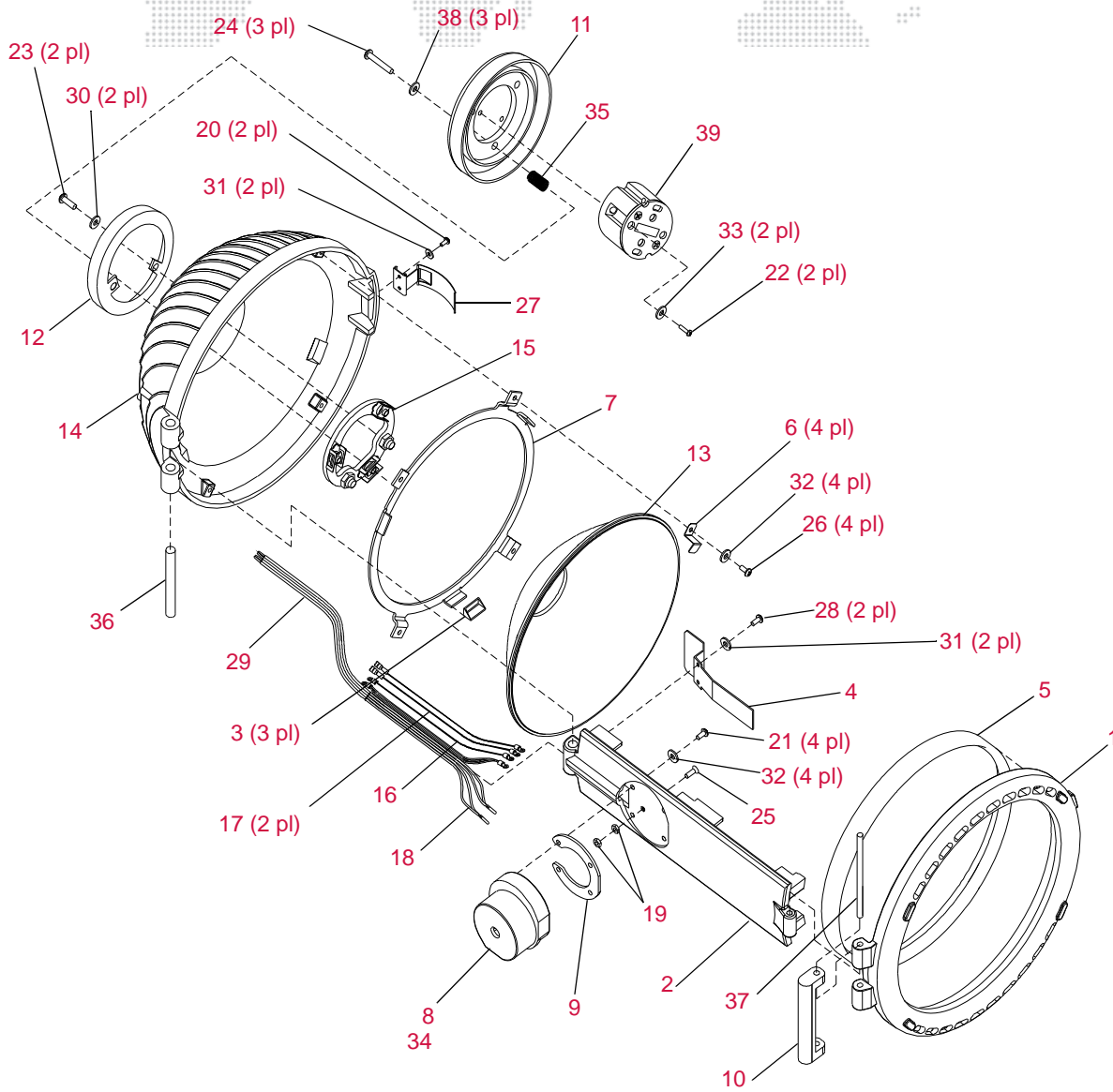
VL5Arc Hinged Rail Assembly

22.9647.0005

Refer to **Figure 3-6**.

No.	Item	Qty.	UM.	Description
1	10.9634.0088	1	EA	FRONT RING, VL5
2	10.9634.0090	1	EA	SIDE RAIL, VL5 HINGED
3	10.9634.0103	3	EA	PAD, MOUNTING, REFLECTOR
4	10.9634.0135	1	EA	PLATE, LAMP WIRE, VL5
5	10.9634.0162	2.17	FT	PAD, VL5 FRONT RING
6	10.9647.0039	4	EA	CLIP, VL5A REFLECTOR MOUNTING
7	10.9647.0068	1	EA	PLATE, REFLECTOR MOUNTING, VL5A
8	10.9647.0082	1	EA	TILT TUBE, ALUMINUM MACHINED - VL5A
9	10.9647.0084	1	EA	HEAT INSULATOR, MACHINED - VL5A
10	10.9647.0107	1	EA	HINGE STOP - VL5ARC
11	10.9647.0120	1	EA	VL5ARC BACK CAP
12	10.9647.0126	1	EA	VL5ARC BACK CAP LIGHT BAFFLE
13	12.9634.0217	1	EA	REFLECTOR, BLK RIM PAR 64 CUSTOM COATED
14	12.9647.0061	1	EA	HEATSINK W/ POT BELLY BLACK, VL5A
15	22.9647.0032	1	EA	NUT RING, VL5A HEATSINK BACKCAP
16	25.8007.2244	1	EA	GND STRAP ASSY, #6 RING/#6 RING, 11"
17	25.8007.2644	2	EA	GND STRAP ASSY, #6 RING/18-14WG FASTON, 11"
18	25.9647.0059	1	EA	CABLE ASSY, VL5A BULB WIRES
19	53.2002.0001	2	EA	NUT, 6-32 KEP ZINC PLATED
20	53.5504.0187	2	EA	SCREW, 4-40 X 3/16" PPSS
21	53.5506.0500	4	EA	SCREW, 6-32 X 1/2" PPSS
22	53.5508.0563	2	EA	SCREW, 8-32 X 9/16" PPSS BLK
23	53.5510.0751	2	EA	SCREW, 10-32 X 3/4" PPSS BLK
24	53.5510.1751	3	EA	SCREW, 10-32 X 1 3/4" PPSS BLK
25	53.5536.0625	1	EA	SCREW, 6-32 X 5/8" PFSS
26	53.5606.0312	4	EA	SCREW, 6-32 X 5/16" PPSS BLK
27	54.1226.0001	1	EA	LATCH ASSY, VL5
28	55.2203.0001	2	EA	SCREW, 4-40 X 1/4" PPZ
29	55.2260.0208	2.42	FT	SLEEVING, FIBERGLASS 0.208 ID
30	55.3301.0010	2	EA	WASHER, #10 FLAT
31	55.3303.0004	4	EA	WASHER, #4 LOCK INT. TOOTH SS
32	55.3303.0006	8	EA	WASHER, #6 LOCK INT. TOOTH SS
33	55.3304.0008	2	EA	WASHER, #8 SPLIT LOCK SS
34	55.6525.0004	1	EA	BUSHING, 3/8" ID FLIP-LOK
35	55.6568.0023	3	EA	SPRING, COMPRESSION .300" OD 1.375" LG SS
36	55.6612.0009	1	EA	PIN, 5/16" DIA X 2-3/4" L SPRING ZINC PLT
37	55.6612.0014	1	EA	PIN, GRV .187" OD 3.35" LG TYPE C .30 L ZINC
38	55.6635.0010	3	EA	WASHER, #10 SPHERICAL LEDLOY BLK OXD
39	71.2528.0003	1	EA	SOCKET, LAMP - VL5ARC

VL5Arc Hinged Rail Assembly (cont.)



HRISOEXP

Figure 3-6: VL5Arc Hinged Rail Assembly

VL5 Latched Rail Assembly

22.9634.0005

Refer to **Figure 3-7**.

No.	Item	Qty.	UM.	Description
1	10.9634.0089	1	EA	SIDE RAIL, VL5 LATCHED
2	10.9634.0226	1	EA	MACHINED TILT TUBE - VL5
3	10.9647.0084	1	EA	HEAT INSULATOR, MACHINED - VL5A
4	53.5504.0187	4	EA	SCREW, 4-40 X 3/16" PPSS
5	53.6610.0003	4	EA	SCREW, 6-32 X 7/16" PPZ
6	54.1226.0001	1	EA	LATCH, ASSY, VL5
7	54.1226.0002	1	EA	STRIKE (VL5 LATCH CATCH)
8	55.3303.0004	4	EA	WASHER, #4 LOCK INT. TOOTH SS
9	55.6538.0001	4	EA	WASHER, #6 LOCK, INTERNAL TOOTH
10	55.6706.0001	1	EA	GROMMET, 9/32" ID 9/16" OD 1/4T SILICONE RED

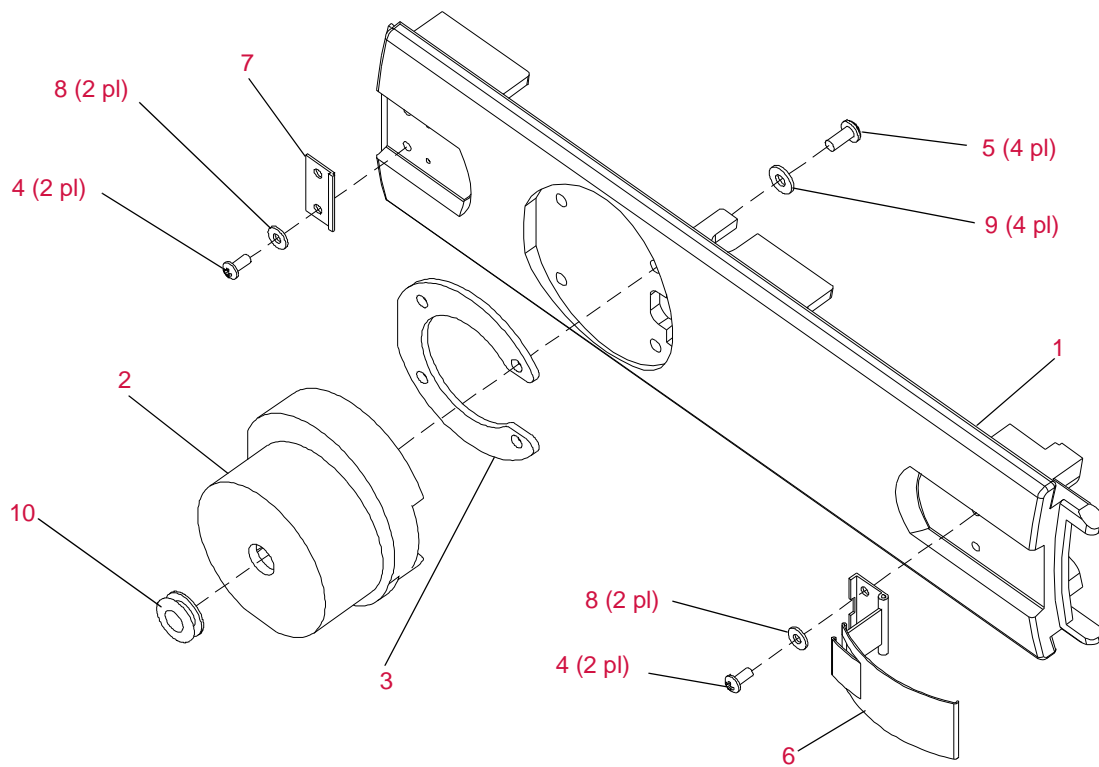


Figure 3-7: VL5 Latched Rail Assembly

VL5Arc Latched Rail Assembly

22.9647.0014

Refer to **Figure 3-8**.

No.	Item	Qty.	UM.	Description
1	10.9634.0089	1	EA	SIDE RAIL, VL5 LATCHED
2	10.9647.0082	1	EA	TILT TUBE, ALUMINUM MACHINED - VL5A
3	10.9647.0084	1	EA	HEAT INSULATOR, HEAT, MACHINED - VL5A
4	10.9647.0117	1	EA	DISCONNECT INSULATING PAD
5	25.9647.0129	1	EA	CABLE ASSY, VL5A DISCONNECT
6	53.2003.0001	2	EA	NUT, 4-40 KEP ZINC PLATED
7	53.5504.0187	2	EA	SCREW, 4-40 X 3/16" PPSS
8	53.5506.0500	4	EA	SCREW, 6-32 X 1/2" PPSS
9	53.6556.0001	2	EA	SCREW, 4-40 X 3/4" PPZ
10	54.1226.0001	1	EA	LATCH ASSY, VL5
11	54.1226.0002	1	EA	STRIKE (VL5 LATCH CATCH)
12	55.3303.0004	4	EA	WASHER, #4 LOCK INT. TOOTH SS
13	55.6538.0001	4	EA	WASHER, #6 LOCK INTERNAL TOOTH
14	55.6706.0001	1	EA	GROMMET, 9/32" ID 9/16" OD 1/4T SILICONE RED

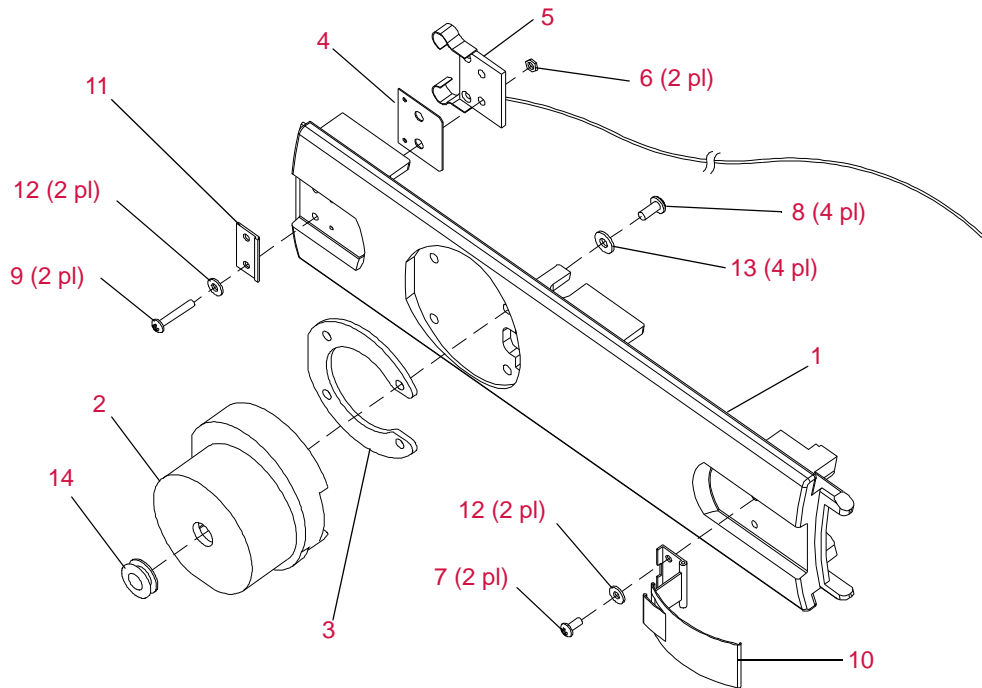


Figure 3-8: VL5Arc Latched Rail Assembly

VL5 Blu/Amb Bulkhead Assembly

22.9634.0006

Refer to **Figure 3-9**.

No.	Item	Qty.	UM.	Description
1	10.9634.0034	32	EA	SPRING, DRIVE ARM, FILTER
2	10.9634.0035	32	EA	LINK, DRIVE ARM
3	10.9634.0098	2	EA	DEFLECTOR, HEAT
4	10.9634.0101	2	EA	BAFFLE, REAR LIGHT
5	10.9634.0105	2	EA	LINK, SWIVEL
6	10.9634.0166	32	EA	CARRIER, FILTER, METAL INJ. MOLDED
7	22.9634.0024	1	EA	ASSY, VL5 BULKHEAD
8	22.9634.0119	1	EA	ASSY, VL5 CENTER HUB
9	22.9634.0123	16	EA	ASSY, FILTER PANEL, VL5 SWP (BLUE) *
10	22.9634.0124	16	EA	ASSY, FILTER PANEL, VL5 LWP (AMBER)
11	22.9634.0143	2	EA	ASSY, VL5 DRIVE RING
12	53.2002.0001	4	EA	NUT, 6-32 KEP ZINC PLATED
13	53.6608.0003	4	EA	SCREW, 6-32 X 3/16" PPZ
14	55.2166.0250	4	EA	STANDOFF, 1/4" HEX 6-32 .205" LG MF SS
15	55.2203.0001	4	EA	SCREW, 4-40 X 1/4" PPZ
16	55.6537.0001	4	EA	WASHER, #4 LOCK INTERNAL TOOTH
17	55.6538.0001	4	EA	WASHER, #6 LOCK INTERNAL TOOTH
18	55.6612.0008	8	EA	PIN, 1/8 OD X 3/8L TYPE-H, AL606-T6 DRIV-LOK
19	55.6669.0009	4	EA	STANDOFF, 1/4" HEX 4-40 .625" LG SS

* 22.9661.0323, used in the VL2416™ wash luminaire, may be substituted.

VL5 Blu/Amb Bulkhead Assembly (cont.)

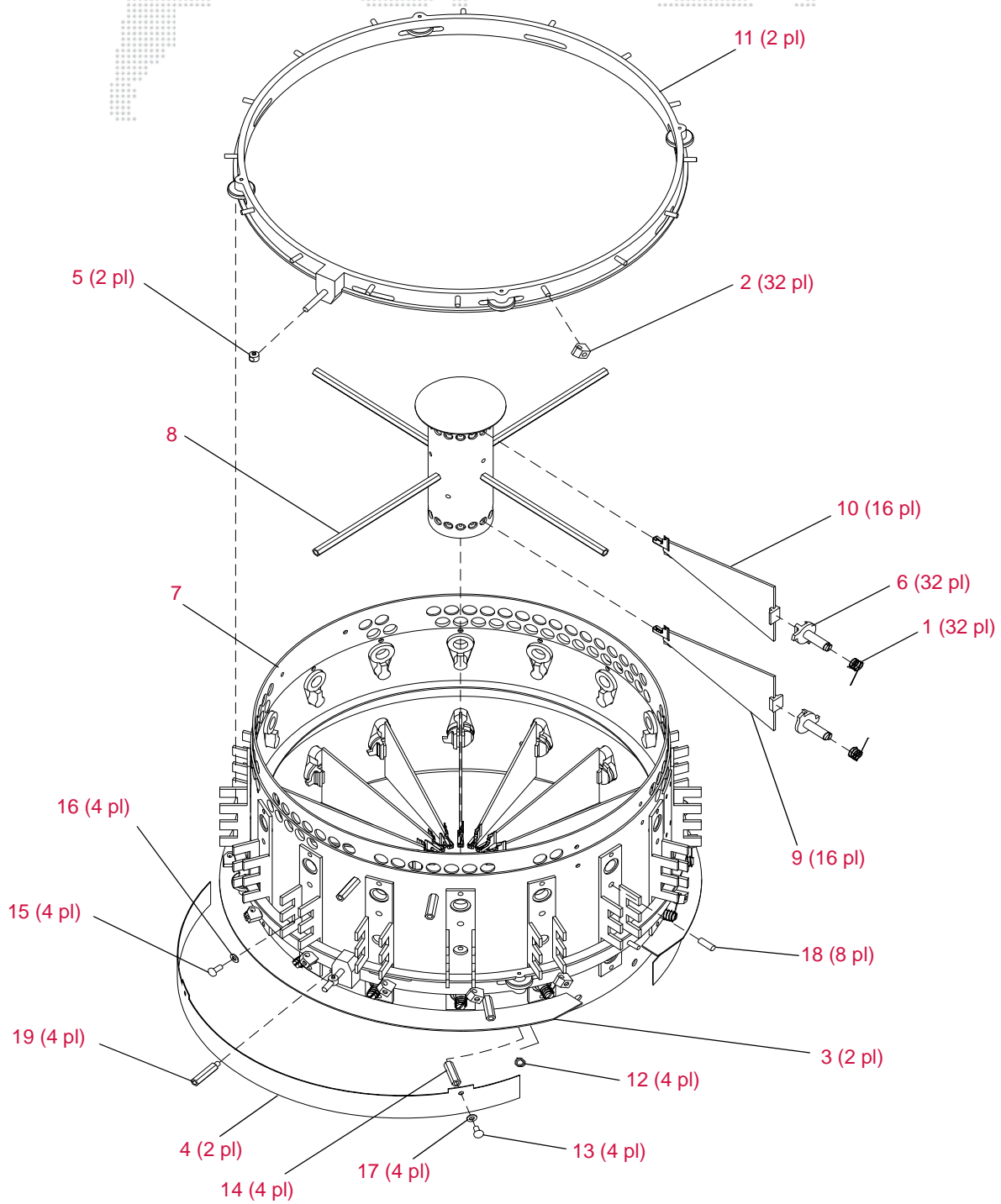


Figure 3-9: VL5 Blu/Amb Bulkhead Assembly

VL5B Mag/Amb Bulkhead Assembly

22.9634.0203

Refer to **Figure 3-10**.

No.	Item	Qty.	UM.	Description
1	10.9634.0034	32	EA	SPRING, DRIVE ARM, FILTER
2	10.9634.0035	32	EA	LINK, DRIVE ARM
3	10.9634.0098	2	EA	DEFLECTOR, HEAT
4	10.9634.0101	2	EA	BAFFLE, REAR LIGHT
5	10.9634.0105	2	EA	LINK, SWIVEL
6	10.9634.0166	32	EA	CARRIER, FILTER, METAL INJ. MOLDED
7	22.9634.0024	1	EA	ASSY, VL5 BULKHEAD
8	22.9634.0119	1	EA	ASSY, VL5 CENTER HUB
9	22.9634.0124	16	EA	ASSY, FILTER PANEL, VL5 LWP (AMBER)
10	22.9634.0143	2	EA	ASSY, VL5 DRIVE RING
11	22.9634.1185	16	EA	ASSY, FILTER PANEL, VL5B CCF (MAGENTA) (changed 02-04-05) *
12	53.2002.0001	4	EA	NUT, 6-32 KEP ZINC PLATED
13	53.6608.0003	4	EA	SCREW, 6-32 X 3/16" PPZ
14	55.2166.0250	4	EA	STANDOFF, 1/4" HEX 6-32 .205" LG MF SS
15	55.2203.0001	4	EA	SCREW, 4-40 X 1/4" PPZ
16	55.6537.0001	4	EA	WASHER, #4 LOCK INTERNAL TOOTH
17	55.6538.0001	4	EA	WASHER, #6 LOCK INTERNAL TOOTH
18	55.6612.0008	8	EA	PIN, 1/8 OD X 3/8L TYPE-H, AL606-T6 DRIV-LOK
19	55.6669.0009	4	EA	STANDOFF, 1/4" HEX 4-40 .625" LG SS

* Separate downscale and upscale filters are no longer required for VL5B luminaires. 22.9634.1185 is a universal replacement item for any VL5B CCF filter panel assembly.

VL5B Mag/Amb Bulkhead Assembly (cont.)

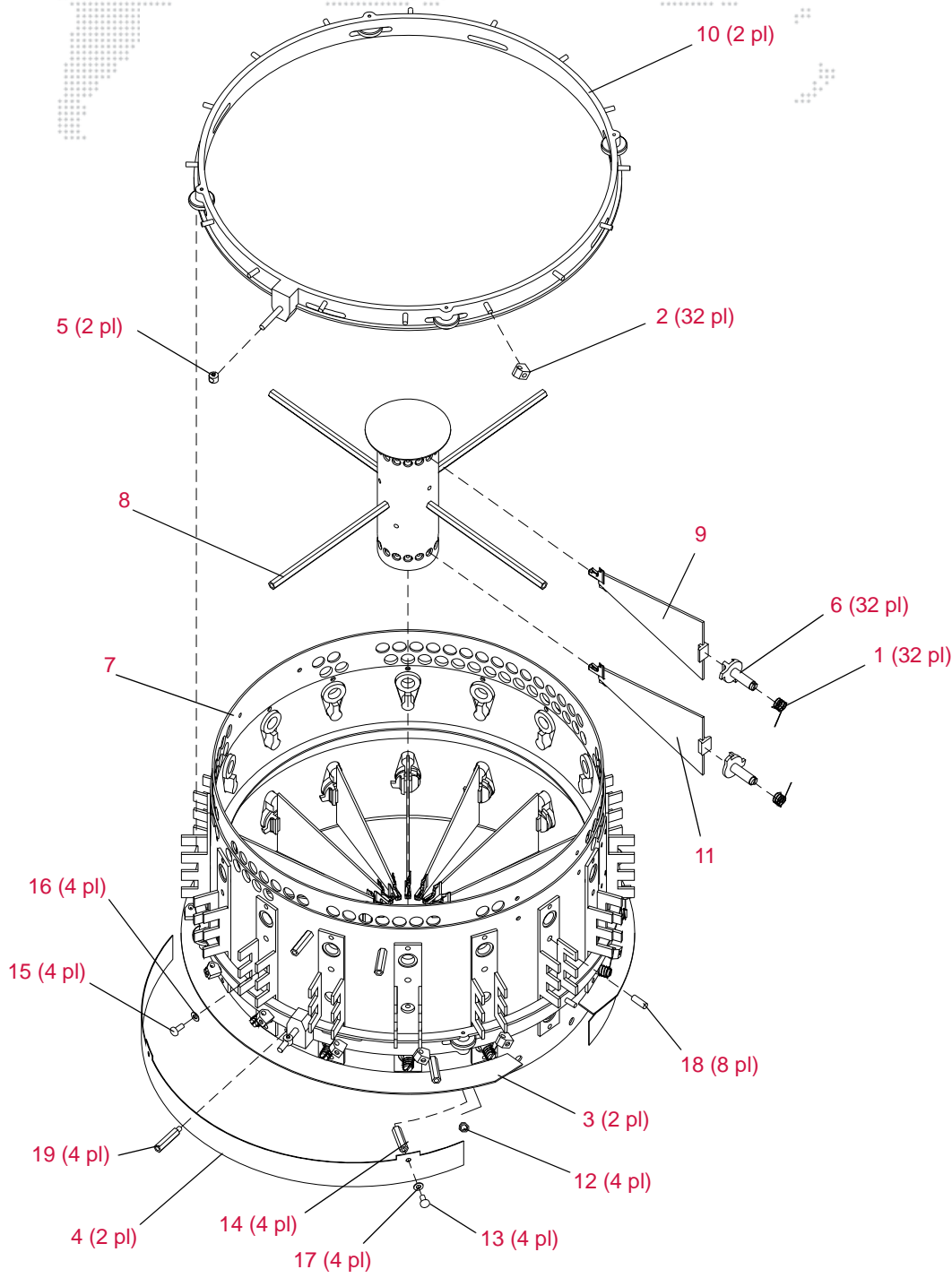


Figure 3-10: VL5B Mag/Amb Bulkhead Assembly



VL5 Mag/Dif Bulkhead Assembly

22.9634.0007

Refer to **Figure 3-11**.

No.	Item	Qty.	UM.	Description
1	10.9634.0026	32	EA	CARRIER, FILTER
2	10.9634.0034	32	EA	SPRING, DRIVE ARM, FILTER
3	10.9634.0035	32	EA	LINK, DRIVE ARM
4	10.9634.0102	2	EA	BAFFLE, FRONT LIGHT
5	10.9634.0105	2	EA	LINK, SWIVEL
6	22.9634.0024	1	EA	ASSY, VL5 BULKHEAD
7	22.9634.0120	1	EA	ASSY, VL5 LIGHT BAFFLE
8	22.9634.0126	16	EA	ASSY, VL5 DIFFUSER PANEL
9	22.9634.0143	2	EA	ASSY, VL5 DRIVE RING
10	22.9647.0074	16	EA	ASSY, FILTER PANEL, CCF (MAGENTA)
11	55.2164.0437	4	EA	STANDOFF, 1/4" HEX 4-40 .438" MF SS
12	55.2203.0001	8	EA	SCREW, 4-40 X 1/4" PPZ
13	55.6537.0001	8	EA	WASHER, #4 LOCK INTERNAL TOOTH
14	55.6612.0008	8	EA	PIN, 1/8 OD X 3/8L TYPE-H AL606-T6 DRIV-LOK
15	55.6669.0009	4	EA	STANDOFF, 1/4" HEX 4-40 .625" LG SS

VL5 Mag/Dif Bulkhead Assembly (cont.)

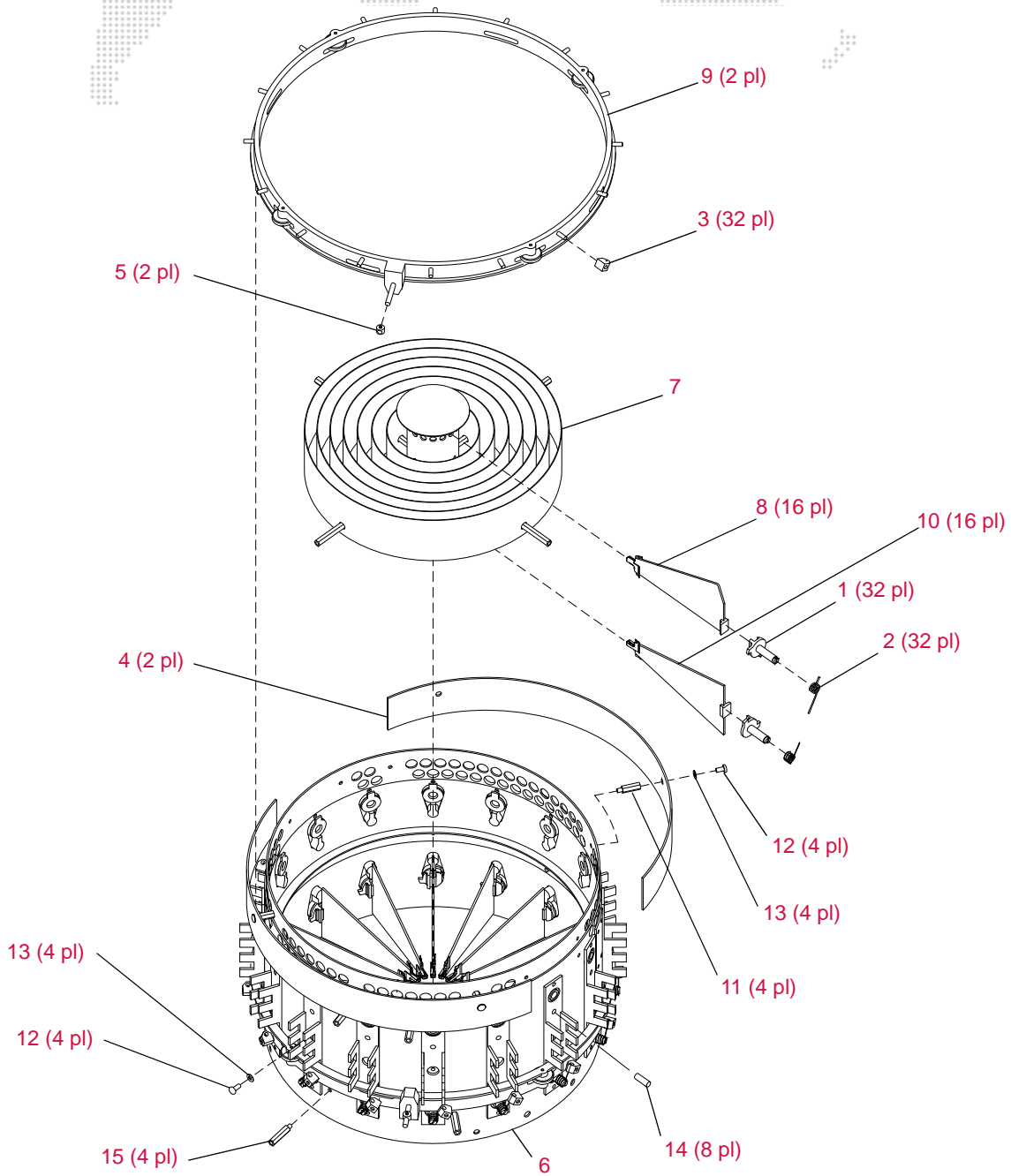


Figure 3-11: VL5 Mag/Dif Bulkhead Assembly

VL5Arc Magenta/Dimmer Bulkhead Assembly

22.9647.0007

Refer to **Figure 3-12**.

No.	Item	Qty.	UM.	Description
1	10.9634.0026	16	EA	CARRIER, FILTER
2	10.9634.0034	32	EA	SPRING, DRIVE ARM, FILTER
3	10.9634.0035	32	EA	LINK, DRIVE ARM
4	10.9634.0077	0.17	FT	PAD, EXTRUDED SILICONE, BULKHEAD
5	10.9634.0105	2	EA	LINK, SWIVEL
6	10.9647.0044	1	EA	BAFFLE, VL5A FRONT LIGHT
7	10.9647.0121	1	EA	VL5ARC INNER LIGHT BAFFLE
8	10.9647.0122	1	EA	VL5ARC OUTER LIGHT BAFFLE
9	10.9647.0124	16	EA	CARRIER, VL5ARC
10	22.9634.0024	1	EA	ASSY, VL5 BULKHEAD
11	22.9634.0120	1	EA	ASSY, VL5 LIGHT BAFFLE
12	22.9634.0143	2	EA	ASSY, VL5 DRIVE RING
13	22.9647.0074	16	EA	ASSY, FILTER PANEL, CCF (MAGENTA)
14	22.9647.0136	16	EA	ASSY, DIMMER BLADE, VL5A
15	55.2164.0437	4	EA	STANDOFF, 1/4" HEX 4-40 .438" MF SS
16	55.2203.0001	6	EA	SCREW, 4-40 X 1/4" PPZ
17	55.3301.0004	2	EA	WASHER, #4 FLAT SS
18	55.6537.0001	6	EA	WASHER, #4 LOCK INTERNAL TOOTH
19	55.6612.0008	8	EA	PIN, 1/8 OD X 3/8L TYPE-H AL606-T6 DRIV-LOK
20	55.6669.0009	4	EA	STANDOFF, 1/4" HEX 4-40 .625 LG SS
21	55.6697.0012	2	EA	STANDOFF, 3/16" RND 4-40 M 6-32 F .625" LG SS SLOT

VL5Arc Magenta/Dimmer Bulkhead Assembly (Cont.)

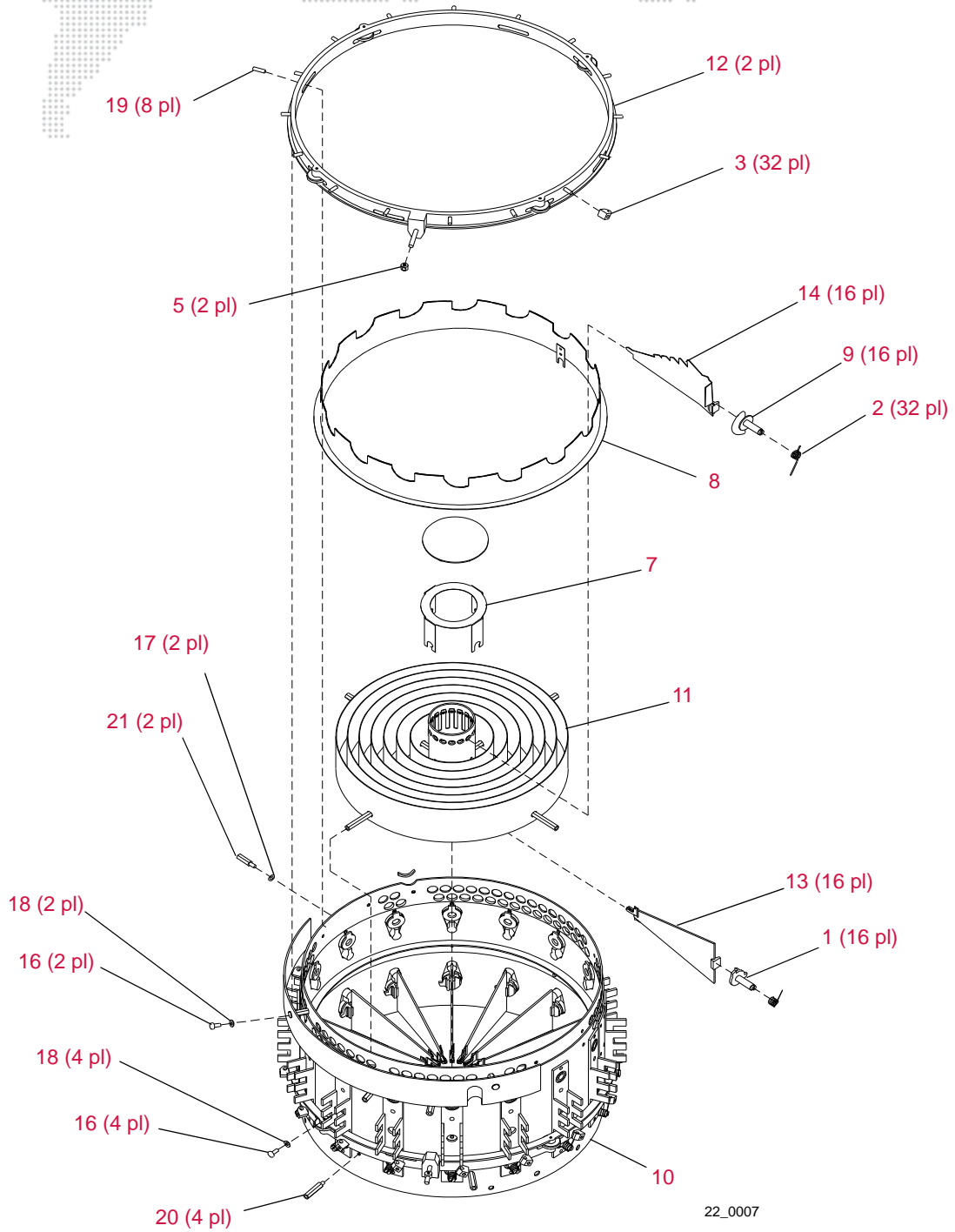


Figure 3-12: VL5Arc Magenta/Dimmer Bulkhead Assembly



VL5B Blu/Dif Bulkhead Assembly

22.9634.0204

Refer to **Figure 3-13**.

No.	Item	Qty.	UM.	Description
1	10.9634.0026	32	EA	CARRIER, FILTER
2	10.9634.0034	32	EA	SPRING, DRIVE ARM, FILTER
3	10.9634.0035	32	EA	LINK, DRIVE ARM
4	10.9634.0102	2	EA	BAFFLE, FRONT LIGHT
5	10.9634.0105	2	EA	LINK, SWIVEL
6	22.9634.0024	1	EA	ASSY, VL5 BULKHEAD
7	22.9634.0120	1	EA	ASSY, VL5 LIGHT BAFFLE
8	22.9634.0126	16	EA	ASSY, VL5 DIFFUSER PANEL
9	22.9634.0143	2	EA	ASSY, VL5 DRIVE RING
10	22.9634.1183	16	EA	ASSY, FILTER PANEL, VL5B SWP (BLUE) (changed 02-04-05) *
11	55.2164.0437	4	EA	STANDOFF, 1/4" HEX 4-40 .438" MF SS
12	55.2203.0001	8	EA	SCREW, 4-40 X 1/4" PPZ
13	55.6537.0001	8	EA	WASHER, #4 LOCK INTERNAL TOOTH
14	55.6612.0008	8	EA	PIN, 1/8 OD X 3/8L TYPE-H AL606-T6 DRIV-LOK
15	55.6669.0009	4	EA	STANDOFF, 1/4" HEX 4-40 .625" LG SS

* Separate downscale and upscale filters are no longer required for VL5B luminaires. 22.9634.1183 is a universal replacement item for any VL5B SWP filter panel assembly.

VL5B Blu/Dif Bulkhead Assembly (cont.)

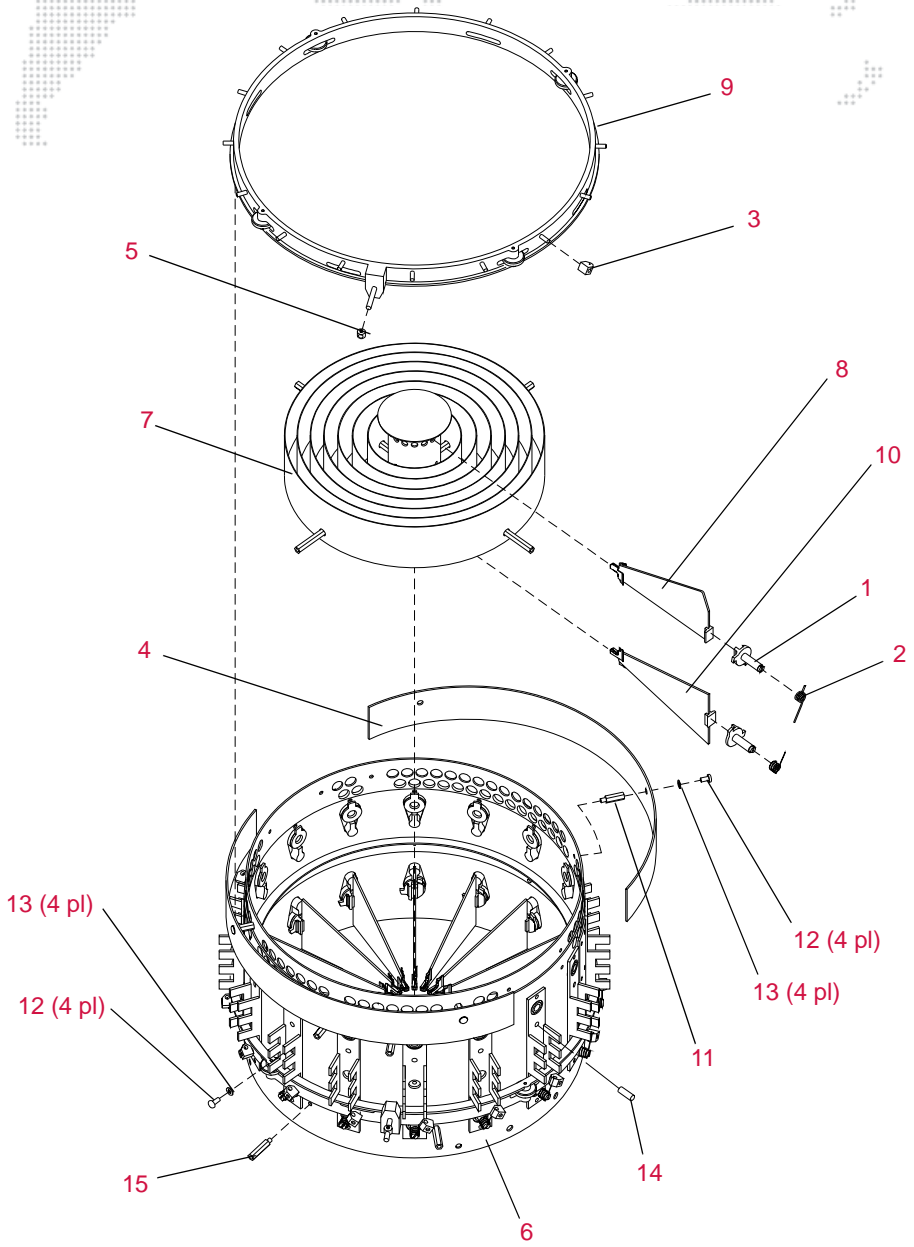


Figure 3-13: VL5B Blu/Dif Bulkhead Assembly

VL5 Center Hub Assembly

22.9634.0119

Refer to **Figure 3-14**.

No.	Item	Qty.	UM.	Description
1	10.9634.0028	1	EA	HUB, CENTER, VL5 BULKHEAD
2	10.9634.0029	2	EA	SPRING, FINGER, FILTER SUPPORT
3	10.9634.0133	1	EA	PLUG, HUB
4	53.5704.0250	4	EA	SCREW, 4-40 X 1/4" SCSS
5	53.6534.0003	8	EA	RIVET, 3/32" OD POP X 3/32GRIP STEEL
6	55.6669.0008	4	EA	STANDOFF, 5/32" HEX 4-40 3.312" SS BLK

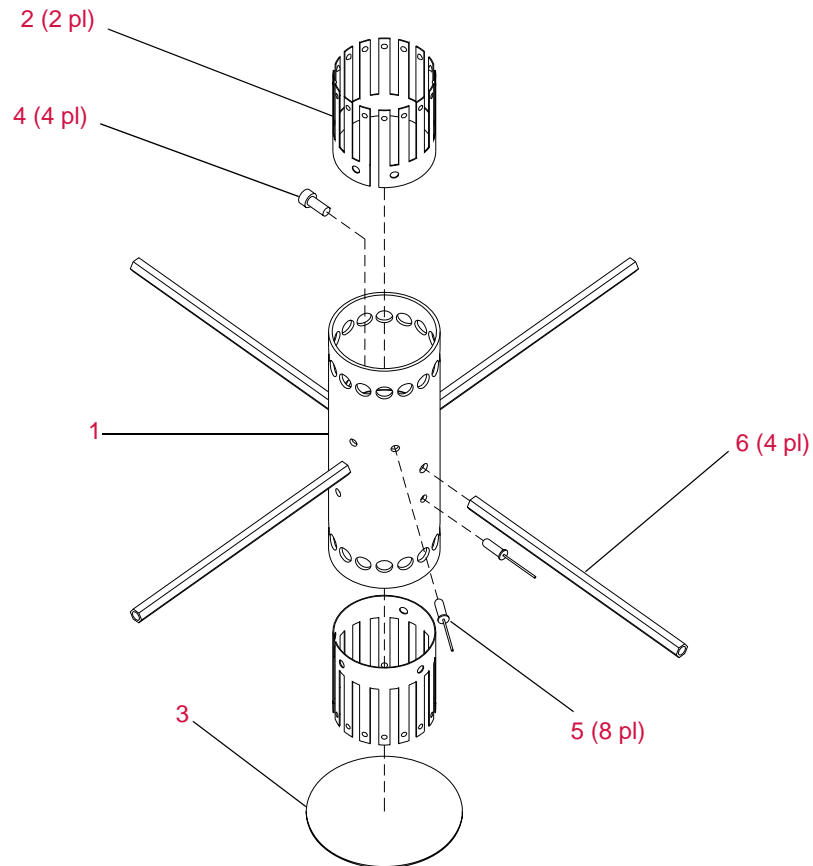


Figure 3-14: VL5 Center Hub Assembly

Filter Panel Assemblies

22.9634.0123 VL5
 22.9634.0124 VL5
 22.9634.1183 VL5B
 22.9634.1185 VL5B
 22.9647.0074 VL5Arc

Refer to **Figure 3-15**.

No.	Item	Qty.	UM.	Description
1	10.9634.0067	1	EA	PAD, FILTER, EXTRUSION, SILICONE, WHITE
2	10.9634.0156	1	EA	CARRIER, CENTER FILTER, BLU/AMB/DIFF (USED ON 22.9634.0123, 22.9634.0124 AND 22.9634.1185)
	10.9634.0157	1	EA	CARRIER, CENTER FILTER, MAGENTA (USED ON 22.9634.1183 AND 22.9647.0074)
3	41.9634.0040	1	EA	FILTER, SWP, BLUE (used on 22.9634.0123)
	41.9634.0041	1	EA	FILTER, LWP, AMBER (used on 22.9634.0124)
	41.9634.1183	1	EA	FILTER, VL5B SWP, BLUE (used on 22.9634.1183)
	41.9634.1185	1	EA	FILTER, VL5B CCF, MAGENTA (used on 22.9634.1185)
	41.9647.0065	1	EA	FILTER, CCF, MAGENTA (used on 22.9647.0074)

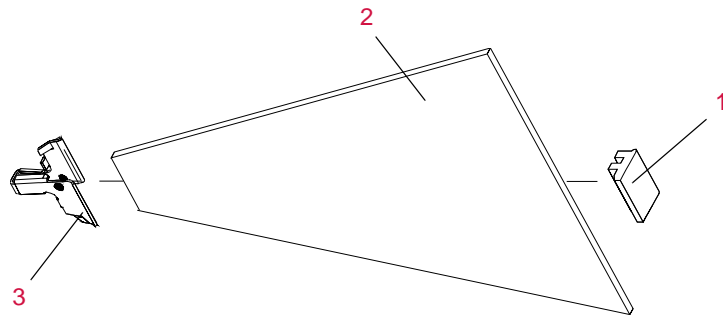


Figure 3-15: Filter Panel Assemblies

VL5 Drive Ring Assembly

22.9634.0143

Refer to **Figure 3-16**.

No.	Item	Qty.	UM.	Description
1	10.9634.0027	1	EA	RING, DRIVE
2	10.9634.0044	4	EA	ROLLER, VL5 DRIVE RING, SM
3	53.5554.0875	1	EA	SCREW, SET, 4-40 X 7/8" SET SS FLAT POINT
4	55.6612.0004	4	EA	PIN, 1/16 OD X 1/2L, TYPE C 303 SS

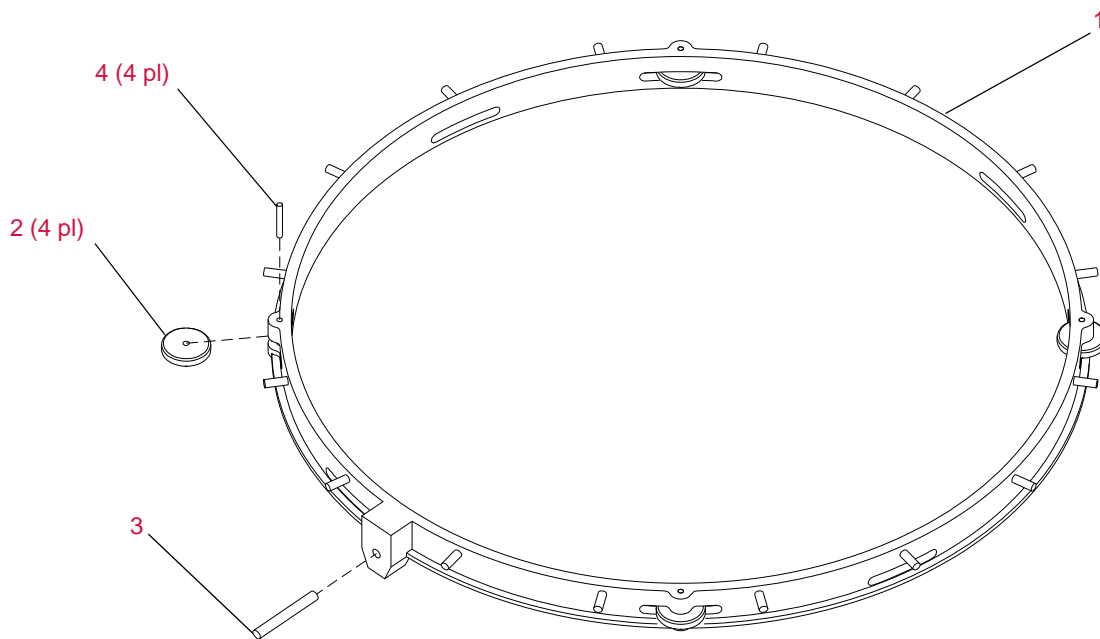


Figure 3-16: VL5 Drive Ring Assembly



VL5 Light Baffle Assembly

22.9634.0120

Refer to **Figure 3-17**.

No.	Item	Qty.	UM.	Description
1	10.9634.0028	1	EA	HUB, CENTER, VL5 BULKHEAD
2	10.9634.0029	2	EA	SPRING, FINGER, FILTER SUPPORT
3	10.9634.0078	1	EA	RING, LIGHT BAFFLE, #1
4	10.9634.0079	1	EA	RING, LIGHT BAFFLE, #2
5	10.9634.0080	1	EA	RING, LIGHT BAFFLE, #3
6	10.9634.0081	1	EA	RING, LIGHT BAFFLE, #4
7	10.9634.0082	1	EA	RING, LIGHT BAFFLE, #5
8	10.9634.0083	1	EA	RING, LIGHT BAFFLE, #6
9	10.9634.0084	1	EA	RING, LIGHT BAFFLE, #7
10	10.9634.0133	1	EA	PLUG, HUB
11	53.5704.0250	4	EA	SCREW, 4-40 X 1/4" SCSS
12	53.6534.0003	8	EA	RIVET, 3/32" OD POP 3/32GRIP STEEL
13	55.6669.0008	4	EA	STANDOFF, 5/32" HEX 4-40 3.312" LG SS BLK

VL5 Light Baffle Assembly (cont.)

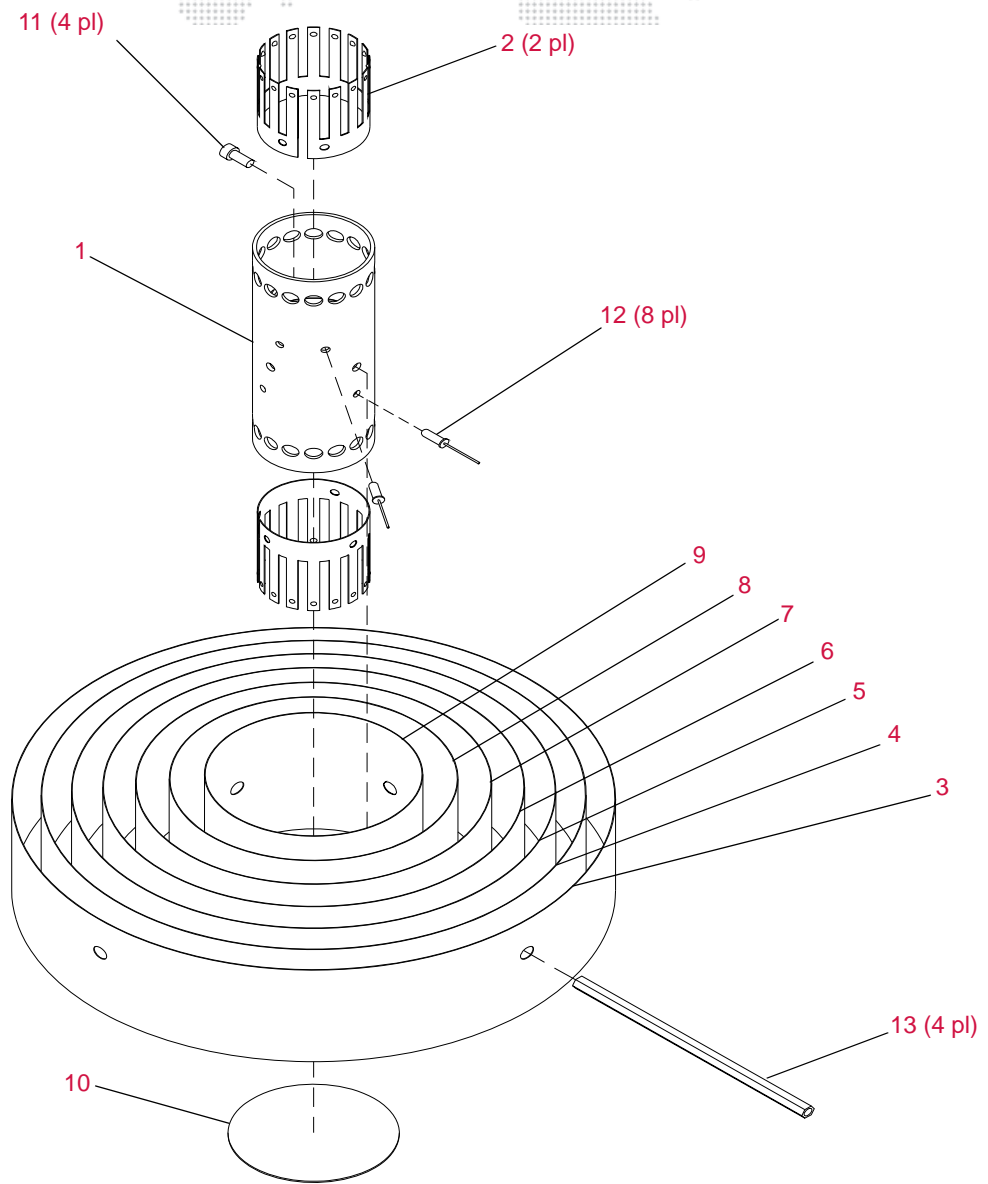


Figure 3-17: VL5 Light Baffle Assembly

VL5 Diffuser Panel Assembly

22.9634.0126

Refer to **Figure 3-18**.

No.	Item	Qty.	UM.	Description
1	10.9634.0067	1	EA	PAD, FILTER, EXTRUSION, SILICONE, WHITE
2	10.9634.0156	1	EA	CARRIER, CENTER FILTER BLU/AMB/DIFF -VL5
3	42.9634.0063	1	EA	PANEL, DIFFUSER

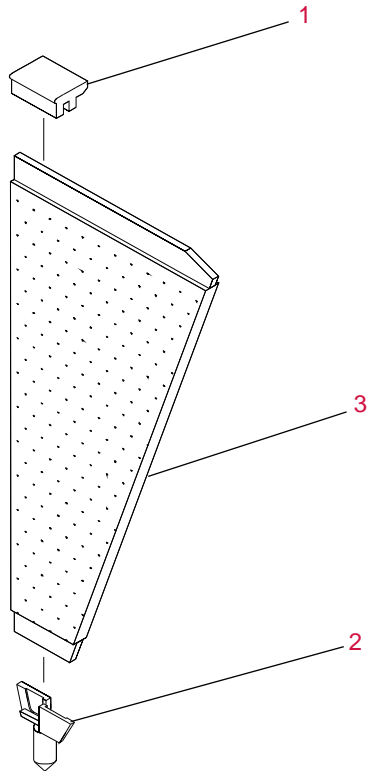


Figure 3-18: VL5 Diffuser Panel Assembly

VL5Arc Dimmer Blade Assembly

22.9647.0136

Refer to **Figure 3-19**.

No.	Item	Qty.	UM.	Description
1	10.9634.0067	1	EA	PAD, FILTER, EXTRUSION, SILICONE, WHITE
2	10.9647.0125	1	EA	DIMMER BLADE, VL5ARC

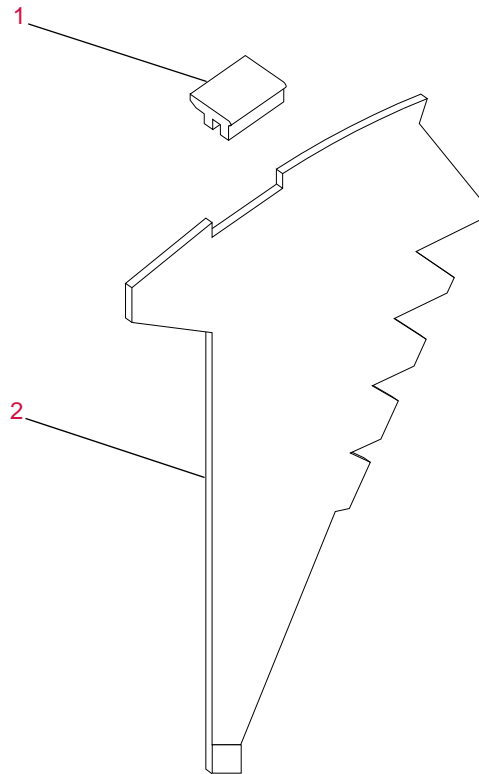


Figure 3-19: VL5 Dimmer Blade Assembly

VL5 Blue/Amber Motor Assembly

22.9634.0121

Refer to **Figure 3-20**.

No.	Item	Qty.	UM.	Description
1	10.9634.0061	1	EA	ACTUATOR MOUNT, VL5
2	10.9634.0075	1	EA	HEAT SHIELD, BLUE/AMBER
3	10.9634.0141	2	EA	HEAT SINK, MODIFIED ACTUATOR
4	44.5026.0001 *	2	EA	MOTOR, LINEAR ACTUATOR HI TEMP
5	53.6520.0001	3	EA	SCREW, 4-40 X 3/8" PPZ
6	54.1217.0004 *	2	EA	LINK, VL5 ACTUATOR/DRIVE RING (5441-P)
7	55.2203.0001	4	EA	SCREW, 4-40 X 1/4" PPZ
8	55.6537.0001	4	EA	WASHER, #4 LOCK INTERNAL TOOTH
9	55.6621.0001	3	EA	WASHER, #4 FLAT ZINC

* Motor and drive link can be ordered as a pre-assembled repair item. Order part number: 22.9634.0236

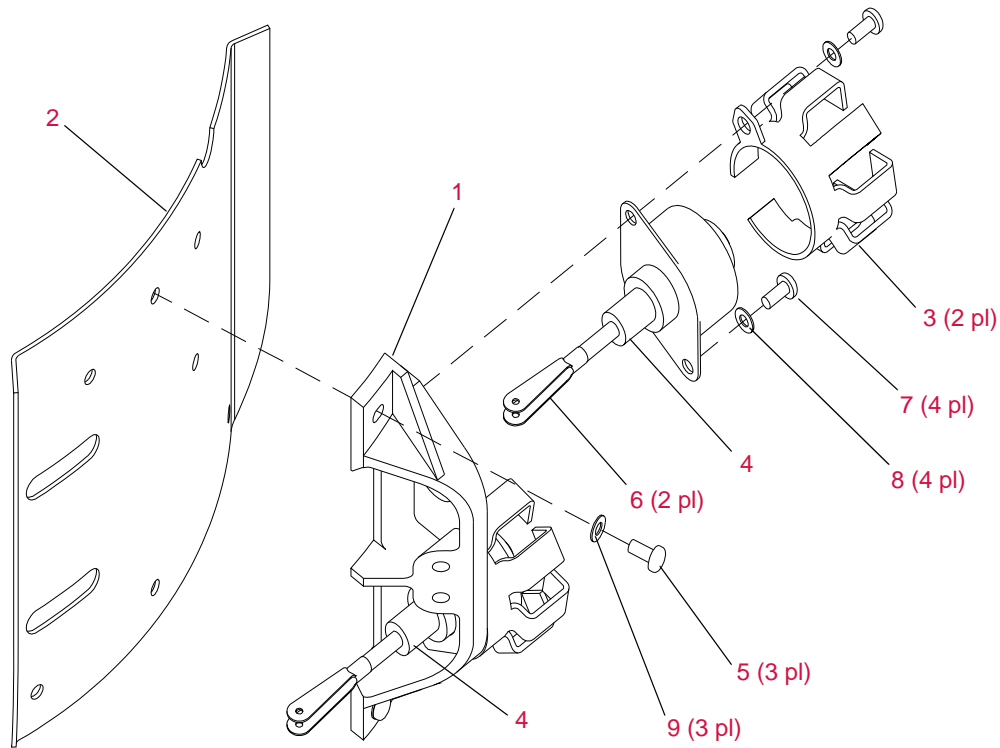


Figure 3-20: VL5 Blu/Amber Motor Assembly

VL5 Magenta/Diffuser Motor Assembly

22.9634.0122

Refer to **Figure 3-21**.

No.	Item	Qty.	UM.	Description
1	10.9634.0061	1	EA	ACTUATOR MOUNT, VL5
2	10.9634.0074	1	EA	HEAT SHIELD, MAGENTA/DIFFUSER
3	10.9634.0141	2	EA	HEAT SINK, MODIFIED ACTUATOR
4	44.5026.0001 *	2	EA	MOTOR, LINEAR ACTUATOR HI TEMP
5	53.6520.0001	3	EA	SCREW, 4-40 X 3/8" PPZ
6	54.1217.0004 *	2	EA	LINK, VL5 ACTUATOR/DRIVE RING (5441-P)
7	55.2203.0001	4	EA	SCREW, 4-40 X 1/4" PPZ
8	55.6537.0001	4	EA	WASHER, #4 LOCK INTERNAL TOOTH
9	55.6621.0001	3	EA	WASHER, #4 FLAT ZINC

* Motor and drive link can be ordered as a pre-assembled repair item. Order part number: 22.9634.0236

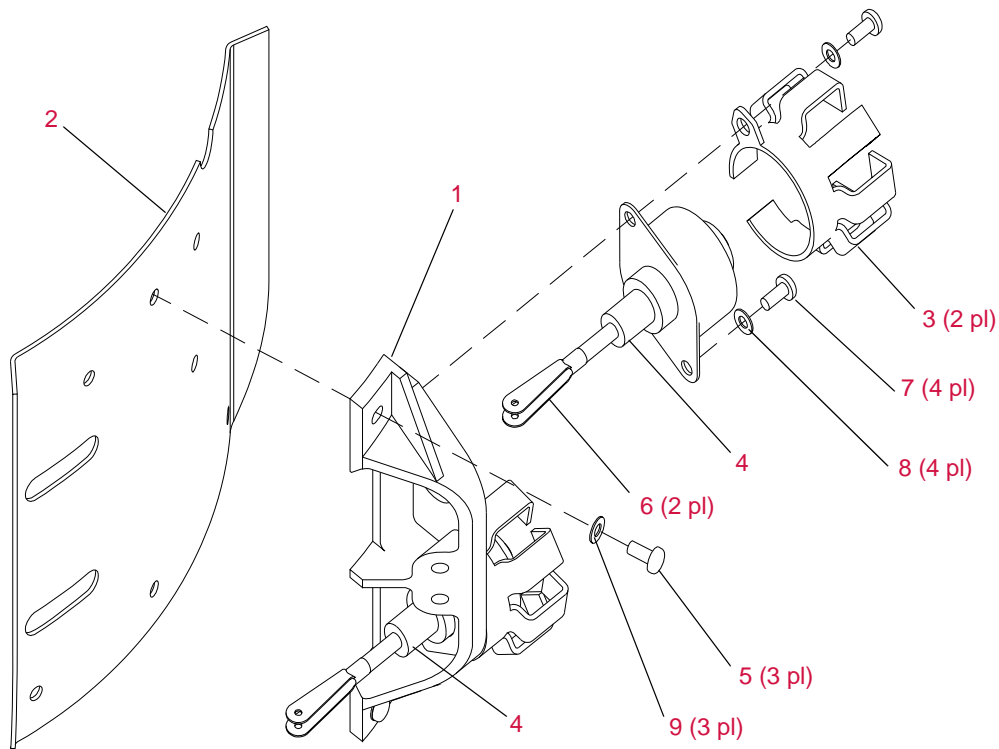


Figure 3-21: VL5 Mag/Dif Motor Assembly

VL5Arc Lens and Bellows/Motor Assembly

22.9647.0131

Refer to **Figure 3-22**.

No.	Item	Qty.	UM.	Description
1	22.9647.0083	1	EA	ASSY, LIQUID LENS - NEW MOLD (VL5A)
2	22.9647.0132	1	EA	ASSY, VL5A MOTOR-BELLOWS
3	55.6596.0006	1	EA	CLAMP, 5/16"-7/16" HOSE SS

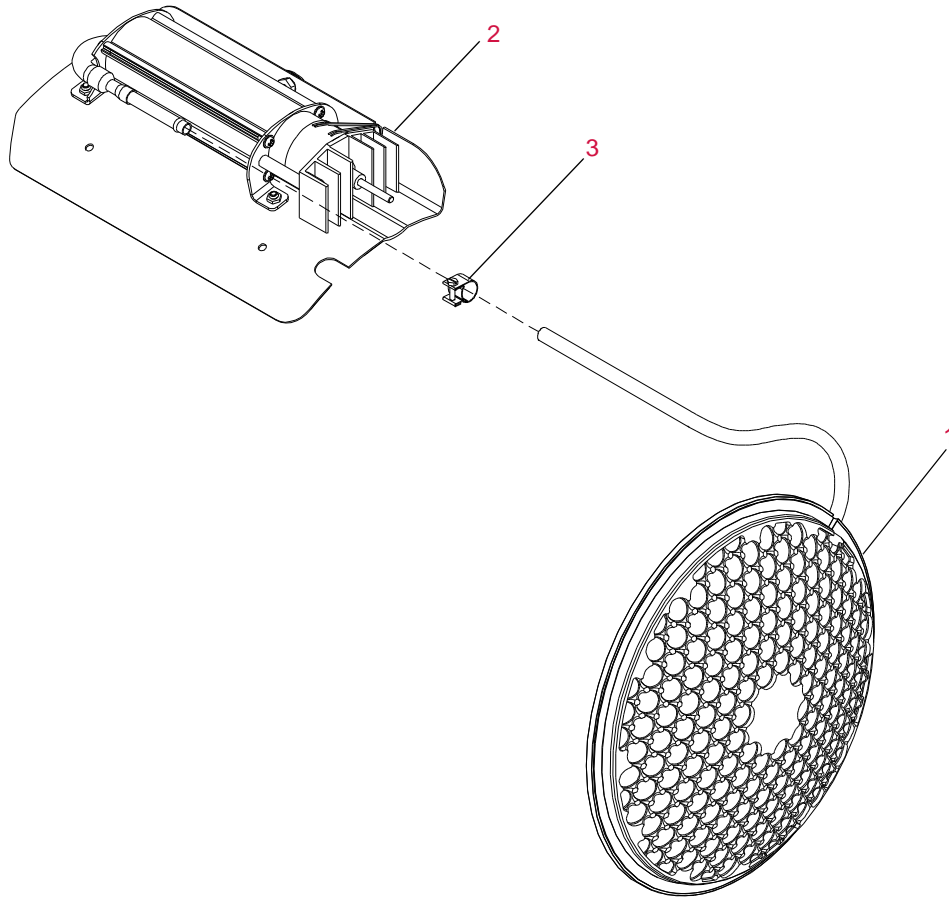


Figure 3-22: VL5Arc Lens and Bellows/Motor Assembly



VL5Arc Motor-Bellows Assembly

22.9647.0132

Refer to **Figure 3-23**.

No.	Item	Qty.	UM.	Description
1	10.9647.0062	1	EA	BELLOWS BRACKET - VL5A
2	10.9647.0064	1	EA	BELLOWS, ENCLOSURE-EXTRUDED/ANODIZED - VL5A
3	10.9647.0076	1	EA	BELLOWS MOTOR BRACKET - VL5A
4	10.9647.0080	1	EA	TEFLON EXTRUSION INSERT - VL5A
5	10.9647.0081	1	EA	MOTOR HEAT SINK - VL5A
6	10.9647.0093	1	EA	SHIELD, DEBRIS, MOTOR/BELLOWS, VL5A
7	22.9647.0078	1	EA	ASSY, BELLOWS - VL5A
8	22.9647.0096	1	EA	ASSY, BELLOWS MTG PLATE, INSULATED
9	22.9647.0113	1	EA	ASSY, LINE ACTUATOR
10	53.2200.0008	1	EA	NUT, 8-32 KEPS SS
11	53.5504.0187	2	EA	SCREW, 4-40 X 3/16" PPSS
12	53.5508.0375	1	EA	SCREW, 8-32 X 3/8" PPSS
13	53.5534.0312	4	EA	SCREW, 4-40 X 5/16" PFSS
14	53.5604.0250	10	EA	SCREW, 4-40 X 1/4" PPSS BLK
15	53.5604.0312	2	EA	SCREW, 4-40 X 5/16" PPSS BLACK
16	55.3303.0004	14	EA	WASHER, #4 LOCK, INT. TOOTH SS
17	55.6503.0004	1	EA	WASHER, #8 FLAT ZINC
18	55.6596.0007	1	EA	CLAMP, 3/8" CABLE SS W/ SILICONE CUSHION

VL5Arc Motor-Bellows Assembly (cont.)

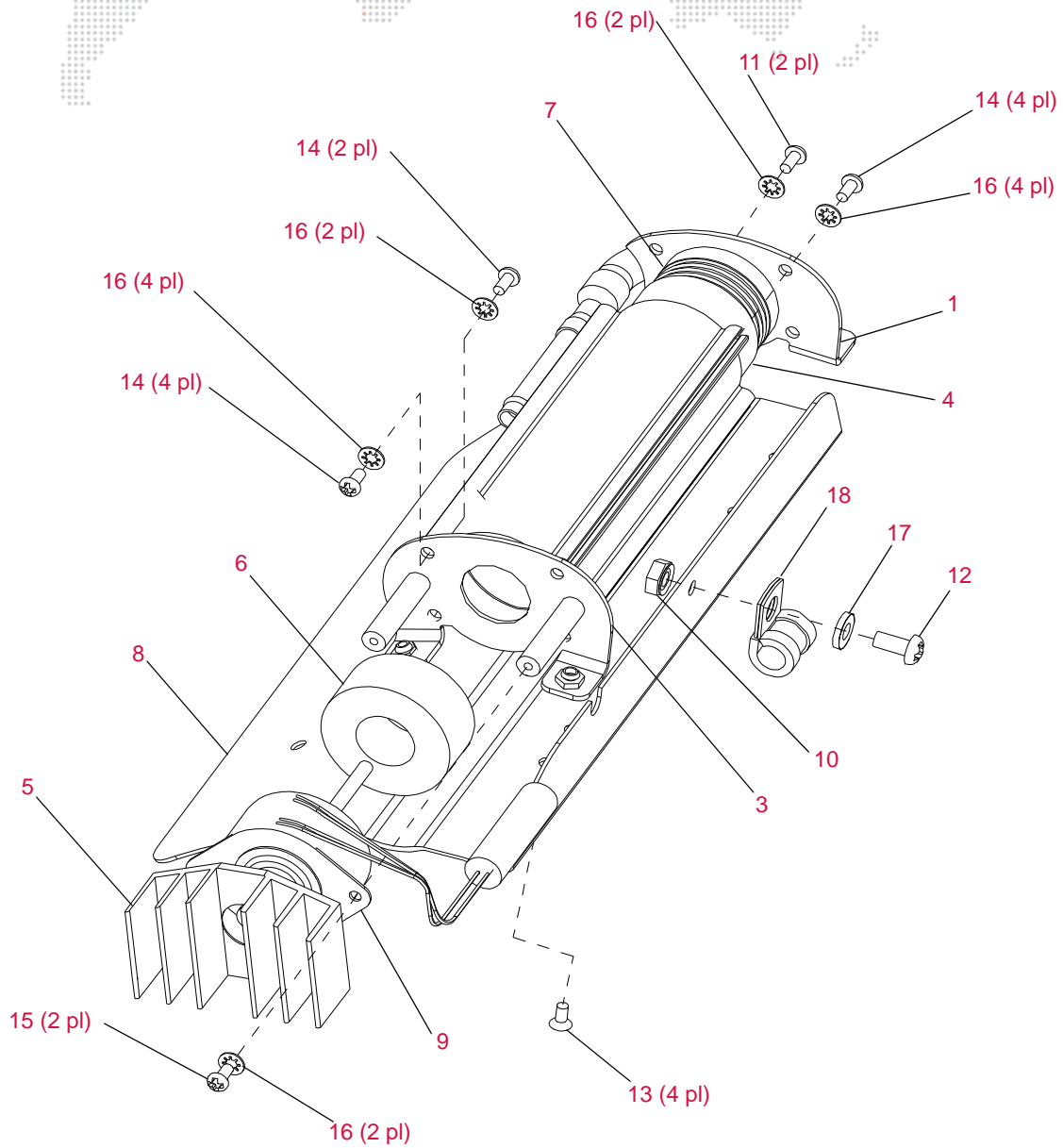


Figure 3-23: VL5Arc Motor-Bellows Assembly

YOKE

Yoke Assembly

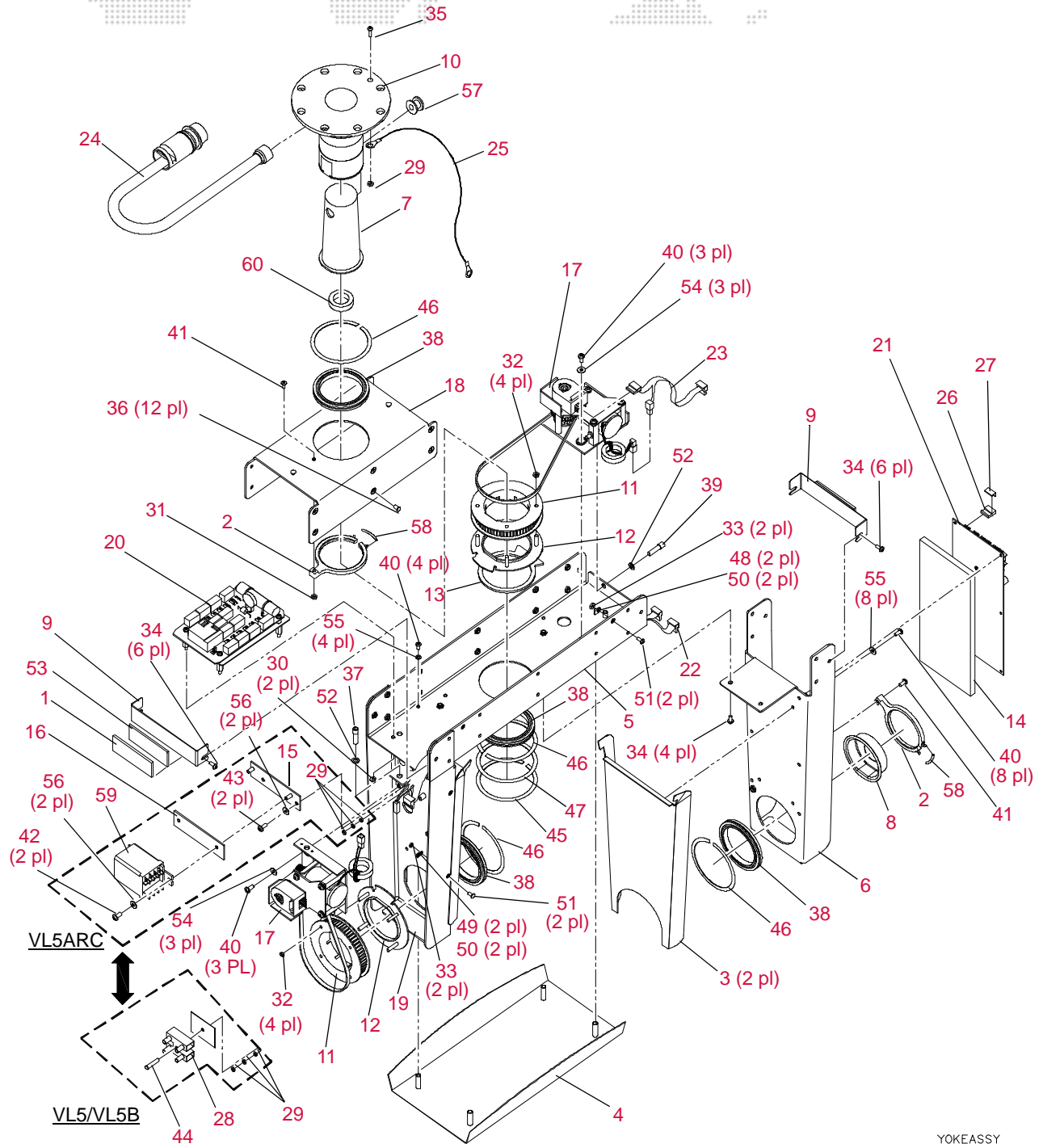
22.9634.0010 VL5
 22.9634.0222 VL5B
 21.9647.0003 VL5Arc

Refer to **Figure 3-24**.

No.	Item	Qty.	UM.	Description
1	06.6018.0001	0.42	FT	VELCRO LOOP, 5/8" BLK ADHESIVE BACKED (VL5/VL5B only)
	06.6018.0001	0.58	FT	VELCRO LOOP, 5/8" BLK ADHESIVE BACKED (VL5Arc only)
2	10.9628.0211	2	EA	STABILIZER, PAN/TILT
3	10.9634.0095	2	EA	HEAT SHIELD, YOKE LEG
4	10.9634.0096	1	EA	HEAT SHIELD, YOKE CROSS MEMBER
5	10.9634.0111	1	EA	YOKE BOTTOM CROSS MEMBER, VL5
6	10.9634.0113	1	EA	YOKE LEG, VL5 BOARD SIDE
7	10.9634.0114	1	EA	LINER, PAN TUBE
8	10.9634.0149	1	EA	CAP, TILT TUBE, VL5
9	10.9634.0153	2	EA	BRACKET, VL5 YOKE COVER
10	10.9634.0155	1	EA	TUBE, VL5 PIGTAIL PAN
11	10.9634.0171	2	EA	PULLEY, PTA DRIVEN
12	10.9634.0174	2	EA	COLLET, PTA DRIVEN PULLEY
13	10.9634.0175	1	EA	RING, PAN STOP
14	10.9647.0110	1	EA	LCB INSULATOR SHEET, VL5 (VL5/VL5Arc only)
15	10.9647.0123	1	EA	BOTTOM RELAY ADAPTER PLATE VL5ARC AND VL6 (VL5Arc only)
16	10.9647.0131	1	EA	TOP RELAY ADAPTER PLATE VL5ARC AND VL6 (VL5Arc only)
17	22.9634.0009	2	EA	ASSY, PAN/TILT MECHANISM VL5
18	22.9634.0110	1	EA	CROSS MEMBER ASSY, YOKE
19	22.9634.0112	1	EA	YOKE LEG, VL5 TILT SIDE
20	23.9647.0047	1	EA	ASSY, VL5A IGNITOR BOARD (VL5Arc only)
21	22.9660.0164	1	EA	PCB ASSY, VL5 (VL5 only)
	22.9660.0311	1	EA	PCB ASSY, VL5B LCB (VL5B only)
	22.9638.0077	1	EA	PCB ASSY, VL5A LAMP CONTROL BD W/EPROM (VL5Arc only)
22	25.9643.0017	1	EA	CABLE ASSY, S300 TILT
23	25.9643.0018	1	EA	CABLE ASSY, S300 PAN
24	25.9634.0180	1	EA	CABLE ASSY, VL5 INPUT W/ GRN-YEL (VL5/VL5B only)
	25.9647.0128	1	EA	VL5A INPUT CABLE ASSEMBLY GRN-YEL (VL5Arc only)
25	25.9638.0243	1	EA	CABLE ASSY, GROUND
26	52.6396.2804	4	EA	RECEPT, 4-POS MTA100 W/POL TAB GREEN CLSD END (VL5/VL5B only)
	52.6396.2804	5	EA	RECEPT, 4-POS MTA100 W/POL TAB GREEN CLSD END (VL5Arc only)
27	52.6424.0004	4	EA	COVER, 4-POS CLOSED END STRAIN RELIEF - MTA (VL5/VL5B only)
	52.6424.0004	5	EA	COVER, 4-POS CLOSED END STRAIN RELIEF - MTA (VL5Arc only)
28	52.8295.0002	1	EA	TERMINAL STRIP, 300V 12AWG 20A 2-POS (VL5/VL5B only)
29	53.2002.0001	3	EA	NUT, 6-32 KEP ZINC PLATED

No.	Item	Qty.	UM.	Description
30	53.2002.0001	2	EA	NUT, 6-32 KEP ZINC PLATED (VL5Arc only)
31	53.2002.0003	1	EA	NUT, 6-32 HEX ZINC NYLON INSERT
32	53.2002.0004	8	EA	NUT, 6-32, ACORN THREADLOCKING, SS
33	53.2003.0001	4	EA	NUT, 4-40 KEP ZINC PLATED
34	53.5508.0375	16	EA	SCREW, 8-32 X 3/8" PPSS
35	53.5536.0375	1	EA	SCREW, 6-32 X 3/8" PFSS
36	53.5638.0375	12	EA	SCREW, 8-32 X 3/8" LG PFSS BLACK
37	53.5710.0100	1	EA	SCREW, 10-32 X 1" SCSS
38	53.6506.0001	4	EA	BEARING, TORQUE TUBE 2.6250 OD X 2.0620 ID
39	53.6514.0002	1	EA	SCREW, 10-32 X 1 1/4" SCSS
40	53.6525.0001	18	EA	SCREW, 6-32 X 5/16" PPZ
41	53.6526.0001	2	EA	SCREW, 6-32 X 5/8" PPZ (VL5/VL5B only)
	53.6613.0001	2	EA	SCREW, 6-32 X 1/2" PPZ (VL5Arc only)
42	53.6526.0001	2	EA	SCREW, 6-32 X 5/8" PPZ (VL5Arc only)
43	53.6558.0001	2	EA	SCREW, 6-32 X 3/8" PPZ (VL5Arc only)
44	53.6616.0001	1	EA	SCREW, 6-32 X 3/4" PPZ (VL5/VL5B only)
45	54.1205.0001	1	EA	RING, RETAINING 1.963" ID
46	54.1206.0001	4	EA	RING, RETAINING 2.521" ID
47	55.2129.0002	1	EA	SHIM, STAINLESS STEEL PAN TUBE
48	55.2177.0001	2	EA	CABLE ANCHOR MOUNT, BLACK
49	55.2178.0001	2	EA	CABLE ANCHOR MOUNT, # 8 SCREW MOUNTING
50	55.2186.0001	4	EA	CABLE TIE, .10" WD 4.00" LG SMALL
	55.2198.0001	0.25	FT	HEATSHRINK, 1/8" BLACK (VL5Arc only) (not shown)
51	55.2201.0001	4	EA	SCREW, 4-40 X 5/16" PFB
52	55.3301.0010	2	EA	WASHER, #10 FLAT
53	55.6507.0003	0.50	FT	WEATHER STRIP, 1/8" X 1" X 50' ADHESIVE BACK (VL5/VL5B only)
	55.6507.0003	0.58	FT	WEATHER STRIP, 1/8" X 1" X 50' ADHESIVE BACK (VL5Arc only)
54	55.6517.0001	6	EA	WASHER .375" OD .150"ID .031" THK FLAT STEEL
55	55.6538.0001	12	EA	WASHER, #6 LOCK INTERNAL TOOTH
56	55.6538.0001	2	EA	WASHER, #6 LOCK INTERNAL TOOTH (VL5Arc only)
57	55.6579.0008	1	EA	GROMMET, 3/8" HOLE 5/16" ID 3/8" THICK MATL
58	55.6603.0001	2	EA	SPRING, SS 4.6#/IN. EXTENSION
59	66.4510.0002	1	EA	RELAY, 20A 250VAC DPDT UL/CSA/VDE (VL5Arc only)
60	67.4008.0001	1	EA	BEAD, EMI .748 I.D.
	82.4307.4002	1	EA	DIODE, 1N4002 RECTIFIER 100V 1A (VL5Arc only) (not shown)

Yoke Assembly (cont.)



YOKEASSY

Figure 3-24: Yoke Assembly

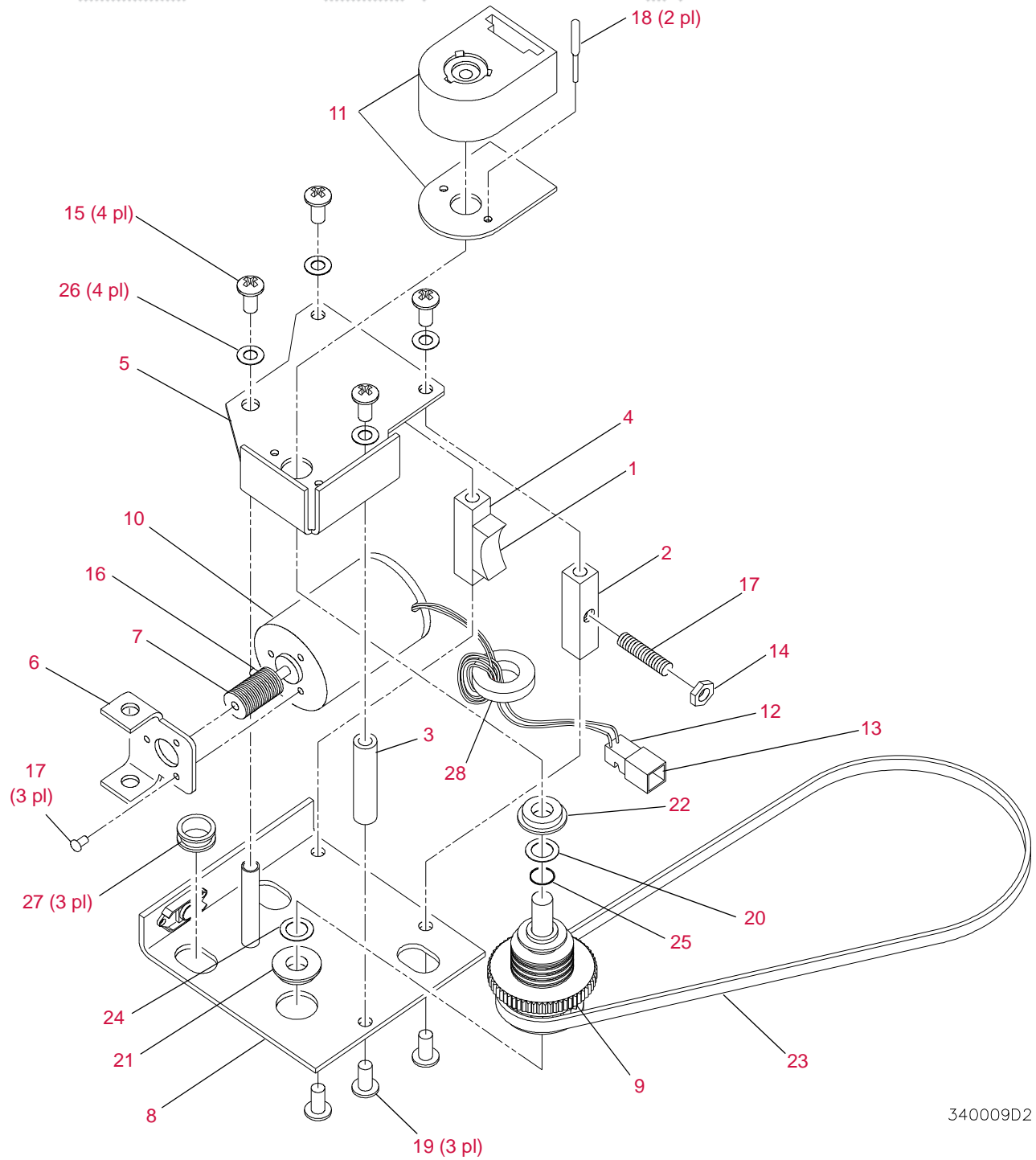
VL5 Pan/Tilt Mechanism Assembly

22.9634.0009

Refer to **Figure 3-25**.

No.	Item	Qty.	UM.	Description
1	10.9620.0293	1	EA	PAD, ANTI-BACKLASH, PTA
2	10.9628.0117	1	EA	SPACER, ADJUSTMENT, BACKLASH, TILT
3	10.9628.0143	1	EA	STANDOFF, SPECIAL RND, 6-32 X 5/16 X .187
4	10.9628.0144	1	EA	STANDOFF, SPECIAL, SQR, TILT MECHANISM
5	10.9634.0053	1	EA	PLATE, TOP, PTA
6	10.9634.0054	1	EA	MOUNT, MOTOR, PTA
7	10.9634.0055	1	EA	WORM, PTA
8	22.9634.0052	1	EA	PLATE ASSY, BOTTOM, PTA
9	22.9634.0237	1	EA	ASSY, VL4 TILT CLUTCH
10	44.5009.0002	1	EA	MOTOR, W/O TACH, VL5 MAXON W/LEAD WIRES
11	45.5105.0001	1	EA	ENCODER, OPTICAL, I06
12	52.6435.2202	1	EA	CONN, MTA156 RED 2PIN (CBL-CBL)
13	52.6436.0002	1	EA	COVER, STRAIN RELIEF/2POS MTA156
14	53.2001.0001	1	EA	NUT, 10-32 KEPS ZINC PLATED
15	53.5506.0312	4	EA	SCREW, 6-32 X 5/16" PPSS
16	53.5652.0125	1	EA	SCREW, 2-56 X 1/8" SET KNURLED-END BLK
17	53.6513.0004	3	EA	SCREW, 2MM X 4MM LG PPSS METRIC
18	53.6534.0002	2	EA	RIVET, 3/32" OD POP 3/16 GRIP RNG ALUM
19	53.6609.0001	3	EA	SCREW, 6-32 X 3/8" PFZ
20	53.6667.0002	1	EA	SCREW, 10-32 X 3/4" SS SET OVAL TIP
21	54.1208.0001	1	EA	BEARING, 1/4"
22	54.1208.0003	1	EA	BEARING, 1/4" ID X 3/8" OD
23	54.2008.0001	1	EA	BELT, VL5, 1/5P 80T .290W KEVLAR
24	55.2110.0002	2	EA	WASHER, .400" OD .260" ID .010" THK FLAT SS
25	55.2123.0001	1	EA	SPRING, WAVE 1/4"
26	55.6538.0001	4	EA	WASHER, #6 LOCK INTERNAL TOOTH
27	55.6579.0003	3	EA	GROMMET, 3/8" HOLE DIA X .219" ID ISODAMP VL5 PTA
28	67.4008.0001	1	EA	BEAD, EMI .748 I.D.

VL5 Pan/Tilt Mechanism Assembly (cont.)



340009D2

Figure 3-25: VL5 Pan/Tilt Mechanism Assembly

VL4 Tilt Clutch Assembly

22.9634.0237

Refer to **Figure 3-26**.

No.	Item	Qty.	UM.	Description
1	10.9634.0019	1	EA	GEAR, WORM, 1M6RL17080
2	10.9634.0051	1	EA	WASHER, "D", PTA
3	22.9638.0220	1	EA	ASSY, DRIVE SHAFT - PAN AND TILT
4	54.1222.0002	1	EA	RING, RETAINING METRIC F/ 9MM SHAFT
5	55.2128.0001	7	EA	SPRING, DISC CLUTCH - VL5
6	55.6677.0007	1	EA	WASHER, .750" OD .383" ID .031" THK FLAT CS BLK OXDZ
7	55.6677.0008	1	EA	WASHER, .875" OD .378" ID .010" THK FLAT SS

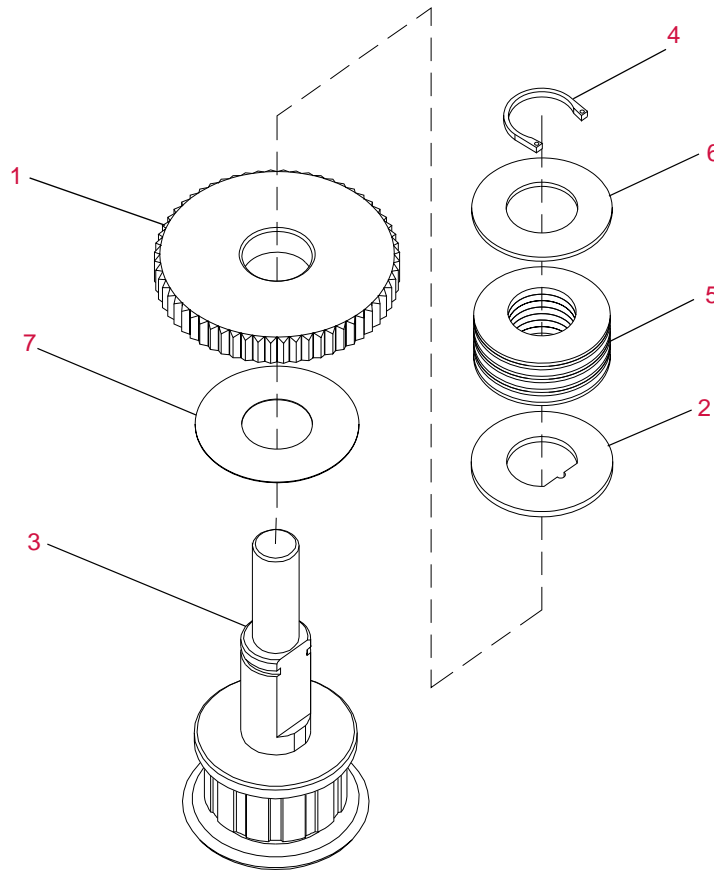


Figure 3-26: VL4 Tilt Clutch Assembly

VL5Arc Ignitor Board Assembly

23.9647.0047

Refer to **Figure 3-27**.

No.	Item	Qty.	UM.	Description
1	10.9638.0064	1	EA	BRACKET, MOUNTING, IGN6 PCB
2	24.9650.0756	1	EA	PCB ASSY, IGNITOR - VL7
3	25.9647.0048	1	EA	CABLE ASSY, VL5A IGNITOR
4	53.2016.0002	2	EA	NUT, 4-40 HEX ZINC
5	53.5506.0500	2	EA	SCREW, 6-32 X 1/2" PPSS
6	53.6569.0001	2	EA	SCREW, 4-40 X 5/16" PPZ
7	53.6613.0500	2	EA	SCREW, 6-32 X 1/2" PPN NYLON
8	55.3303.0006	2	EA	WASHER, #6 LOCK INT. TOOTH SS
9	55.6658.0006	4	EA	STANDOFF, 1/4" HEX 6-32 .562" LG MF SS

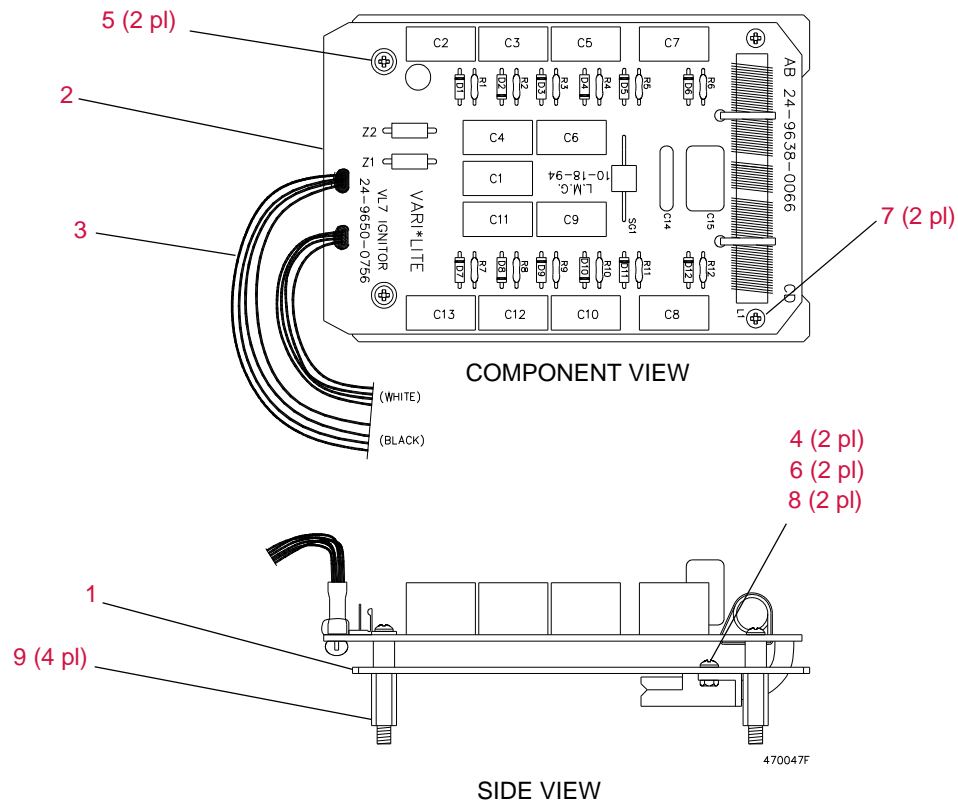


Figure 3-27: VL5Arc Ignitor Board Assembly

VL7 Ignitor PCB Assembly

24.9650.0756

Refer to Figure 3-28.

No.	Item	Qty.	UM.	Description	Ref
1	11.9650.0756	1	EA	PCB, IGNITOR -VL7	
2	25.9638.0222	1	EA	CABLE ASSY, IGNITOR BOARD OUTPUT	
3	55.2186.0001	2	EA	CABLE TIE, .10" WD 4.00" LG SMALL	
4	60.1422.1002	12	EA	RES, 1/4W 5% 10.0 MEG CF	R1-R12
5	62.2032.0001	1	EA	CAP, .01UF, 3000V, RAD, CERAMIC, .375", 20%	C14
6	62.3000.0033	13	EA	CAP, .033UF, 1000V, RAD, POLYPRO, .600" 10%	C1-C13
7	62.3002.0102	1	EA	CAP, .001UF, 15KV, RAD, CERAMIC DISC	C14
8	68.4515.0006	1	EA	COIL, IGNITOR, VL6	L1
9	75.7102.0001	1	EA	SPARK GAP, 2.5KV	SG1
10	82.4311.0818	12	EA	DIODE, MR818 RECTIFIER 1KV 1A	D1-D12
11	82.5310.6304	2	EA	DIODE, Z CLIPPER 1.5KE180CA 180V 5W	Z1, Z2

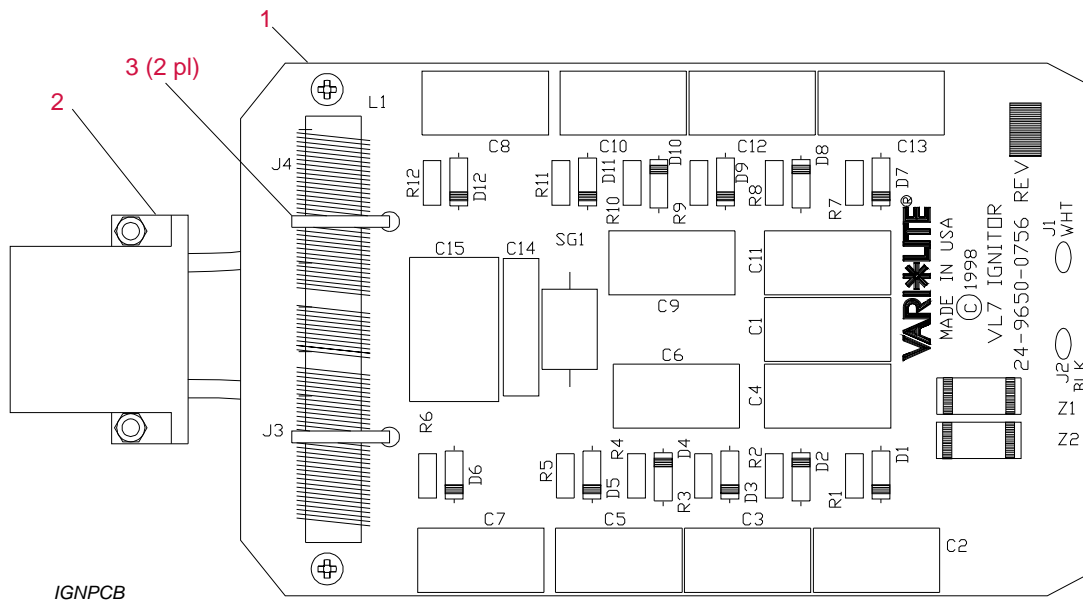


Figure 3-28: VL7 Ignitor PCB Assembly

Lamp Control PCB Assembly

24.9634.0070 VL5
 24.9634.0070.01 VL5B
 24.9638.0009.02 VL5A

Refer to **Figure 3-29**.

No.	Item	Qty.	UM.	Description
1	11.9634.0071	1	EA	PCB, VL5 (VL5/VL5B only)
	11.9638.0010	1	EA	PCB, VL6 CONTROL (VL5Arc only)
2	22.9634.0104	1	EA	KIT, COMPONENT, VL5 PCB ASSY (VL5/VL5B only)
	22.9638.0087	1	EA	KIT, COMPONENTS, VL6 PCB ASSY (VL5Arc only)
3	52.5000.0002	1	EA	SOCKET, 132 PIN PQFP PGA ADVANCED INTRCON
4	53.5508.0500	1	EA	SCREW, 8-32 X 1/2" PPSS
5	55.3303.0008	1	EA	WASHER, #8 LOCK INT. TOOTH SS
6	87.7155.0003	1	EA	EPROM, PGMD:27C101A-10/VL5 V3.0 12-14-98 (VL5 only)
	87.7224.0003	1	EA	EPROM, PGMD:27C010A-10/VL5B V3.0 12-14-98 (VL5B only)
	87.7159.0003	1	EA	EPROM, PGMD:27C100A/VL5A V3.0 12-14-98 (VL5Arc only)

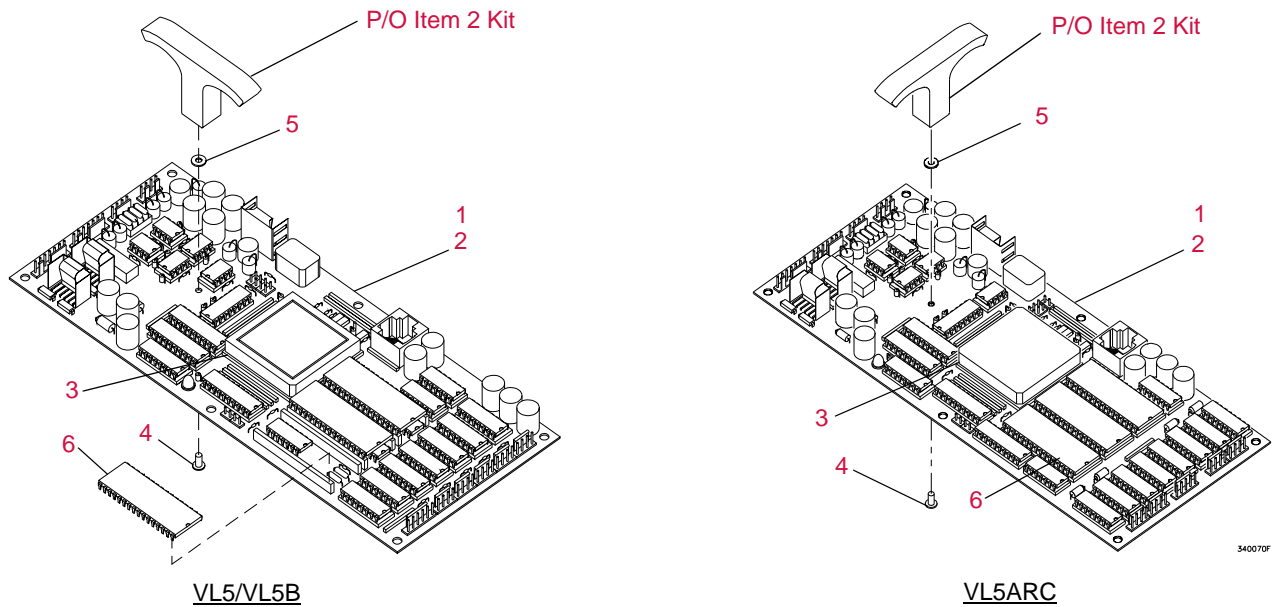


Figure 3-29: Lamp Control PCB Assembly

VL5 PCB Assembly Components Kit

22.9634.0104

Refer to Figure 3-30.

No.	Item	Qty.	UM.	Description	Ref
1	50.2708.0001	6	EA	SOCKET, 8-PIN DIP	XF1, XU21, XU26-XU29
2	50.2714.0001	2	EA	SOCKET, 14-PIN DIP	XU9, XU20
3	50.2732.0001	3	EA	SOCKET, 32-PIN DIP	XU11-XU13
4	51.5017.0001	1	EA	HEATSINK, 7128D, TO-220	U22
5	51.5018.0001	2	EA	HEATSINK, 7148D, TO-220	U23, U24
6	52.5000.0001	1	EA	TERM STRIP, 4-PIN, DBL-ROW TSW	P6
7	52.5000.0003	1	EA	COVER, SOCKET 132-POS PQFP 821942-1	XU16
8	52.5000.0004	1	EA	SOCKET,132-POS PQFP #821949-5	XU16
9	52.5000.0016	10	EA	SOCKET, 16-PIN DIP TINNED	XU1-XU8, XU14, XU17
10	52.5000.0020	4	EA	SOCKET, 20-PIN DIP OPEN FRAME	XU10, XU15, XU18, XU19
11	52.6240.0001	1	EA	HEADER, 6-POS MTA FRCT LOK STRT POST	P3
12	52.6259.0001	2	EA	HEADER, 5-POS MTA FRCT LOK STRT POST	P7B, P8B
13	52.6284.0001	5	EA	HEADER, 4-POS MTA FRCT LOK STRT POST	P1, P2, P4, P5, P9
14	52.6297.0001	4	EA	HEADER, 2-POS MTA FRCT LOK STRT POST	P7A, P8A,P10A, P10B
15	52.6399.0001	1	EA	JUMPER, PROGRAMMING	J2
16	52.6433.0001	1	EA	PLUG, ADAPTER, 8-PIN, LCP, SAMTEC	AF1
17	52.8284.0001	3	EA	HEADER, 2-PIN SGL ROW STRGHT GOLD CONT .100CNTR	J2-J4
18	52.8402.0002	1	EA	JACK, MODULAR 8-PIN STRAIGHT	J1
19	55.6703.0001	1	EA	HANDLE, VL5 PCB, BLACK	
20	60.1420.2703	2	EA	RES, 1/4W 5% 2.7K CF	R7, R8
21	60.1422.1001	4	EA	RES, 1/4W 5% 1.0K CF	R5, R6, R10, R13
22	60.1424.4703	1	EA	RES, 1/4W 5% 470.0 OHM CF	R1
23	60.1425.1003	1	EA	RES, 1/4W 5% 100.0 OHMS CF	R11
24	60.1425.5603	1	EA	RES, 1/4W 5% 560.0 OHMS CF	R2
25	60.1429.3303	2	EA	RES, 1/4W 5% 330.0 OHM CF	R9, R12
26	60.1429.3305	1	EA	RES, 1/4W 5% 330.0K CF	R3
27	60.5000.0002	1	EA	RES, 1/4W 5% 20.0M	R4
28	61.4306.0472	3	EA	RES SIP, 472 6-PIN BUSSED LW PRFLE	RP1, RP5, RP14
29	61.4310.0103	11	EA	RES SIP, 103 10-PIN BUSSED	RP2-RP4, RP6-RP13
30	62.2013.0104	33	EA	CAP, .1UF, 50V, AXL, CERAMIC, .100", 20%	C1-C8, C13-C19, C24-C26, C30-C39, C45, C47, C48, C55, C56
31	62.2034.0206	2	EA	CAP, 20PF, 50V, SIP, CERAMIC, .100", 5%	C27, C28
32	62.2094.0106	6	EA	CAP, 10UF, 35V TANTALUM AXIAL 20%	C9-C12, C41, C44
33	62.2099.0104	1	EA	CAP, .1UF, 50V, SIP, CERAMIC, .100", 10%	C29
34	62.3002.0103	4	EA	CAP, .01UF, 50V, RAD, CERAMIC	C51-C54
35	62.3002.0477	1	EA	CAP, 470UF, 10V RAD ALUMINUM	C46
36	62.3005.0477	11	EA	CAP, 470UF, 35V RAD ALUMINUM	C20-C23, C40, C42, C43, C49, C50, C57, C58
37	64.4003.0001	1	EA	CRYSTAL, 32.768 KHZ	Y1
38	68.4525.0004	1	EA	INDUCTOR, 680UF PE52649	L1

No.	Item	Qty.	UM.	Description	Ref
39	70.3729.0001	4	EA	FUSE, 1/16A, 125V, PICO II	F1
40	70.3731.0001	1	EA	FUSE, 5AMP, 19374K, TR5-T TIME LAG	F2
41	70.3732.0001	1	EA	FUSEHOLDER, TR5, 19560	XF2
42	82.4309.5401	1	EA	DIODE, 1N5401 RECTIFIER 100V 3A	D2
43	82.4316.5822	1	EA	DIODE, 1N5822 SCHOTTKY 40V 3A	D1
44	82.5301.5908	4	EA	DIODE, ZENER TS 1N5908 5V 5W	D3-D6
45	82.5316.6281	1	EA	DIODE, ZENER, 1N6281 27V 1500W 10%	D7
46	83.3157.0001	2	EA	IC, 6N137, OPTOCOUPLER	U26, U27
47	83.5000.0001	4	EA	IC, L293D, QUAD HALF-BRIDGE DRIVER	U2, U3, U6, U7
48	83.5000.0003	1	EA	IC, LM2575T-5.0, VOLTAGE REG., SWITCHING	U22
49	83.5000.0004	2	EA	IC, LMD18200, H-BRIDGE, 55V, 3A	X23, X24
50	84.0068.0332	1	EA	IC, MC68332, MICROPROCESSOR	U16
51	84.4131.0001	1	EA	IC, 74HC05 HEX INVERTER W/OPEN COLLECTOR	U20
52	84.4234.0001	2	EA	IC, LTC485CN8 RS422/RS485 TRANSCEIVER DIP PKG	U28, U29
53	84.5000.0004	1	EA	IC, 74HC32 QUAD 2-INPUT OR GATE	U9
54	84.5000.0016	2	EA	IC, 512KX8 STATICRAM (100ns, LOWPOWER)	U12, U13
55	84.7407.0174	5	EA	IC, 74HC174 HEX D-FF W/CLR	U1, U4, U5, U8, U17
56	84.7411.0001	1	EA	IC, HPR100, DC TO DC CONVERTER, 5V IN/OUT	U25
57	85.5000.0701	1	EA	IC, MAX701, PWR SUPPLY MONITOR	U21
58	85.5104.0002	2	EA	IC, HCTL-2020, DECODER	U18, U19
59	85.5119.0001	1	EA	IC, 75173, QUAD DIF.LINE RCVR	U14
60	87.7129.0015	1	EA	IC, LOGIC PGM:VL5 U15 2614	U15
61	87.7132.0002	1	EA	IC, LOGIC PGM:VL5 U10 2624	U10
62	88.8101.0001	1	EA	LED, RED T-1 3/4 ROUND	LO1

VL5 PCB Assembly Components Kit (cont.)

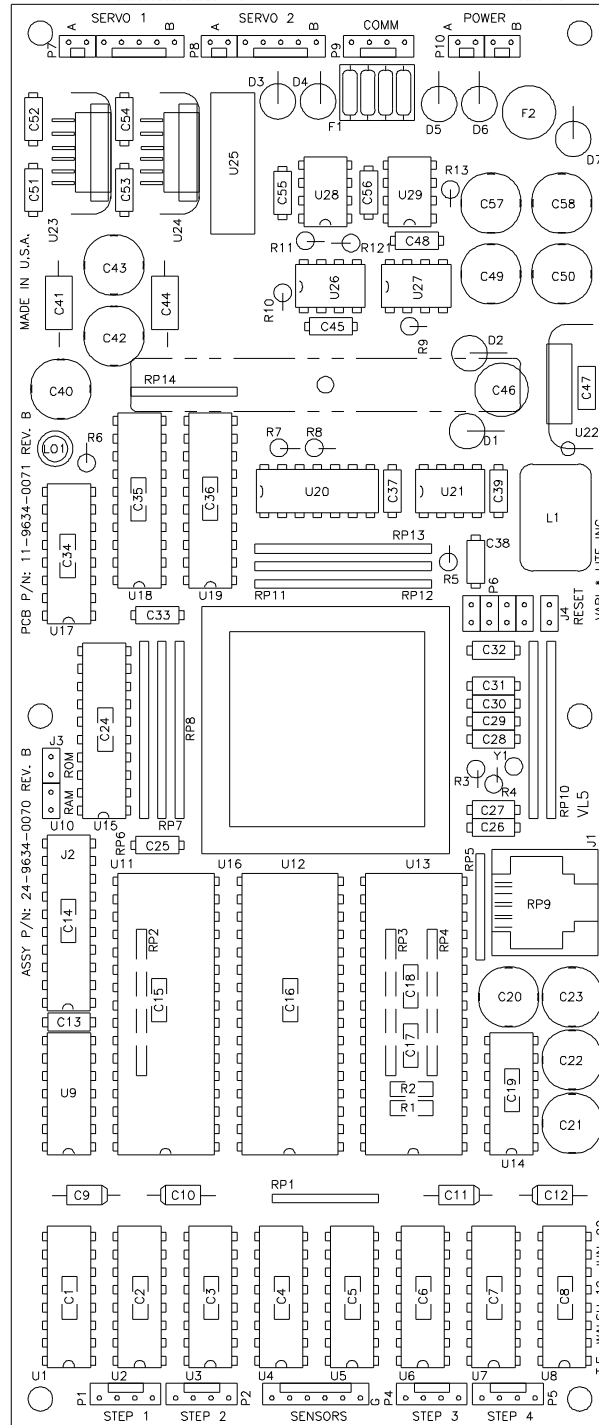


Figure 3-30: VL5 PCB Assembly Components Kit

VL6 PCB Assembly Components Kit

22.9638.0087

Refer to **Figure 3-31**.

No.	Item	Qty.	UM.	Description	Ref
1	50.2708.0001	6	EA	SOCKET, 8-PIN DIP	XF1, XU23, XU25, XU26, XU30
2	50.2714.0001	1	EA	SOCKET, 14-PIN DIP	XU22
3	51.5017.0001	1	EA	HEATSINK, 7128D, TO-220	U24
4	51.5018.0001	2	EA	HEATSINK, 7148D, TO-220	U27, U28
5	52.5000.0001	1	EA	TERM STRIP, 4-PIN, DBL-ROW TSW	P7
6	52.5000.0003	1	EA	COVER, SOCKET 132-POS PQFP #821942-1	XU18
7	52.5000.0004	1	EA	SOCKET, 132-POS PQFP #821949-5	XU18
8	52.5000.0016	5	EA	SOCKET, 16-PIN DIP TINNED	XU1, XU2, XU15, XU16, XU19
9	52.5000.0020	3	EA	SOCKET, 20-PIN DIP OPEN FRAME	XU17, XU20, XU21
10	52.6240.0001	1	EA	HEADER, 6-POS MTA FRCT LOK STRT POST	P1
11	52.6259.0001	2	EA	HEADER, 5-POS MTA FRCT LOK STRT POST	P8B, P9B
12	52.6284.0001	6	EA	HEADER, 4-POS MTA FRCT LOK STRT POST	P2-P6, P10
13	52.6297.0001	4	EA	HEADER, 2-PIN MTA FRCT LOK STRT POST	P8A, P9A, P11A, P11B
14	52.6373.0004	2	EA	SOCKET STRIP, 12-POS SGL ROW LOW PRO.	XU17
15	52.6373.0005	4	EA	SOCKET STRIP, 8-POS SGL ROW LOW PRO.	U11, U13
16	52.6373.0007	4	EA	SOCKET STRIP, 8-POS DOUBLE ROW	XU14
17	52.6373.0008	2	EA	SOCKET STRIP, 8-POS SGL ROW TIN	XU14
18	52.6374.0007	2	EA	SOCKET STRIP, 7-POS SNGL ROW LOW PROFILE	XU14
19	52.6399.0001	1	EA	JUMPER, PROGRAMMING	J2
20	52.6433.0001	1	EA	PLUG, ADAPTER, 8-PIN, LCP, SAMTEC	AF1
21	52.6437.0016	6	EA	SOCKET STRIP, 16-POS ELEVATED .33"	U8A, U8B, U10A, U10B, U12A, U12B
22	52.8284.0001	3	EA	HEADER, 2-PIN SGL ROW STRGHT GOLD CONT .100CNTR	J2-J4
23	52.8402.0002	1	EA	JACK, MODULAR 8-PIN STRAIGHT	J1
24	55.6703.0001	1	EA	HANDLE, VL5 PCB, BLACK	
25	60.1420.2703	2	EA	RES, 1/4W 5% 2.7K CF	R7, R8
26	60.1422.1001	4	EA	RES, 1/4W 5% 1.0K CF	R5, R6, R10, R13
27	60.1424.4703	1	EA	RES, 1/4W 5% 470.0 OHM CF	R1
28	60.1425.1003	1	EA	RES, 1/4W 5% 100.0 OHMS CF	R11
29	60.1425.5603	1	EA	RES, 1/4W 5% 560.0 OHM CF	R2
30	60.1429.3303	2	EA	RES, 1/4W 5% 330.0 OHM CF	R9, R12
31	60.1429.3305	1	EA	RES, 1/4W 5% 330.0K CF	R3
32	60.5000.0002	1	EA	RES, 1/4W 5% 20.0 MEG	R4
33	61.4306.0103	1	EA	RES SIP, 103 6-PIN BUSSED LW PROFILE	RP1
34	61.4306.0472	2	EA	RES SIP, 472 6-PIN BUSSED LW PRFLE	RP5, RP14
35	61.4310.0103	11	EA	RES SIP, 103 10-PIN BUSSED	RP2-RP4, RP6-RP13

No.	Item	Qty.	UM.	Description	Ref
36	62.2013.0104	36	EA	CAP, .1UF, 50V, AXL, CERAMIC, .100", 20%	C1-C7, C16-C19, C20-C25, C28, C29, C30, C31, C35-C39, C40-C44, C46, C52, C59, C60, C61
37	62.2034.0206	2	EA	CAP, 20PF, 50V, SIP, CERAMIC, .100", 5%	C27, C28
38	62.2094.0106	7	EA	CAP, 10UF, 35V, TANTALUM AXIAL 20%	C8 -C12, C48, C51
39	62.2099.0104	3	EA	CAP, .1UF, 50V, SIP, CERAMIC, .100", 10%	C32-C349
40	62.3002.0103	4	EA	CAP, .01UF, 50V, RAD, CERAMIC	CC55-C58
41	62.3002.0477	1	EA	CAP, 470UF, 10V, RAD, ALUMINUM	C45
42	62.3005.0477	12	EA	CAP, 470UF, 35V, RAD, ALUMINUM	C13-C15, C 26, C27, C47, C49, C50, C53, C54, C62, C63
43	64.4003.0001	1	EA	CRYSTAL, 32.768 KHZ	Y1
44	68.4525.0006	1	EA	INDUCTOR, 470uH, PE52628/PE52648	L1
45	70.3729.0001	4	EA	FUSE, 1/16A, 125V, PICO II	F1
46	70.3731.0001	1	EA	FUSE, 5AMP, 19374K, TR5-T TIME LAG	F2
47	70.3732.0001	1	EA	FUSEHOLDER, TR5, 19560	XF2
48	82.4309.5401	1	EA	DIODE, 1N5401 RECTIFIER 100V 3A	D2
49	82.4316.5822	1	EA	DIODE, 1N5822 SCHOTTKY 40V 3A	D1
50	82.5301.5908	4	EA	DIODE, ZENER TS 1N5908 5V 5W	D3-D6
51	82.5316.6281	1	EA	DIODE, ZENER 1N6281 27V 1500W 10%	D7
52	83.3157.0001	2	EA	IC, 6N137, OPTOCOUPLER	U25, U26
53	83.5000.0001	5	EA	IC, L293D, QUAD HALF-BRIDGE DRIVER	U3-U7
54	83.5000.0003	1	EA	IC, LM2575T-5.0, VOLTAGE REG., SWITCHING	U24
55	83.5000.0004	2	EA	IC, LMD18200, H-BRIDGE, 55V, 3A	U27, U28
56	84.0068.0332	1	EA	IC, MC68332, MICROPROCESSOR	U18
57	84.4131.0001	1	EA	IC, 74HC05 HEX INVERTER W/OPEN COLLECTOR	U22
58	84.4234.0001	2	EA	IC, LTC485CN8 RS422/RS485 TRANSCEIVER DIP PKG	U30, U31
59	84.5000.0004	1	EA	IC, 74HC32 QUAD 2-INPUT OR GATE	U14
60	84.5000.0014	2	EA	IC, 581001-70 128K X 8 STATIC RAM, 70SPEED	U10, U12
61	84.7407.0174	6	EA	IC, 74HC174 HEX D-FF W/CLR	U2, U11, U13, U15, U16, U19
62	84.7411.0001	1	EA	IC, HPR100, DC TO DC CONVERTER, 5V IN/OUT	U29
63	85.5000.0701	1	EA	IC, MAX701, PWR SUPPLY MONITOR	U23
64	85.5104.0002	2	EA	IC, HCTL-2020, DECODER	U20, U21
65	85.5119.0001	1	EA	IC, 75173, QUAD DIF. LINE RCVR	U1
66	87.7132.0002	1	EA	IC, LOGIC PGM:VL5 U10 2624	U17
67	87.7145.0002	1	EA	IC, LOGIC PGM:VL6 U9	U9
68	88.8101.0001	1	EA	LED, RED T-1 3/4 ROUND	LED1



Notes

CABLES

#6 Ring/#6 Ring 11" GND Strap Assembly

25.8007.2244

Refer to **Figure 3-32**.

No.	Item	Qty.	UM.	Description
1	52.8329.0001	2	EA	TERM, RING #6 22-16AWG NON-INS
2	73.7130.0002	0.92	FT	WIRE, 7/64" TUBULAR BRAID SILVER-PLATED

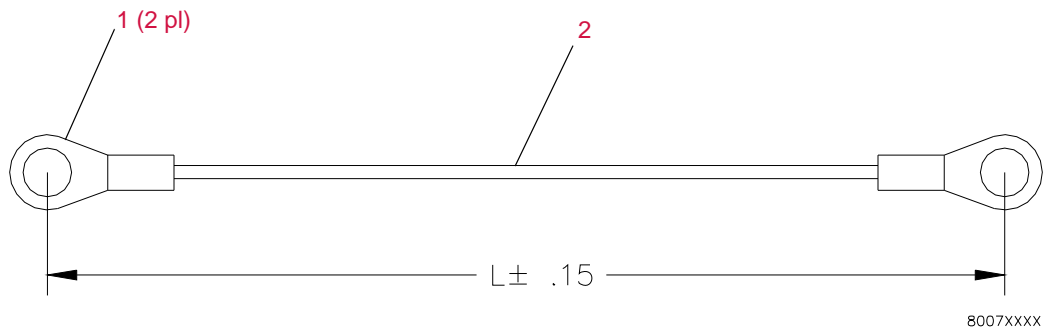


Figure 3-32: #6 Ring/#6 Ring 11" GND Strap Assembly

#6 Ring/18-14AWG Faston 11" GND Strap Assembly

25.8007.2644

Refer to **Figure 3-33**.

No.	Item	Qty.	UM.	Description
1	52.8271.0009	1	EA	RECEPT, FASTON .250" 18-14AWG NON INS
2	52.8329.0001	1	EA	TERM, RING #6 22-16AWG NON-INS
3	73.7130.0002	0.92	FT	WIRE, 7/64" TUBULAR BRAID SILVER-PLATED

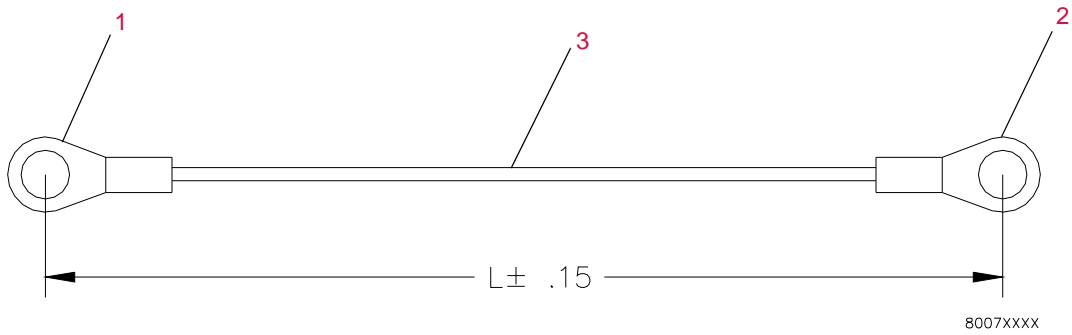


Figure 3-33: #6 Ring/18-14AWG Faston 11" GND Strap Assembly

#8 Ring/#8 Ring 11" GND Strap Assembly

25.8007.3344

Refer to Figure 3-34.

No.	Item	Qty.	UM.	Description
1	52.8329.0003	2	EA	TERM, RING #8 22-16AWG NON-INS
2	73.7130.0002	0.92	FT	WIRE, 7/64" TUBULAR BRAID SILVER-PLATED

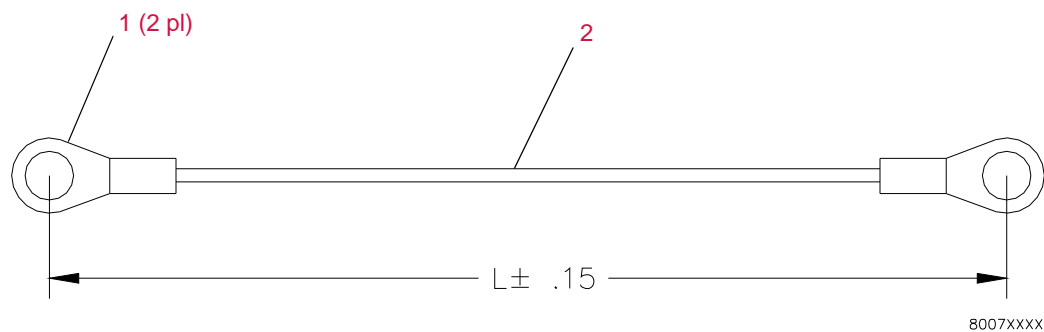


Figure 3-34: #8 Ring/#8 Ring 11" GND Strap Assembly

Tilt Cable Assembly

25.9643.0017

Refer to **Figure 3-35**.

No.	Item	Qty	UM	Description
1	52.6270.0001	2	EA	CONN HOUSING, 5-PIN MTA CLOSED END RED
2	52.6396.0003	1	EA	COVER, 7-POS MTA100 STRAIN RELIEF
3	52.6396.2202	1	EA	RECEPT, 2-POS MTA100 W/POL TAB RED CLSD END
4	52.6424.0005	1	EA	COVER, 5-POS CLOSED END STRAIN RELIEF - MTA
5	52.6434.2202	1	EA	RECEPT, MTA156 RED 2-POS.
6	52.6436.0002	1	EA	COVER, STRAIN RELIEF/2-POS MTA156
7	55.2197.0001	0.08	FT	HEATSHRINK, 3/8" BLACK
8	55.2199.0002	0.17	FT	HEATSHRINK, 1/16" CLEAR
9	55.2200.0001	0.17	FT	HEATSHRINK, 3/16" BLACK
10	73.7039.0001	4.42	FT	CBL, 22AWG STRND 4COND POLYPR INSUL

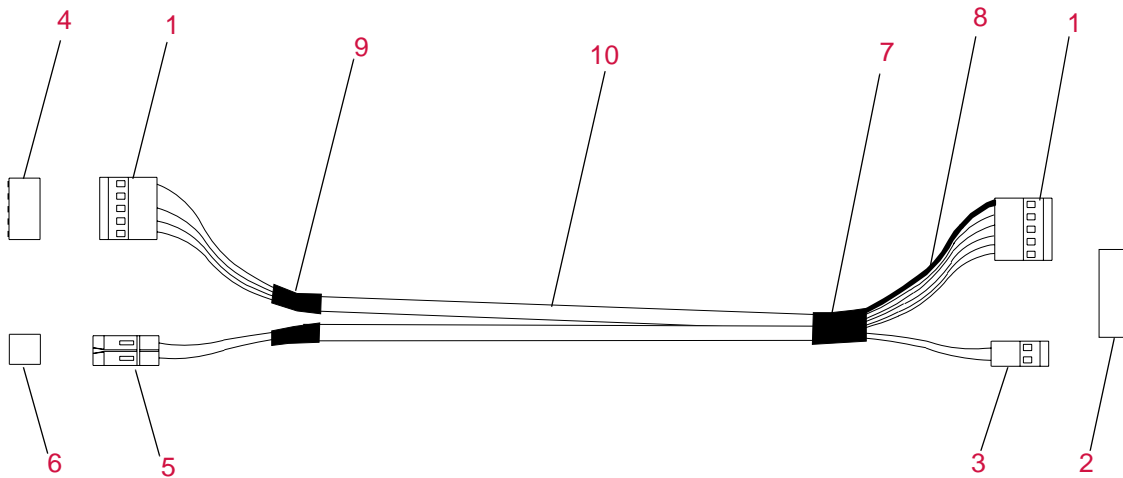


Figure 3-35: Tilt Cable Assembly

Pan Cable Assembly

25.9643.0018

Refer to **Figure 3-36**.

No.	Item	Qty	UM	Description
1	52.6270.0001	2	EA	CONN HOUSING, 5-PIN MTA CLOSED END RED
2	52.6396.0003	1	EA	COVER, 7-POS MTA100 STRAIN RELIEF
3	52.6396.2202	1	EA	RECEPT, 2-POS MTA100 W/POL TAB RED CLSD END
4	52.6424.0005	1	EA	COVER, 5-POS CLOSED END STRAIN RELIEF - MTA
5	52.6434.2202	1	EA	RECEPT, MTA156 RED 2-POS.
6	52.6436.0002	1	EA	COVER, STRAIN RELIEF/2-POS MTA156
7	55.2197.0001	0.08	FT	HEATSHRINK, 3/8" BLACK
8	55.2199.0002	0.17	FT	HEATSHRINK, 1/16" CLEAR
9	55.2200.0001	0.17	FT	HEATSHRINK, 3/16" BLACK
10	73.7039.0001	1.42	FT	CBL, 22AWG STRND 4COND POLYPR INSUL

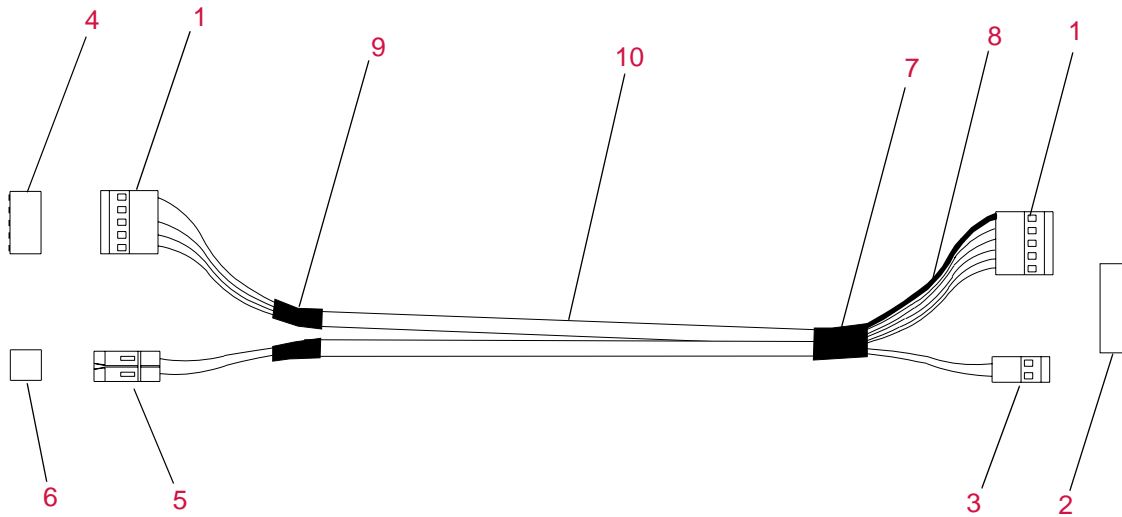


Figure 3-36: Pan Cable Assembly

VL5 Ground Safety Cable Assembly

25.9634.0140

Refer to **Figure 3-37**.

No.	Item	Qty.	UM.	Description
1	52.8231.0005	2	EA	TERM, RING #6 BLUE 16-14AWG REEL PIDG
2	73.7089.0504	8.00	FT	WIRE, 22AWG 300V 200C TEF GRN/YEL UL1180

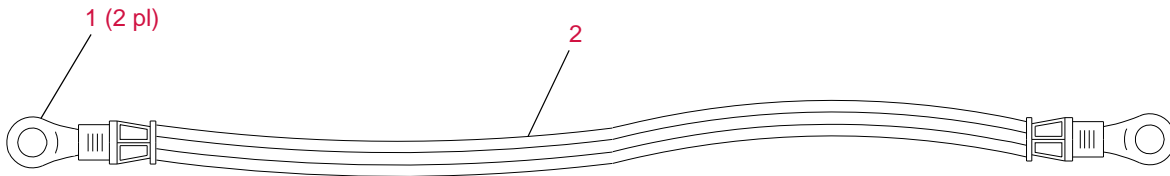


Figure 3-37: VL5 Ground Safety Cable Assembly

VL5 Input W/Grn-Yel Cable Assembly

25.9634.0180

Refer to **Figure 3-38**.

No.	Item	Qty.	UM.	Description
1	52.6396.2202	2	EA	RECEPT, 2-POS MTA100 W/POL TAB RED CLSD END
2	52.6396.2204	1	EA	RECEPT, 4-POS MTA100 W/POL TAB RED 4 CLSD END
3	52.6400.0015	1	EA	RECEPT, 17-16, FREE HANG CPC
4	52.6424.0002	2	EA	COVER, 2-POS CLOSED END STRAIN RELIEF - MTA
5	52.6424.0004	1	EA	COVER, 4-POS CLOSED END STRAIN RELIEF - MTA
6	52.6431.0002	1	EA	BACKSHELL, CPC17 NYLON .300-.525 CBL RNG
7	52.8201.0001	5	EA	CONTACT PIN, 22AWG GLD (REEL) TYPE 3+
8	52.8202.0001	7	EA	CONTACT PIN, TIN 18-16AWG (REEL) TYPE 3+
9	52.8231.0005	1	EA	TERM, RING #6 BLUE 16-14 AWG REEL PIDG
10	52.8298.0002	2	EA	TERM, WIRE PIN 16-14 GA.
11	54.1223.0001	1	EA	CORD GRIP, 1/2" NPT, 610GRIP KELLUMS D-LUX
	55.2199.0002	0.25	FT	HEATSHRINK, 1/16" CLEAR (not shown)
12	73.7087.0002	3	EA	CABLE, INTEGRAL VL5 W/GRN-YEL

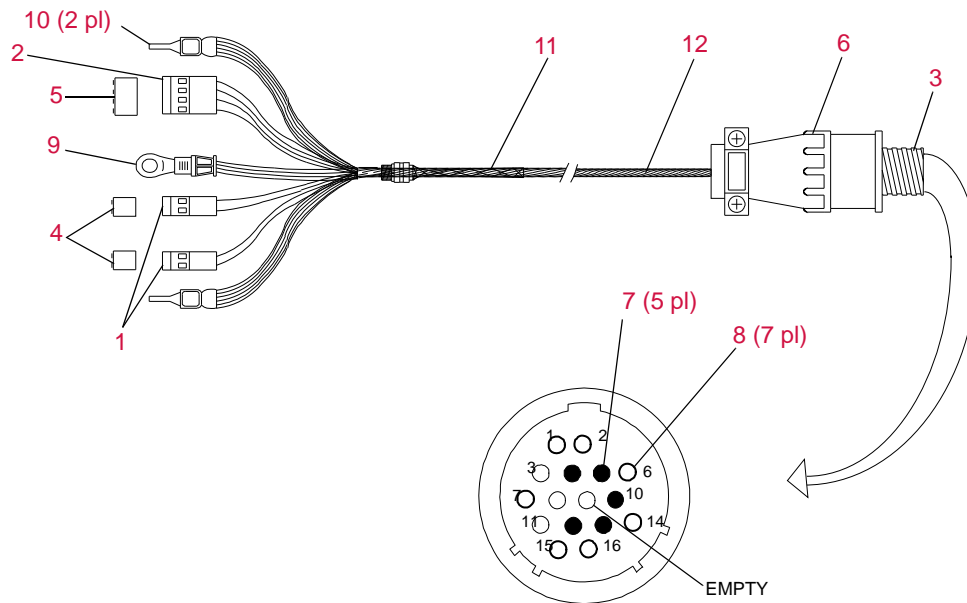


Figure 3-38: VL5 Input W/Grn-Yel Cable Assembly

Ignitor Board Output Cable Assembly

25.9638.0222

Refer to **Figure 3-39**.

No.	Item	Qty.	UM.	Description
1	52.6264.0003	1	EA	CONN HOUSING, 30 SERIES W/FLNGS 3-POS
2	52.8247.0002	2	EA	CRIMP CONTACT, S30 TIN (REEL)
3	73.7027.0001	.033	FT	WIRE, 16AWG 30KV CHAMPLAIN ONLY 3239B

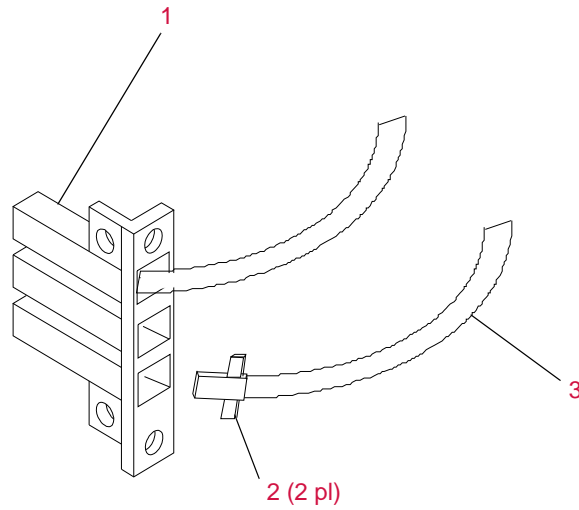


Figure 3-39: Ignitor Board Output Cable Assembly

Ground Cable Assembly

25.9638.0243

Refer to **Figure 3-40**.

No.	Item	Qty.	UM.	Description
1	52.8231.0005	2	EA	TERM, RING BLUE 16-14AWG REEL PIDG
2	73.7089.0504	5.30	FT	WIRE, 22AWG 300V 200C TEF GRN/YEL UL1180

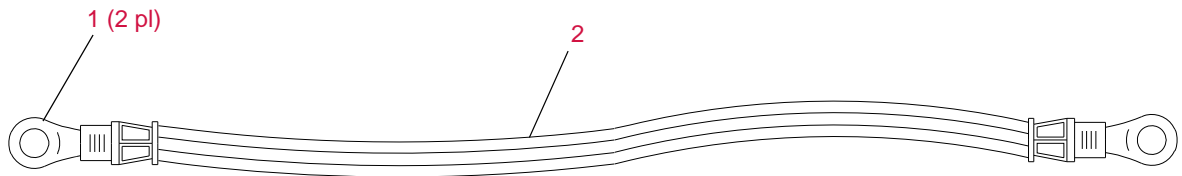


Figure 3-40: Ground Cable Assembly

VL5Arc Ignitor Cable Assembly

25.9647.0048

Refer to **Figure 3-41**.

No.	Item	Qty.	UM.	Description
1	52.8271.0005	2	EA	RECPT. FASTON 1/4" 16-14AWG INS. (REEL)
2	52.8298.0002	2	EA	TERM, WIRE PIN 16-14 GA.
3	73.7089.0000	4.50	FT	WIRE, 22AWG BLK 300V TEFLON STRANDED
4	73.7089.0009	4.50	FT	WIRE, 22AWG WHT TEFLON STRANDED

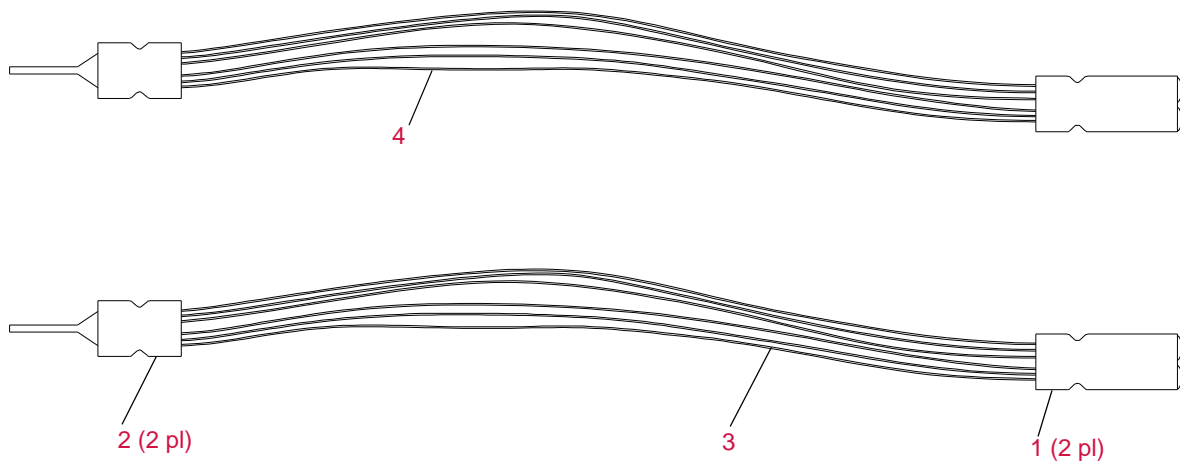


Figure 3-41: Ground Cable Assembly

VL5Arc Bulb Wires Cable Assembly

25.9647.0059

Refer to **Figure 3-42**.

No.	Item	Qty.	UM.	Description
1	25.9634.0140	1	EA	CABLE ASSY, VL5 GROUND SAFETY
2	52.8247.0001	2	EA	CRIMP CONTACT, S30 TIN (REEL)
3	55.6601.0002	0.50	FT	HEATSHRINK, 0.191" ID TFE TEFLON
4	55.6695.0002	0.30	FT	HEATSHRINK, 3/8" ADHESIVE WALL
5	73.6616.0011	1.58	FT	WIRE, 16AWG 600V 600C MICA TAPE TAN
6	73.7100.0001	4.08	FT	WIRE, 16AWG 20KVDC 41/32 STRD 200C SILICONE

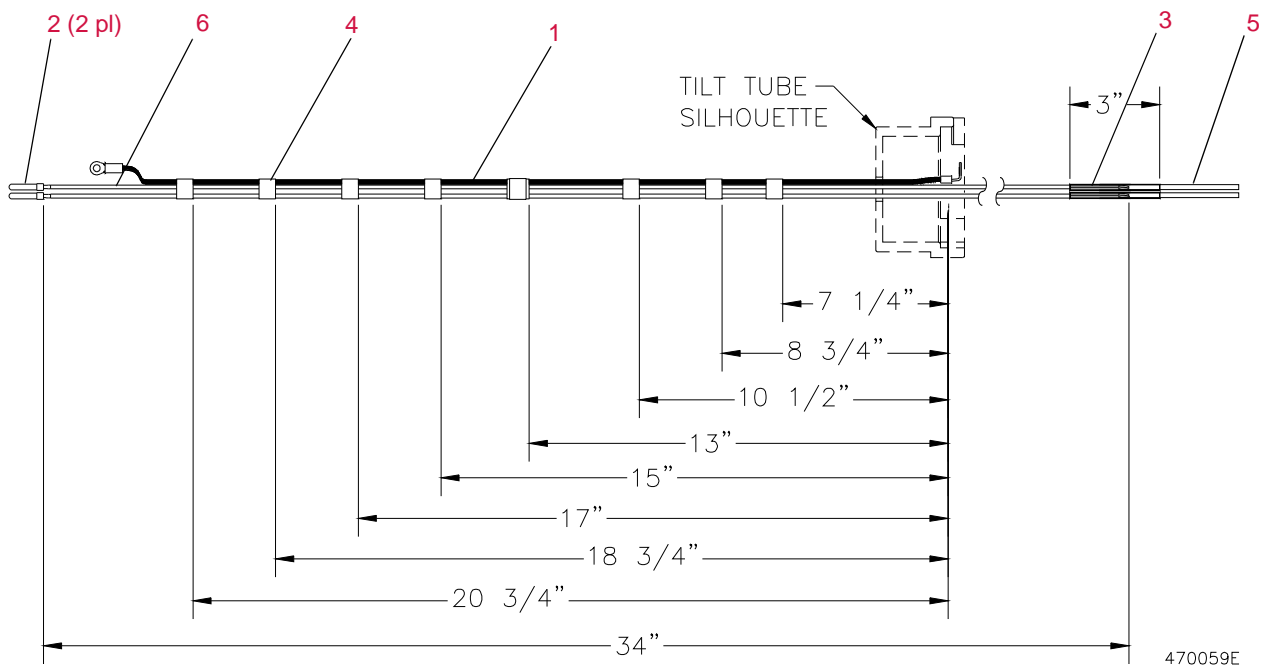


Figure 3-42: VL5Arc Bulb Wires Cable Assembly

Bellows Motor Extension Cable Assembly

25.9647.0108

Refer to **Figure 3-43**.

No.	Item	Qty.	UM.	Description
1	52.6469.0001	1	EA	CONN, PLUG HI-TEMP 4-PIN 26AWG
2	52.6470.0010	1	EA	CLAMP, CABLE RECEPTACLE
3	73.2528.0002	2.25	FT	WIRE, 28AWG 250V 200C TFE RED STRND MIL-W-16878
4	73.2528.0005	2.25	FT	WIRE, 28AWG 250V 200C TFE GRN STRND MIL-W-16878
5	73.2528.0006	2.25	FT	WIRE, 28AWG 250V 200C TFE BLU STRND MIL-W-16878
6	73.2528.0010	2.25	FT	WIRE, 28AWG 250V 200C TFE BLK STRND MIL-W-16878

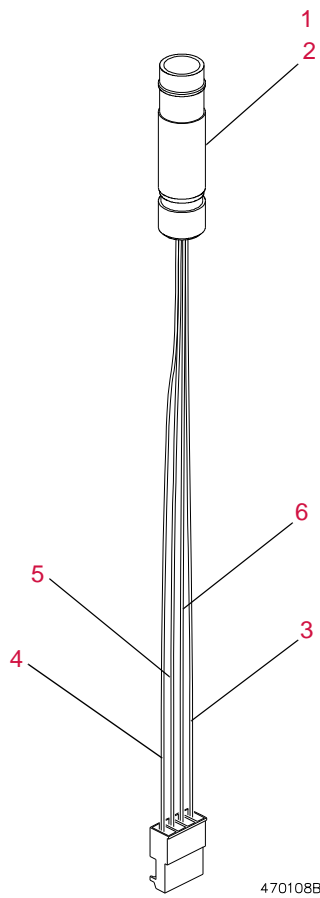


Figure 3-43: Bellows Motor Extension Cable Assembly

VL5A Input Cable Assembly Grn-Yel

25.9647.0128

Refer to **Figure 3-44**.

No.	Item	Qty.	UM.	Description
1	52.6396.2202	1	EA	RECEPT, 2-POS MTA100 W/POL TAB RED CLSD END
2	52.6396.2204	1	EA	RECEPT, 4-POS MTA100 W/POL TAB RED CLSD END
3	52.6400.0015	1	EA	RECEPT, 17-16, FREE HANG CPC
4	52.6424.0002	1	EA	COVER, 2-POS CLOSED END STRAIN RELIEF - MTA
5	52.6424.0004	1	EA	COVER, 4-POS CLOSED END STRAIN RELIEF - MTA
6	52.6431.0002	1	EA	BACKSHELL, CPC17 NYLON .300-.525 CBL RNG
7	52.8277.0001	5	EA	CONTACT PIN, 22AWG GLD (REEL) TYPE 3+
8	52.8276.0001	7	EA	CONTACT PIN, TIN 18-16AWG (REEL) TYPE 3+
9	52.8231.0005	1	EA	TERM, RING #6 BLUE 16-14AWG REEL PIDG
10	52.8244.0005	1	EA	FASTON RECEPT, INS, .250", 22-18AWG STRIP
11	52.8312.0001	2	EA	RECP, FASTON 1/4" 18-14AWG INSULATED VO
12	54.1223.0001	1	EA	CORD GRIP, 1/2" NPT 610GRIP KELLUMS D-LUX
	55.2199.0002	0.25	FT	HEATSHRINK, 1/16" CLEAR (not shown)
13	73.7087.0002	3	EA	CABLE, INTEGRAL VL5 W/GRN-YEL

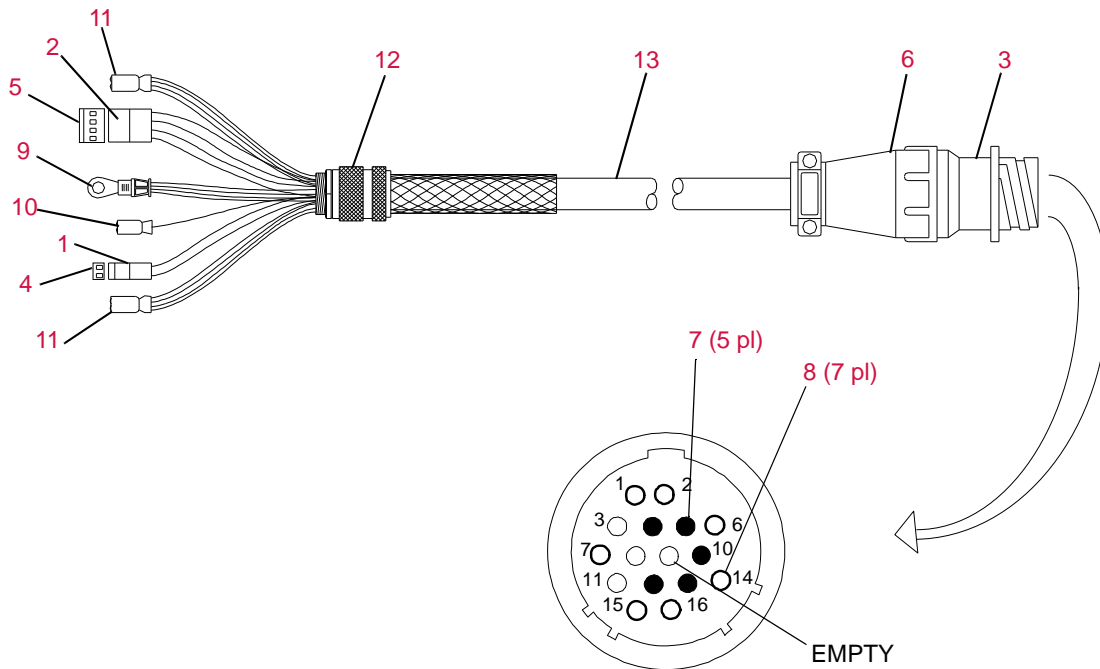


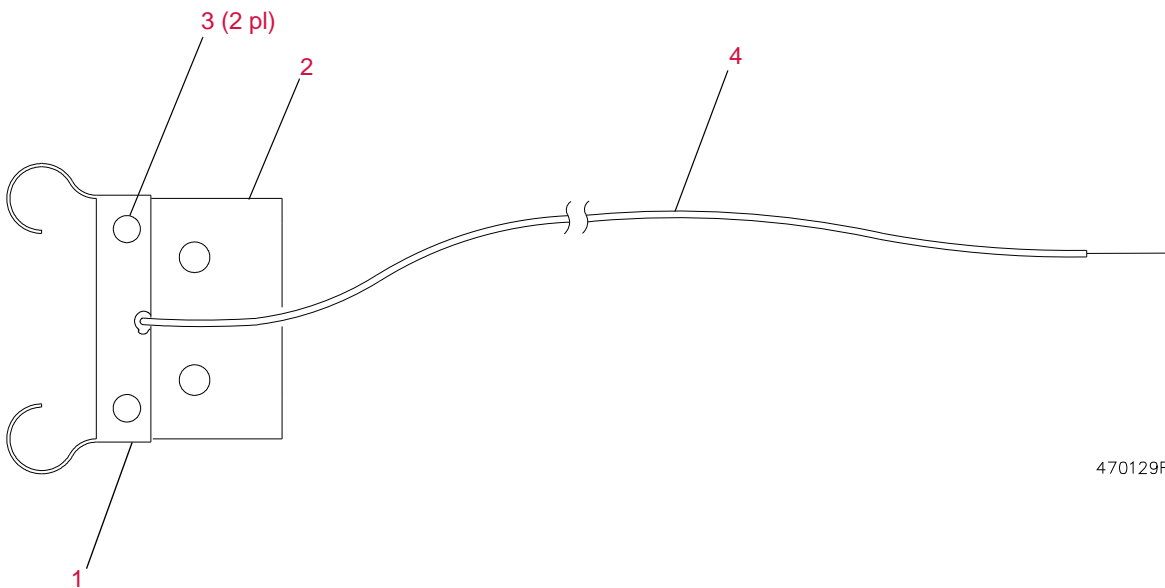
Figure 3-44: VL5A Input Cable Assembly Grn-Yel

VL5Arc Disconnect Cable Assembly

25.9647.0129

Refer to **Figure 3-45**.

No.	Item	Qty.	UM.	Description
1	10.9647.0118	1	EA	VL5A DISCONNECT CONTACT
2	10.9647.0150	1	EA	VL5A DISCONNECT MOUNT
3	53.6534.0006	2	EA	RIVET, 3/32" OD 3/16 SOLID 2117-T4A1 100DEG CSK HD
4	73.1522.0005	3.00	FT	WIRE, 22AWG 150V 200C TFE GRN UL1213/CSA



470129F

Figure 3-45: VL5Arc Disconnect Cable Assembly



A.

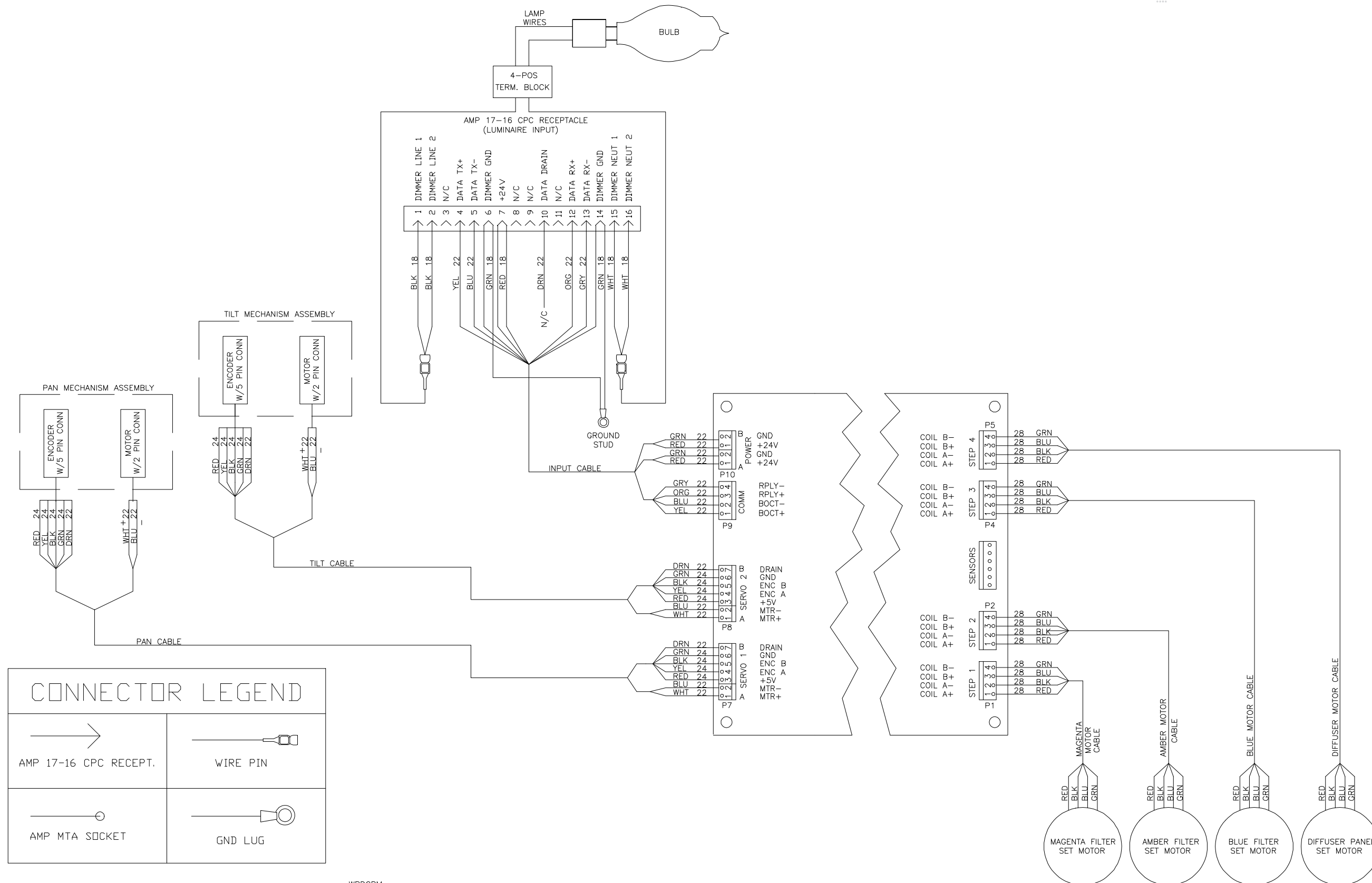
TECHNICAL BULLETINS

List of Technical Bulletins

The following table identifies the current technical bulletins associated with the VL5 series wash luminaires.

Technical Bulletin	Description	Associated Luminaire
VL5-021A	Install new VL5 and VL6 luminaire and VLM moving mirror pan and tilt assembly driven pulleys and stops and lamp wire tie-wrap mounting block location	VL5
VL5-022	Install new VL5 and VL6 luminaire pan and tilt assembly driven pulleys and stops	VL5
VL5-023	VL5 luminaire drive ring guide pin press	VL5
VL5-024	Release and installation of VL5B luminaire with new pastel color filters	VL5B
VL5-025	Replace lamp wire plate to eliminate light leak on VL5 luminaires	VL5
VL5-026	EMI shielding and weather-stripping modifications for VL5/VL5B luminaires and VLM mirror yoke leg covers	VL5/VL5B
VL5-027	VL5/VL5B luminaire Tophat/Gelframe - description and installation instructions	VL5/VL5B
VL5-028	VL5 luminaire magenta drive ring guide pins	VL5/VL5Arc/VL5B
VL5-029	VL5/VL5B luminaire pan pulley installation tool	VL5/VL5Arc/VL5B
VL5-030	New VL5/VL5B luminaire input rating label and lamp wire sleeving	VL5/VL5B
VL5-032	Ferrite bead EMI shield for VL5/VL6/VLM pan and tilt motor wires	VL5
VL5-034	Revised pan and tilt belt tension procedure for all VL5 family luminaires and the VLM mirror	VL5/VL5Arc/VL5B
VL5-035	Release of new VL5B luminaire EPROM	VL5B
VL5-036A	VL5/VL5B luminaire and VLM mirror Ground, UL Listed, and Dry locations labels	VL5/VL5B
VL5-037	VL5Arc luminaire lamp adjustment procedure	VL5Arc
VL5-038	VL5Arc luminaire leak prevention modification	VL5Arc
VL5-039A	VL5Arc luminaire bellows motor connector kit	VL5Arc
VL5-040	VL5Arc luminaire lens protection kit	VL5Arc
VL5-041	VL5Arc luminaire lens removal kit	VL5Arc
VL5-042	VL5/VL5B compliance upgrade	VL5/VL5B
VL5-043	VL5Arc luminaire UV glass installation	VL5Arc
VL5-044	VL5Arc luminaire blackout/compliance retrofit	VL5Arc
VL5-045B	VL5/VL5B luminaire improved lamp wires	VL5/VL5B
VL5-047	VL5Arc luminaire backcap/lamp socket retrofit	VL5Arc
VL5-048	VL5Arc luminaire disconnect diode	VL5Arc
VL5-049	Series 300 luminaire software upgrade V3.0	VL5/VL5Arc/VL5B
VL5-050	New patent label addition for VL5, VL5Arc, VL5B luminaires	VL5/VL5Arc/VL5B
VL5-051	VL5Arc replacement ballast for proper balance	VL5Arc

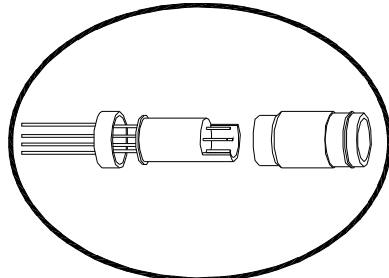
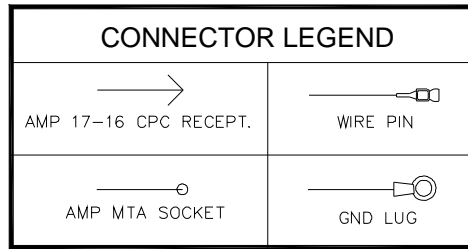
VL5/VL5B Wiring Diagram



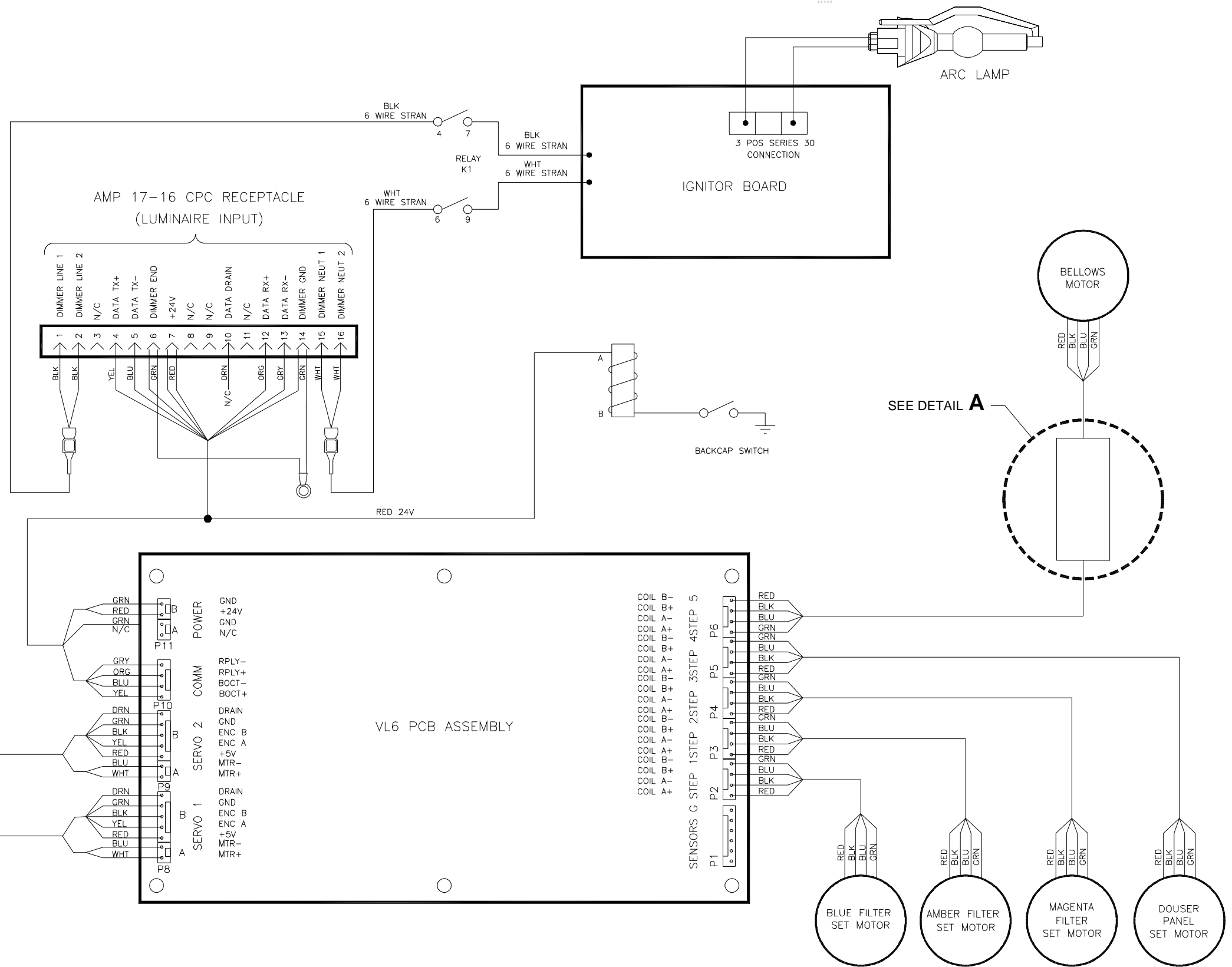
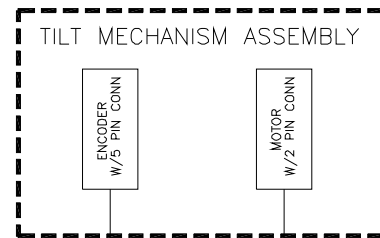
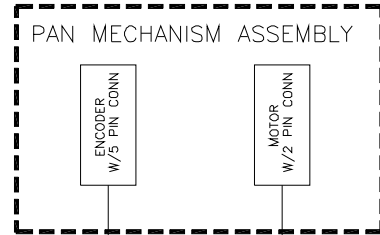
CONNECTOR LEGEND	

WRDGRM

VL5Arc Wiring Diagram



DETAIL A





VL5™ Wash Luminaire Service Manual

Version as of: October 26, 2011

PRG part number: 02.9634.0010 F



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