PLASI 2000

Pulse Light Approach Slope Indicator

SERVICE, MAINTENANCE & ILLUSTRATED PARTS MANUAL

Manual Number PLF002 ***12 October, 2004***

APPLICABLE TO
DA500099-1, DA500099-2
PLASI 2000 SYSTEMS

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SECTION I - INTRODUCTION

1.0 Purpose

This Manual provides the information required for service of the PLASI 2000 System.

The PLASI 2000 System will require a minimum of servicing. It is enclosed in a weather tight housing and is designed for continuous unattended operation. With proper installation and adherence to the recommended servicing schedule presented in Section II, the System is designed to deliver trouble free operation. The System may be maintained readily by technician level personnel.

The program outlined in Section II provides a recommended servicing schedule based on continuous System usage. The user should consider the schedule as a guide, and based on local environmental conditions and service experience, may find it expedient to either increase or decrease the frequency of some of the listed service actions.

1.1 Description of Systems

The light beam is generated through the use of optical components, two moveable Shutter Chains, and a White/Red filter. One Tungsten-Halogen Lamp is positioned behind a Condenser Lens. For reliability, an Automatic Lamp Changer positions a new Lamp if the one in use should fail. Under normal conditions, average Lamp life is approximately 600 to 650 hours at 108V. At 100V, Lamp life typically doubles.

The pulsing beam is created by a moving chain with triangular Shutter Elements, positioned in front of and close to the Condenser Lens. The height of the steady white light is a function of the distance between the upper Shutter Elements and the edge of the Red Filter. The number of pulses per second is determined by the number of elements per second which interrupt the pilot's view of the light behind the shutter.

To project a steady red and a red pulsing beam indicating "BELOW GLIDE PATH" information, a Red Filter is installed behind the upper Shutter Elements. The Objective Lens inverts the beam so that the upper Shutter Elements generate the pulsing "LOW" beam and the lower Shutter Elements generate the "HIGH" beam.

1.2 Power

The basic power supply required at the PLASI 2000 System shall be a nominal 120 $\pm$ 10% VAC, with a frequency of 50 or 60 hertz, single phase alternating current. To

improve the service life of the BVA Lamps, a Voltage Limiter Unit is used to provide reduced and stabilized voltage to the Lamp.

Input power is routed to the Control Module Assembly which contains the Power Switch, a Circuit Breaker, and all the Control Relays.

1.3 Cooling

To dissipate heat created by the Lamp and other electronic components, an Exhaust Fan and a Circulation Fan are mounted within the PLASI 2000 System. Internal air is circulated around the Lamp, Condenser Lens and chains, by a single fan mounted over the active Lamp. Outside ambient air is drawn through the System by the Exhaust Fan located on the Front Plate which exhausts out the front of the PLASI 2000 System and down across the window. A replaceable/reusable Filter is located at the rear of the Base Plate, inside the Unit.

Temperature Sensors are located at three points in the PLASI 2000 System: One inside the Control Module, one mounted under the Circulation Fan, and one mounted to the Pulse Generator Plate above the chain drive motors.

The Control Module will SHUT OFF the Exhaust Fan if the temperature inside the PLASI 2000 System is less than 46 degrees F and RESTART the fan above 52 degrees F. It will TURN ON the heaters if the temperature of the Aluminum Plate is less than 32 degrees F and TURN OFF the heaters when the temperature rises above 36 degrees F. The PLASI 2000 System will SHUT DOWN if the temperature of the Control Module is above 175 degrees F or if the temperature of the Sensor next to the Circulation fan goes above 250 degrees F.

1.4 Automatic Lamp Changing

The PLASI 2000 System contains an Automatic Lamp Changing System that will rotate a new Lamp into Operating Position when the Lamp in service fails. A Current Sensor in the Control Module detects when power is ON and when the Lamp is not drawing current. The Sensor Circuit then switches power to the Lamp Table Solenoid which rotates the Lamp Table one position, moving a new Lamp into Operating Position. When the fourth Lamp is rotated to the Operating Position, a signal is generated by the Lamp Table which tells the Control Module not to attempt any further Lamp changes. This signal can also be used to drive a relay for external Last Lamp Indicators.

1.5 Photo Sensor (Photo Cell)

Automatic dimming to adjust Lamp brightness for night operation is provided by a Photo Sensor and the Control Module. The Photo Sensor generates a DC voltage, proportional to the ambient light intensity, which is read by the Control Module. If the light intensity is less than 320 lux, the Control Module drives the DIM input of the Voltage Limiter which in turn reduces the Lamp voltage. If the light intensity is greater than 590 lux, the Control Module does not drive the DIM input and full regulated voltage is applied to the Lamp. In either case, a 60 second delay is

added before the DIM input is changed. Night voltage adjustment procedures are described under *Paragraph 4.2* of the PLASI 2000 System Operation and Installation Manual.

1.6 Tilt Switches

Tilt Switches have been incorporated in the System that will automatically SWITCH OFF the PLASI 2000 System if it has been jolted in such a way as to move the housing from more than 0.5 degrees up to 0.5 degrees down. A ten second time delay is added by the Control Module to prevent the Tilt Switch from responding to ordinary transient disturbances such as taxiing airplanes or hovering helicopters.

1.7 Power Control

The PLASI 2000 System is controlled with the "ON-OFF-REMOTE" Switch. To manually TURN ON the Unit, the Switch should be in the "ON" Position.

1.8 Remote Radio Control

When the "ON-OFF-REMOTE" Switch is in the REMOTE Position, Radio Remote "ON/OFF" Control of the PLASI 2000 System can be accomplished using an FAA-L-854 RECEIVER/DECODER wired into the PLASI Control Circuit. Radio control by keying a transmitter can be accomplished from a tower, operations office, or from an aircraft, and provides "ON/OFF" function and a fifteen minute operational cycle. (See Figure 17, Interconnect Diagram)

1.9 Signal Failure Modes

The PLASI 2000 System is a fail safe design which ensures that any malfunction of beam projection will not result in a hazardous situation for approaching aircraft.

There are three potential failure modes of the projected signal.

The first is loss of power to the Unit or the Projector Lamp, which will result in complete loss of signal with no hazard.

The second is failure of the Pulse Generator Drive System and resulting loss of one or both pulse signals. This type of failure will be detected by Electronic Sensors (Pulse Detectors) and the Unit will shut down, resulting in complete loss of signal with no hazard.

The third failure is if the Unit is knocked out of alignment. The Tilt Switch will be activated and will shut down the Unit, resulting in complete loss of signal with no hazard. The Tilt Switch is pre-set at the factory on the Inclinometer Arm and requires no adjustments.

If either Shutter Chain stops moving, a Slotted Sensor (Missing Pulse Detector) mounted on each chain will indicate that fact to the Control Module. The Control Module will then SHUT DOWN the PLASI 2000 System and put a chain fault message on the display panel. Since the Missing Pulse Detector signal must alternate between high and low states to be valid, any fault in the Missing Pulse Detector -- either shorted or open -- will be detected by the Control Module as a chain fault.

SECTION II - RECOMMENDED SERVICING SCHEDULE

2.0 Routine Service

1. Remove incoming line power before performing service unless noted otherwise.

2. After performing service, carefully replace the shell, ensure that it is firmly seated, and tighten down the hand screw that secures the shell to the main assembly.

2.1 Servicing

CAUTION: DO NOT TOUCH LAMPS WITH BARE FINGERS. BODY CHEMICALS WILL CAUSE LAMP TO BECOME OPAQUE. USE CLEAN CLOTH OR GLOVES WHEN HANDLING LAMPS. IF LAMP SURFACES ARE TOUCHED WITH FINGERS, CLEAN WITH ALCOHOL OR SIMILAR CLEANING AGENT.

Item	Service Frequency	Service Action
Front window-outside.	At Lamp change if required.	1. Clean with optical cleaning solution (Kodak lens cleaning fluid or equivalent) using a lint free cloth or tissue.
Vertical aiming.	Every 6 months,	1. With shell removed, check that the internal level index mark is set to the desired approach angle on the degree scale and that the bubble in the level is centered. (Figure 1) 2. Adjust if required, see Paragraph 3.4 of the Operation and Installation Manual. 3. With shell installed perform a field check per Paragraph 2.2 to verify the Plasi approach path angle.

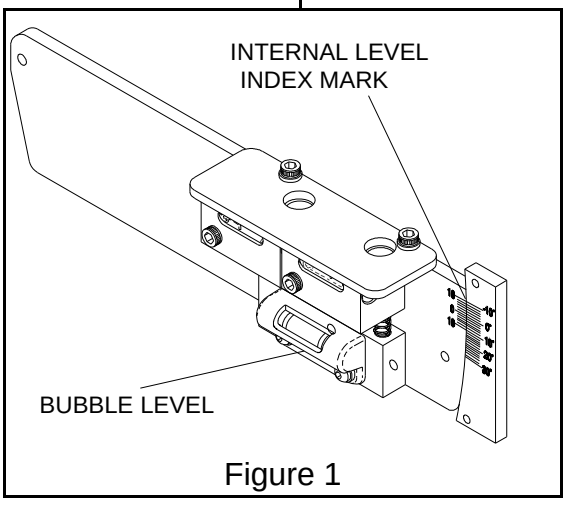


Figure 1

Item	Service Frequency	Service Action
Lamps	As required.	1. Remove all failed Lamps. 2. Move Lamp in service to Number 1 socket (Figure 2). 3. Install new Lamps in all other sockets. 4. Reset Lamp Table so Number 1 Lamp is in Operating position. (Rotate Clockwise)

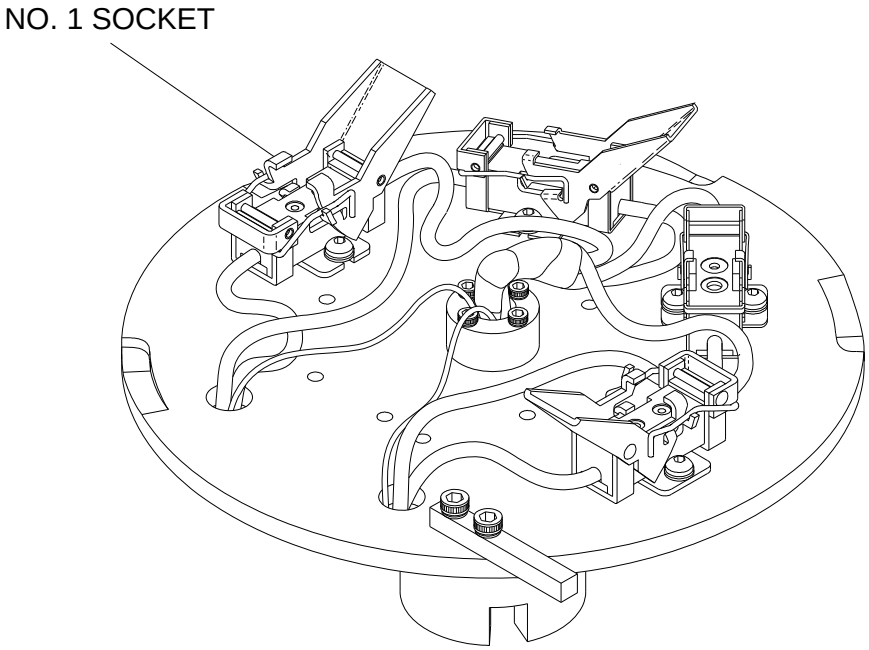


Figure 2

Item	Service Frequency	Service Action
Condenser Lens, Objective Lens, Red Filter, and inside of window	At Lamp change, if required.	1. Clean with optical cleaning fluid (Kodak lens cleaning fluid or equivalent) using a lint free cloth or tissue. (Figure 3) 2. If any optical components are found damaged, contact DeVore Aviation for instructions at (505) 345-8713

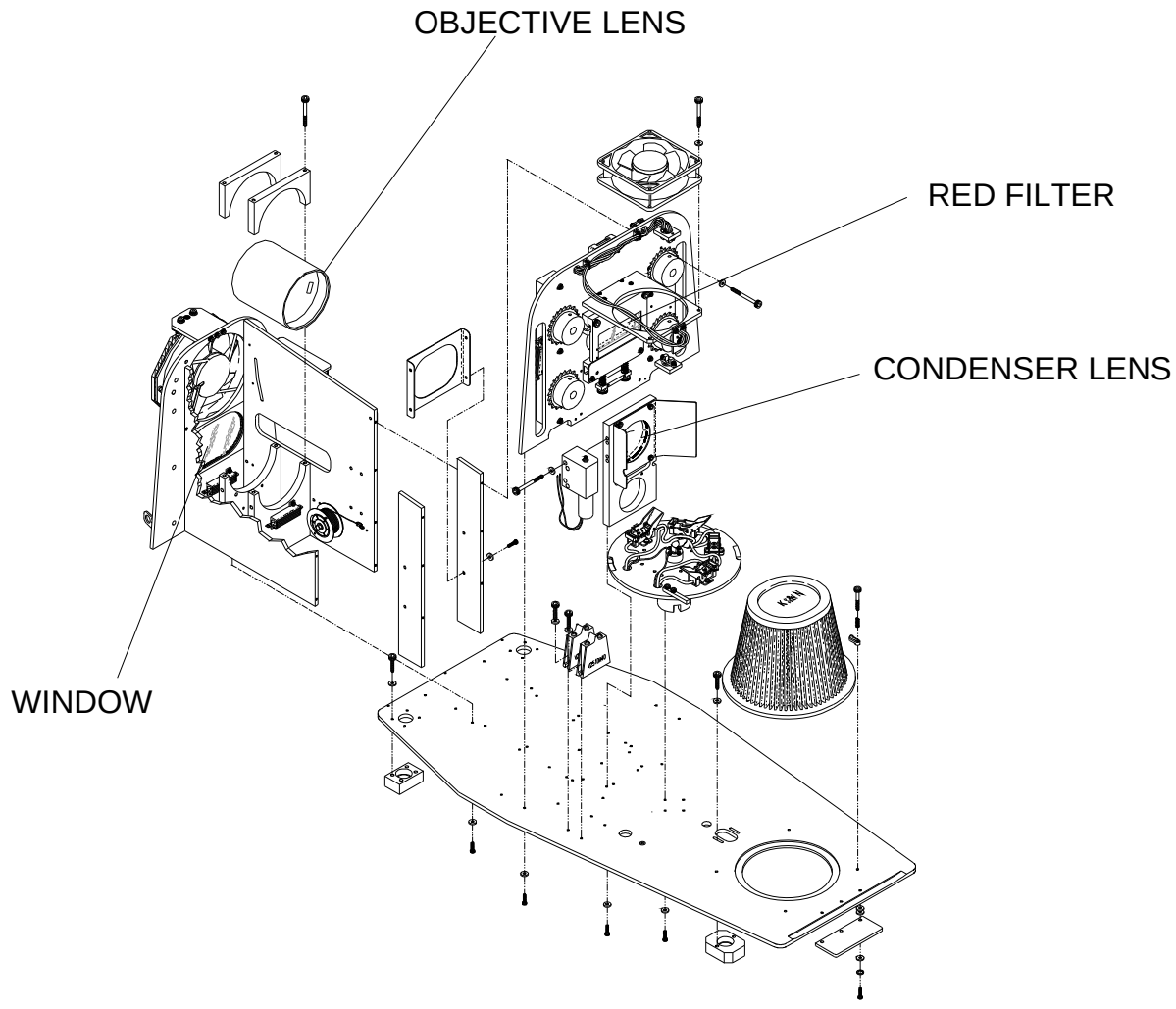


Figure 3

Item	Service Frequency	Service Action
Air inlet	Every 6 months or as required.	1. Inspect Filter. The Filter is washable/ reusable; if it is dirty, clean as follows: 2. Remove Filter by rotating the four plastic clamps holding it down (Figure 4). 3. Lightly tap off surface dust 4. Clean in a solution of warm water and mild soap detergent. 5. Rinse the Filter from the inside out. Shake and allow to air dry. Do not use air hose. 6. Re-oil Filter element with a light weight filter oil, (light weight motor oil may be used). Re-install Filter.

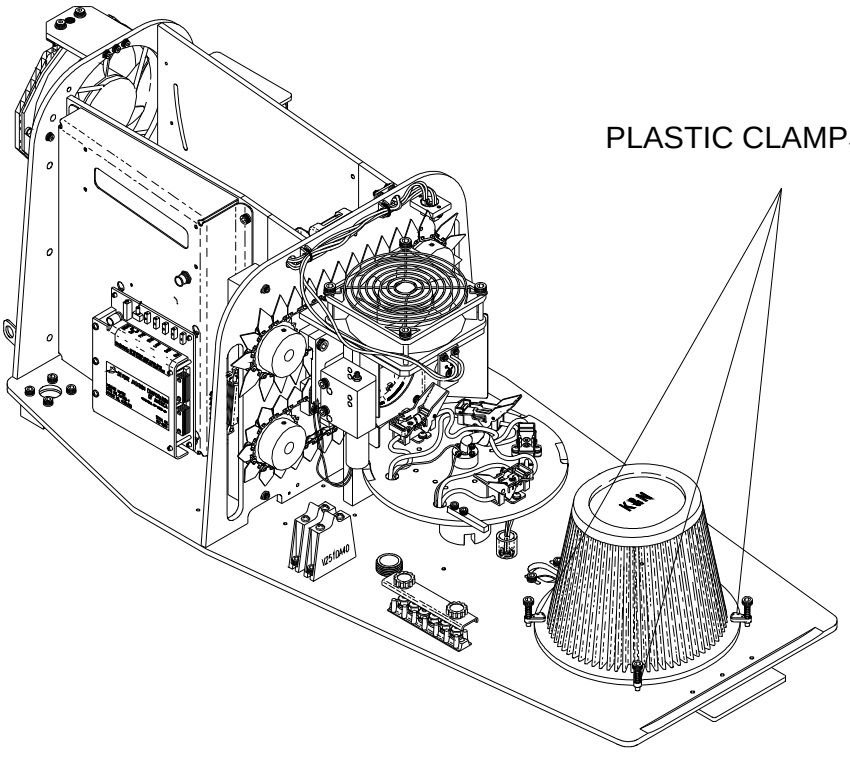


Figure 4

Item	Service Frequency	Service Action
Shutter Chains.	Every 6 months	1. Lubricate chains and sprocket teeth with Teflon fortified lubricant (SAE 50 weight non-detergent motor oil may be used if Teflon is not available) (Figure 5) . Use sparingly. Apply lubricant only to chain and sprocket teeth. Lubricant must not contaminate the Red Filter or Condenser Lens. 2. Check tightness of all sprocket set screws (8 places). 3. Check chain tension for upper and lower chains. Turn power on. With chain running, chain sag should be approximately one-eighth inch (1/8) to one-quarter (1/4) inch. If necessary, adjust tension per Paragraph. 3.0.2.

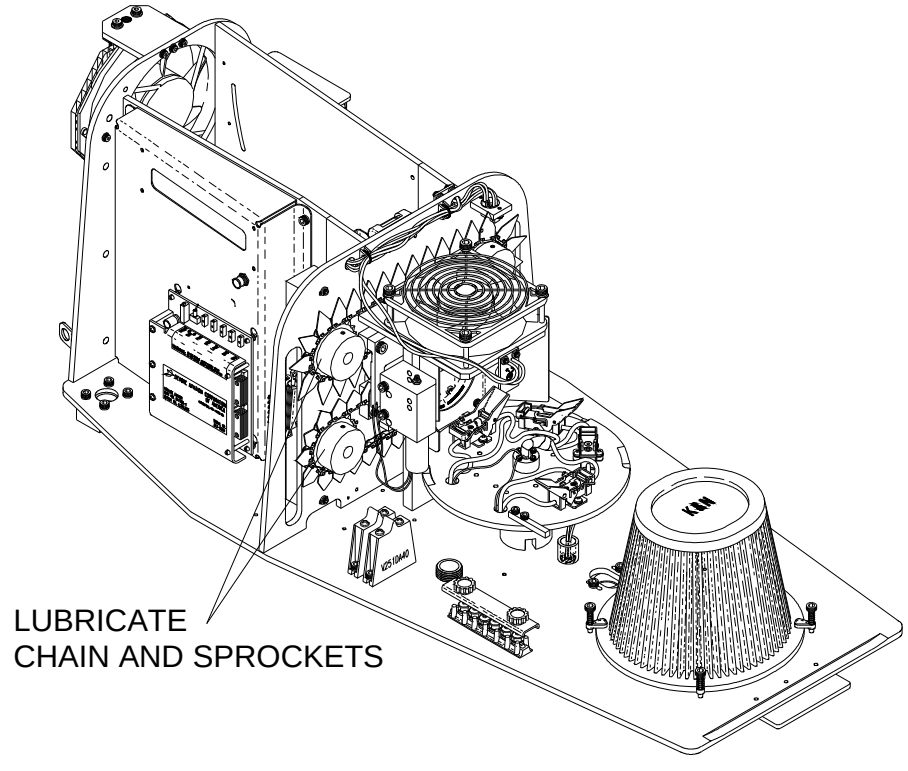


Figure 5

Item	Service Frequency	Service Action
Circulation Exhaust Fan.	Every 6 months.	1. With housing open and power on, check for airflow output of the interior Circulation Fan and the Exhaust Fan.
Photo Sensor	Every 6 months	1. With System operating on daytime Lamp voltage, cover the Photo Sensor (Figure 6) in signal range to prevent it from seeing any ambient light. Within 45 to 75 seconds, the Lamp voltage should drop to the night setting (58V to 62V). Uncover the Photo Sensor and in 45 to 75 seconds, the Lamp will return to the daytime setting.

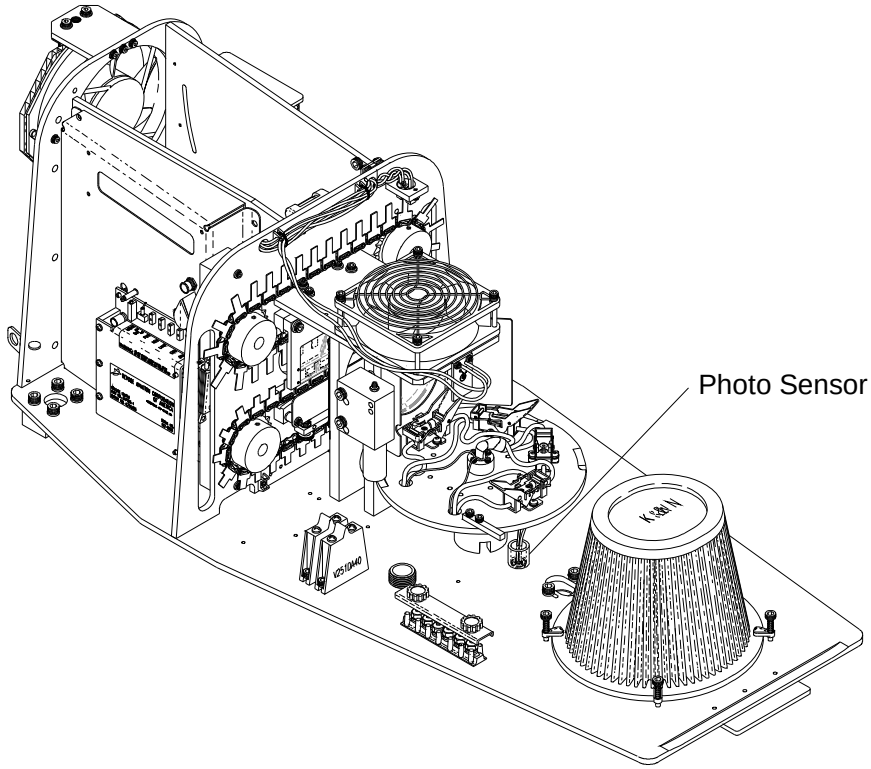


Figure 6

2.2 Field Check to Verify PLASI Approach Path Angle

Tools Required: DA500170-1 Leveling Rod and DA500171-1 Sighting Block (2),

1. Locate a point (A) approximately 25ft. in front of the PLASI unit and another point (B) 300 inches ± 1.0 in front of point (A). (Figure 7).

2. At each location, drive a stake into the ground. Use a transit to align the top of each stake to the same level. The stake tops should be no higher than the PLASI mounting leg height. **(**Figure 7).

3. Extend the leveling rod and place it vertically on top of Stake `A'.

4. Stand in front of the rod, peer through the hole in the sighting block looking at the PLASI unit light output while sliding it along one edge of the rod.

5. Find the position through which the PLASI projector in the unit appears to be half-red and half-white. Be as precise as you can and tighten the screw, clamping the sighting block to the rod. Check that the block has not moved during tightening.

6. Place the leveling rod vertically on Stake `B'

7. Repeat steps 4 and 5 for Stake `B', using the second sighting block. The distance between the two sighting block hole centers is dimension `X'. (Figure 7).

8. Calculate the tangent of the angle by using the following formula.

$$\text{Tan}(\Theta) = \frac{\text{Dim. `X' (inches)}}{\text{300 inches}}$$

9. Convert the Tangent (Θ) to the actual degrees by using a calculator or Trigonometric Table.

10. Given that the steady white on glide path signal is 0.35 degrees,. (Ref. Paragraph 1.2.2 of Operation and Installation Manual PLG002) Add 0.175 degrees (half of the 0.35 degree on glide path signal) to the angle calculated in step 11, to determine the centerline of the steady white on glide path signal.

11. Compare this angle with the clinometer reading for the PLASI unit. If there is more than a plus or minus 0 degree, 10 minute variation, repeat steps 3 thru 10. If the angle is still out of tolerance call DeVore Aviation for assistance.

Field Check to Verify PLASI Approach Path Angle (cont.)

Example:

The PLASI unit approach path angle is set at 3 degrees (normal for fixed wing aircraft)

Where Dimension `X' = 15.25 inches (Ref step 7)

Tan ∅ = $\frac{15.25}{300}$ = .0508333 (Ref step 8)

∅ = 2.91° (Ref step 9)

2.91° + 0.175° = 3.085° = 3° 0° 5′ (Ref step 10)

This is within the allowable tolerance of 3°± 0° 10′ (Ref step 11)

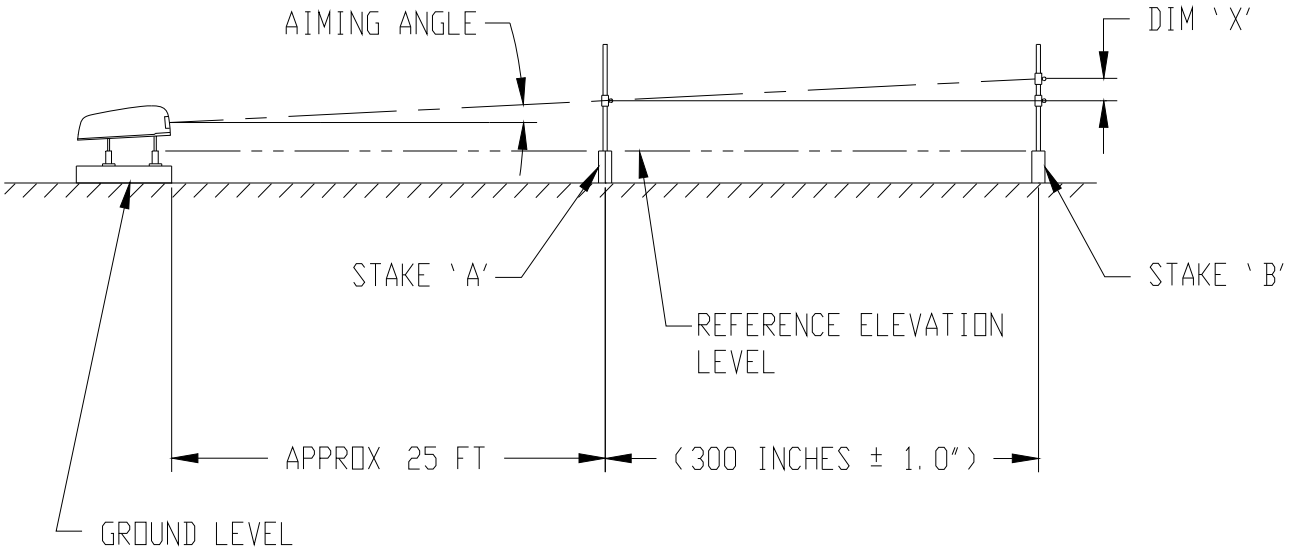


Figure 7

SECTION III - PLASI 2000 SYSTEM MAINTENANCE

3.0 Routine Maintenance

1. TURN OFF power before performing maintenance unless noted otherwise.

3.0.1 Relamping

No Tools Required

1. Remove used Lamps by depressing socket lever.

2. Move the Operating Lamp, if serviceable, to Number 1 Position (Figure 8). (Rotate Clockwise)

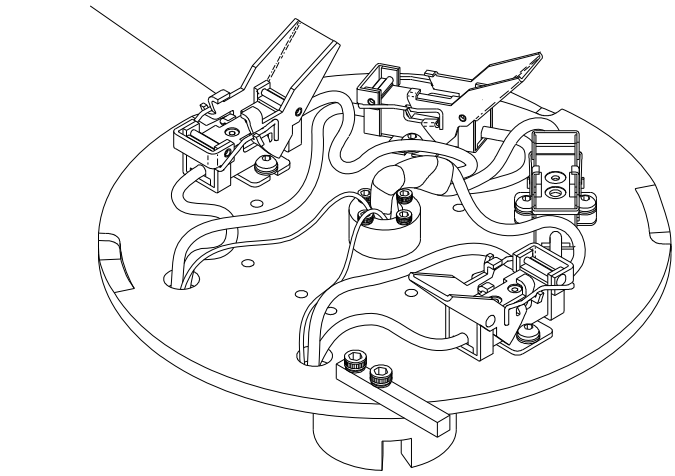


Figure 8

CAUTION:DO NOT TOUCH LAMP GLASS SURFACE. BODY CHEMICALS CAUSE GLASS LAMP ENVELOPE TO BECOME OPAQUE. HANDLE WITH CLEAN CLOTH OR GLOVES. CLEAN GLASS WITH ALCOHOL OR SIMILAR CLEANING AGENT.

3. Install new BVA (900W, 120V) Lamps. Pull socket lever to secure.

4. Reset Table to move Number 1 Lamp to the Operating Position (Figure 8). (Rotate Clockwise)

3.0.2 Shutter Chain Tensioning

Tools Required - 5/32 Allen wrench

1. Remove Control Module, see Paragraph 3.1.1.

2. Slightly loosen the cap screws (3 places) (Figure 9) securing the Bearing Block Assembly to the Pulse Generator Plate.

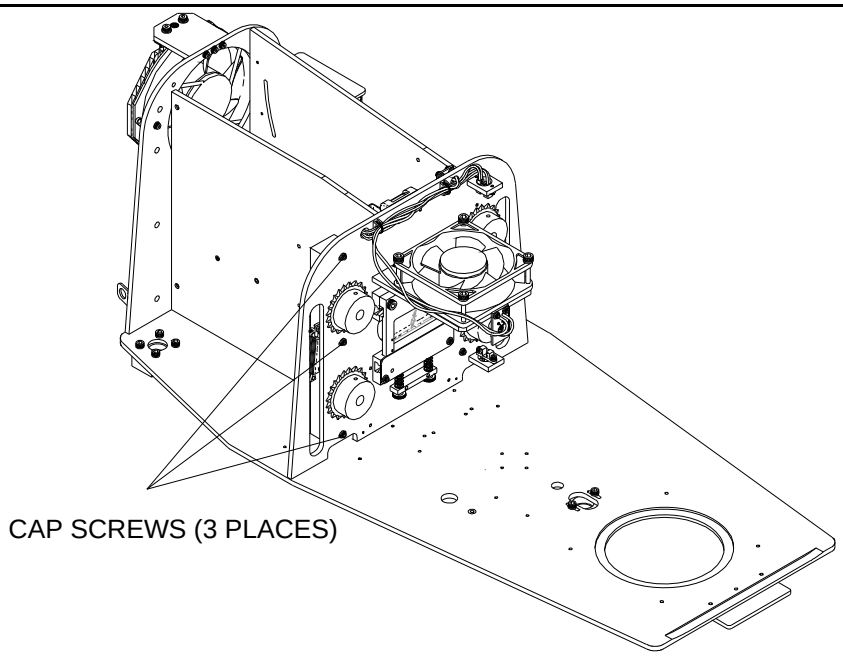


Figure 9

3. Move the Bearing Block Assembly to tension the chains. Both upper and lower chains must be tensioned together.

4. Tighten the three cap screws.

5. Reinstall control module.

NOTE: Tension is correct when the moving chain can be deflected approximately one-eighth (1/8) to one-quarter (1/4) inch with firm touch of a finger.

3.1 Component Removal and Installation

3.1.1 Control Module:

Tools Required - #2 Phillips Screwdriver

WARNING: ENSURE THAT LINE POWER COMING IN TO THE PLASI 2000 SYSTEM IS TURNED OFF BEFORE REMOVING OR INSTALLING THE CONTROL MODULE!

Removal:

1. Remove the Voltage Limiter:

   a. Unplug the 6 pin connector from the Voltage Limiter.

b. Remove the two plastic pins that prevent upward movement of the Voltage Limiter (Figure 10).

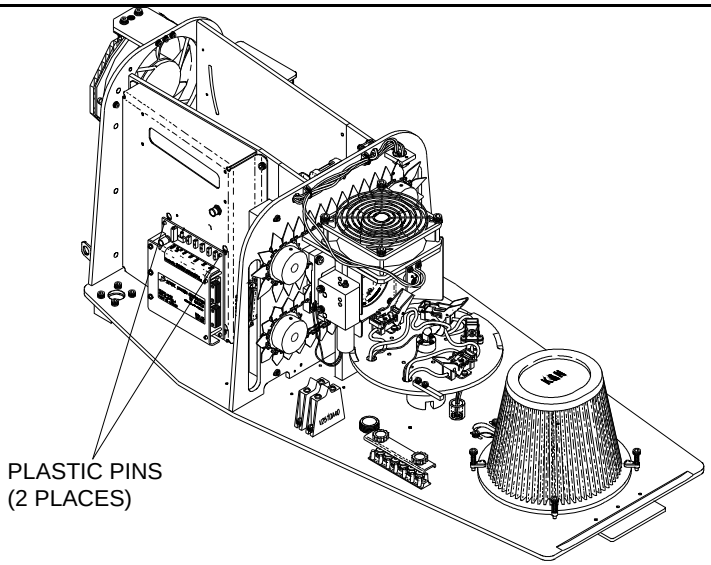


Figure 10

c. Then lift the Voltage Limiter up and out to remove it from the Control Module Case.

d. Place the Voltage Limiter to one side.

2. Carefully unplug the two Terminal Block Connectors from J1 and J2 at the bottom of the Control Module.

3. Unscrew the four screws that hold the Control Module Assembly to the left Web Assembly. These are captive screws and will remain connected to the Control Module (Figure 11).

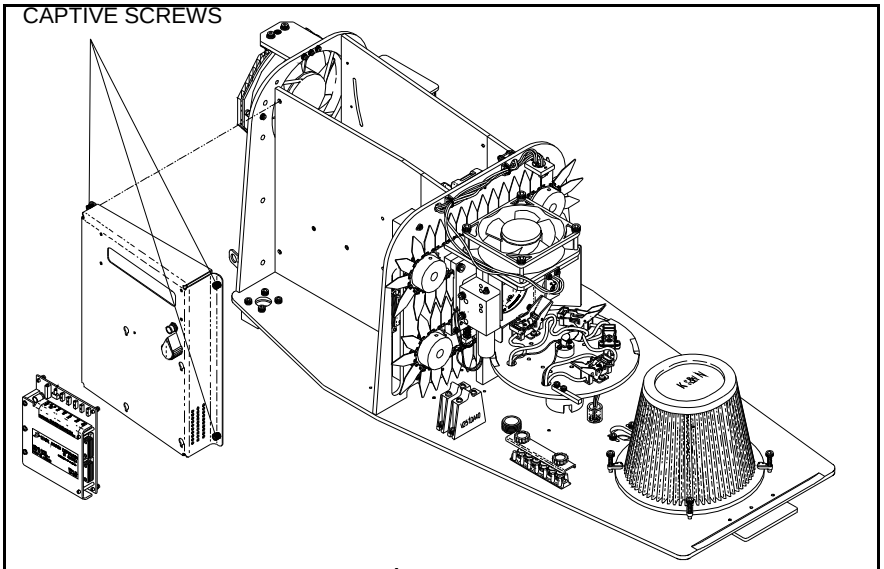


Figure 11

4. Slide the Control Module upwards until it is free from the rest of the PLASI 2000 System.

Installation:

CAUTION: WHILE INSTALLING CONTROL MODULE, DO NOT PINCH OR ENTANGLE WIRES.

1. Slide the back surface of the Control Module down the outside surface of the left Web until the Control Module is an inch or two away from the PLASI 2000 System Base Plate.

2. Carefully insert the two Terminal Block Connectors into J1 and J2 at the bottom of the Control Module. Squeeze them firmly in place to ensure that they are fully seated along their entire length.

3. Continue sliding the Control Module down until it is in place, with its captive screws lined up with the matching threaded holes in the left Web.

4. Screw all four mounting screws into the Web. Then, tighten them.

5. Install the Voltage Limiter. The procedure is the reverse of step 1 of Removal, above.

3.1.2 Shutter Motors

Tools Required - Allen Wrenches 1/l6", 3/32", 5/32" and needle nose pliers.

WARNING: ENSURE THAT LINE POWER COMING IN TO THE PLASI 2000 SYSTEM IS TURNED OFF BEFORE REMOVING OR INSTALLING MOTORS.

Removal:

1. Disconnect external power.

2. Remove Control Module, see Paragraph 3.1.1.

3. Carefully unplug the Terminal Block Connector from J1 at the bottom of the Control Module, and remove the blue wire from location 20 and the red wire from either location 21 (top motor) or 23 (bottom motor) and the black wire from either location 22 (top motor) or 24 (bottom motor).

4. Remove the motor wires from the wiring harness, cutting off cable ties where necessary.

5. Remove the splice from the blue wire and remove the screws retaining the Missing Pulse Detector.

6. Rotate chain and sprocket until the master link rests on the driven sprocket.

7. Remove the retainer clip from the master link. Remove the link from the shutter chain.

8. Remove the Motor Sprocket. Loosen the set screws holding the sprocket shaft to the motor shaft. Remove the Motor Sprocket shaft.

9. Remove the four cap screws holding the motor to the Pulse Generator Plate.

10. Remove motor.

Installation:

1. The procedure for installing a new motor is the reverse of that for removal. A new splice will be needed to combine all four blue motor wires into one.

2. Tension the Shutter Chains per Paragraph 3.0.2.

3.1.3 Lamp Changer Solenoid

Tools Required - 1/8", 9/64" Allen Wrenches and 3/8" Wrench.

WARNING: ENSURE THAT LINE POWER COMING IN TO THE PLASI 2000 SYSTEM IS TURNED OFF BEFORE REMOVING OR INSTALLING SOLENOID.

Removal:

1. Carefully unplug the Terminal Block Connector from J2 at the bottom of the Control Module, and remove the black wires from locations 15 and 16.

2. Remove the two cap screws holding the Solenoid Block (Figure 12) to the

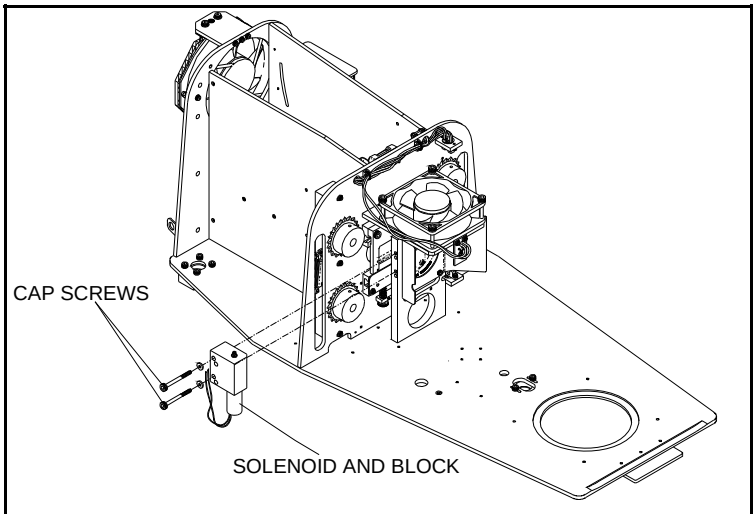


Figure 12

Lens Mount. Retain insulators between Solenoid Block and Lens Assembly, save for reassembly

3. Remove the Solenoid wires from the wiring harness, cutting off cable ties where necessary.

4. It is recommended that the Solenoid Assembly be replaced as a unit (Solenoid and Block)

Installation:

CAUTION: WHEN INSTALLING SOLENOID, TAKE CARE TO REINSTALL INSULATORS BETWEEN THE SOLENOID BLOCK AND THE LENS ASSEMBLY.

1. The procedure for installing a new Solenoid is the reverse of that for removal. It does not matter which black wire goes in location 15 and which into location 16.

2. Adjust the stop at the top of the Solenoid to limit upward movement of the plunger to between .020" to .040" above the top surface of the Lamp Table (to ensure free movement of the Lamp Table measure clearance at 5 evenly spaced locations starting at the stop).

3.1.4 Shutter Chain

Tools Required - Allen Wrenches 1/l6", 3/32", 5/32" and needle nose pliers.

WARNING: ENSURE THAT THE PLASI 2000 SYSTEM IS TURNED OFF AND THE CIRCUIT BREAKER DISENGAGED BEFORE REMOVING OR INSTALLING SHUTTER CHAINS.

CAUTION: WHEN REMOVING SHUTTER CHAIN, TAKE CARE TO AVOID DAMAGING SENSORS.

Removal:

1. Loosen the three cap screws securing the Bearing Block Assembly to the Pulse Generator Plate and push Block towards the center of the PLASI 2000 System. (Figure 13).

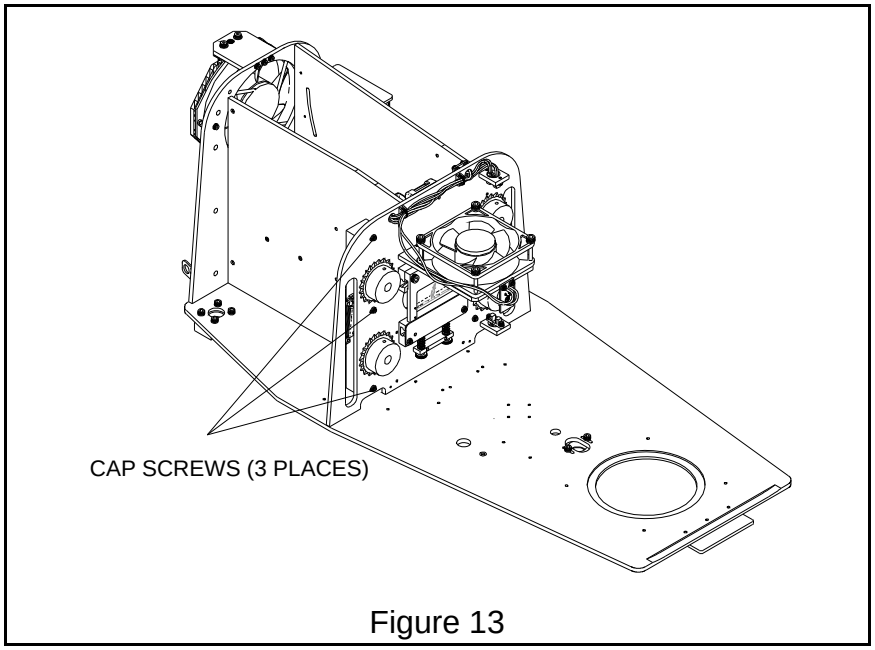


Figure 13

2. Remove the retainer clip from the master link. Remove the link from the Shutter Chain.

3. Pull chain out of chain guide and remove from Motor Sprocket.

Installation:

1. Install Shutter Chain in reverse order of removal.

2. Tension the Shutter Chains per Paragraph 3.0.2.

3.2 PLASI 2000 System Maintenance Tools:

1. Tilt Switch and Level Arm adjustment - 3/8” wrench, level.

2. Adjusting leg height - 3/4” wrenches.

3. Air Filter replacement - No Tools.

SECTION IV - TROUBLE ANALYSIS CHART

The PLASI 2000 System display panel, located inside the Unit in the left front corner, will usually give a message pointing to the fault which caused it to SHUT DOWN (Figure 14). Use the Trouble Analysis Chart to determine which actions to take when the PLASI 2000 System shuts down. In every case, if the recommended actions do not solve the problem, the Control Module could be at fault.

Trouble Analysis Chart

MESSAGE	PROBABLE CAUSE
No Message	The Control Module is not operating properly. Check power source. Check Switches and Circuit Breaker. Replace Control Module.
WARMING UP	The temperature of the PLASI 2000 System is less than 32 degrees F. If the power to the PLASI 2000 System has been only recently applied, this is normal and the PLASI 2000 System will warm-up in a few minutes. If the PLASI 2000 System is clearly warmer than -36 degrees F, check the thermal sensor assembly that is mounted on the Aluminum Plate near the motors. If the PLASI 2000 System is less than 32 degrees F, but does not warm-up, check the heaters.
CHECK CIRC FAN	The Thermal Sensor Assembly that is mounted on the Circulation Fan is greater than 250 degrees F. Check the Circulation Fan. Check the Exhaust Fan. Check the Air Filter. Check the Thermal Sensor Assembly.
ALL LAMPS OUT	The Lamp Table is signaling Last Lamp (Table is in Position 4) and the Lamp is drawing no current. Replace burned out Lamps. Check Lamp Table wiring. Check Lamp Table switches.
TOP CHAIN FAULT	The Missing Pulse Detector on the top chain is not signaling. Check top chain for binding or obstructions. Check tightness of chain sprocket set screws. Check top chain motor. Check top chain motor wiring. Check Slotted Sensor on top chain.

BOT CHAIN FAULT	The missing Pulse Detector on the bottom chain is not signaling. Check bottom chain for binding or obstructions. Check tightness of chain sprocket set screws. Check bottom chain motor. Check bottom chain motor wiring. Check Slotted Sensor on bottom chain.
TILT HIGH	The Leveling Arm Sensor is open. Check alignment of the PLASI 2000 System. Check wiring to the Tilt Sensors. Check the Mercury Switch in the Tilt Sensor.
TILT LOW	The Leveling Arm Sensor is open. Check alignment of the PLASI 2000 System. Check wiring to the Tilt Sensors. Check the Mercury Switch in the Tilt Sensor.
OVER TEMPERATURE	The temperature of the air inside the Control Module is greater than 176 degrees F. Check Exhaust Fan. Check Air Filter. Check for obstructions to air flow.
LINE OVER VOLTAGE	The voltage on the power line into the PLASI 2000 System is greater than 135VRMS. Check power source. Check wiring.
SOLENOID FAULT	The Control Module has tried to fire the Solenoid 12 times without seeing any Lamp current nor the Last Lamp signal. Check Solenoid. Check Lamp Table wiring. Check Lamp Table Switches. Check Lamp Table for binding. Check cable reel for proper cable tension.
LOW LINE FAULT	The voltage on the power line into the PLASI 2000 System is less than 96VRMS. Check power source. Check wiring.
LIMITER FAULT	The line voltage is okay, the Lamp has been on for more than 1 second, and the voltage out to the Lamp is less than 30VRMS. Check Voltage Limiter. Check wiring to Voltage Limiter and to Lamp Table.

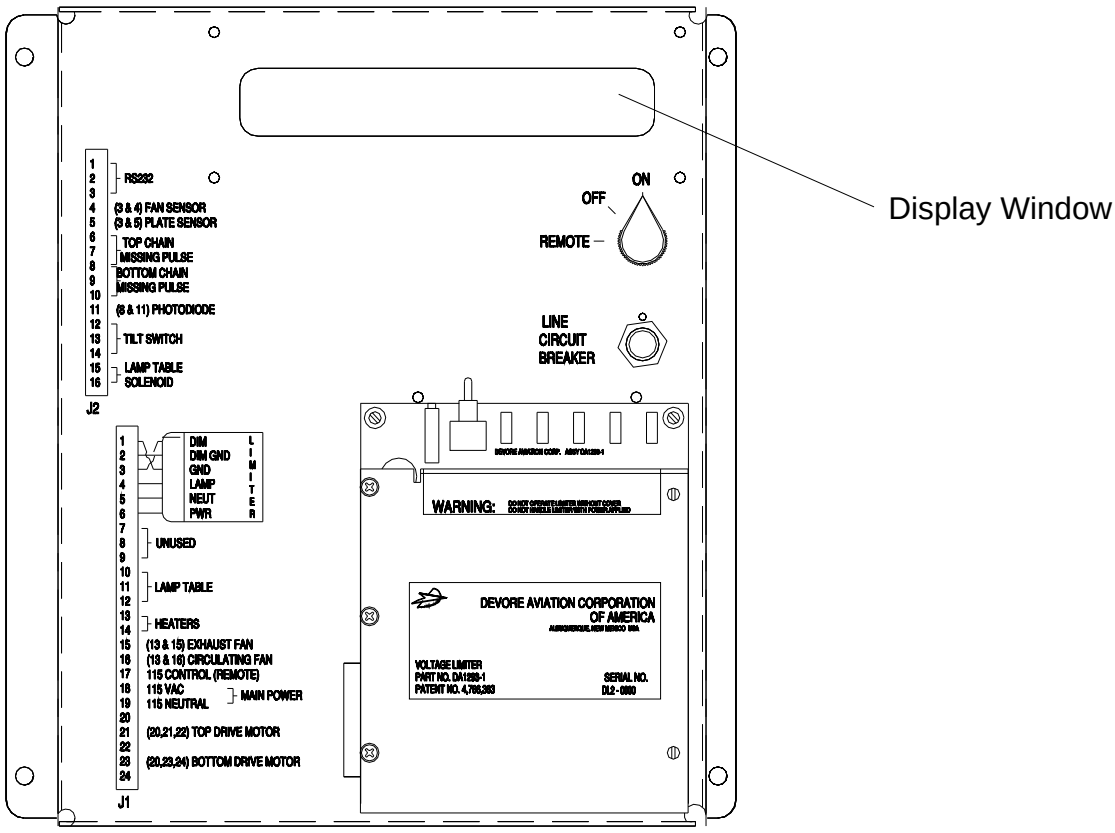

Display Window
ON
OFF
REMOTE
LINE
CIRCUIT
BREAKER
J2
RS232
(3 & 4) FAN SENSOR
(3 & 5) PLATE SENSOR
TOP CHAIN
MISSING PULSE
BOTTOM CHAIN
MISSING PULSE
(8 & 11) PHOTODIODE
TILT SWITCH
LAMP TABLE
SOLENOID
J1
DIM
DIM GND
GND
LAMP
NEUT
PWR
LIMITER
UNUSED
LAMP TABLE
HEATERS
(13 & 15) EXHAUST FAN
(13 & 16) CIRCULATING FAN
115 CONTROL (REMOTE)
115 VAC
115 NEUTRAL
MAIN POWER
(20,21,22) TOP DRIVE MOTOR
(20,23,24) BOTTOM DRIVE MOTOR
WARNING:
DEVORE AVIATION CORPORATION
OF AMERICA
VOLTAGE LIMITER
PART NO. DA1239-1
PATENT NO. 4,766,303
SERIAL NO.

Figure 14

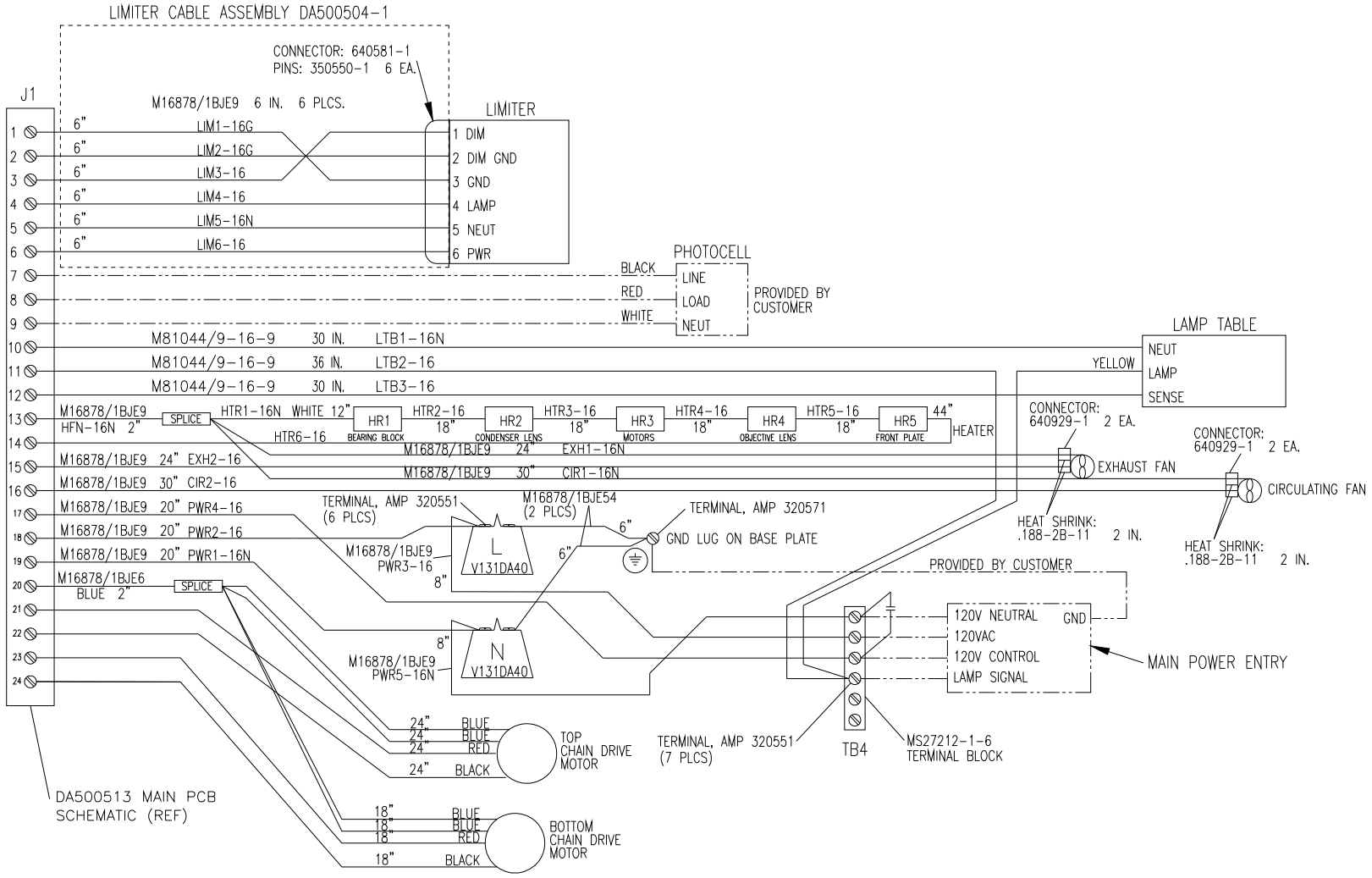


Figure 15 PLASI 2000 System Wiring Diagram

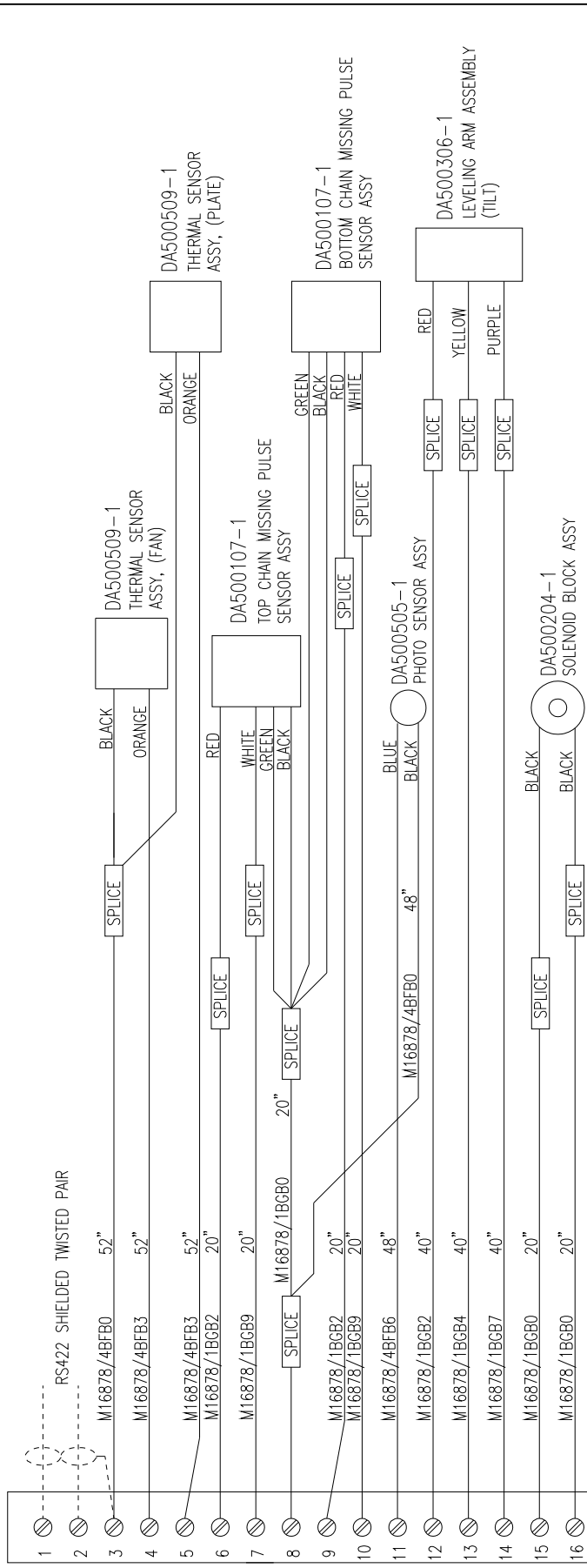


Figure 16 J2 Wiring Diagram

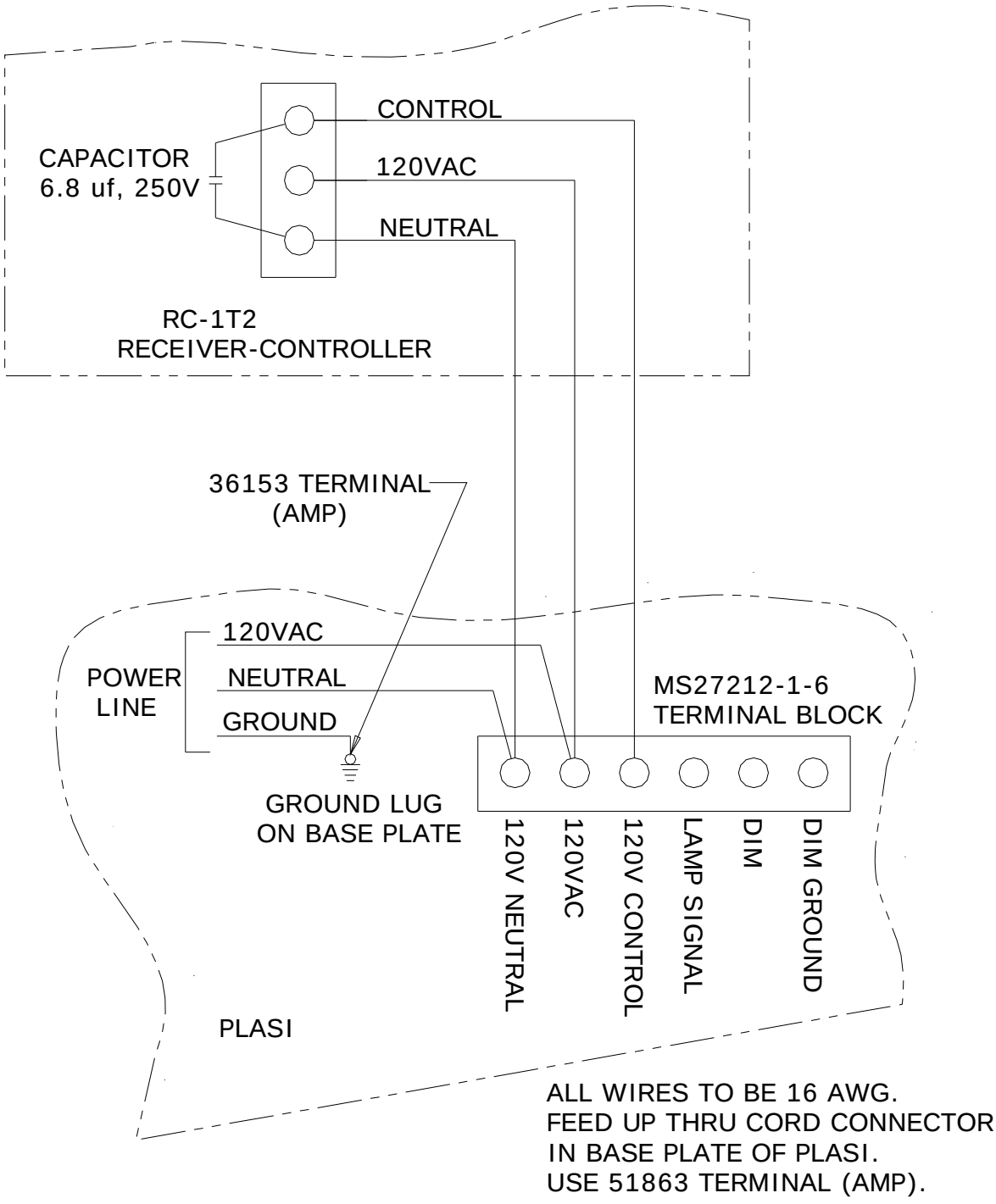


Figure 17 Interconnect Diagram-PLASI to Radio Receiver Controller

SECTION V - PLASI 2000 SYSTEM ILLUSTRATED PARTS LIST

INTRODUCTION

This illustrated parts manual is designed to permit identification of replacement parts, when necessary, for the PLASI 2000 System. Parts lists identification will include the following breakdown information:

1. Item Number column identifies the individual part with its corresponding illustration.

2. Part Number column identifies the DeVore Aviation Corporation of America Part Number, AN, MS, NAS, or commercial Part Numbers used as original or replacement equipment.

3. Description column lists the functional name of the identified part. The name is used when placing an order for replacement parts.

4. Quantity column provides the total requirements of each individual part for noted assembly and subassembly.

IPL Figure 9 Bearing Block Assembly

Item Number	Part Number	Description	Quantity
-	DA500109-1	BEARING BLOCK ASSEMBLY	-
1	DA500114-11	BEARING BLOCK, PULSE GENERATOR	1
2	DA500115-11	SHAFT, DRIVEN, PASSIVATED	2
3	DA1455-1	BEARING (SEE DRAWING FOR PART NUMBERS AVAIL.)	4
4	CS-10	COLLAR	2
5	620-10	RESISTOR, 10 OHM 30W 5% BY RCD TYPE 620	1

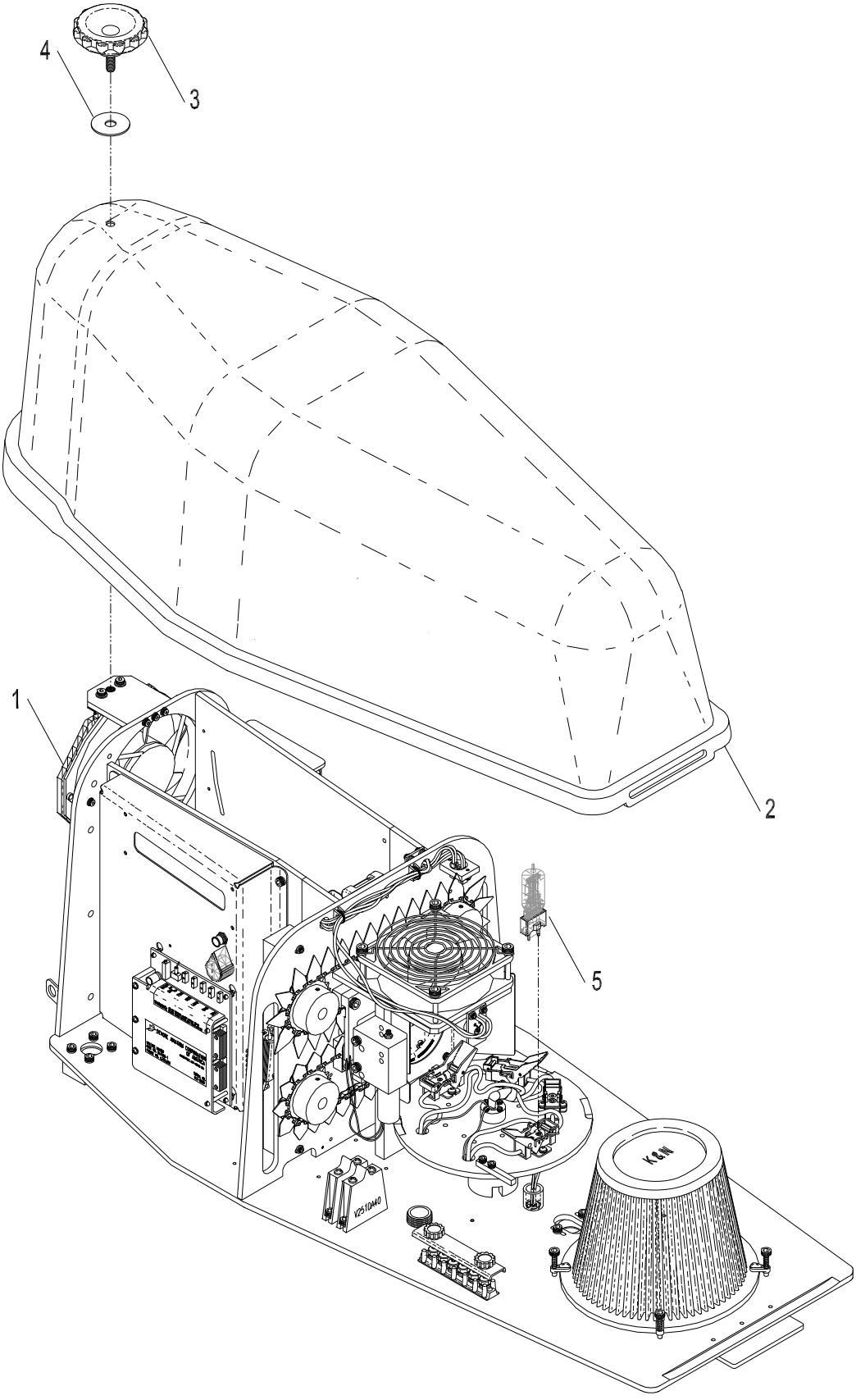
****NOTE****

DO NOT USE THIS MANUAL FOR ANY PURPOSE EXCEPT FOR ITS INTENDED USE AS A PARTS REPLACEMENT CATALOG. MANUFACTURER SPECIFICATIONS, RATINGS, AND REPAIR PROCEDURES CAN BE FOUND IN THE PLASI 2000 SYSTEM SERVICE AND MAINTENANCE SECTIONS OF THIS MANUAL.

NOTE: When ordering replacement components or assemblies, be sure that the mounting hardware for the installation corresponds to the next higher assembly or installation procedure requirements.

DeVore Aviation Corporation of America reserves the right to change or cancel any assemblies, assembly components, parts lists, or illustrations represented here without prior notice. It further reserves the right to substitute components whenever such substitution does not interfere with the functional operation of the PLASI 2000 System.

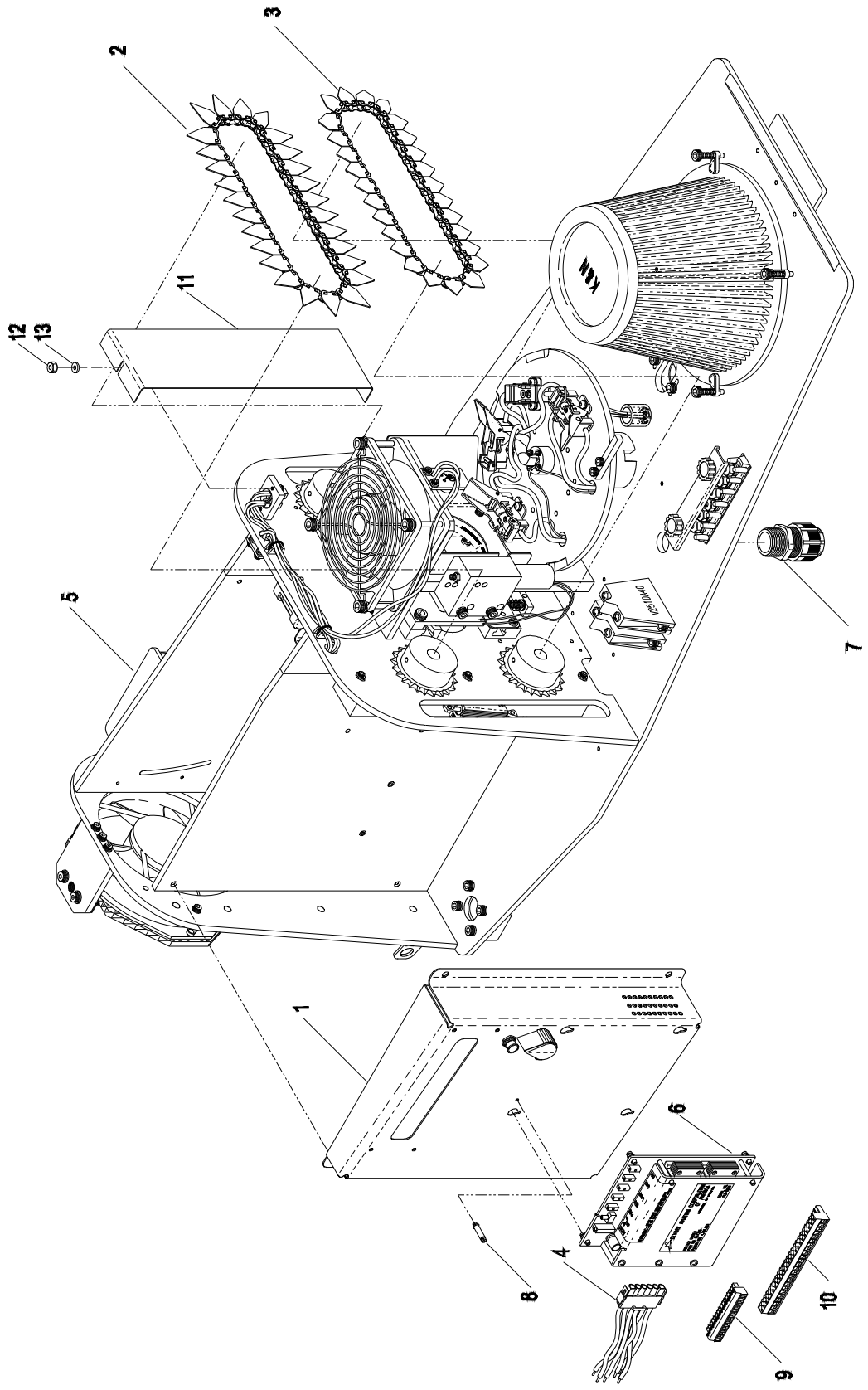
IPL Figure 1PLASI 2000 System Assembly



IPL Figure 1 PLASI 2000 System Assembly

Item Number	Part Number	Description	Quantity
-	DA500100-1	PLASI 2000 System (60Hz)	-
-	DA500100-2	PLASI 2000 System (50Hz)	-
1	DA500102-1	PULSE GENERATOR ASSEMBLY, (60 HZ)	1
	DA500102-2	PULSE GENERATOR ASSEMBLY, (50 HZ)	1
2	DA500609-1	COMPOSITE SHELL ASSEMBLY	1
3	DA500147-11	RETAINING KNOB	1
4	DA500147-13	WASHER, SEALING	1
5	BVA	LAMP, ANSI# BVA, 900W, 120V, TUNGSTEN HALOGEN	4

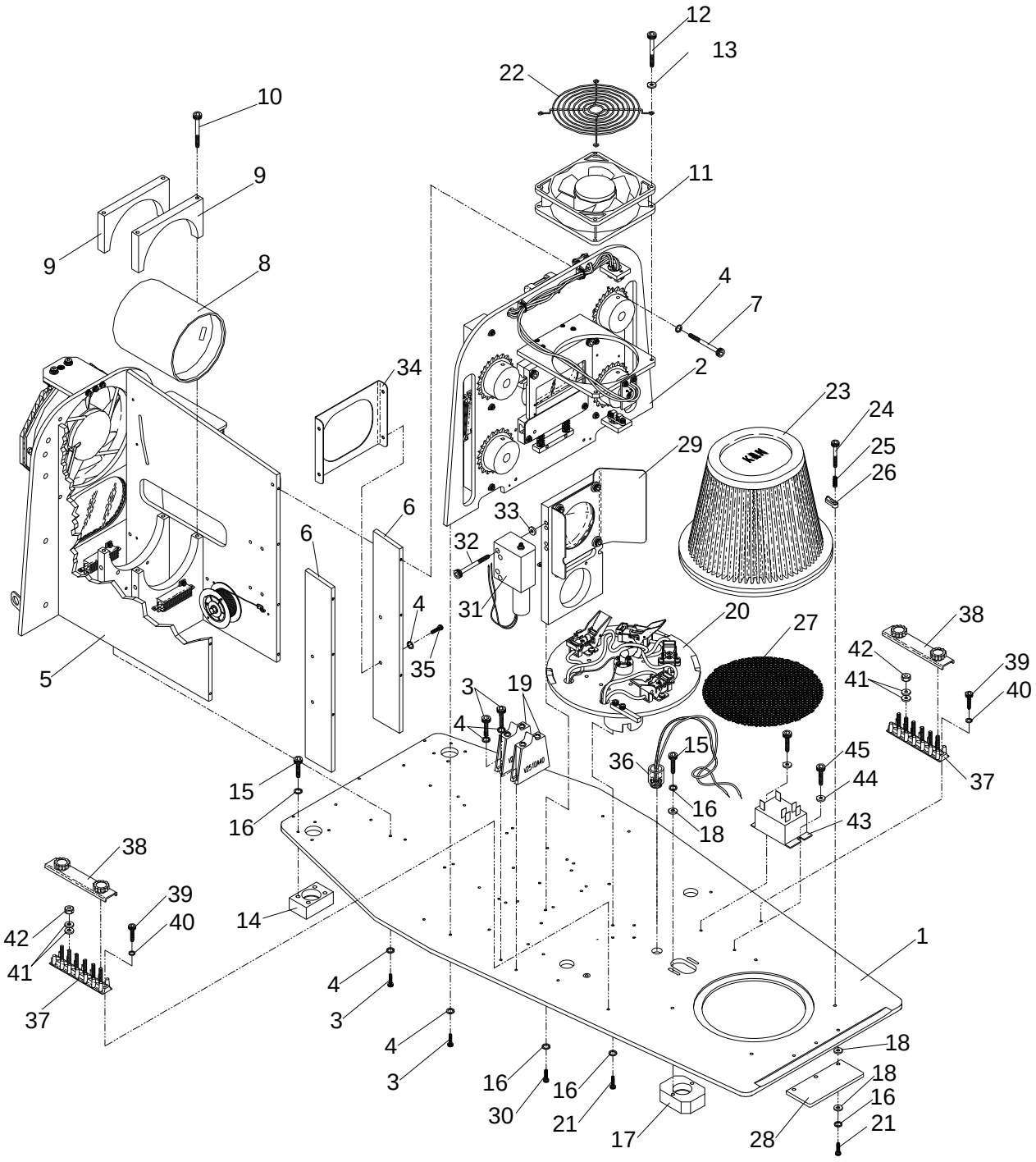
IPL Figure 2 Pulse Generator Assembly



IPL Figure 2 Pulse Generator Assembly

Item Number	Part Number	Description	Quantity
-	DA500102-1	PULSE GENERATOR ASSEMBLY (60 Hz)	-
-	DA500102-2	PULSE GENERATOR ASSEMBLY (50 Hz)	-
1	DA500507-1	CONTROL MODULE ASSEMBLY (60 HZ)	1
	DA500507-3	CONTROL MODULE ASSEMBLY (50 HZ)	1
2	DA500720-3	SHUTTER CHAIN ASSEMBLY (FIXED UPPER)	1
3	DA500720-1	SHUTTER CHAIN ASSEMBLY (FIXED LOWER)	1
4	DA500504-1	LIMITER CABLE ASSEMBLY	1
5	DA500103-1	MAIN GENERATOR ASSEMBLY (60 Hz)	1
5	DA500103-3	MAIN GENERATOR ASSEMBLY (50Hz)	1
6	DA1293-1	LIMITER II ASSEMBLY	1
7	2932NM	CORD CONNECTOR	1
8	27MSP00625	5-8 PCB POST	2
9	1803714	PLUG CONNECTOR, 0.15, 16 PIN (COMBICON)	1
10	1757239	PLUG CONNECTOR, 0.2, 24 PIN (COMBICON)	1
11	DA500153-11	SHIELD PLATE	1
12	HNL4-40C	HEX NUT, LOCKING-NYLON INSERT, MACHINE SCREW, 4-40, STAINLESS STEEL	2
13	WA-4-C	WASHER, # 4, THICK, FLAT, STAINLESS STEEL	2

IPL Figure 3 Main Generator Assembly



IPL Figure 3 Main Generator Assembly

Item Number	Part Number	Description	Quantity
-	DA500103-1	MAIN GENERATOR ASSEMBLY (60 Hz)	-
-	DA500103-3	MAIN GENERATOR ASSEMBLY (50 Hz)	
1	DA500112-11	BASE PLATE	1
2	DA500104-1	GENERATOR PLATE ASSEMBLY (60HZ)	1
	DA500104-3	GENERATOR PLATE ASSEMBLY (50HZ)	1
3	SHCS6-32X.50C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 6-32 X .50 LONG	26
4	WA-6-SLC	WASHER, # 6, SPLIT LOCK, STAINLESS STEEL	44
5	DA500142-1	WEB ASSEMBLY	1
6	DA500127-11	SPACER (STANDARD SIGNAL)	2
7	SHCS6-32X2.50C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL, 6-32 X 2 .50 LONG	6
8	113-070	PROJECTOR (OBJECTIVE) LENS	1
9	DA500121-13	LENS CLAMP	2
10	SHCS6-32X2.00C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL, 6-32 X 2.00 LONG	4
11	DA1423-1	CIRCULATION FAN	1
12	SHCS6-32X1.75C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL, 6-32 X 1.75 LONG	4
13	WA-6-LC	WASHER, # 6, THIN, FLAT, STAINLESS STEEL	4

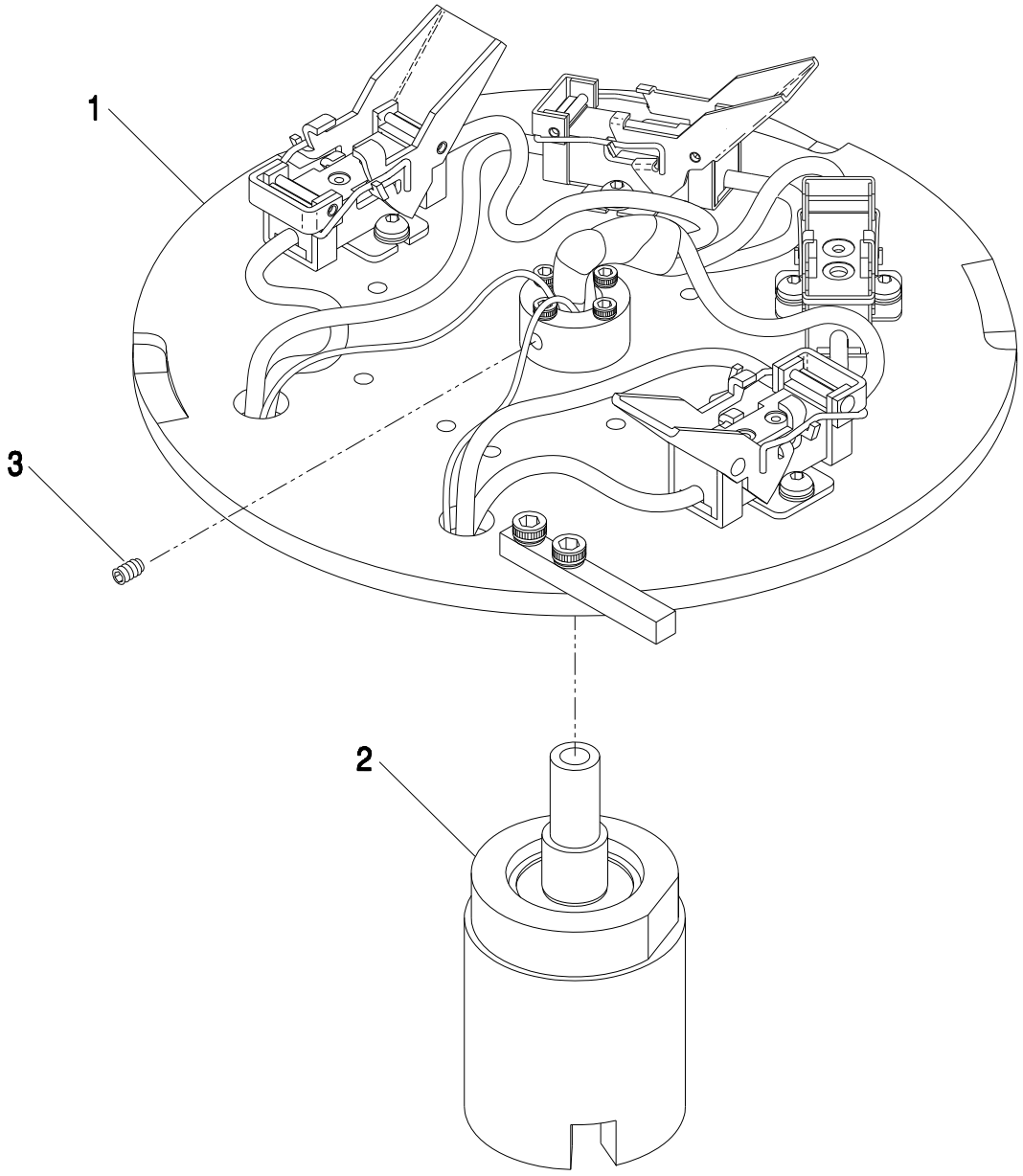
IPL Figure 3 Main Generator Assembly

Item Number	Part Number	Description	Quantity
14	DA500130-1	LATCH BLOCK ASSEMBLY	2
15	SHCS10-32X.875C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 10-32 X .875 LONG	10
16	WA-10-SLC	WASHER, # 10, SPLIT LOCK, STAINLESS STEEL	20
17	DA500126-1	FOOT ASSEMBLY, REAR	1
18	WA-10-LC	WASHER, # 10, THIN, FLAT, STAINLESS STEEL	9
19	V131DA40	VARISTOR	2
20	DA500201-1	LAMP CHANGER ASSEMBLY	1
21	SHCS10-32X.75C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 10-32 X .75 LONG	7
22	08170	FINGER GUARD, COMAIR MUFFIN FAN, MD24B2	1
23	DA500157-1	AIR FILTER ASSEMBLY (E2875 AND .38 X .50-4G-24)	1
24	9X25-0624	SHOULDER BOLT	4
25	C0240-020-0880S	SPRING	4
26	L-5507	RETAINER	4
27	DA500152-11	SCREEN, FILTER	1
28	DA500150-11	TANG, SHELL RETAINER	1
29	DA500106-1	ASPHERIC CONDENSER LENS ASSEMBLY	1
30	SHCS10-32X.50C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 10-32 X .50 LONG	2

IPL Figure 3 Main Generator Assembly

Item Number	Part Number	Description	Quantity
31	DA500204-1	SOLENOID BLOCK ASSEMBLY	1
32	SHCS8-32X1.25C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 8-32 X 1.25 LONG	2
33	00003007-1	WASHER	2
34	DA500151-11	BAFFLE	3
35	SHCS6-32X.25C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 6-32 X .25 LONG	12
36	DA500505-1	PHOTO SENSOR ASSEMBLY	1
37	MS27212-1-6	TERMINAL BLOCK ASSEMBLY	1
38	MS18029-1S-6	COVER ASSEMBLY	1
39	SHCS4-40X.375C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 4-40 X .375 LONG	2
40	WA-4-SLC	WASHER, # 4, SPLIT LOCK, STAINLESS STEEL	2
41	WA-6-C	WASHER, # 6, THICK, FLAT, STAINLESS STEEL	12
42	MS21083N06	NUT, HEX, SELF-LOCKING	6

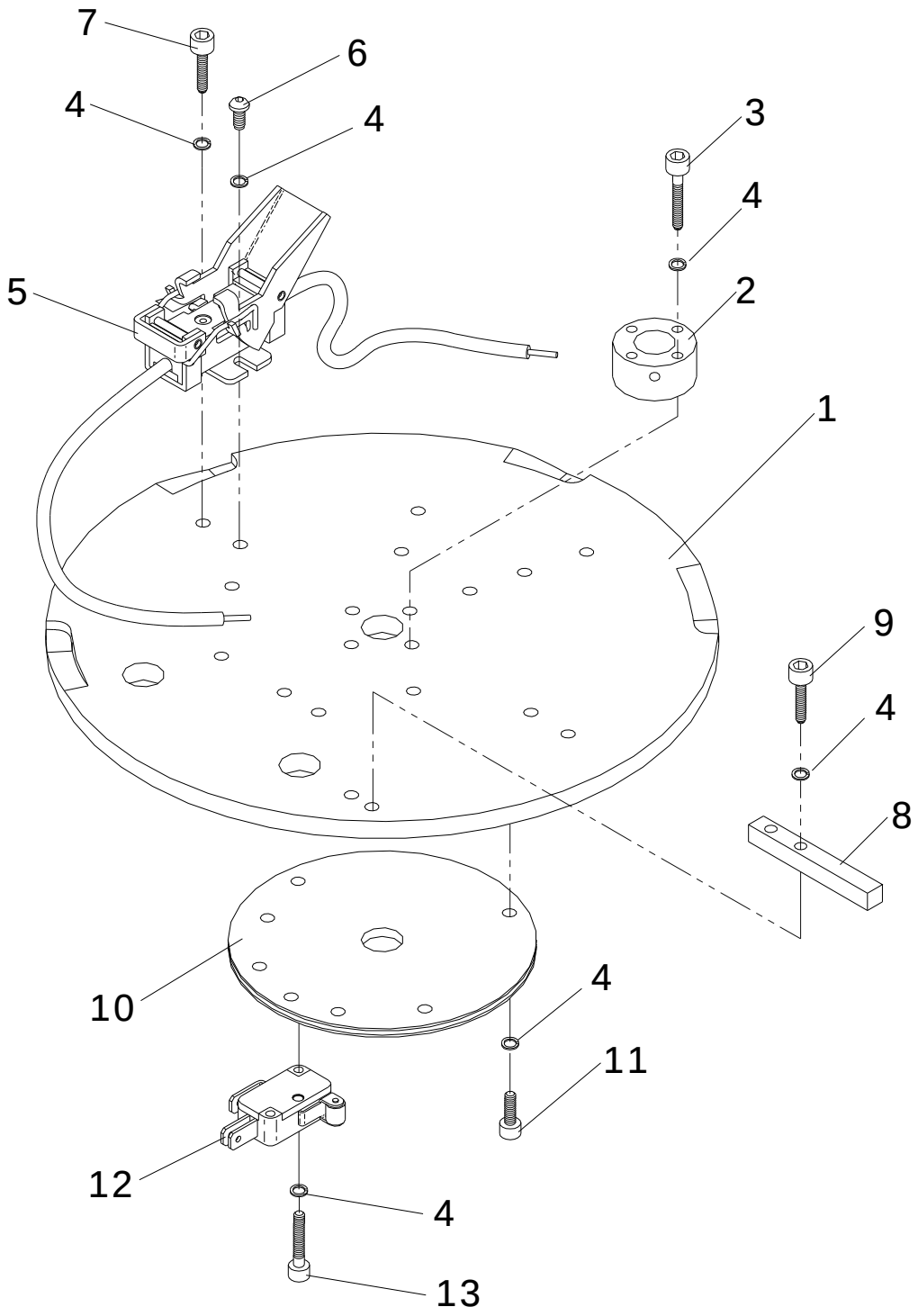
IPL Figure 4 Lamp Changer Assembly



IPL Figure 4 Lamp Changer Assembly

Item Number	Part Number	Description	Quantity
-	DA500201-1	LAMP CHANGER ASSEMBLY	-
1	DA500202-1	LAMP TABLE ASSEMBLY	1
2	DA500203-1	PEDESTAL ASSEMBLY, LAMP TABLE	1
3	SS6-32X.187C	SET SCREW, CUP POINT, SOCKET HEAD, STAINLESS STEEL, 6-32 X .187 LONG	1

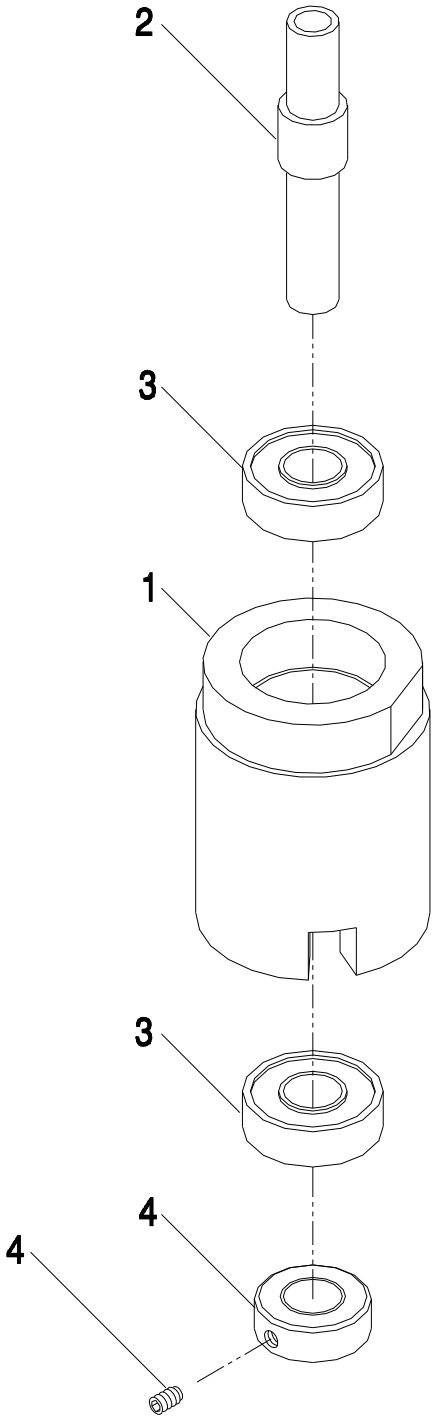
IPL Figure 5 Lamp Table Assembly



IPL Figure 5 Lamp Table Assembly

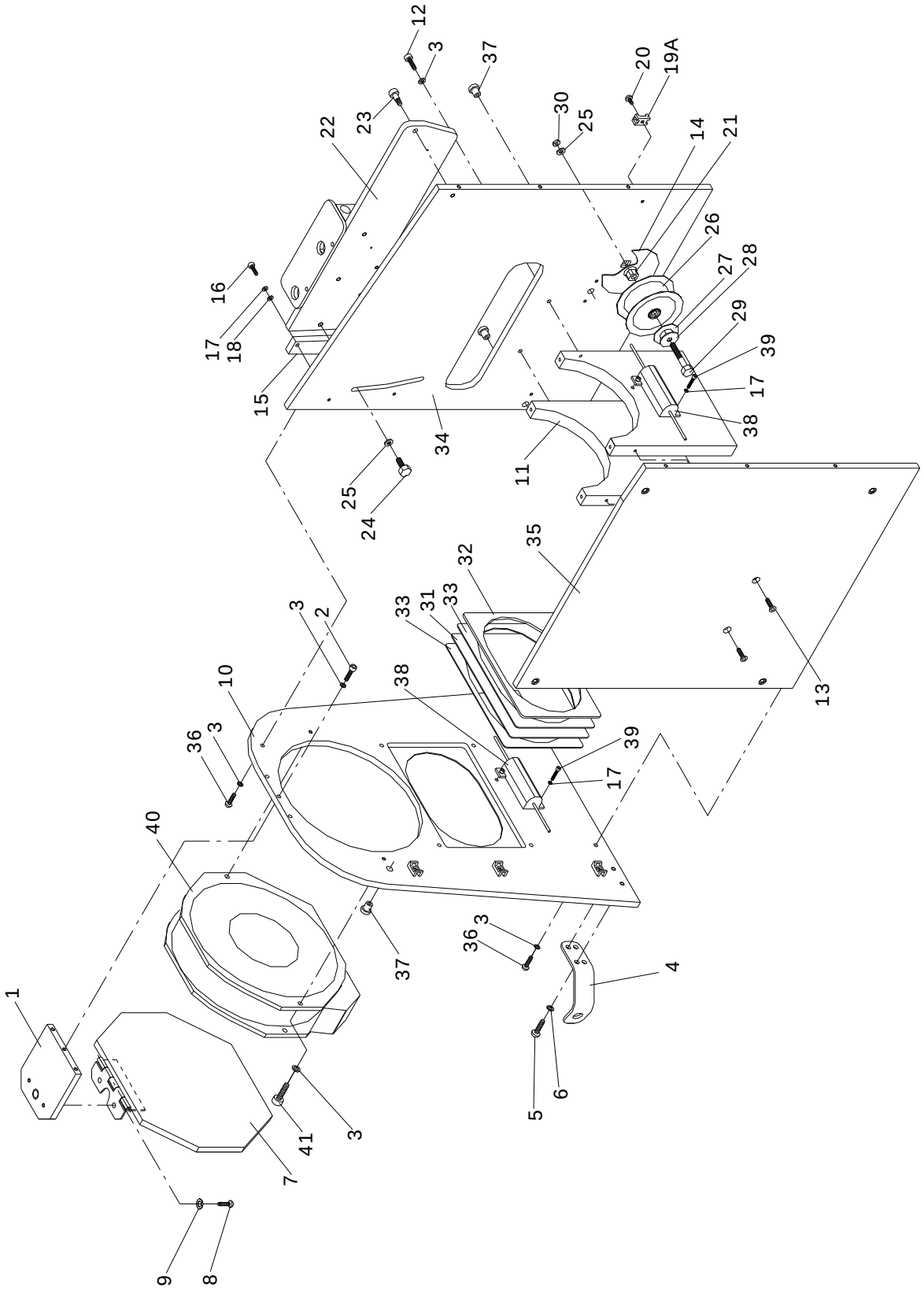
Item Number	Part Number	Description	Quantity
-	DA500202-1	LAMP TABLE ASSEMBLY	-
1	DA500210-11	LAMP TABLE	1
2	DA500212-11	HUB, LAMP TABLE	1
3	SHCS4-40X.75C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 4-40 X .75 LONG	4
4	WA-4-SLC	WASHER, # 4, SPLIT LOCK, STAINLESS STEEL	21
5	DA1410-1	SOCKET	4
6	SBHC4-40X.25C	SCREW, BUTTON HEAD CAP, STAINLESS STEEL 4-40 X .25C	7
7	SHCS4-40X.50C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 4-40 X .50 LONG	1
8	DA500215-11	STOP, LAMP TABLE	1
9	SHCS4-40X.50C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 4-40 X .50 LONG	2
10	DA500211-11	DRIVE WHEEL, LAMP TABLE	1
11	SHCS4-40X.375C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 4-40 X .375 LONG	1
12	V3L-139-D9	MICRO SWITCH W-SPADE LUGS (HONEYWELL)	3
13	SHCS4-40X.75C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 4-40 X .75 LONG	6

IPL Figure 6 Lamp Table Pedestal Assembly



IPL Figure 6 Lamp Table Pedestal Assembly

Item Number	Part Number	Description	Quantity
-	DA500203-1	LAMP TABLE PEDESTAL ASSEMBLY	-
1	DA500213-11	PEDESTAL, LAMP TABLE	1
2	DA500115-11	SHAFT, DRIVEN, PASSIVATED	1
3	DA1455-1	BEARING (SEE DRAWING FOR PART NUMBERS AVAILABLE.)	2
4	CS-10	COLLAR	1



IPL Figure 7 Web Assembly

IPL Figure 7 Web Assembly

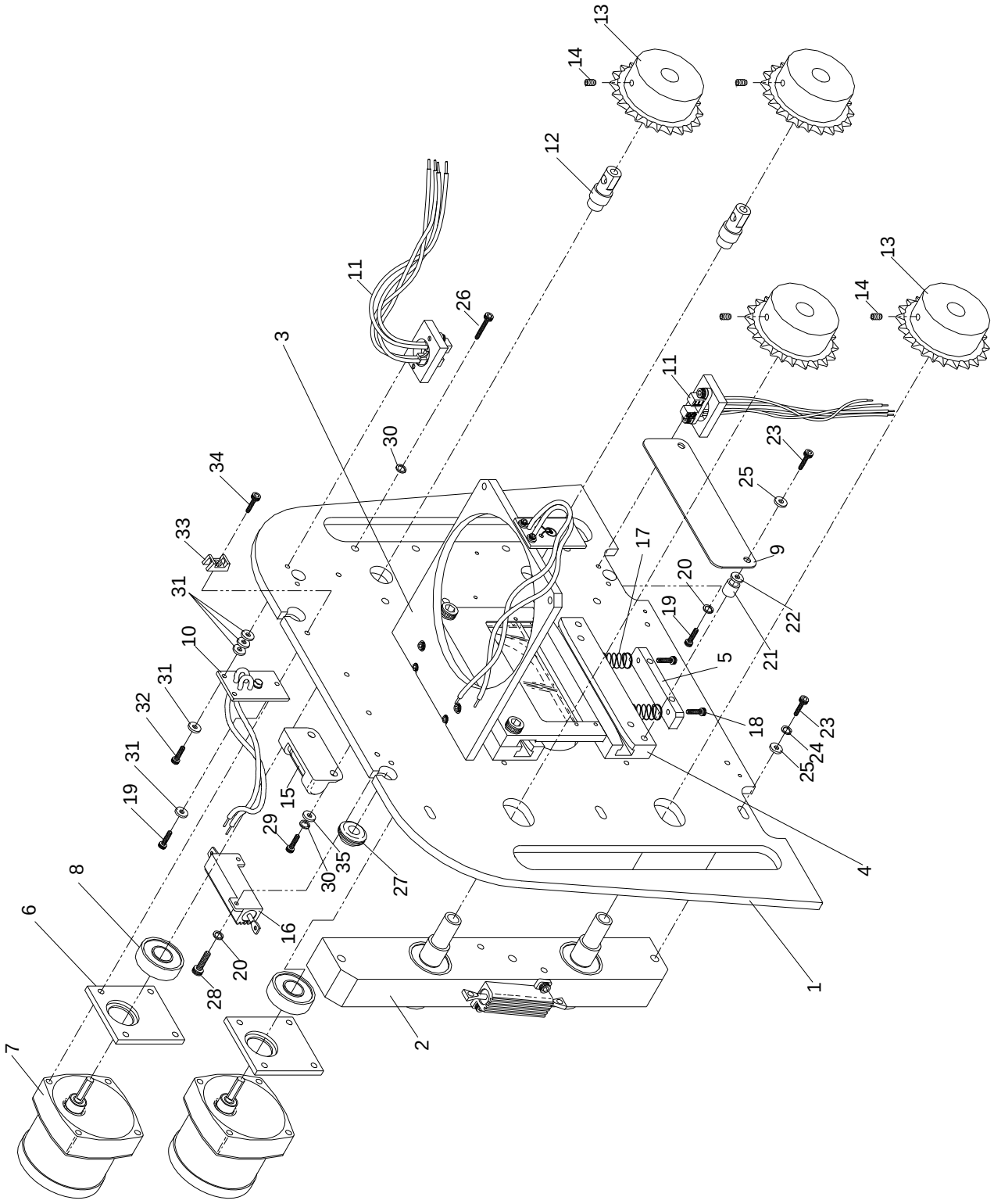
Item Number	Part Number	Description	Quantity
-	DA500142-1	WEB ASSEMBLY	-
1	DA500145-11	SUPPORT PLATE	1
2	SHCS6-32X.625C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL, 6-32 X .625 LONG	3
3	WA-6-SLC	WASHER, # 6, SPLIT LOCK, STAINLESS STEEL	14
4	DA500146-11	LATCH BRACKET	2
5	SBHC8-32X.375C	SCREW, SOCKET BUTTON HEAD CAP, STAINLESS STEEL, 8-32 x .375 LONG	4
6	WA-8-SLC	WASHER, # 8, SPLIT LOCK, STAINLESS STEEL	4
7	DA500148-1	FLAPPER DOOR ASSEMBLY	1
8	SBHC6-32X.25C	SCREW, SOCKET BUTTON HEAD CAP, STAINLESS STEEL, 6-32 X .25 LONG	2
9	WA-6-C	WASHER, # 6, THICK, FLAT, STAINLESS STEEL	2
10	DA500111-11	WINDOW SUPPORT	1
11	DA500121	LENS SUPPORT AND CLAMP	2
12	SHCS6-32X.50C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL, 6-32 X .50 LONG	2
13	SFHC6-32X.50C	SCREW, SOCKET FLAT HEAD CAP, STAINLESS STEEL, 6-32 X .50 LONG	2
14	FMG41021-11	WASHER, TEFLON, .70 DIA	1
15	DA500316-11	VERNIER BLOCK	1

IPL Figure 7 Web Assembly

Item Number	Part Number	Description	Quantity
16	SBHC4-40X.50C	SCREW, SOCKET BUTTON HEAD CAP, STAINLESS STEEL, 4-40 X .50 LONG	2
17	WA-4-SLC	WASHER, # 4, SPLIT LOCK, STAINLESS STEEL	6
18	WA-4-LC	WASHER, # 4, THIN, FLAT, STAINLESS STEEL	2
19A	TM1S4-M	CABLE TIE CLAMP	7
19B	PLT1M-M0	CABLE TIE (NOT ILLUSTRATED)	12
20	SBHC4-40X.25C	SCREW, SOCKET BUTTON HEAD CAP, STAINLESS STEEL 4-40 X .25 LONG	7
21	FMG41020-13	BLOCK, REEL (.225 THICK)	1
22	DA500306-1	LEVELING ARM ASSEMBLY	1
23	9X25-0608	SHOULDER BOLT	1
24	AN3-4A	BOLT	1
25	WA-10-C	WASHER, # 10, THICK, FLAT, STAINLESS STEEL	2
26	DA500208-1	REEL ASSEMBLY	1
27	FMG41021-13	WASHER, TEFLON .70 DIA	1
28	AN970-3	WASHER	1
29	AN3-14A	BOLT	1
30	MS21083N3	NUT	1
31	DA500136-11	WINDOW (CLEAR GLASS)	1

IPL Figure 7 Web Assembly

Item Number	Part Number	Description	Quantity
32	DA500135-13	CLAMP PLATE	1
33	DA500135-11	GASKET, WINDOW FROM 1-32(0.32") THICK MAT'L.	2
34	DA500110-13	SUPPORT WEB	1
35	DA500110-11	SUPPORT WEB	1
36	SBHC6-32X.50C	SCREW, SOCKET BUTTON HEAD CAP, STAINLESS STEEL, 6-32 X .50 LONG	7
37	9305K21	BUSHING BUMPER, RUBBER, FLAT TOP	3
38	620-10	RESISTOR, 10 OHM 30W 5%, TYPE 620 (RCD)	2
39	SHCS4-40X.375C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 4-40 X .375 LONG	4
40	DA1422-1	EXHAUST FAN ASSEMBLY	1
41	SHCS6-32X.75C	SCREW, SOCKET HEAD CAP STAINLESS STEEL, 6-32 X .75 LONG	2



IPL Figure 8 Generator Plate Assembly

IPL Figure 8 Generator Plate Assembly

Item Number	Part Number	Description	Quantity
-	DA500104-1	GENERATOR PLATE ASSEMBLY (60 Hz)	-
-	DA500104-3	GENERATOR PLATE ASSEMBLY (50 Hz)	-
1	DA500113-11	PULSE GENERATOR PLATE	1
2	DA500109-1	BEARING BLOCK ASSEMBLY	1
3	DA500105-1	CHAIN GUIDE AND FILTER ASSEMBLY	1
4	DA500117-11	CHAIN GUIDE	1
5	DA500119-11	ADJUSTMENT BLOCK	1
6	DA500155-11	BEARING BLOCK	2
7	SP3732	MOTOR 115V 60HZ WITH SPECIAL SHAFT & LEADS	2
	SP3733	MOTOR 115V 50HZ WITH SPECIAL SHAFT & LEADS	2
8	DA1455-1	BEARING	2
9	DA500128-11	SHIELD	1
10	DA500509-1	THERMAL SENSOR BOARD ASSEMBLY	1
11	DA500107-1	SENSOR ASSEMBLY, MISSING PULSE	2
12	DA500156-11	SHAFT ADAPTER	2
13	35BS18-1/2HT	SPROCKET	4
14	SS1/4-20X.375C	SET SCREW, 1/4-20 3/8, STAINLESS STEEL	8

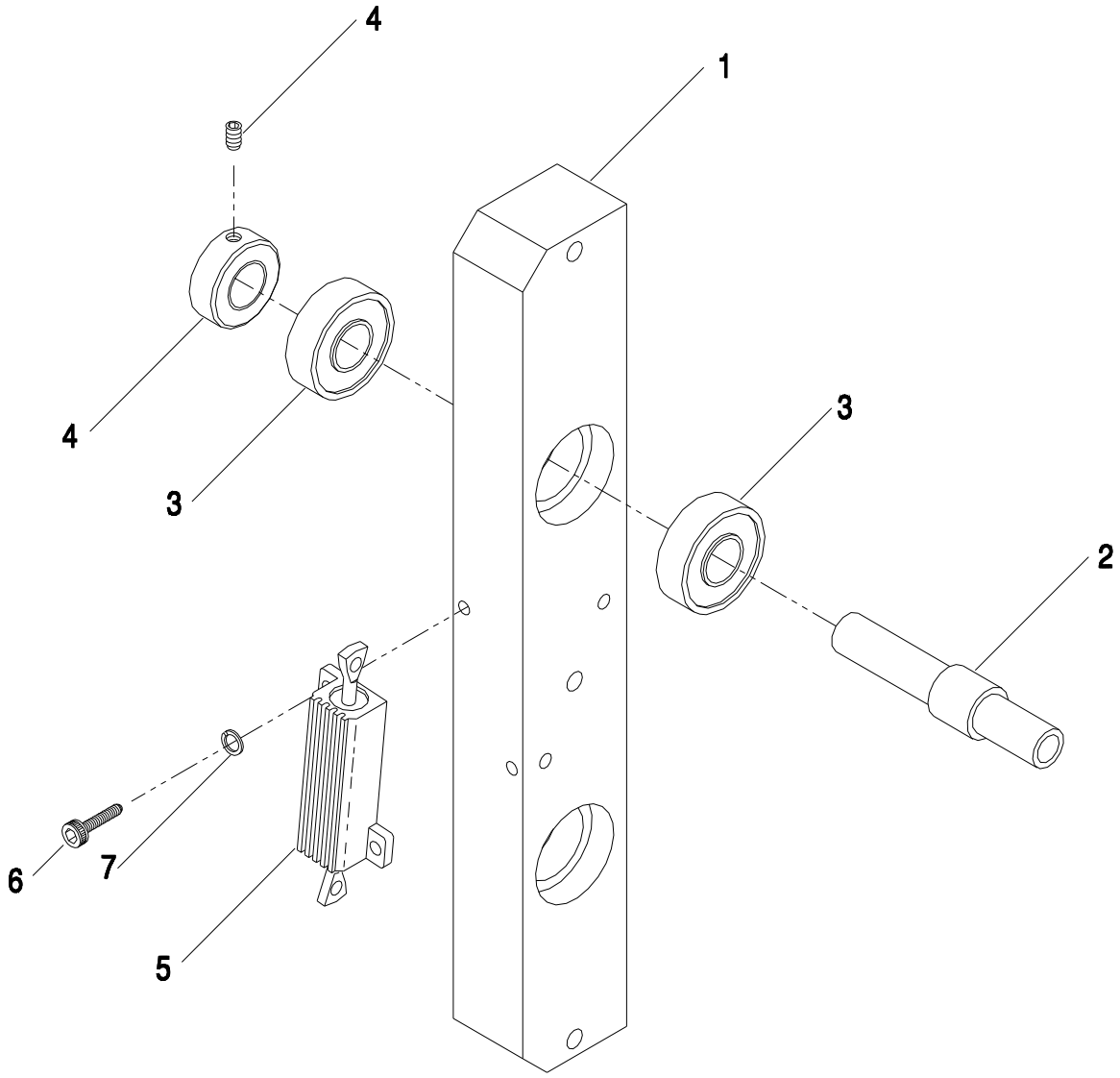
IPL Figure 8 Generator Plate Assembly

Item Number	Part Number	Description	Quantity
15	DA1427-1	BUBBLE LEVEL	1
16	620-10	RESISTOR	1
17	C0240-020-0880S	SPRING	2
18	SHCS4-48X1.0C	SOCKET HEAD CAP SCREW, 4-48 X 1.0, SS	2
19	SBHC4-40X.50C	SOCKET BUTTON HEAD SCREW, 4-40 X 1/2, SS	5
20	WA-4-SLC	WASHER, #4, SPLIT LOCK, STAINLESS STEEL	4
21	.375R10-32X.50A	SPACER	2
22	WA-10-C	WASHER, #10, THICK, STAINLESS STEEL	4
23	SHCS10-32X.875C	SOCKET HEAD CAP SCREW, 10-32 X 7/8, SS	5
24	WA-10-SLC	WASHER, #10, SPLIT LOCK, STAINLESS STEEL	3
25	WA-10-LC	WASHER, #10, THIN, STAINLESS STEEL	9
26	SBHC8-32X.75C	SOCKET BUTTON HEAD SCREW, 8-32 X 3/4, SS	8
27	MS35489-93	MS GROMMET	2
28	SHCS4-40X.375C	SOCKET HEAD CAP SCREW, 4-40 X 3/8, SS	2
29	SBHC8-32X.50C	SOCKET BUTTON HEAD SCREW, 8-32 X 1/2, SS	2
30	WA-8-SLC	WASHER, #8, SPLIT LOCK, STAINLESS STEEL	10
31	WA-4-C	WASHER, #4, THICK, STAINLESS STEEL	14

IPL Figure 8 Generator Plate Assembly

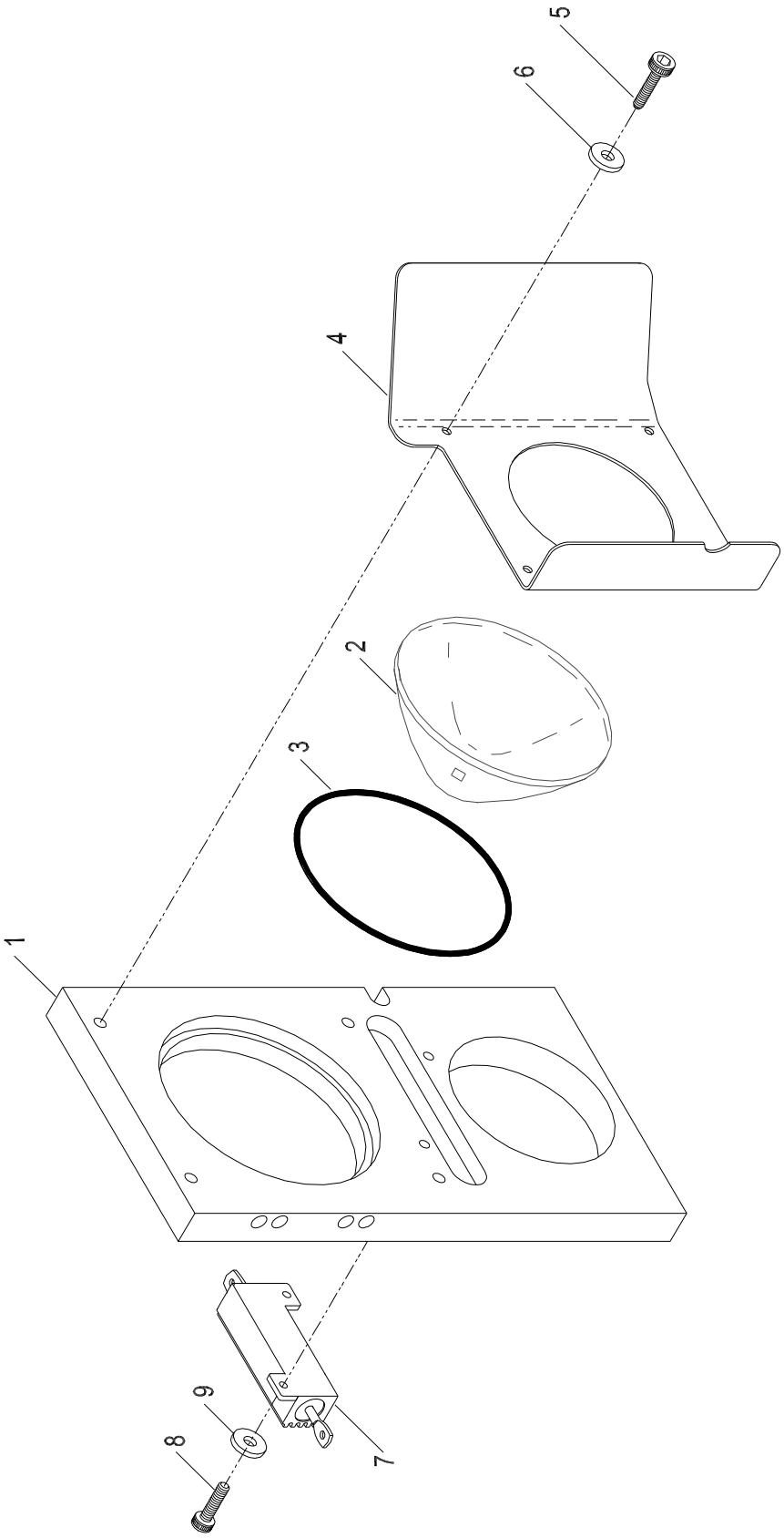
Item Number	Part Number	Description	Quantity
32	SBHC4-40X.75C	SOCKET BUTTON HEAD SCREW, 4-40 X 3/4, SS	2
33	TM1S4-M	CABLE TIE MOUNTS	6
34	SBHC4-40X.25C	SOCKET BUTTON HEAD SCREW, 4-40 X 1/4, SS	6
35	WA-8-LC	WASHER, #8, THIN, STAINLESS STEEL	2

IPL Figure 9 Bearing Block Assembly



IPL Figure 9 Bearing Block Assembly

Item Number	Part Number	Description	Quantity
-	DA500109-1	BEARING BLOCK ASSEMBLY	-
1	DA500114-11	BEARING BLOCK, PULSE GENERATOR	1
2	DA500115-11	SHAFT, DRIVEN, PASSIVATED	2
3	DA1455-11	BEARING (SEE DRAWING FOR PART NUMBERS AVAILABLE.)	4
4	CS-10	COLLAR	2
5	620-10	RESISTOR, 10 OHM 30W 5%, TYPE 620 (RCD)	1
6	SHCS4-40X.50C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL 4-40 X .50 LONG	2
7	WA-4-SLC	WASHER, # 4, SPLIT LOCK, STAINLESS STEEL	2

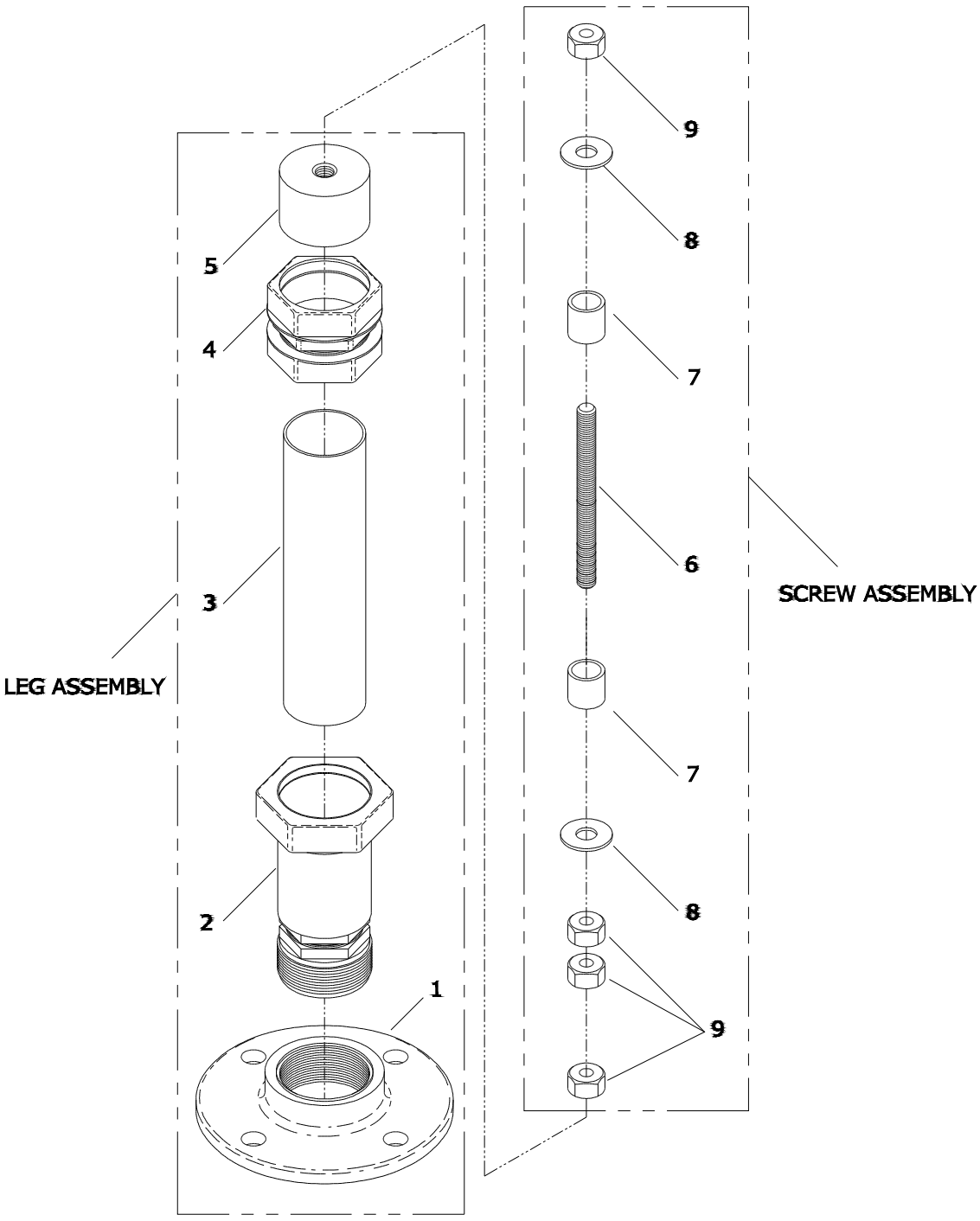


IPL Figure 10 Condenser Lens Assembly

IPL Figure 10 Condenser Lens Assembly

Item Number	Part Number	Description	Quantity
-	DA500106-1	ASPHERIC CONDENSER LENS ASSEMBLY	-
1	DA500123-11	LENS HOLDER	1
2	01-LAG023	CONDENSER LENS	1
3	2-149V884	GASKET	1
4	DA500120-13	LENS CLAMP, CONDENSER	1
5	SBHC6-32X.375C	SCREW, SOCKET BUTTON HEAD CAP, STAINLESS STEEL 6-32 X .375 LONG	4
6	WA-6-LC	WASHER, # 6, THIN, FLAT, STAINLESS STEEL	4
7	620-10	RESISTOR, 10 OHM 30W 5% BY RCD TYPE 620	1
8	SHCS4-40X.50C	SCREW, SOCKET HEAD CAP, STAINLESS STEEL, 4-40 X .50 LONG	2
9	WA-4-SLC	WASHER, # 4, SPLIT LOCK, STAINLESS STEEL	2

IPL Figure 11 Leg Assembly/Screw Assembly



IPL Figure 11 Leg Assembly/Screw Assembly

Item Number	Part Number	Description	Quantity
-	DA1209-17	LEG SUB ASSEMBLY (FRANGIBLE PLASI SUPPORT)	3
1	BIA00095DE2	MOUNTING FLANGE	1
2	40000163-001	FRANGIBLE COUPLING	1
3	DA1209-13	LEG	1
4	DA1487-1	COUPLING ASSEMBLY - COMPRESSION	1
5	AS6025	LEG PLUNGER	1
-	DA500143-1	SCREW ASSEMBLY, ADJUSTMENT (FRONT)	2
6	DA1464-17	ADJUSTMENT SCREW (FRONT)	1
7	.625R.527X.50C	SPACER	2
8	NAS1149C0863R	WASHER	2
9	DA1462-11	NUT, JAM	4
-	DA500143-3	SCREW ASSEMBLY, ADJUSTMENT (REAR)	1
6	DA1464-15	ADJUSTMENT SCREW (REAR)	1
7	.625R.527X.50C	SPACER	2
8	NAS1149C0863R	WASHER	2
9	DA1462-11	NUT, JAM	4