Titan 180

Xenon Illuminator

Service Manual

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INTRODUCTION

This manual has been prepared to aid in the repair and maintenance of the TITAN 180-Watt Xenon Illuminators.

The procedures and instructions contained in this document are to be used by qualified technical personnel only. Some procedures may have live exposed circuitry and wiring which could be hazardous if contacted with. Use extreme caution when working on equipment that has power applied to it

TECHNICAL SUPPORT SERVICES

In the event that you experience difficulty or need technical assistance, please contact our technical support staff at (904) 731-5869 or Toll Free 800-684-6404 and/or by fax at (904) 733-0012 .

Please have the following information ready when you call:

- MODEL NUMBER
- SERIAL NUMBER
- DETAILED DESCRIPTION OF THE PROBLEM

GENERAL THEORY OF OPERATION

The TITAN 180 Illuminator general operation is as follows. Please consult Fig. 1 for wiring information.

A.C. POWER DISTRIBUTION

The TITAN 180 Illuminators are based around a universal input power supply. Input line voltages of 100-120 V ˜ and 220-240V ˜ at 50/60 Hz are applied at the Power Input Model via a hospital grade power cord. The input power is then filtered by a low leakage current EMI Filter. Over current protection is provided by two fuses. A double-pole interlock switch provides operator safety, which is located on back left side of the lamp heat shield.

DC POWER DISTRIBUTION

DC Power for the other system components is generated by the lamp power supply. In addition to the 12.5 volts DC lamp power, it generates + 12 VDC. The 12 VDC is used to power the cooling fan and the elapsed lamp hour meter.

INTENSITY CONTROL

A rotating stainless steel disc that is placed in front of the lamp controls intensity. The disc contains holes in varying sizes and patterns. Manual lamp intensity control is made via a front panel mounted knob.

LAMP POWER AND IGNITION SYSTEM

The lamp power and ignition system consists of the lamp power supply, lamp base assembly, and the lamp cartridge assembly. In the event you have a power supply failure, it is recommended that the power supply be returned to SUNOPTIC TECHNOLOGIES® for servicing. When power supply is switched on, the DC supplies come up to voltage immediately. The lamp power supply has a built in delay of 1 to 2 seconds before it will attempt to start the lamp. If the lamp is unsuccessful at igniting, the power supply will try six to ten times in rapid succession before ceasing. After successful ignition the supply switches to a 12.5 VDC output at approximately 14 amps of current.

COOLING SYSTEM

Cooling is provided by a 100 CFM, 12 VDC fan. Air is drawn through the sides of the unit, across the power supply and lamp, and exhausted through the rear mounted exhaust louver. An infrared filter which is located between the lamp lens and the lamp housing provides additional cooling of the light. This filter blocks the infrared “heat” from the output turret while passing the visible light, thus lowering the temperature of the instruments and cables. Caution should still be used, as there are still potentially hazardous temperatures at the turret.

PARTS REPLACEMENT PROCEDURES

The following procedures are meant to aid the technician/engineer in replacing defective or damaged components. These procedures are meant to be used by qualified personnel only. Extreme caution should be used and all necessary safety precautions taken when working on this equipment.

SHUTTER REPLACEMENT

1. Disconnect the illuminator from the power source.

2. Remove the ten cover screws on the sides and the two on top of the unit.

3. Remove O-ring that engages knob with shutter.

4. Remove the E-external retaining ring holding the shutter assembly to the front panel.

5. Slide off the shutter assembly from mounting stud.

6. Replace the shutter assembly with the new one. Protruding set screw in shutter assembly must go up between two pressed in pins on sheet metal cabinet casing. Re-install E-external retaining ring.

7. Re-install O-ring. Turn intensity knob left and right until shutter is in sync with intensity knob marking.

8. Replace the top cover making sure the lamp access door is over the lamp cartridge.

9. Replace the twelve cover screws and secure.

I.R. FILTER ASSEMBLY REPLACEMENT

CAUTION: Before performing this procedure, be sure the unit has cooled to room temperature. The lamp cartridge and IR filters operate at very high temperatures.

1. Disconnect the illuminator from the power source.

2. Open the lamp access door and remove the lamp, gently rocking from front to back. Set lamp aside.

3. Remove I.R. filter using a short Phillips head screw driver to remove one Teflon holder. Replace I.R. filter with new I.R. filter reinstalling Teflon holder.

4. Install the lamp, being sure it is totally seated, and close the access door.

LAMP BASE REPLACEMENT

CAUTION: Before performing this procedure, be sure the unit has cooled to room temperature.

1. Disconnect the illuminator from the power source.

2. Remove the ten cover screws on the sides and the two on top of the unit.

3. Open lamp access door and lift the top straight up and off the unit. Set aside.

4. Remove the lamp cartridge assembly, gently rocking from front to back. Set lamp cartridge aside.

5. Disconnect the power supply lamp wires from the lamp base igniter module at the (+) and (–) terminals on the igniter circuit board.

6. Remove turret by unscrewing a Phillips head screw that holds a shoulder stud in center of turret.

7. Remove the E-external retaining ring holding the shutter assembly to the front panel.

8. Slide off the shutter assembly from mounting pin. Set aside.

9. Place the unit on its side.

10. From the bottom, remove the four screws that hold the lamp base to the bottom panel.

11. Remove the lamp base from the unit. Remove optic/turret block from base by removing three flat head Phillip drive screws. Place optic/turret block on new base.

12. Place the new lamp base assembly into the unit with the banana jacks in the heat shield area. Secure with the four screws to the bottom of the unit.

13. Place the unit back on its feet.

14. Replace the shutter assembly. Protruding set screw in shutter assembly must go between two pressed in pins on sheet metal cabinet casing. Re-install E-external retaining ring.

15. Reconnect the lamp power supply wires to the igniter module terminals.

16. Install the lamp cartridge, being sure it is totally seated.

17. Replace the top cover making sure the lamp access door is over the lamp cartridge.

18. Replace the twelve cover screws and secure.

19. Replace Turret and shoulder stud using Phillips head screw driver.

POWER SUPPLY REPLACEMENT

1. Disconnect the illuminator from the power source.

2. Remove the ten cover screws on the sides and the two on top of the unit.

3. Open lamp access door and lift the top cover straight up and off the unit. Set aside.

4. Disconnect the fan lead connector, the AC power input connectors, and the lamp output power wires from the power supply.

5. Set the unit on its side.

6. While holding the power supply with one hand, remove the four mounting screws from the bottom of the unit.

7. Place the new power supply in the unit so all four holes line up with the power supply standoffs. Secure with the 4 mounting screws from the bottom.

8. Place the unit back on its feet.

9. Reconnect the fan lead connector, the AC power input connectors, and the lamp output power wires to the power supply.

10. Replace the top cover making sure the lamp access door is over the lamp cartridge.

11. Replace the twelve cover screws and secure.

COOLING FAN REPLACEMENT

1. Disconnect the illuminator from the power source.
2. Remove the ten cover screws in the sides and the two on top of the unit.
3. Open the lamp access door and lift the top cover straight up and off the unit. Set aside.
4. Disconnect the fan lead connector and the hour meter wiring harness connector from the power supply.
5. Remove the three screws holding the back panel to the bottom housing and lay down the panel.
6. Remove the fan mounting screws and nuts. This will free the fan louver also.
7. Replace the fan assembly with the airflow blowing out the back of the unit. The fan leads should be coming out of the fan at the tip and against the back panel.
8. Secure the fan mounting screws with the nuts.
9. Slide the back panel into the mounting slots.
10. Reconnect the fan lead connector and the hour meter wiring harness connector to the power supply.
11. Replace the top cover making sure the lamp access door is over the lamp cartridge.
12. Replace the eight cover screws and secure.

LAMP REBUILD PROCEDURE

See Fig. 2 and for reference.

When rebuilding the Xenon lamp cartridge, it is recommended to replace several key components of the cartridge assembly. These components are included when you purchase a replacement rebuild kit from **Sunoptic Technologies®**.

CAUTION: Before performing this procedure, be sure the unit has cooled to room temperature.

WARNING: **Lamps are under high pressure and must be handled with care. Face shield should be worn when handling this lamp.**

The following procedure will guide you through rebuilding your Xenon lamp cartridge.

PFC LAMP REBUILD PROCEDURE FIG. 2

The following procedure will guide you through rebuilding your PFC Xenon lamp cartridge.

Tools required: Screw driver and adjustable wrench.

1. Be sure lamp has cooled to room temperature.
2. Remove the brass plugs from the bottom of the unit. Press the lamp assemblies from the back, out of the lamp housing.
3. Set the lamp face down on its front Heatsink.
4. Remove the copper clips from both heatsink.
5. Gently pull the lamp out of the heatsinks.
6. Remove the cooling ring from the lamp.
7. Clean off all the parts with a rag or paper towel, alcohol may help in heatsink compound removal.
8. Remove the new lamp from its package. Record its serial number and date installed in the illuminator manual.
9. Set the lamp face down with its protective cap on its lens. If the lamp has a rubber cap on the fill tube on the rear of the lamp, remove it.
10. Apply a thin film of heatsink compound to the metal surface of the lamp and the inside contact area of the front and back heat sinks. Be careful not to get compound on the lamp glass surface. If you do, clean the lamp with a clean alcohol wipe.

    CAUTION: Only apply a thin layer of heatsink compound to areas.

11. Press the lamp into the back heatsink making sure the fill tube is aligned at six O'CLOCK
12. Install copper clips.
13. Remove the end cap from the front of the lamp. Use care not to touch the window of the lamp.
14. Apply heatsink compound to the front outside diameter of the lamp.

15. Press the cooling ring onto the front of the lamp.

16. Press the front heatsink assembly onto the lamp/cooling ring assembly. Align the threaded holes in the bottom of the two heatsinks with each other.

17. Secure the front heatsink onto the lamp with the copper clips.

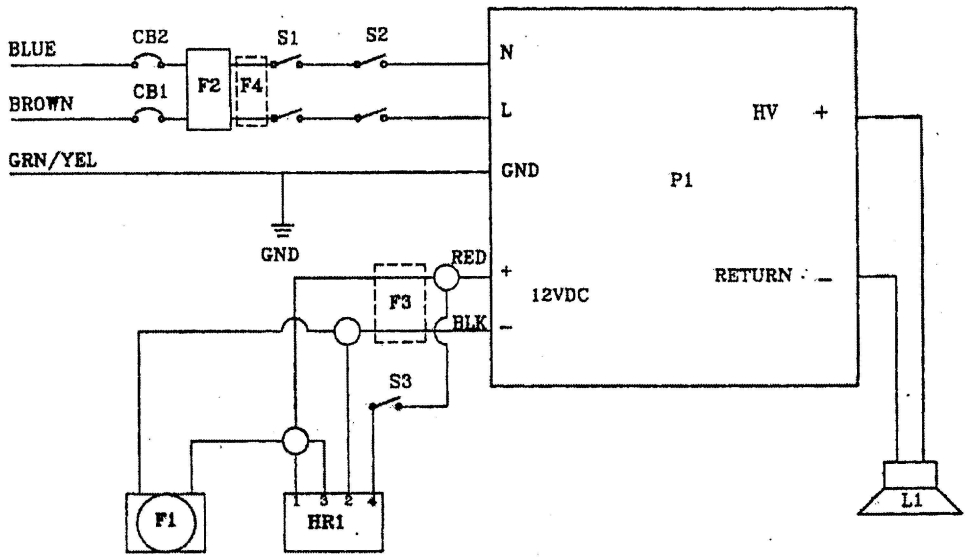
18. Align the threaded holes in the bottom of the heatsink with the bottom of the lamp housing, and press the entire lamp assembly into the lamp housing, so that when the lamp is pointing toward you, the window of the lamp is pointing to the front panel. Install the two brass plugs into the bottom of the lamp assembly and tighten.

REPLACEMENT PARTS

DESCRIPTION	PART NUMBER
Replacement lamp cartridge	SSX0048
180-Watt Xenon power supply	SSX0025
Hour meter	SSX0020
Power input module/EMI filter	SSX0021
Shutter assembly	SSX0086
Cooling fan	SSX0022
Reset switch assembly	SSX0024
Xenon lamp	SSX0049
Lens	SSX0026
Filter	SSX0027

For parts not listed here, call our Customer Service Department listed at the front of the manual.

FIGURE 1



CODE	PART NUMBER	DESCRIPTION	QTY.
CB1/CB2	I3000109	3.0 AMP FUSES	2
S1	I1104000	LIMIT SWITCH	1
S2	I1245501	ON/OFF SWITCH	1
P1	I3000120	180 WATT POWER SUPPLY	1
F1	I3000084	12 VDC FAN	1
HR1	I2000012	12 VDC HOUR METER	1
L1	SYC0048	XENON 180 WATT LAMP	1
F2	I3000108	EMI FILTER	1
F3/F4	I1180007	INTERNAL FERRITE	2
S3	I200041	HOUR METER REST SWITCH	1

FIGURE 1

FIGURE 2

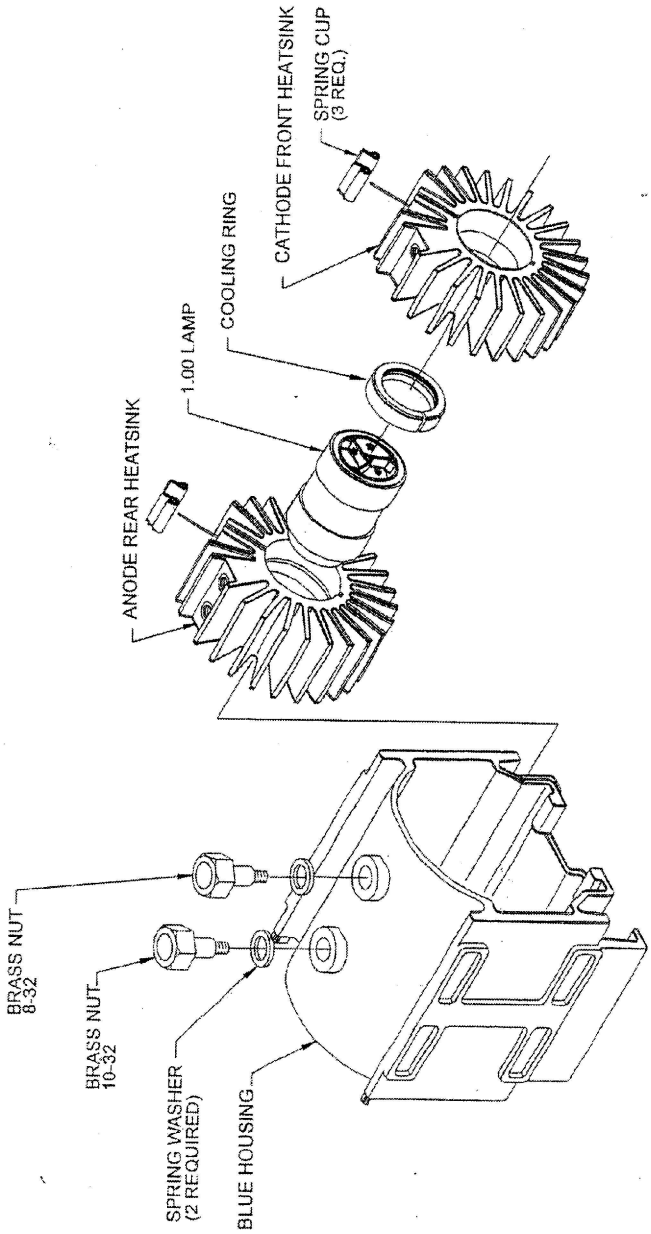


FIGURE 2