

Piper PA-28/ PA-32 Cowl Mount HID Light Assembly Kit

INSTALLATION MANUAL No. HID-P-003

Model Applicability:

Piper Aircraft, Inc.: PA-28-150, PA-28-160, PA-28-180, PA-28-235, PA-28S-160, PA-28S-180, PA-28R-180, PA-28R-200, PA-28-151, PA-28-161, PA-28-181, PA-28R-201, PA-28R-201T, PA-28-236, PA-28RT-201, PA-28RT-201T, PA-28-201T, PA-32-260, PA-32-300, PA-32S-300, PA-32R-300, PA-32RT-300, PA-32R-301 (SP), PA-32R-301 (HP), PA-32-301, PA-32-301FT, PA-32-301XTC.

KNOTS 2U, LTD.

**709 Airport Road
Burlington, WI 53105
262 763-5100
www.knots2u.com**

REV #	DATE	EFFECT

TABLE OF CONTENTS

		Cover Page	1
		Table of Contents	2
Section	1.0	Introduction	3
Section	2.0	Bulb And Ballast Installation	3
Section	3.0	Specifications and Paperwork	3
Section	4.0	Figure A	4
Section	5.0	Instructions for Continued Airworthiness	5
Section	6.0	Typical Wiring Schematic	6
Section	7.0	EMI Checklist	7
Section	8.0	Supplemental Type Certificate	

Section 1.0

Introduction

This manual describes the installation of a cowl mounted HID light which replaces the factory cowl mounted landing light. This approval extends only to models which are listed on the AML or are included in this manual. The installation must be accomplished in accordance with AC43.13-1B and 2A. The installation requires the mounting of a ballast and bulb. Before installing confirm the voltage of the ballast being installed is correct for the aircraft voltage.

Section 2.0

Bulb And Ballast Installation

- A) Disconnect power and ground wire from landing light and remove bulb from aircraft. Install HID light to aircraft. Confirm a minimum of 3.5" of clearance between the bulb and the aircraft exhaust.
- B) Install the HID ballast to the firewall while referencing Figure A for ballast installation details. (Alternate ballast mounting locations may be chosen by the installer, provided that they will withstand the inertia forces stipulated in AC43.13-2A Chapters 1 & 3 to Section 2 A)
- C) Connect black lead of cable # RMD-2281-11 to aircraft ground, verify ground continuity per AC43.13 1B/2A section 11. (Lead may be shortened if necessary)
- D) Connect white lead of cable # RMD-2281-11 to original aircraft power wire. (Lead may be shortened if necessary) See Section 6.0, Typical Wiring Schematic, Detail A for details.
- E) Connect cable # HID-1-5-72-CA from ballast to bulb. Cable should be routed through cowl in the same or equivalent manner as the factory landing light wire. (If the ballast is located closer to the light than the firewall, the shorter cable no. RMD-2281-10 may be used)
- F) Confirm that all wires are secured with tie wraps or Adel clamps. For further information reference AC43.13-1B section 11-126
- G) Test HID Light, confirm there are no circuit breakers popped with all electrical equipment turned on. Also check for any electrical/magnetic interference with all radio and navigation equipment per EMI checklist, page 7 of this manual.

Section 3.0

Specifications And Paperwork

Complete FAA Form 337 for return to service, weight and balance update and log book entry. Place a copy of the supplemental type certificate and Instructions for Continued Airworthiness with aircraft logs.

HID Assembly Weight	.95 lbs.
Minus Weight of Assembly Removed.....	.50 lbs.
Weight Change	+ .45 lbs. – Negligible.

HID Amperage 12/14 Volt	2.9 Amps
HID Amperage 24/28 Volt	1.5 Amps

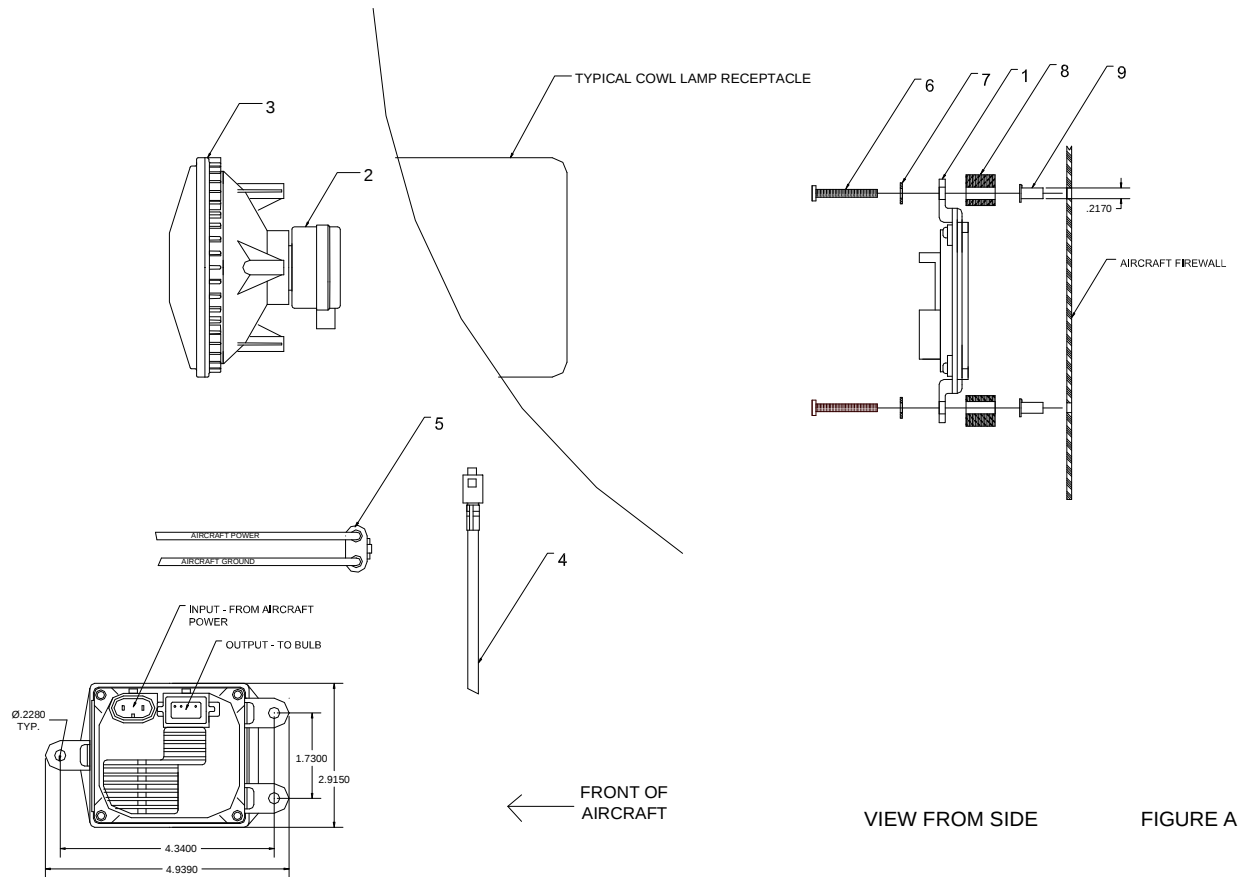
Amperage chart of stock bulb(s) removed:

12 / 14 Volt Systems

50 watt	4.2 Amps
100 watt	8.3 Amps
150 watt	12.5 Amps
200 watt	16.7 Amps
250 watt	20.8 Amps
300 watt	25 Amps

24 / 28 Volt Systems

50 watt	2.1 Amps
100 watt	4.2 Amps
150 watt	6.3 Amps
200 watt	8.3 Amps
250 watt	10.4 Amps
300 watt	12.5 Amps



INDEX No.	PART No.	DESCRIPTION	UNITS PER ASSY.
1	RMD-2281-08A	BALLAST, HID, 24 VOLT	1
OR	RMD-2281-09A	BALLAST, HID, 12 VOLT	1
2	RMD-2280-06	BULB, D1S	1
3	RMD-2280-08	REFLECTOR HOUSING, HID LIGHT, CLEAR	1
OR	RMD-2280-09	REFLECTOR HOUSING, HID LIGHT, DIFFUSED	1
4	HID-1-5-72-CA	HID CABLE, BALLAST TO LAMP	1
5	RMD-2281-11	CABLE, A/C TO BALLAST	1
6	MS35206-251	MACHINE SCREW – PHILLIPS, PAN HEAD #832	3
7	MS35333-38	LOCKWASHER – INTERNAL TOOTH, #8	3
8	HID-2281-13	SPACER – NEOPRENE	3
9	A8K-75	RIVNUT – KEYED, #832	3

Hardware sizes are recommended, appropriate substitutions may be used.

Section 4 Figure A

Section 5.0

Instructions for Continued Airworthiness

Knots 2U, Ltd.
709 Airport Road
Burlington, WI 53105
262.763.5100
www.knots2u.com

Trouble Shooting

Problem	Solution	Comments
Light circuit breaker “pops” frequently.	Check wires for a short circuit. Remove and replace ballast.	Contact Knots 2U, Ltd. for a replacement.
HID Light does not illuminate, illuminates slowly or does not go to full power.	Replace bulb and / or ballast, verify function.	Contact Knots 2U, Ltd. for a replacement.

Maintenance / Inspection Requirements

Scheduled Inspections

Inspection	Time interval	Comments
Remove landing light retainer and lens, inspect; A) Ballast for mounting security and general condition. B) Bulb housing, bulb and retainer plate for security and general condition.	Annual or 200 hours, whichever comes first.	Contact Knots 2U, Ltd. for a replacement.

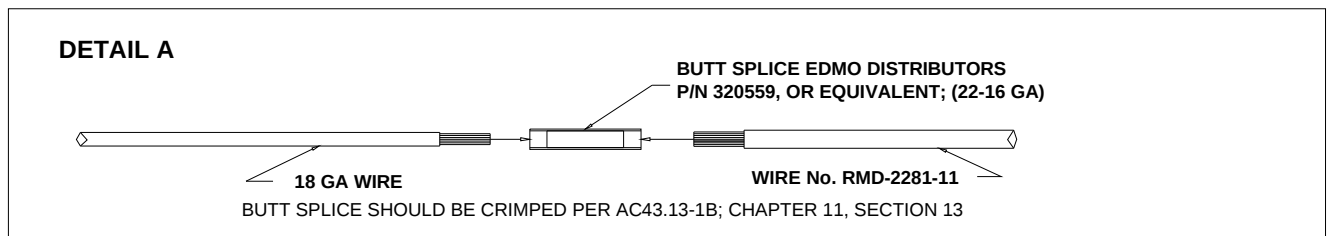
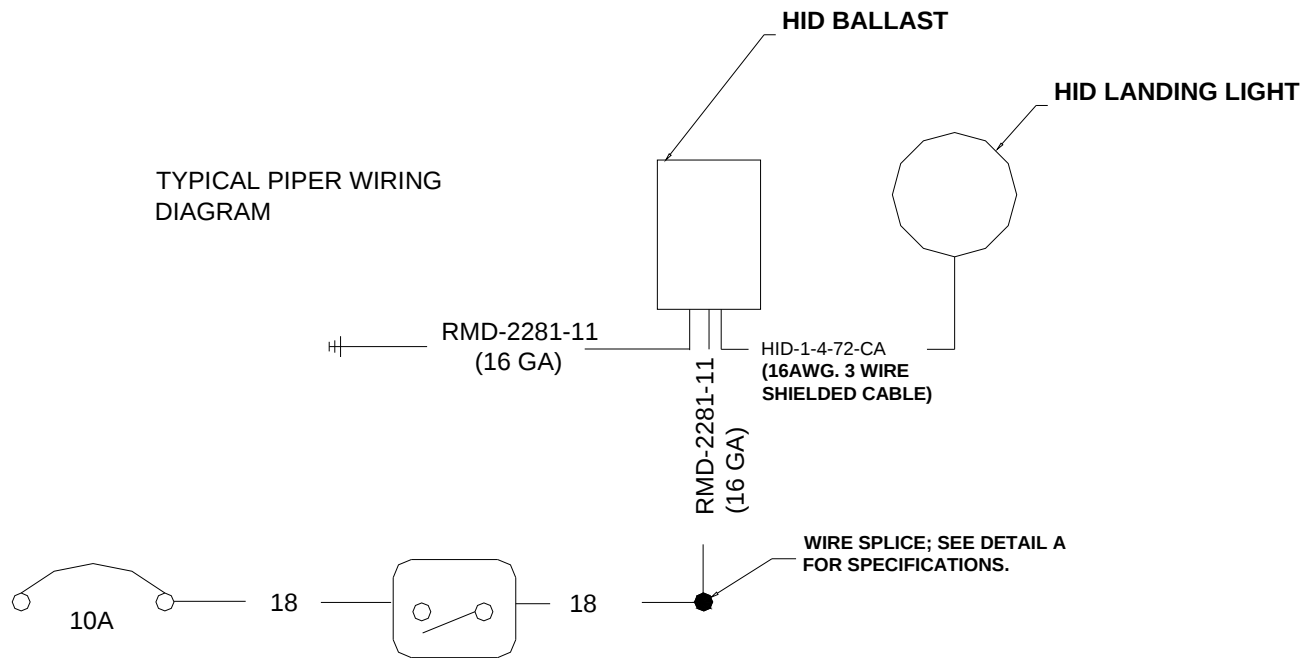
Unscheduled Inspections

Inspection	Event	Comments
Remove landing light retainer and lens, inspect; A) Ballast for mounting and security B) Bulb housing, bulb and retainer plate for security and general condition. C) Perform function test.	Hard landing, Lightning Strike.	Contact Knots 2U, Ltd. for a replacement

Section 6.0

Typical Wiring Schematic

This wiring schematic is typical of the aircraft approved by this manual and is shown as reference. See the appropriate Piper Service Manual for wiring schematics applicable to your aircraft.



Section 7.0

EMI Checklist

1. This EMI checklist must be completed after installation of the HID light(s). The purpose of this checklist is to insure that there is no interference between the HID lighting system, and other systems already installed in the aircraft. If interference is detected, contact Knots 2U, Ltd.

a. VHF Radio Check

- With the VHF Radio on, adjust to the squelch activation threshold. Test the following frequencies, 121.7, 122.95, 128.7, and 131.3. Note any normal background noise.
- Activate HID light(s) and repeat frequency check. Note any deviation in background noise between tests, or any other anomalies.
- Repeat check on any additional radios.

b. VOR Check

- With the nav radio on, tune to a local frequency and center the course needle with valid flag and To/From indication.
- Activate HID light(s), note any needle movement. (CDI, valid flag To/From) Also check for any other anomalies.
- Repeat check on any additional nav radios.

c. ADF Check

- With the ADF/NDB on. Test at least three frequencies, one near the low ADF/NDB frequency range, one near the middle ADF/NDB frequency range and one in the higher ADF/NDB frequency range. Verify proper needle indication and valid flag.
- Activate HID light(s) and repeat frequency check. Note any deviation in needle indication or flag. Also check for any other anomalies.
- Repeat check on any additional ADF/NDB driven equipment.

d. GPS Check

- Turn on GPS and set to a way - point at least 100 miles away. Center course needle by selecting "Direct To". If multi function display is installed, verify valid course on map.
- Activate HID light(s). Note any deviation in readings. Also check for any other anomalies.
- Repeat test for each additional GPS.

e. Additional Equipment

Operate any other equipment and test for interference with the HID light(s). Individual equipment installation and/or operation manuals may be referenced for specific test procedures.