Cessna HID Landing / Taxi Light Assembly Kit

KNOTS 2U, LTD.
709 Airport Road
Burlington, WI 53105
262 763-5100
www.knots2u.com

REV #	DATE	EFFECT
A	6-14-04	Revised Dwg. C-RMDHID per ECO 0023. Revised Page 3 Section 2 Paragraph. E by adding reference to: 172R, 172S, 182S, 182T, T182T, 206H, T206H and later models
B	11-17-04	Revised Section 1.0 to limit installation of this kit to models with wing mounted lights only.
C	5-8-05	Replaced Part No. RMD-2280-01 with Part No. RMD-2280-08 and RMD-2280-09.
D	7-15-05	Added words “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.
E	3-21-06	Added EMI Checklist as Section 8.0. Adjusted weight in section 4.0 due to ballast change. Revised Dwg. No. C-RMDHID.
F	8-16-07	ECO 110

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**	**Parts List ……..**	**3**
Section	**4.0**	**Specifications and Paperwork ……**	**3**
Section	**5.0**	**Drawing C-RMDHID Page 1 of 2 ……**	**4**
	5.0	**Drawing C-RMDHID Page 2 of 2 ……**	**5**
Section	**6.0**	**Maintenance / Troubleshooting Guide ……..**	**6**
Section	**7.0**	**Typical Wiring Schematic ……..**	**7**
Section	**8.0**	**EMI Checklist ……...…….**	**8**
Section	**9.0**	**Supplemental Type Certificate ……**	

Section 1.0 **Introduction**

This manual describes the installation of HID lights for all Cessna aircraft with wing mounted landing / taxi lights. This approval does not extend to models not listed on the AML or cowling / fuselage installation of HID lights. The installation must be accomplished in accordance with AC43.13-1B and 2A. The installation requires the mounting of a ballast for each bulb. The bulb is mounted using the same attachment method as the bulb it is replacing. HID Lights may be installed individually or as a pair. Before installing confirm the voltage of the ballast being installed is correct for the aircraft voltage.

Section 2.0 **Bulb And Ballast Installation**

A) Remove the landing light retainer, lens and old bulb(s) from the wing. Attach the ballast to the wing rib in the leading edge of the wing just to the right of the right hand bulb or just to the left of the left hand bulb. 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. Mount ballast per drawing # C-RMDHID.
B) Connect black lead of cable # RMD-2281-11 to aircraft ground, verify ground continuity per AC43.13 1B/2A section 11.
C) Connect white lead of cable # RMD-2281-11 to aircraft power.
D) Connect cable # RMD-2281-10 from ballast to bulb.
E) Install new bulb using original hardware except on the following aircraft; 172R, 172S, 182S, 182T, T182T, 206H, T206H and up, also models where the HID bulb needs to be moved forward to prevent interference with the wing spar. These aircraft should reference drawing C-RMDHID, Page 2 of 2 for installation instructions.
Confirm that all wires are secured with tie wraps or Adel clamps. Special care should be taken locating wires in and around fuel lines and/or fuel tanks. With some exceptions, a minimum separation of 6" is required between a power wire and a fuel tank or fuel line. For further information reference AC43.13-1B section 11-126
F) Reinstall landing light retainer and lens.
G) For 12/14 volt systems use a minimum 10 Amp circuit breaker for two lights, or individual 5 Amp breakers for each light. For 24/28 volt systems use a minimum 10 Amp breaker for two lights or individual 5 Amp breakers for each light.
H) Confirm lights are adjusted properly and function test. Confirm there are no circuit breakers popped with all electrical equipment turned on. Also check for any electrical/magnetic interference with radio or navigation equipment per EMI Checklist section 8.0.

Section 3.0 **Parts List**

See Dwg. No. C-RMDHID for Parts List

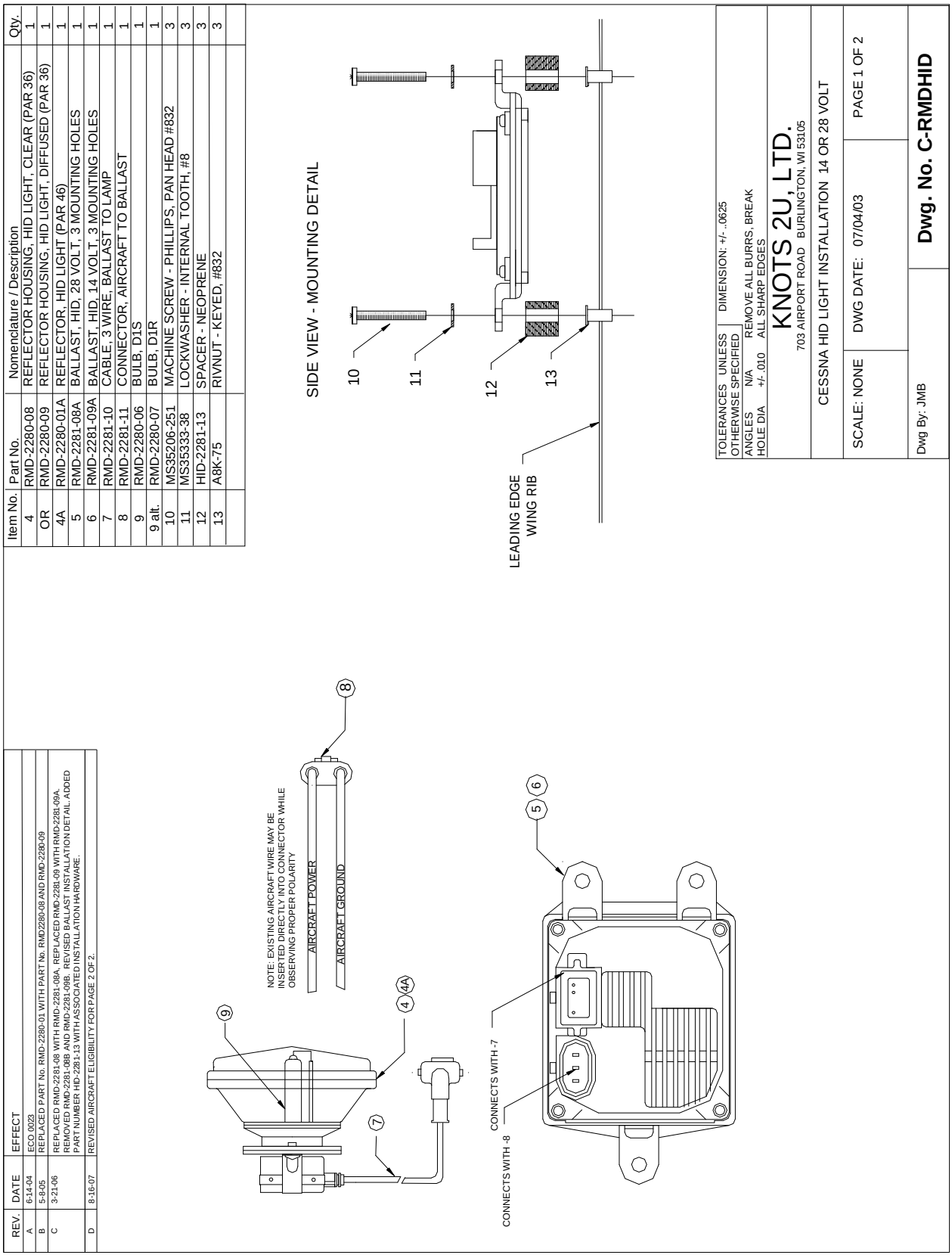
Section 4.0 **Specifications And Paperwork**

Complete FAA Form 337 for return to service, log book entry and weight and balance change. Place a copy of the supplemental type certificate, drawing C-RMDHID and maintenance / trouble shooting manual with aircraft logs.

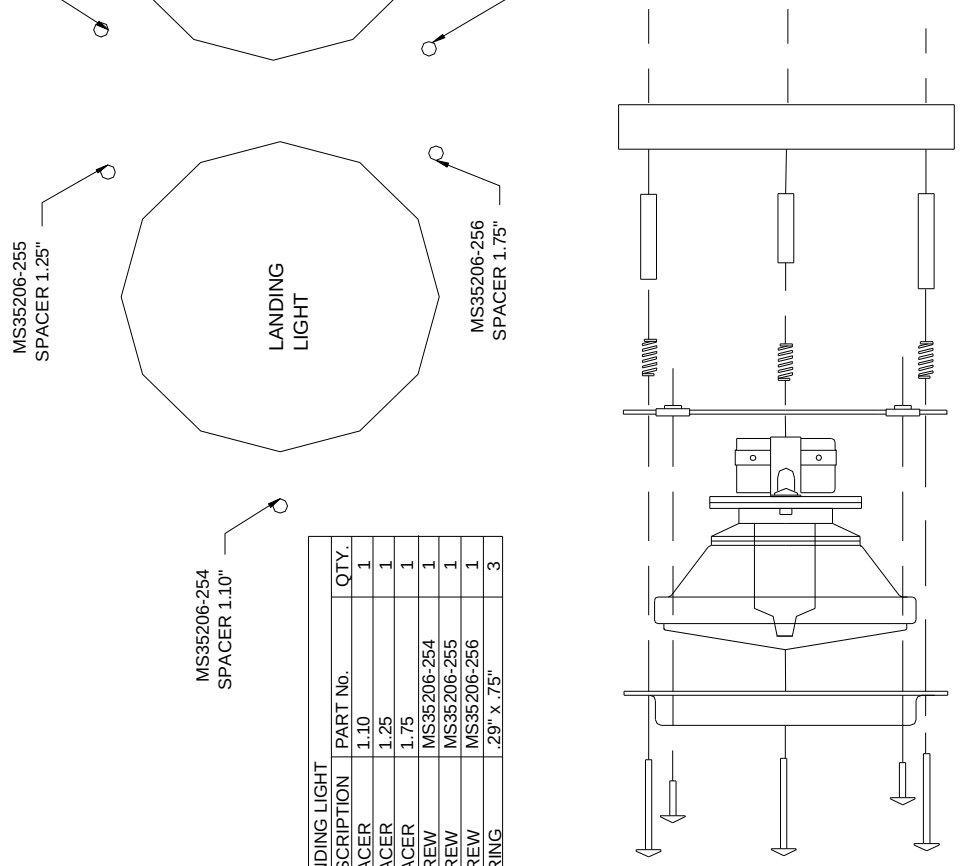
HID weight with PAR 36 bulb…….	**0.95 lbs. ea. Including ballast and cable**
HID weight with PAR 46 bulb…….	**1.12 lbs. ea. Including ballast and cable**
Minus weight of bulbs removed……..…….	**.45 lbs. ea. (weight shown is for a GE 4509, check weight if bulb is different)**
Arm……..……..…	**Per appropriate Cessna aircraft manual**
HID amperage 12/14 volt ……..……	**3.1 A. ea.**
HID amperage 24/28 volt……	**1.5 A. ea.**

Amperage chart of stock bulb(s) removed:

12 / 14 volt Systems		**24 / 28 volt Systems**	
50 watt	**4.2 Amps ea.**	**50 watt**	**2.1 Amps ea.**
100 watt	**8.3 Amps ea.**	**100 watt**	**4.2 Amps ea.**
150 watt	**12.5 Amps ea.**	**150 watt**	**6.3 Amps ea.**
200 watt	**16.7 Amps ea.**	**200 watt**	**8.3 Amps ea.**
250 watt	**20.8 Amps ea.**	**250 watt**	**10.4 Amps ea.**
300 watt	**25 Amps ea.**	**300 watt**	**12.5 Amps ea.**


Item No. | Part No. | Nomenclature / Description | Qty.
4 | RMD-2280-08 | REFLECTOR HOUSING, HID LIGHT, CLEAR (PAR 36) | 1
OR | RMD-2280-09 | REFLECTOR HOUSING, HID LIGHT, DIFFUSED (PAR 36) | 1
4A | RMD-2280-01A | REFLECTOR, HID LIGHT (PAR 46) | 1
5 | RMD-2281-08A | BALLAST, HID, 28 VOLT, 3 MOUNTING HOLES | 1
6 | RMD-2281-09A | BALLAST, HID, 14 VOLT, 3 MOUNTING HOLES | 1
7 | RMD-2281-10 | CABLE, 3 WIRE, BALLAST TO LAMP | 1
8 | RMD-2281-11 | CONNECTOR, AIRCRAFT TO BALLAST | 1
9 | RMD-2280-06 | BULB, D1S | 1
9 alt. | RMD-2280-07 | BULB, D1R | 1
10 | MS35206-251 | MACHINE SCREW - PHILLIPS, PAN HEAD #832 | 3
11 | MS35333-38 | LOCKWASHER - INTERNAL TOOTH, #8 | 3
12 | HID-2281-13 | SPACER - NEOPRENE | 3
13 | A8K-75 | RIVNUT - KEYED, #832 | 3
SIDE VIEW - MOUNTING DETAIL
10
11
12
13
LEADING EDGE
WING RIB
NOTE: EXISTING AIRCRAFT WIRE MAY BE INSERTED DIRECTLY INTO CONNECTOR WHILE OBSERVING PROPER POLARITY
AIRCRAFT POWER
AIRCRAFT GROUND
8
9
4
4A
7
5
6
CONNECTS WITH -7
CONNECTS WITH -8
REV. | DATE | EFFECT
A | 6-14-04 | ECO 0023
B | 5-8-05 | REPLACED PART No. RMD-2280-01 WITH PART No. RMD2280-08 AND RMD-2280-09
C | 3-21-06 | REPLACED RMD-2281-08 WITH RMD-2281-08A, REPLACED RMD-2281-09 WITH RMD-2281-09A. REMOVED RMD-2281-08B, AND RMD-2281-09B. REVISED BALLAST INSTALLATION DETAIL. ADDED PART NUMBER HID-2281-13 WITH ASSOCIATED INSTALLATION HARDWARE.
D | 8-16-07 | REVISED AIRCRAFT ELIGIBILITY FOR PAGE 2 OF 2.
TOLERANCES UNLESS OTHERWISE SPECIFIED | DIMENSION: +/- .0625
ANGLES N/A | REMOVE ALL BURRS, BREAK HOLE DIA +/- .010 | ALL SHARP EDGES
KNOTS 2U, LTD.
703 AIRPORT ROAD BURLINGTON, WI 53105
CESSNA HID LIGHT INSTALLATION 14 OR 28 VOLT
SCALE: NONE | DWG DATE: 07/04/03 | PAGE 1 OF 2
Dwg By: JMB | Dwg. No. C-RMDHID

CESSNA HID LIGHT INSTALLATION DIAGRAM. MODELS 172R, 172S, 182S, 182T, T182T, 206H, T206H and up, also models where the HID bulb needs to be moved forward to prevent interference with the wing spar.



LANDING LIGHT		
DESCRIPTION	PART No.	QTY.
SPACER	1.10	1
SPACER	1.25	1
SPACER	1.75	1
SCREW	MS35206-254	1
SCREW	MS35206-255	1
SCREW	MS35206-256	1
SPRING	.29" x .75"	3

TAXI LIGHT		
DESCRIPTION	PART No.	QTY.
SPACER	1.25	1
SPACER	1.50	1
SPACER	1.63	1
SCREW	MS35206-254	2
SCREW	MS35206-255	1
SPRING	.29" X .75"	3

SPACERS - ALLOY 6061 ALUMINUM TUBING. .21" ID WITH .049" WALL THICKNESS.

KNOTS 2U, LTD.
703 AIRPORT ROAD BURLINGTON, WI 53105

CESSNA HID LIGHT INSTALLATION 14 OR 28 VOLT

SCALE: NONE | DWG DATE: 07/04/03 | PAGE 2 OF 2

Dwg By: JMB | **Dwg. No. C-RMDHID**

Section 6.0

Maintenance / Troubleshooting Guide
Instructions for Continued Airworthiness

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

Note to Installer:
For the fastest service please contact Knots 2U, Ltd. at Day Ph; 262.763.5100 or after hours at Ph; 262 492-6054 with any technical questions regarding the installation or trouble shooting of this product.

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

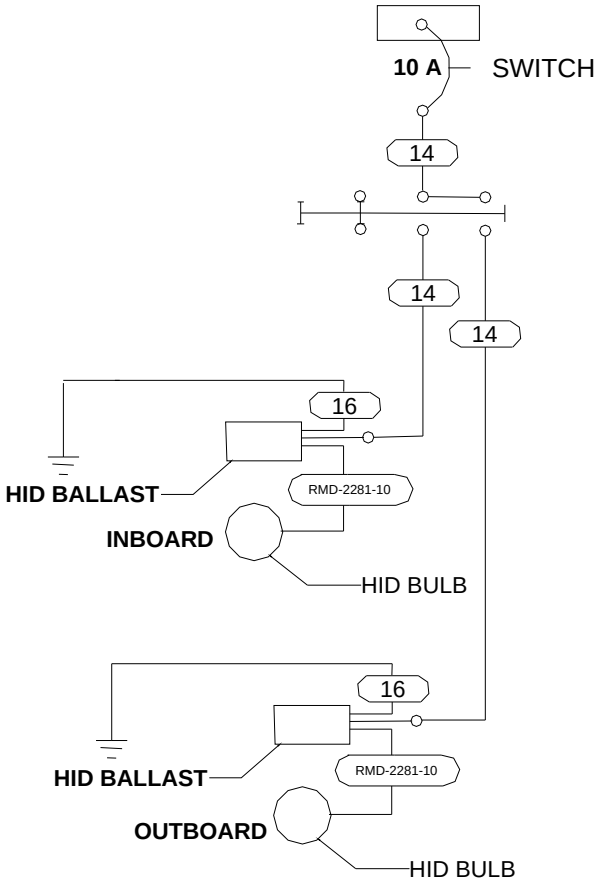
Inspection	Time interval	Comments
Remove landing light retainer and lens, inspect; A) Ballast for mounting security and general condition. B) Bulb housing, bulb and retainer plate for security and general condition.	Annual or 200 hours.	Contact Knots 2U, Ltd. for a replacement.

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, Wing strike.	Contact Knots 2U, Ltd. for a replacement.

Section 7.0 **Typical Wiring Schematic**

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



Section 8.0 **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 out of tolerance interference between the HID lighting system and other systems already installed in the aircraft. If out of tolerance interference is detected, the installation may be modified by adding external filters, re-locating equipment, or re-routing cables as necessary to eliminate interference. For further assistance, the installer may 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 readings between tests.
    - Repeat check on any additional radios.

    b. VOR Check

    - With the nav radio on adjust squelch to the activation threshold. Test the following frequencies, 108.00, 111.4, 116.4 and 117.95. Note any normal background noise.
    - Activate HID light(s) and repeat frequency check. Note any deviation in readings between tests.
    - Repeat check on any additional nav radios.

    c. ADF Check

    - With the ADF/NDB on, adjust to the squelch activation threshold. 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. Note any normal background noise.
    - Activate HID light(s) and repeat frequency check. Note any deviation in readings between tests.
    - 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. Note GPS readings
    - Activate HID light(s). Note any deviation in readings between tests.
    - 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.