

**R22-series Electronic Ignition System (EIS) Upgrade Kit Instructions**

*Kit replaces retard CMI magneto with EIS. Use KI-272-1A on R22-series S/N 4824 & prior and KI-272-1B on S/N 4825 & subsequent. Contact RHC Technical Support for nose battery-configured helicopters.*

**NOTE**

Visit [www.robinsonheli.com](http://www.robinsonheli.com) to verify kit instructions are current revision. Review instructions before installation; contact RHC Technical Support with questions. Verify kit contents match list; contact RHC Customer Service if parts are missing or damaged.

**NOTE**

Kit installation requires current revision Lycoming Service Instruction Nos. 1437 & 1569, available at [www.lycoming.com](http://www.lycoming.com).

ITEM	PART NUMBER	KIT CONTENTS	QTY PER KI-272-1A	QTY PER KI-272-1B
1	KI-272-1Instr.	Kit Instructions . . . . .	1	1
2	B049-14	Harness Assembly . . . . .	1	1
3	B049-15	Harness Assembly . . . . .	1	1
4	B158-4-1IN	Heat Shrink, 1 inch diameter (1-inch length) . . . . .	4	4
5	B263-4	Socket . . . . .	1	1
6	B263-11	Housing . . . . .	1	0
7	B263-31	Housing . . . . .	1	1
8	B304-21	Fuse Assembly . . . . .	1	0
9	D275-210	Fuse . . . . .	0	1
10	KI-272-3086	Wire Assembly . . . . . Includes: [1] B274-16 Wire, 16 gage, 90 inch length (marked "KI-272-3086") [1] B263-3 Pin [1] B263-10 Housing	1	0
11	01F29428-CT	Screws (Lycoming part number, alternate to 01F31508-CT) . . . . .	3	3
12	66K4A3SN-02	EIS (Lycoming part number, includes 66K4F hardware kit) . . . . .	1	1
13	67P20439	Ignition Harness (Lycoming part number) . . . . .	1	1
14	M-674	Gasket, copper - spark plug (alternate to STD-295) . . . . .	1	1
15	STD-475	Washer, 5/16-inch lock, internal teeth (Lycoming part number) . . . . .	2	2
16	MS3367-4-9+	Ty-Rap (Note: "+" in part number indicates 20-qty pack) . . . . .	2	2
17	MS3367-5-9+	Ty-Rap (Note: "+" in part number indicates 20-qty pack) . . . . .	2	2
18	MS25171-1S	Nipple . . . . .	1	1
19	MS35206-227+	Screw (Note: "+" in part number indicates 10-qty pack) . . . . .	1	1
20	MS35333-37	Washer, lock - internal tooth . . . . .	2	2

**Consumable**

Loctite C5-A, Copper based Anti-seize (ref: Lycoming Service Instruction noted above)

**Special Tools**

- Wire stripping and crimping tools
- Heat gun

**Kit Instructions**

1. Ensure ignition switch is OFF; remove key. Turn BATTERY switch OFF. Disconnect battery per R22 Maintenance Manual (MM) § 33-10.

**NOTE**

Parenthetic dash numbers, such as (-166), indicate number marked on wiring insulation (if single conductor), or jacket (if multi-conductor and/or shielded).

2. Refer to R22 Illustrated Parts Catalog (IPC) Figure 96-15. Remove aft belly panel and remove starting vibrator. Slide one B158-4-1IN heat shrink over each receptacle on wires (-166) & (-584). Apply heat using heat gun. While heat shrink is hot, pinch and close the open end using smooth jaw pliers. Verify receptacle is insulated and heat shrink is secure. Secure covered wires using appropriately sized ty-raps & trim tips flush.
3. Refer to IPC Figure 53-1. Remove A378 (LH & RH) skirts and panels.
4. Perform **A** or **B** below, as necessary:
  - A. For helicopters equipped with C728-1 Separator assembly.** Refer to KI-255-1 R22-series Engine Air-Oil Separator Installation Kit instructions, Figures 1 and 2. Disconnect A729-77 rubber [drain] tube from C728-1 separator assembly and temporarily cap tube. Disconnect A758-43 hose from separator assembly, and remove screws securing separator assembly at MS21919 clamp & bottom tab. Remove separator assembly and temporarily cap hose.
  - OR-
  - B. For helicopters equipped with A727-1 breather tube.** Refer to IPC Figure 71-1. Disconnect engine breather tube at engine by removing clamps from the rubber coupling and bottom clamp(s). Temporarily cap exposed connection.
5. Refer to IPC Figure 71-1. Photo document installation of ignition harness connected to engine-left (retard) magneto, including all ty-rap & clamp locations. Disconnect harness from engine-left magneto and remove harness from engine-left magneto and remove harness from engine. Remove engine-left (retard) magneto from engine per Lycoming Service Instructions No. (SI) 1569 Installation section I.
6. Refer to SI 1437. Remove lower spark plug from cylinder 1 & discard copper gasket. Rotate crankshaft in normal direction until cylinder 1 is on compression stroke, then continue normal rotation until starter ring gear support indicates top center (marked "TC" on support) of compression stroke. Inspect removed spark plug, service as required, install in cylinder 1 using new M-674 copper gasket, and torque per MM § 23-33.
7. Perform Lycoming SI. 1569 Installation section II, Remove and Inspect Drive Interface. Install magneto drive interface per SI 1569 Installation section III.

**Kit Instructions (continued)**

8. Refer to Figure 1. Install B049-14 and B049-15 harness assemblies to 66K4A3SN-02 EIS as shown. Perform Lycoming SI 1569 Installation section V, VI (clean engine oil may be substituted for M-6 grease), and VII.
9. **Helicopter S/N 4824 & prior only:**
  - a. Refer to Figures 2 and 3A. Locate B415 battery relay. Remove nipple from relay's direct power stud; remove & retain nut securing battery positive cable and remove cable from stud. Insert ring terminal on B304-21 fuse assembly thru nipple and install to stud; install battery positive cable and retained nut. Special torque nut to 80 in-lb; verify security. Torque stripe per MM Figure 2-1. Position nipple over stud and secure using appropriately-sized ty-raps. Cinch ty-rap until snug without over-tightening, and trim tip flush with head. Install B263-11 housing to B304-21 fuse assembly socket; verify security of socket in housing.
  - b. Refer to Figure 3A. Connect KI-272-3086 wire to newly installed fuse assembly. Route KI-272-3086 wire along main harness to EIS. Ensure wire has sufficient slack to connect to newly installed EIS without preloading wire. Trim wire to appropriate length. Secure along main harness using appropriately sized ty-raps. Cinch ty-rap until snug without over-tightening, and trim tip flush with head.
  - c. Strip KI-272-3086 wire and crimp B263-4 socket on wire. Inspect crimp per MM §23-84. Verify security of socket. Install socket into B263-31 housing. Verify security of socket in housing.
10. **Helicopter S/N 4825 & subsequent only:**

Refer to Figure 3B. Locate B304-22 fuse assembly adjacent to B415 battery relay. Install D275-210 (10A) fuse; secure using appropriately sized ty-raps & trim tips flush.
11. **Helicopter S/N 4825 thru 4861 only:**

Refer to Figures 3B and 4. Locate stowed wire (-3086) covered with black heat shrink and remove ty-raps as required for access. Cut off heat-shrink-covered portion of wire (-3086), strip end, and crimp B263-4 socket on wire.. Inspect crimp per MM §23-84; verify security of socket. Install socket into B263-31 housing; verify security of socket in housing.
12. Refer to Figures 3A or 3B (as applicable), and 4. Connect existing p-lead and shield drain wires to EIS as shown. Locate and connect wire (-3086) to B049-14 harness assembly. Slide one B158-4-11N heat shrink over ring terminal on unused retard wire. Apply heat using heat gun. While heat shrink is hot, pinch and close the open end using smooth jaw pliers. Verify ring terminal is insulated and heat shrink is secure. Secure terminal to adjacent wire bundle using appropriately sized ty-raps & trim tips flush.
13. Install 67P20439 ignition harness using (3) 01F29428-CT screws. Route and connect ignition leads as marked on spark plug nuts. Dress & secure harness per photos taken in step 4. Perform Lycoming SI 1569 Installation section XIV Final inspection.
14. Install C728-1 separator assembly using KI-255-1 R22-series Engine Air-Oil Separator Installation Kit instructions or A727-1 breather tube per IPC Figure 71-1, as required.
15. Install A378 (LH & RH) skirts and panels.
16. Connect battery per MM § 37-10.

**Kit Instructions (continued)**

17. Perform Lycoming SI 1569 Operation section I. Pre-Operational Check and II. Operational Check.
18. Revise helicopter's Weight and Balance Record in Pilot's Operating Handbook (POH) Section 6 to reflect this installation by incorporating the following data:

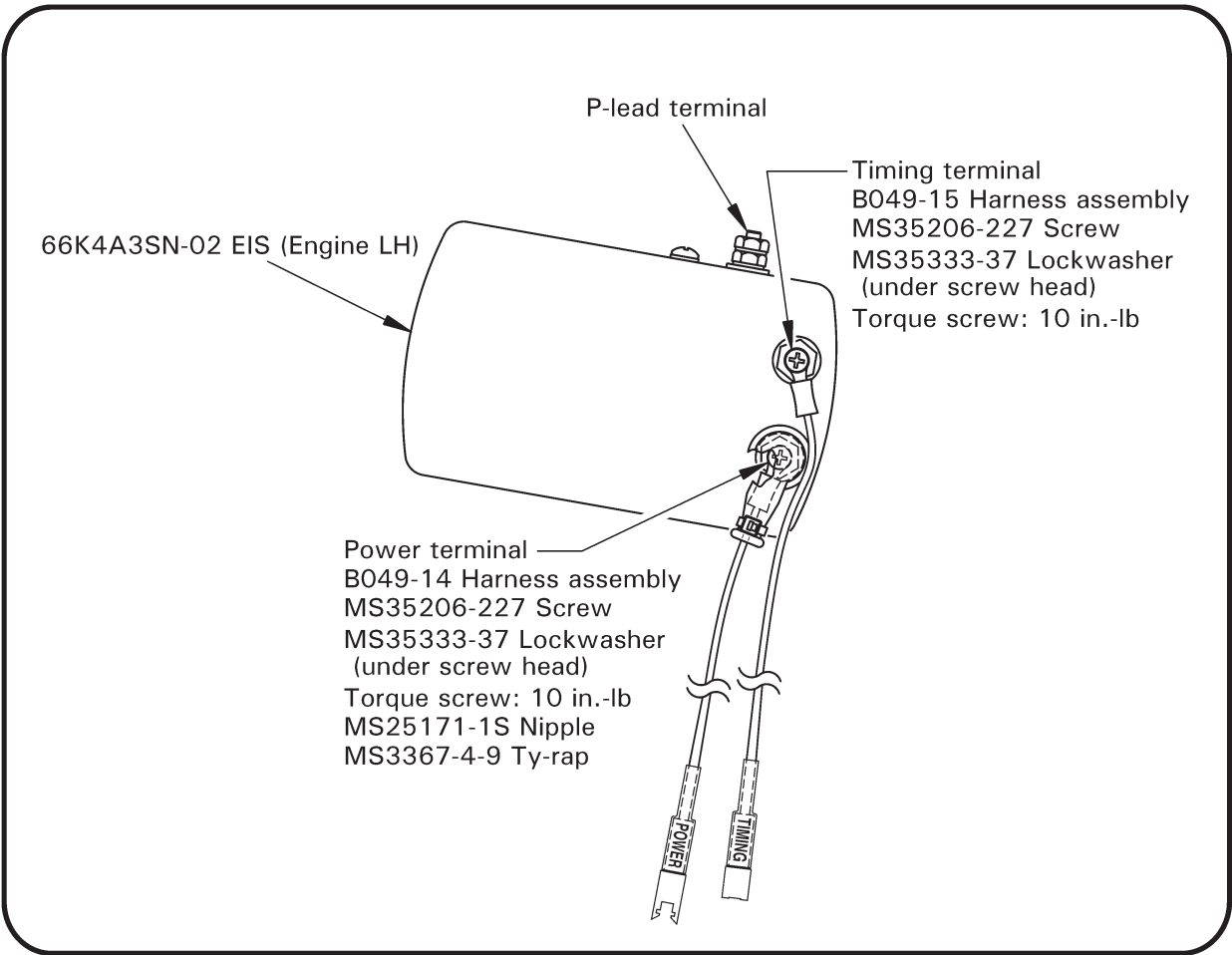
**Remove:**

Item	Weight	Long. Arm	Long. Moment	Lat. Arm	Lat. Moment
Retard Magneto Ignition System	-5.64 lb	97.89 in.	-552.081 in-lb	4.26 in.	-24.04 in-lb

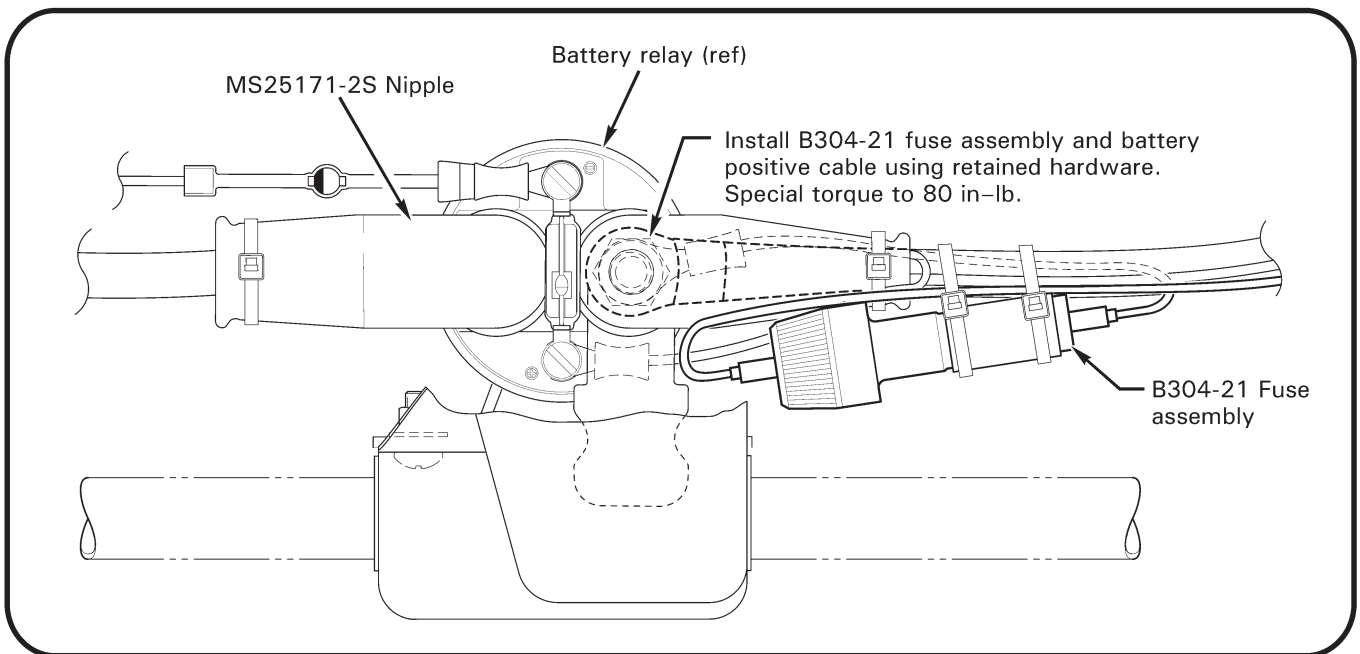
**Install:**

Item	Weight	Long. Arm	Long. Moment	Lat. Arm	Lat. Moment
Electronic Ignition System (Engine LH)	+4.01 lb	98.71 in.	+395.827 in-lb	4.01 in.	16.08 in-lb

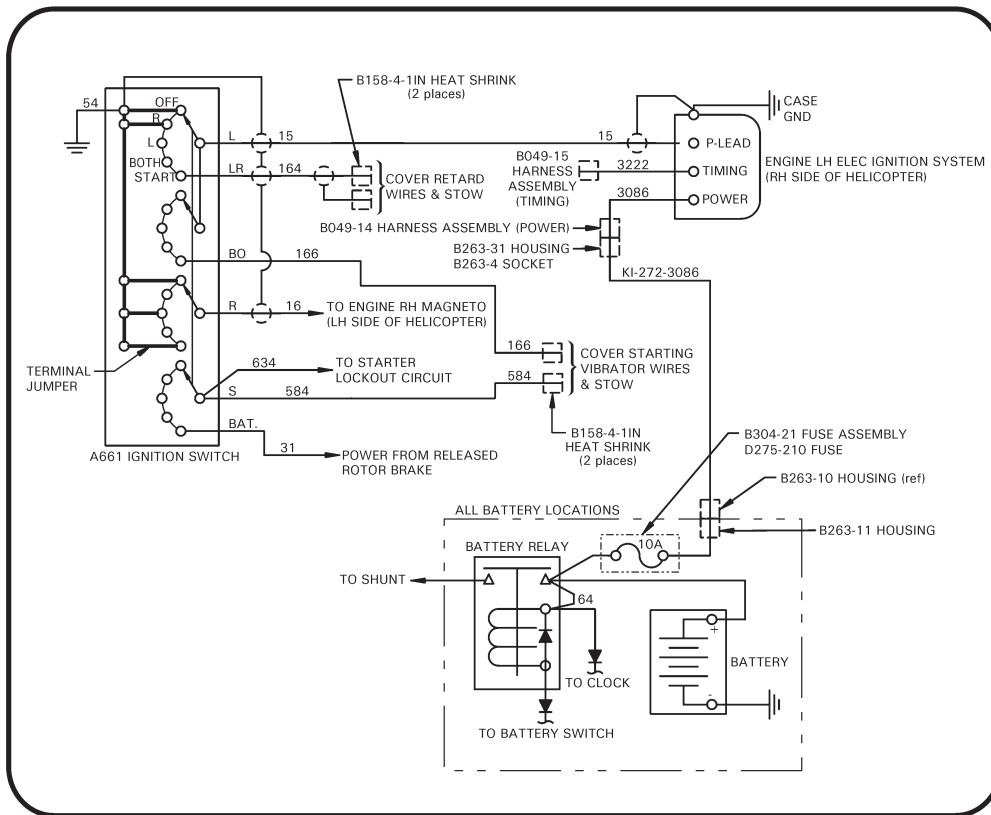
19. Make appropriate maintenance record entries.



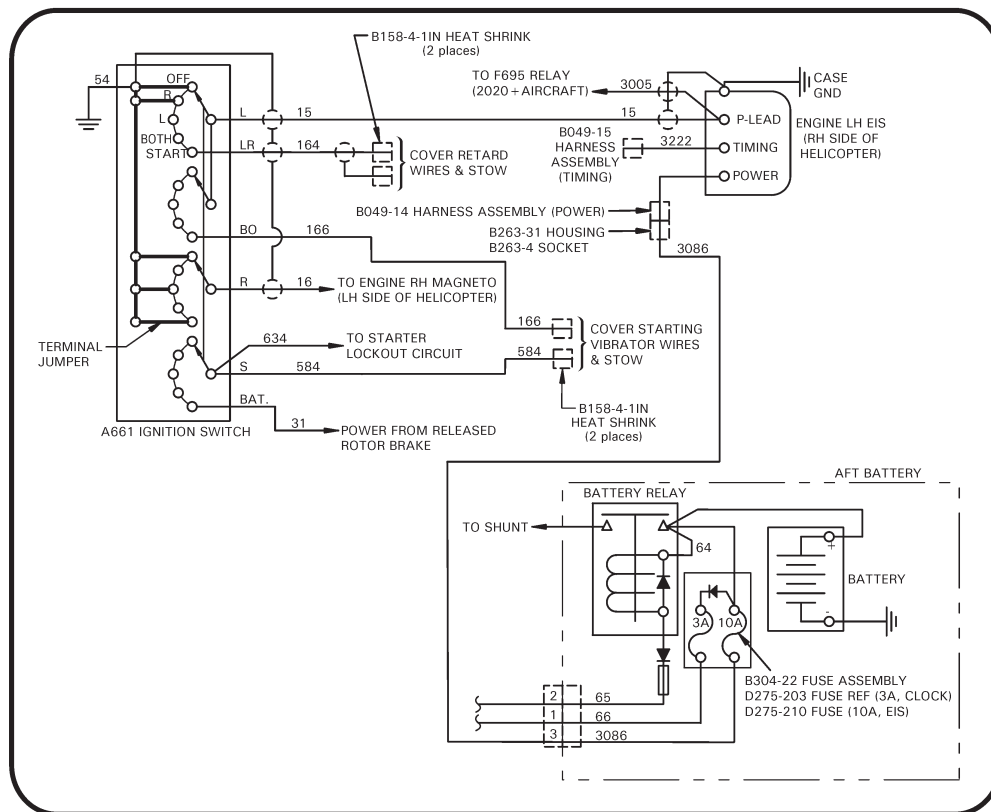
**Figure 1 Harness installations**



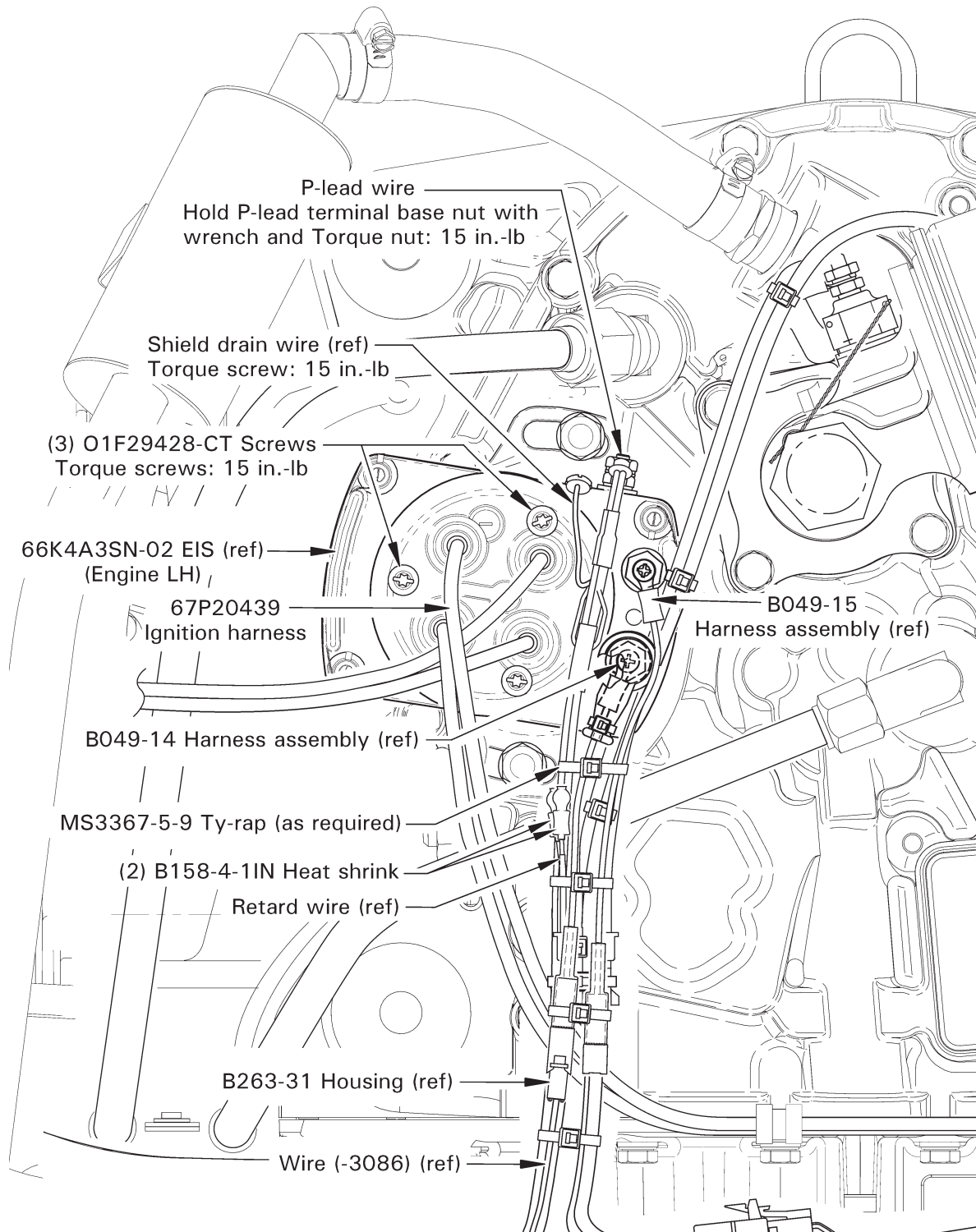
**Figure 2 B304-21 Fuse assembly installation**



**Figure 3A EIS Schematic**  
(S/N 4824 & prior)



**Figure 3B EIS schematic**  
(S/N 4825 & subsequent)



**Figure 4 EIS installation, engine LH**  
(View looking aft)