R44-series (28V) Cockpit Camera Installation Kit Instructions

*Eligible for installation on R44 Raven **I** S/N 2421 to 2624, Raven **II** S/N 14411 & prior, and Cadet S/N 30070 & prior, without (optional) air conditioning. Additionally, R44 Raven **I** S/N 2460 & prior may be eligible for this installation, with helicopter electrical system voltage verification. Refer to KI-275-6 for helicopters with (14V) electrical systems. Kit provides instruction for installing cockpit camera, antenna, and required wiring, including splicing camera audio wire with copilot headset audio wires.*

NOTE

Visit https://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 Support if parts are missing or damaged.

NOTE

Kit requires separating cabin interior pieces from bulkhead and roof, which may result in deterioration of the foam insulation. Kit does not contain replacement interior parts.

ITEM	PART NUMBER	KIT CONTENTS	QTY
1	KI-275-2Instr.	Kit Instructions	1
2	B158-2-1FT	Heat Shrink – Black, 1/8-inch diameter (1 foot length)	1
3	B158-3-1FT	Heat Shrink – Black, 3/16-inch diameter (1 foot length)	2
4	B260-3	Terminal – Ring	2
5	D844-2	Cabin Camera Harness Assembly	1
6	D844-4	Fuse Assembly (includes D275-205 fuse)	1
7	F039-2	Enclosure Assembly – Cabin Camera	1
8	F714-2	Antenna Assembly	1
9	F714-4	Flash Drive Assembly	1
10	AN526C832R6	Screw	1
11	MS3367-4-9+	Ty-Rap (Note: “+” in part number indicates 20-qty pack)	1
12	MS3367-5-9+	Ty-Rap (Note: “+” in part number indicates 20-qty pack)	1
13	MS3367-7-9+	Ty-Rap (Note: “+” in part number indicates 10-qty pack)	1
14	MS21042L08	Nut	1
15	MS27039C0806	Screw	2
16	MS35206-226	Screw	1
17	MS35206-232	Screw	1
18	NAS1149FN816P+	Washer (Note: “+” in part number indicates 20-qty pack)	1

Consumables

Refer to R44 Maintenance Manual (MM) § 23-70 for approved materials list.

- A257-8 Rubber lubricant
- B270-5 Sealant
- B270-8 Adhesive
- Solder (Sn60 or Sn63)

Special Tools:

- 90º angle drill
- Soldering iron
- Heat gun
- Small diameter (~3/32-inch), 3-foot long rigid metal rod, such as a welding rod
- Wire stripping and crimping tools

Kit Instructions

1. Ensure battery and avionics switches are off. Disconnect lead-acid battery per MM § 37-11 or lithium-ion battery per MM § 37-12, as applicable.

2. Refer to MM Figure 2-4. Remove access and inspection panels 3A thru 3E, 4C thru 4H, 5, 6A, and open circuit breaker panel.

3. Refer to Figure 1. Remove and discard screw securing C039 cover assembly to D118-1 (rotor brake) bracket assembly; remove and retain screws securing cover to C710 spacers. Lower cover and disconnect cover wiring from airframe harness. Remove cover.

WARNING

Review appropriate Safety Data Sheet (SDS) when working in proximity to hazardous materials. Specific recommendations for use of personal protective equipment are located in the SDS.

4. Refer to Figure 1. Layout dimension on exterior roof for drilling new hole as shown in Detail B, using straight edge to maintain lateral alignment with existing holes. Using a drill stop, drill (1) .169–.175 inch diameter hole. Deburr hole and clean up debris. Using a pick or similar tool, pierce headliner at newly drilled hole. Install new AN526C832R6 screw (provided).

5. Refer to Figure 1. Remove C710-3 spacer from center screw and secure screw to roof using (1) NAS1149FN816P washer and (1) MS21042L08 nut as shown in Detail A. Install spacer to newly installed AN526C832R6 screw.

6. Refer to IPC Figure 97-21. Remove and retain screws securing LH (copilot) C710 cover to C710-3 spacers. Remove and retain screws securing TJ-120 standard headset jack to cover.

NOTE

Parenthetic dash numbers, such as (-3081), indicate number marked on wiring insulation (if single conductor), or jacket (if multi-conductor and/or shielded).

7. Carefully separate headliner form roof as necessary to route wires (-3081) to headset jack from C039 cover location.

Kit Instructions (continued)

8. Refer to Figures 2 and 2A. Trim two 1/2 inch lengths of B158-3 heat shrink, and one 1 inch length of B158-2 heat shrink. Strip end of ORG, WHT, & BLU (-3081) wires.

   a. Desolder wire(s) from terminal #2 of TJ-120 jack; pigtail WHT wire (-3081) with desoldered wire(s). Slide one 1/2-inch piece of B158-3 heat shrink onto wires and resolder wire(s) to terminal #2.

   b. Desolder wire(s) from terminal #4 of TJ-120 jack; pigtail BLU wire (-3081) with desoldered wire(s). Slide one 1/2-inch piece of B158-3 heat shrink onto wires and resolder wire(s) to terminal #4.

   c. Solder splice ORG wire (-3081) to existing ORG wire (-1795) and if Bose® jack is installed, solder all three ORG wires together. Slide the 1-inch piece of B158-2 heat shrink onto solder spliced ORG wires.

   d. Slide heat shrink over soldered areas and apply heat using heat gun. Verify security.

9. Install TJ-120 jack to LH (copilot) C710 cover using retained screws. Install cover to C710-3 spacers using retained hardware.

10. Refer to R44 IPC Figure 96-83. Carefully connect RV-BATT-LIPO500 Battery connector to circuit board.

11. Refer to Figure 2. Connect D269-6 receptacle of D844-2 harness assembly to camera plug in F039-2 enclosure assembly; secure connector using MS3367-4-9 ty-rap. Carefully separate headliner from roof only as necessary to access antenna installation location. Connect F714-2 antenna assembly to fitting in enclosure assembly and route antenna forward. Position antenna with metal side down, opposite of roof surface. Remove backing from tape on antenna and press in place on roof.

12. Refer to Figure 3 and 4. Using a rigid metal rod carefully route upward behind bulkhead foam insulation on LH (seat back) side, along existing wire bundle, then forward along left side of helicopter centerline. Secure wire harness wires to rod and carefully retract rod downwards, routing above 220-242400-09 clips (see R44 Illustrated Parts Catalog [IPC] Figure 63-11).

13. As required, install headliner to roof using B270-8 adhesive, tucking antenna wire inside headliner. Install enclosure assembly to C710-3 spacers using retained screws, and to D118-1 bracket assembly using MS35206-232 screw. Secure enclosure wires to existing wires using appropriately-sized ty-raps. Cinch ty-raps until snug without over-tightening, and trim tips flush with head.

14. Refer to Figure 4. Route D844-2 harness wire (-3080) to ground stud on C351-1 LH aft seat back brace. Cut wire to length and strip end. Install B260-3 ring terminal to wire. Inspect crimp per MM § 23-84. Verify security of terminal. Install ring terminal to ground stud.

NOTE
A257-8 lubricant may be used to aid routing of wire thru clamps.

15. Refer to Figure 4. Route D844-2 harness wire (-3048) to engine oil pressure switch. Follow main harness aft thru firewall, moving B270-5 sealant as required. Follow wire bundle to oil pressure switch. Trim wire to length and strip end. Install B260-3 ring terminal on wire. Inspect crimp per MM § 23-84. Verify security of terminal. Install ring terminal to “NC” terminal on oil pressure switch. Ensure seal around wire bundle and firewall is restored, adding B270-5 sealant as required.

Kit Instructions (continued)

16. Refer to Figure 5. Select available location on main bus bar. Remove existing installation screw and lockwasher from selected location; discard screw and retain lockwasher. Install D844-4 fuse assembly ring terminal to bus bar using new MS35206-226 screw and retained lockwasher. Secure fuse holder along adjacent wire harness using appropriately-sized ty-raps. Cinch ty-raps until snug without over-tightening, and trim tips flush.

17. Refer to Figure 4. Route D844-2 harness wire (-3079) to main bus as shown, along airframe harness to circuit breaker panel. Carefully remove ty-raps from airfame harness and secure wire (-3079) to airframe harness using appropriately sized ty-rap. Cinch ty-rap until snug without over tightening, and trim tip flush with head. Strip wire and install on D844-4 fuse assembly. Inspect crimp per MM § 23-84. Verify security.

18. Install insulation per MM §15.400, as required.

19. Install access and inspection panels, as required.

20. Install aft seat back, engine aft belly and both side cowlings.

21. Connect lead-acid battery per MM § 37-11 or lithium-ion battery per MM § 37-12, as applicable. Turn on battery switch.

22. Function check camera installation:

    a. Refer to Cockpit Camera Quick Start Guide available at https://robinsonheli.com.

    b. Refer to Figure 3. Insert F714-4 flash drive assembly to USB port of F039-2 enclosure. Toggle helicopter battery switch ON for minimum 30 seconds; video will record automatically. While video is recording, activate & route an audio source (such as ATIS) to copilot headset. Toggle helicopter battery switch OFF.

    c. Transfer flash drive to a computer and view video. If video is level with cockpit, camera lens is properly adjusted. If no audio is heard, check newly installed wiring, with attention to splices.

    d. If horizon slants to the right (as shown in Figure 6), adjust angle by loosening two NAS1352-04-4 screws holding lens (see Figure 3) and rotate lens counterclockwise while facing lens; if horizon slants to the left, rotate lens clockwise. Tighten screws. Repeat steps b & c.

23. Revise helicopter's Weight and Balance Record in Pilot's Operating Handbook (POH) Section 6 to reflect this installation by incorporating the following data:

    Add:

Item	Weight	Long. Arm	Long. Moment	Lat. Arm	Lat. Moment
KI-275-2 Cockpit Camera Installation Kit	+0.48 lb	68.18 in.	+32.72 in-lb	-2.28 in.	-1.10 in-lb

24. Make appropriate maintenance record entries.

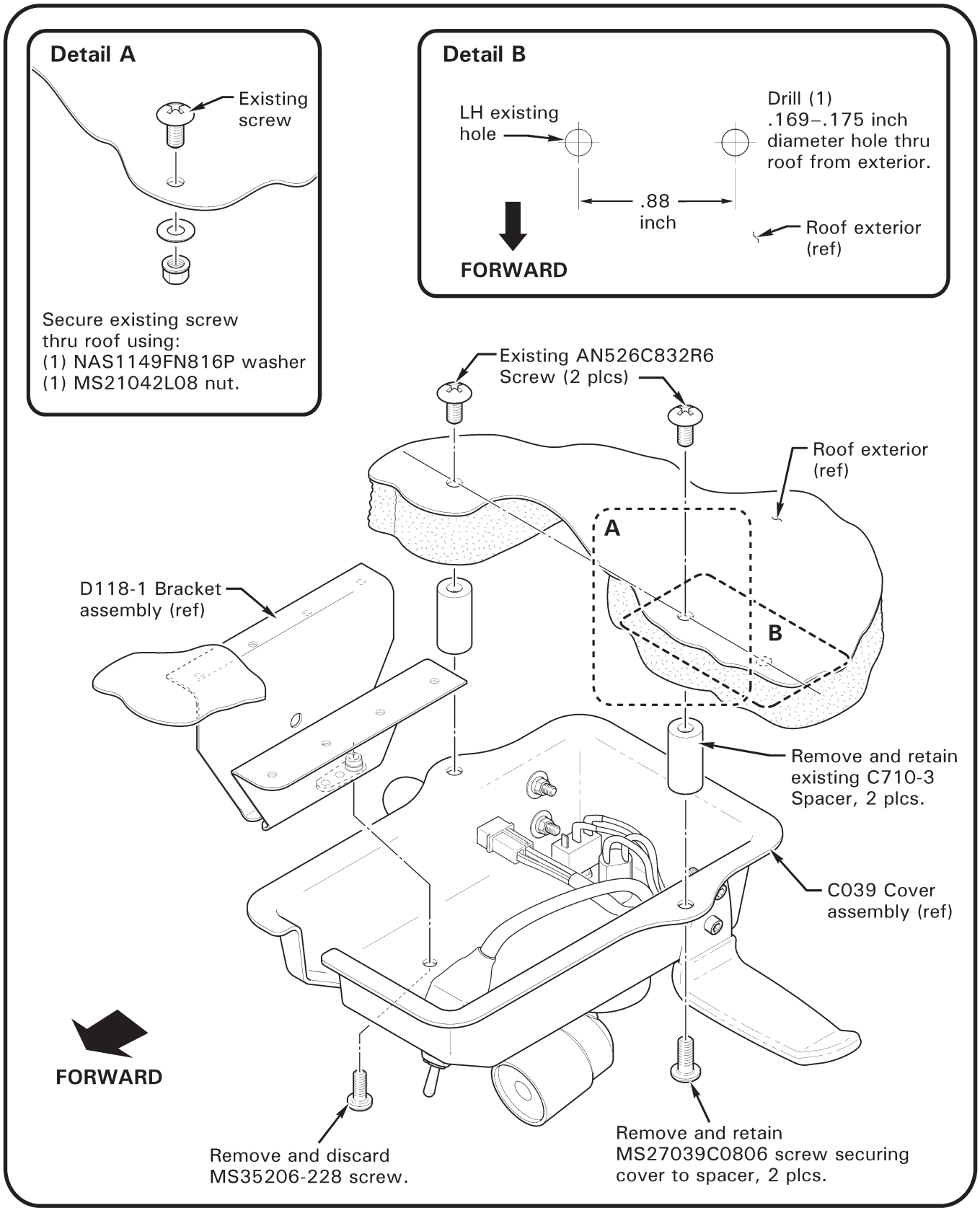


FIGURE 1 Existing C039 cover assembly installation
(includes new installation hole location)

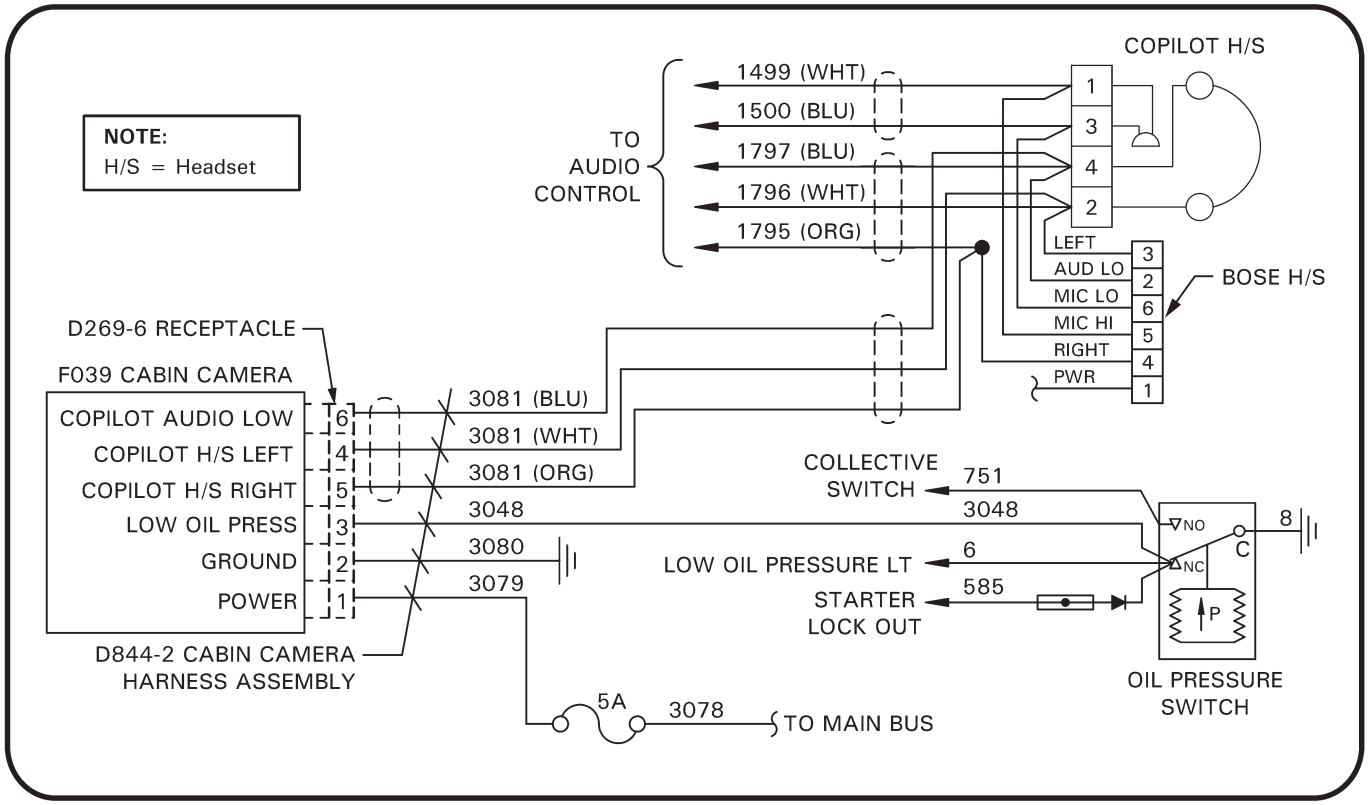


FIGURE 2 Wiring schematic
(typical; see MM § 14.00 for additional schematics)

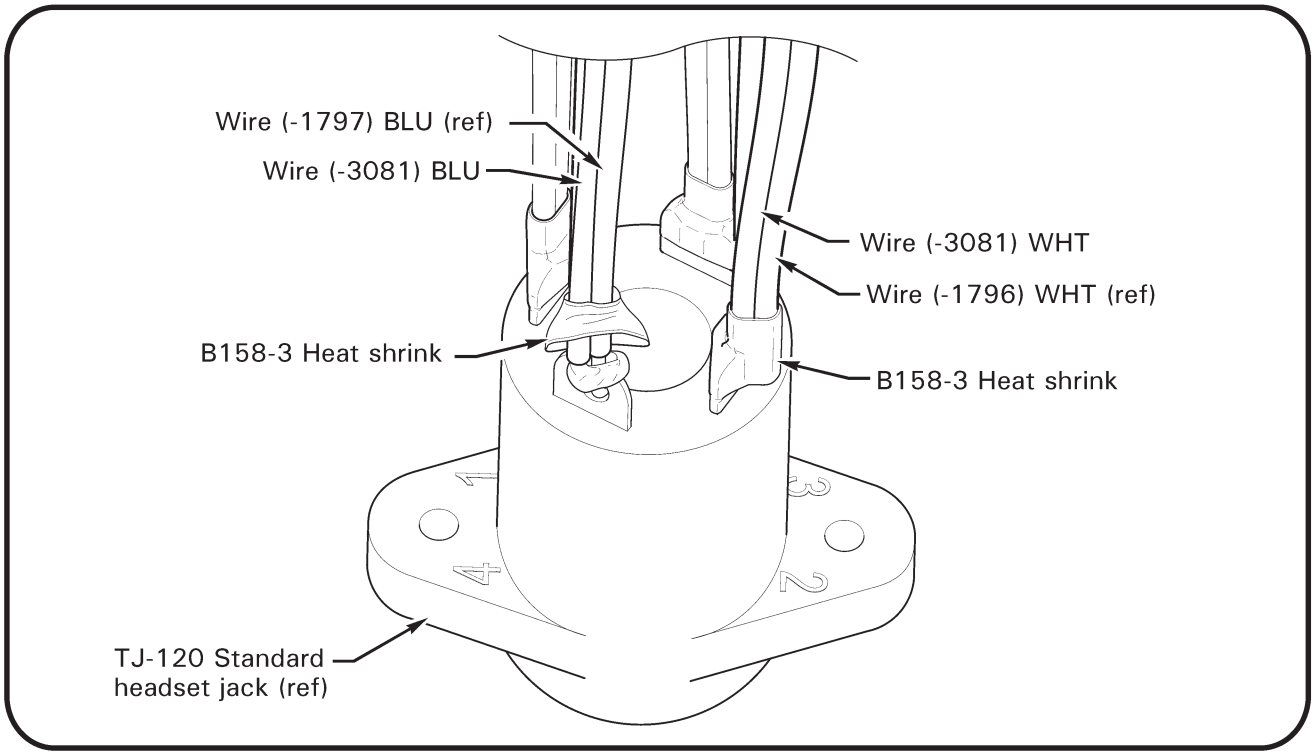


FIGURE 2A Solder splice at TJ-120 jack
(ORG wire splice not shown)

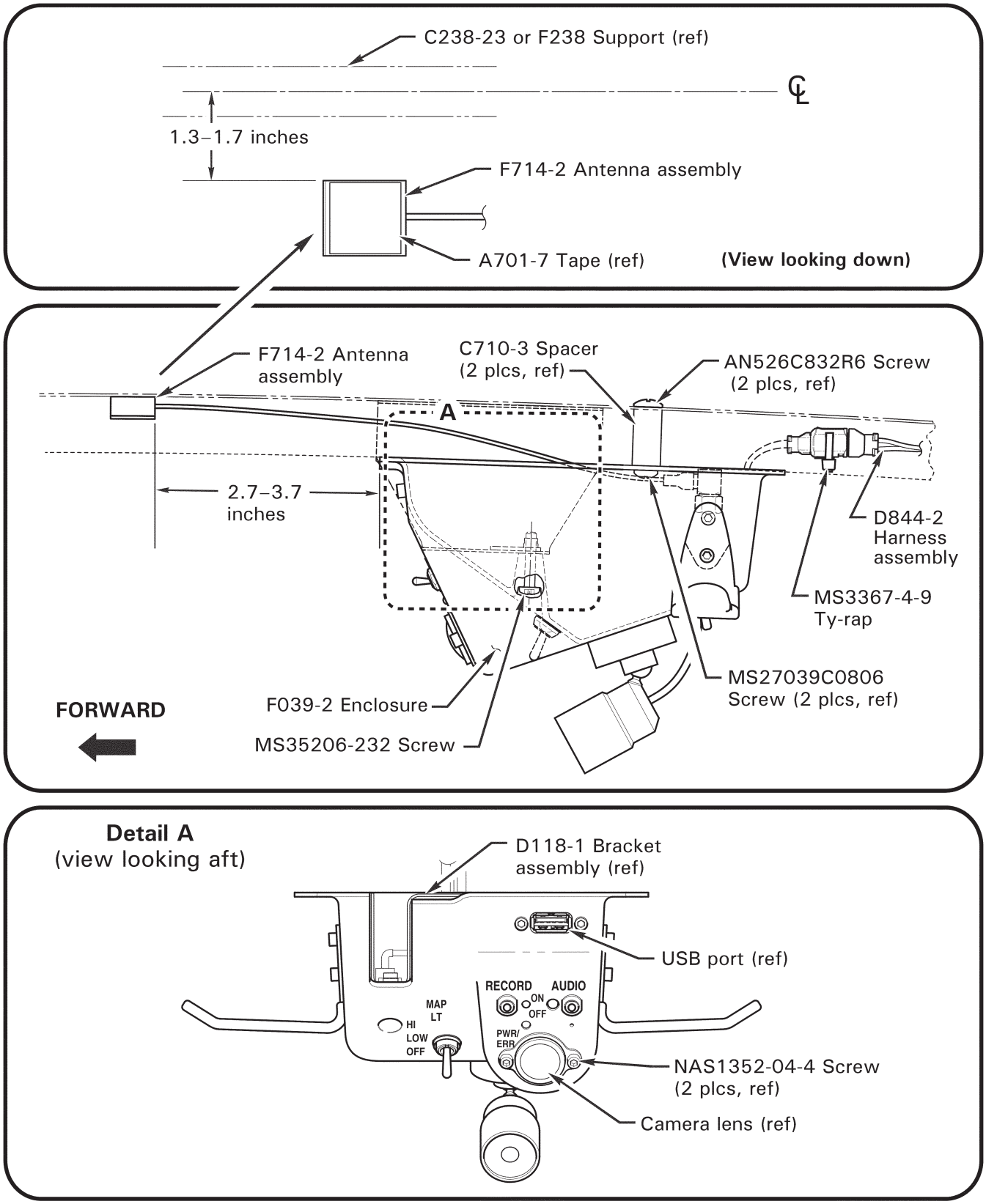


FIGURE 3 Connecting camera to D844-2 harness

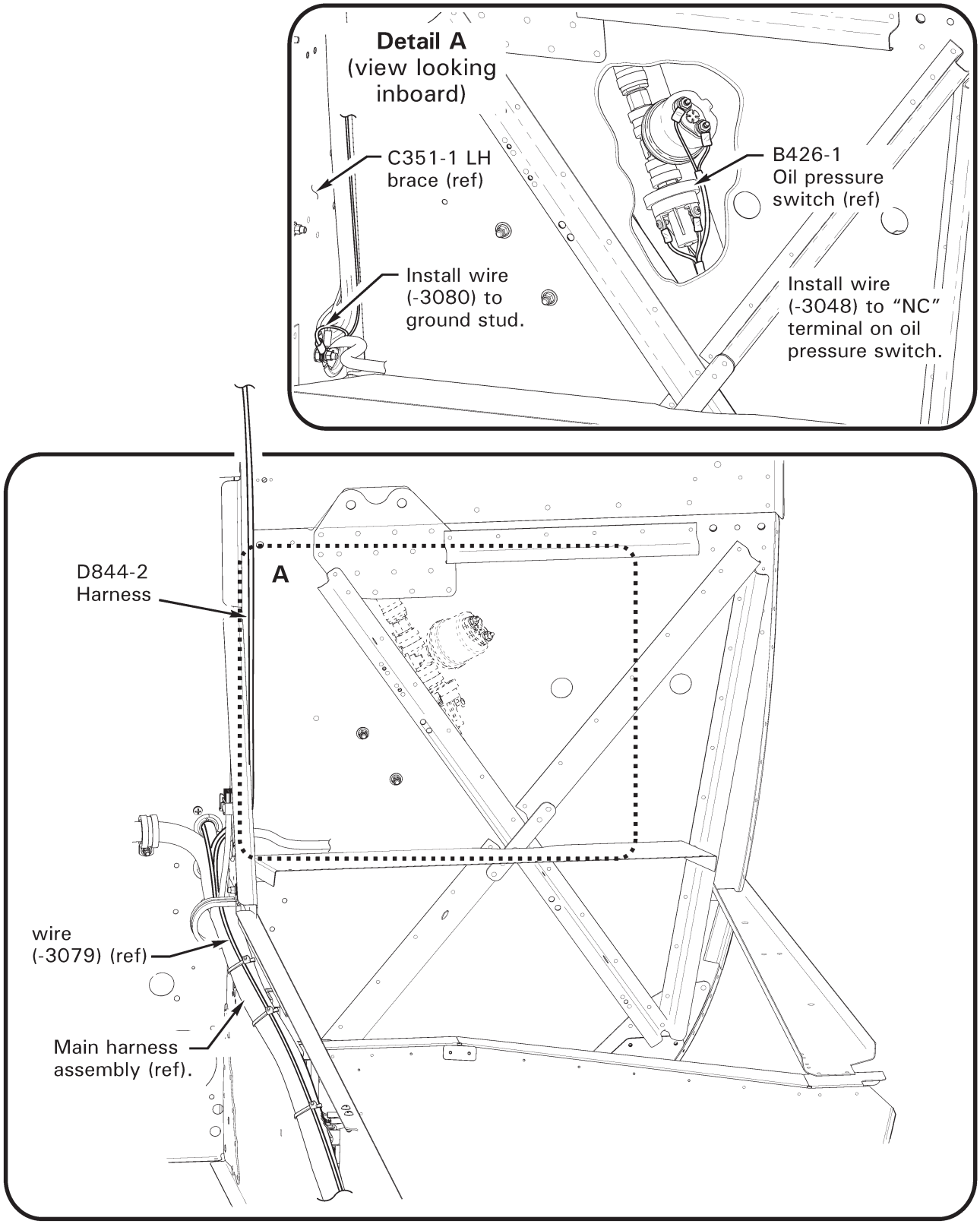


FIGURE 4 Terminating locations for D844-2 harness wiring
(view looking aft)

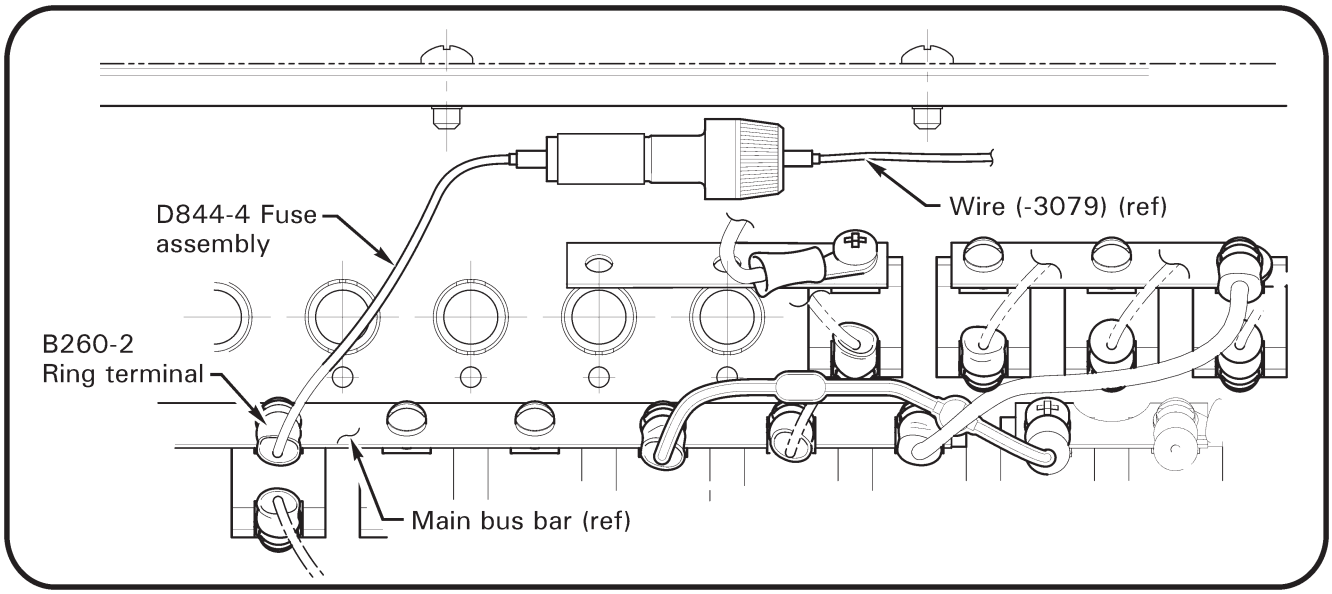


FIGURE 5 Fuse block assembly installation
(location shown for D844-4 is typical)

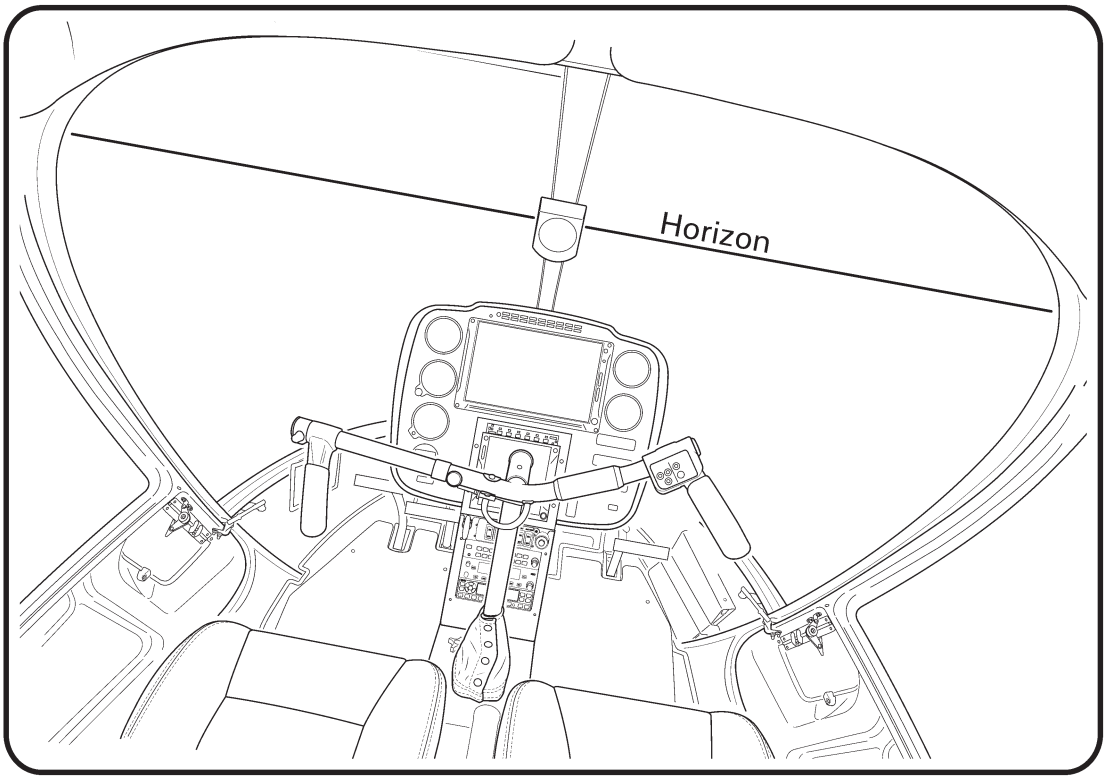


FIGURE 6 Camera view angle
(angle shown requires adjustment)