R22-series Cockpit Camera Installation Kit Instructions

Eligible for installation on R22 helicopter S/N 2969 thru 4824, and earlier helicopters equipped with ICS or audio panel installations. Helicopters equipped with "hot mic" toggle switch are not compatible. 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-275-1Instr.	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	F039-1	Enclosure Assembly – Cockpit Camera	1
8	F714-2	Antenna Assembly	1
9	F714-4	Flash Drive Assembly	1
10	MT640-1	Key (headset jack)	1
11	2653	Hole Plug	2
12	MS3367-4-9+	Ty-Rap (Note: "+" in part number indicates 20-qty pack)	1
13	MS3367-5-9+	Ty-Rap (Note: "+" in part number indicates 20-qty pack)	1
14	MS3367-7-9+	Ty-Rap (Note: "+" in part number indicates 10-qty pack)	1
15	MS35206-226	Screw	1
16	NAS1352-04-6	Screw	4

Consumables

Refer to R22 Maintenance Manual (MM) § 23-70 for approved materials list.

- A257-8 Rubber lubricant
- B270-5 Sealant
- B270-8 Adhesive
- B270-20 Adhesive
- Solder (Sn60 or Sn63)

Special Tools:

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

Kit Instructions

1. Ensure battery and avionics switches are off. Disconnect battery per MM § 33-10.

2. Refer to MM Figure 2-3A. Remove access and inspection panels 4A thru 4D. Remove RH seat back assembly per MM § 15-22. Open circuit breaker panel.

CAUTION

Standard headset jack installation screws are installed using Loctite®. Care must be taken to remove screws without cracking jack. Apply heat to end of screw from inside enclosure using a soldering iron until screw can be rotated with minimum force (less than 4 in-lb of torque). If resistance occurs before screw is completely removed, repeat heating process.

3. Refer to R22 Illustrated Parts Catalog (IPC) Figure 33-15. Remove and retain hardware securing A712 cover to roof. Carefully lower cover; remove and retain spacers. Mark headset jacks with installed positions, LH & RH; remove headset jacks from cover. Remove and retain hardware securing maplight ground wire to bulkhead; disconnect maplight switch from airframe harness. Remove and discard cover.

NOTE

Parenthetic dash numbers, such as (-2886), indicate number marked on wiring insulation (if single conductor), or jacket (if multi-conductor and/or shielded).

4. Refer to Figures 1 and 1A. 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.

Kit Instructions (continued)

5. Install TJ-120 headset jacks in correct position (as marked when removed), using (4) NAS1352-04-6 screws with B270-20 adhesive sparingly applied to threads; torque to 2 in-lb.

6. Refer to R22 IPC Figure 96-37. Carefully connect RV-BATT-LIPO500 Battery connector to circuit board.

7. Refer to Figure 2. Connect D269-6 receptacle of D844-2 harness assembly to camera plug in F039-1 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.

8. Install spotlight ground wire (-1858) ring terminal to bulkhead using retained hardware. If *not* equipped with Bose® headset jacks, install 2653 hole plugs in left & right aft headset installation holes of enclosure assembly and skip to step 10.

9. Install Bose® headset jacks in correct position (as marked when removed), locating keyway per Figure 2**.** Hold jack in position using 1/2 inch (open-end) wrench on housing flats. Position dress nut to achieve dimension as shown in Figure 2, Detail A; snug hex nut to enclosure. Torque dress nut to 14 in-lb using MT640-1 key, fitted to a 6-point, 3/8 inch socket. Verify housing protrudes beyond dress nut per Figure 2, Detail A.

10. Refer to Figure 3 and 4. Using a rigid metal rod carefully route upward behind bulkhead foam insulation on RH (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.

11. Install enclosure assembly to cabin roof using retained hardware and A130-34 spacers. 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.

12. Refer to Figure 4. Route D844-2 harness wire (-3080) to ground stud on A351-2 RH 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.

13. 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)

14. 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.

15. 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. Trim and strip wire (-3079) to length. Crimp on D844-4 fuse assembly. Inspect crimp per MM § 23-84. Verify security.

16. Install insulation per MM § 15.40, as required.

17. Install access and inspection panels, as required.

18. Install RH seat back assembly per MM § 15-22.

19. Connect battery per MM § 33-10. Turn on battery switch.

20. 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 F039-1 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.

21. 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-275-1 Cockpit Camera Installation Kit	+0.42 lb	92.26 in.	+38.74 in-lb	-2.61 in.	-1.10 in-lb

22. Make appropriate maintenance record entries.

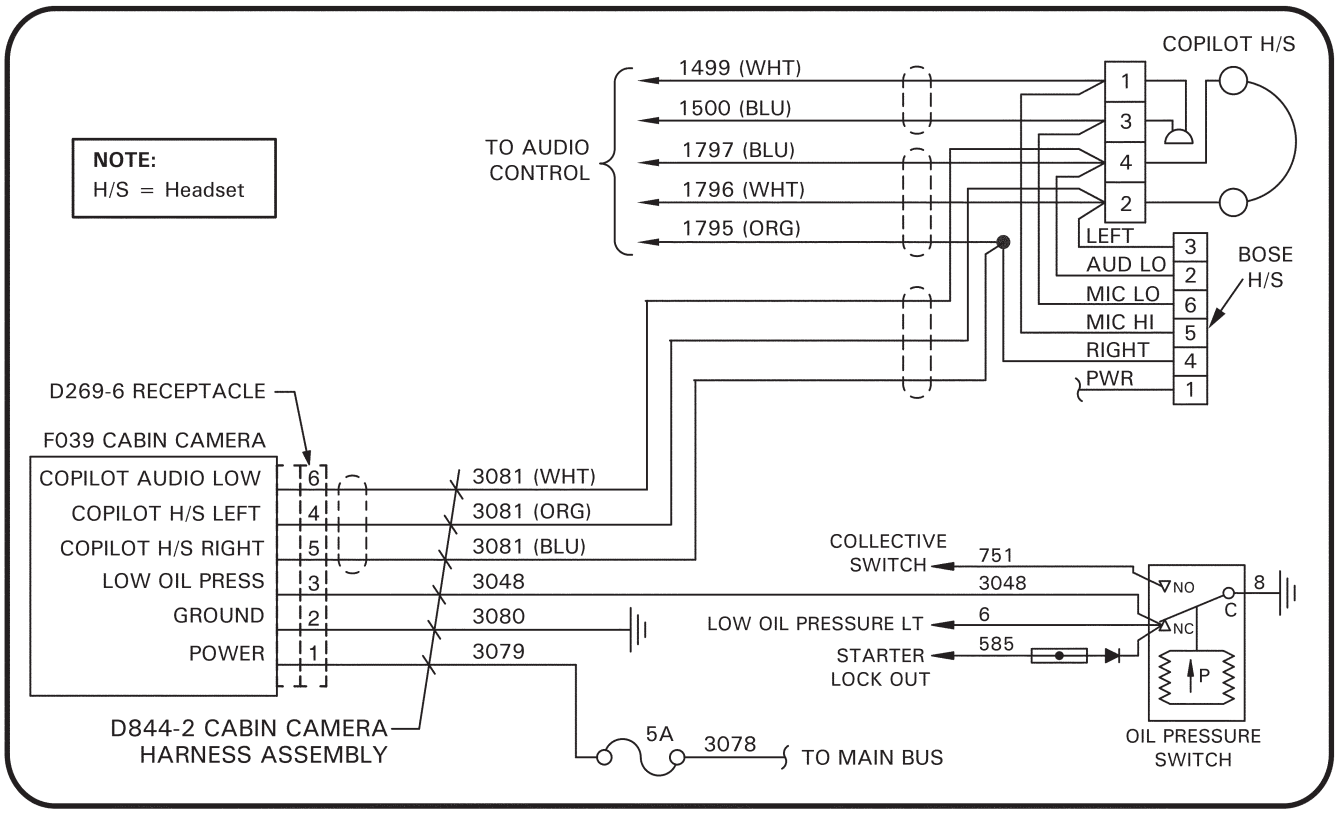


FIGURE 1 Wiring schematic
(typical; see MM § 14.800 for additional schematics)

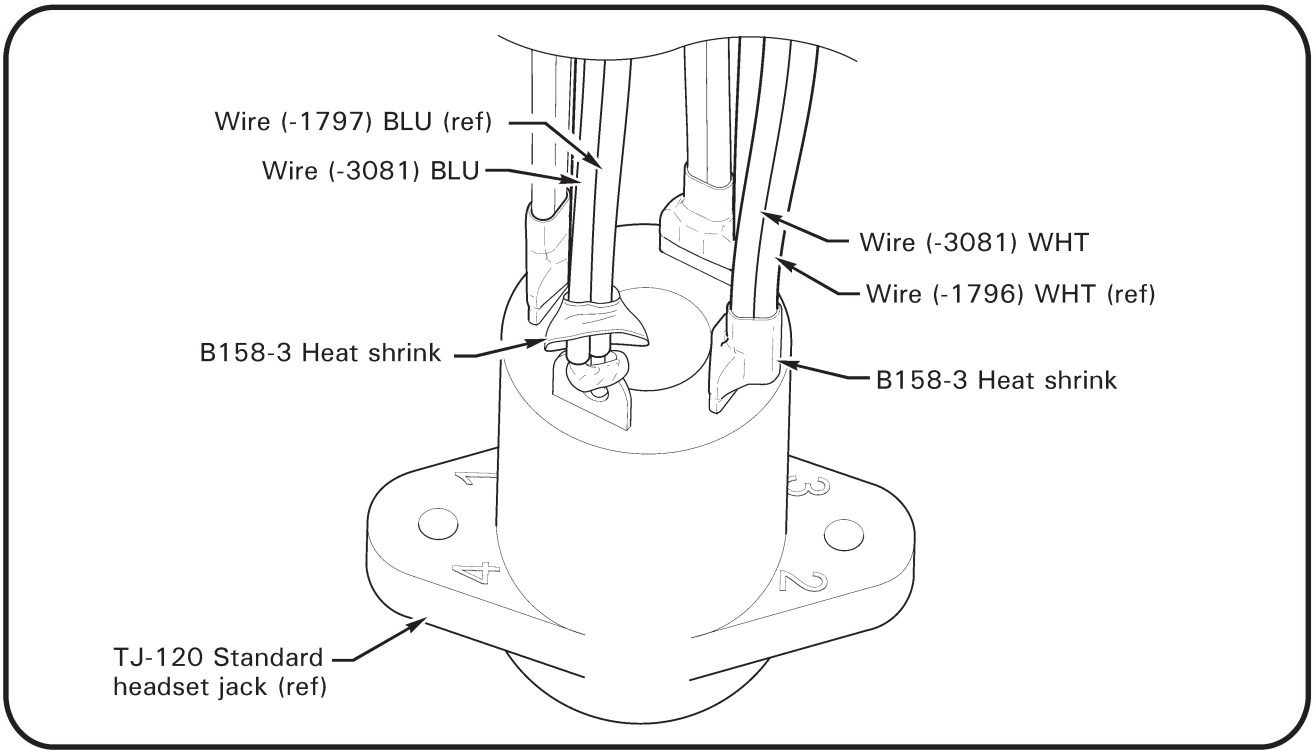


FIGURE 1A Solder splice at TJ-120 jack
(ORG wire splice not shown)

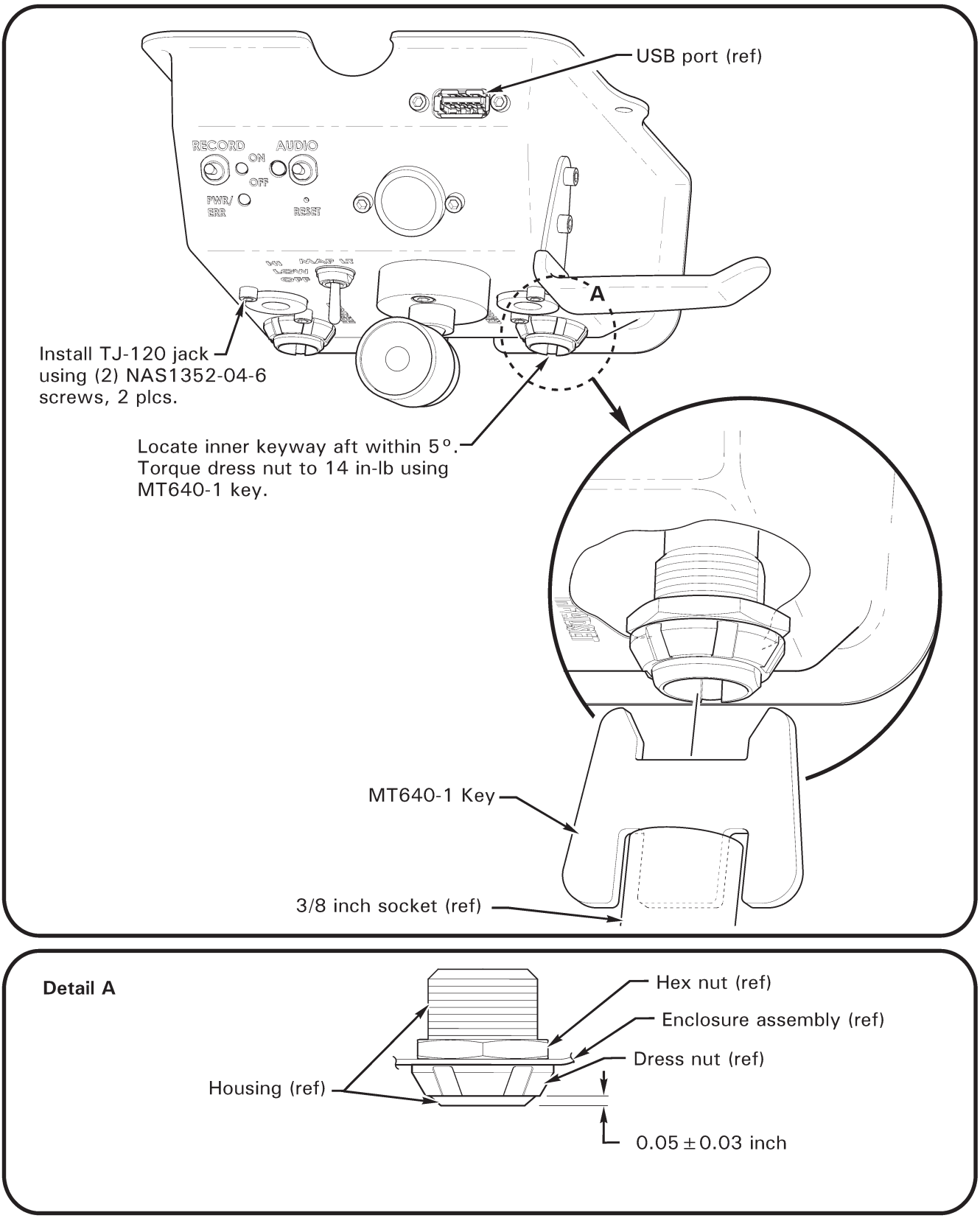


FIGURE 2 Headset jacks installation

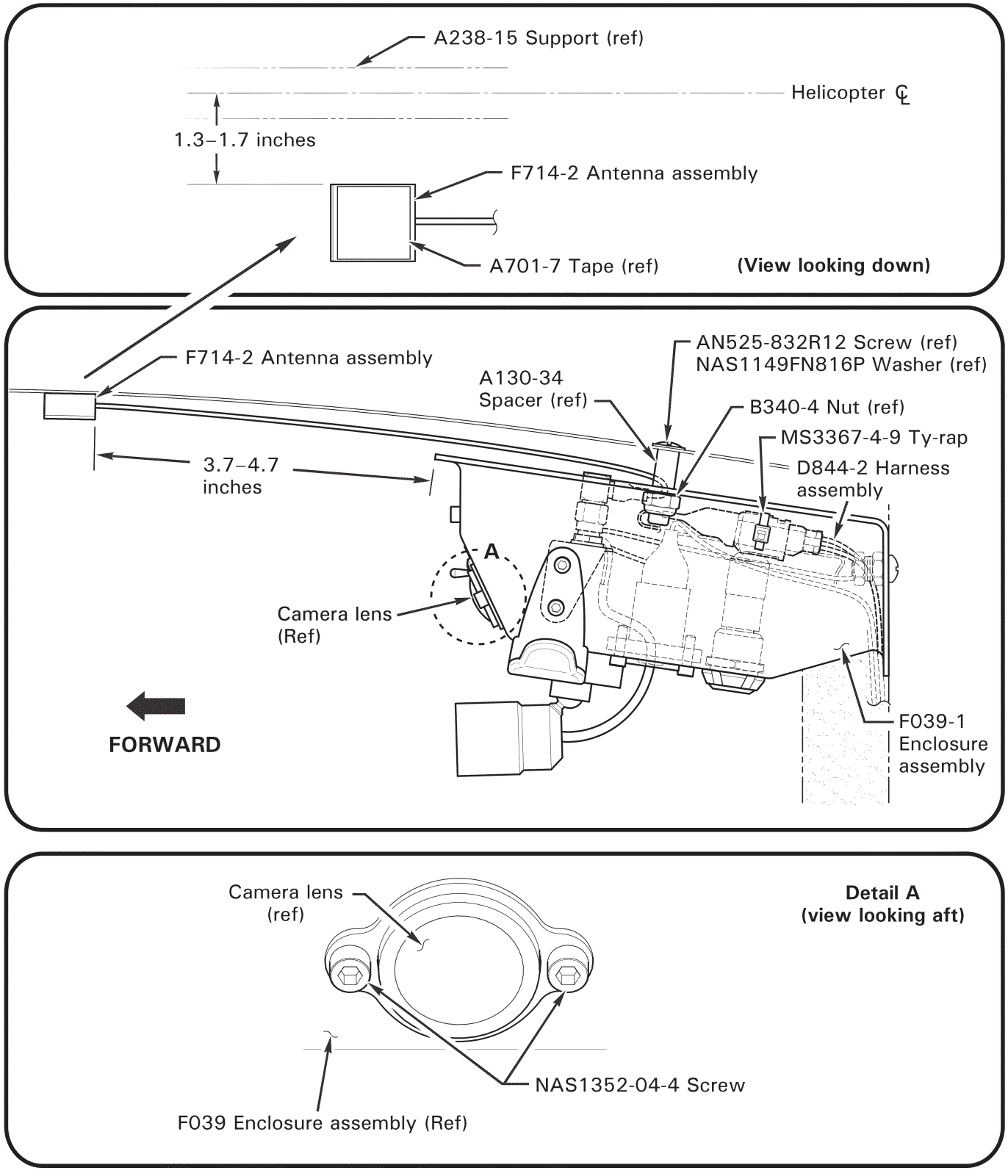


FIGURE 3 Enclosure and antenna installation

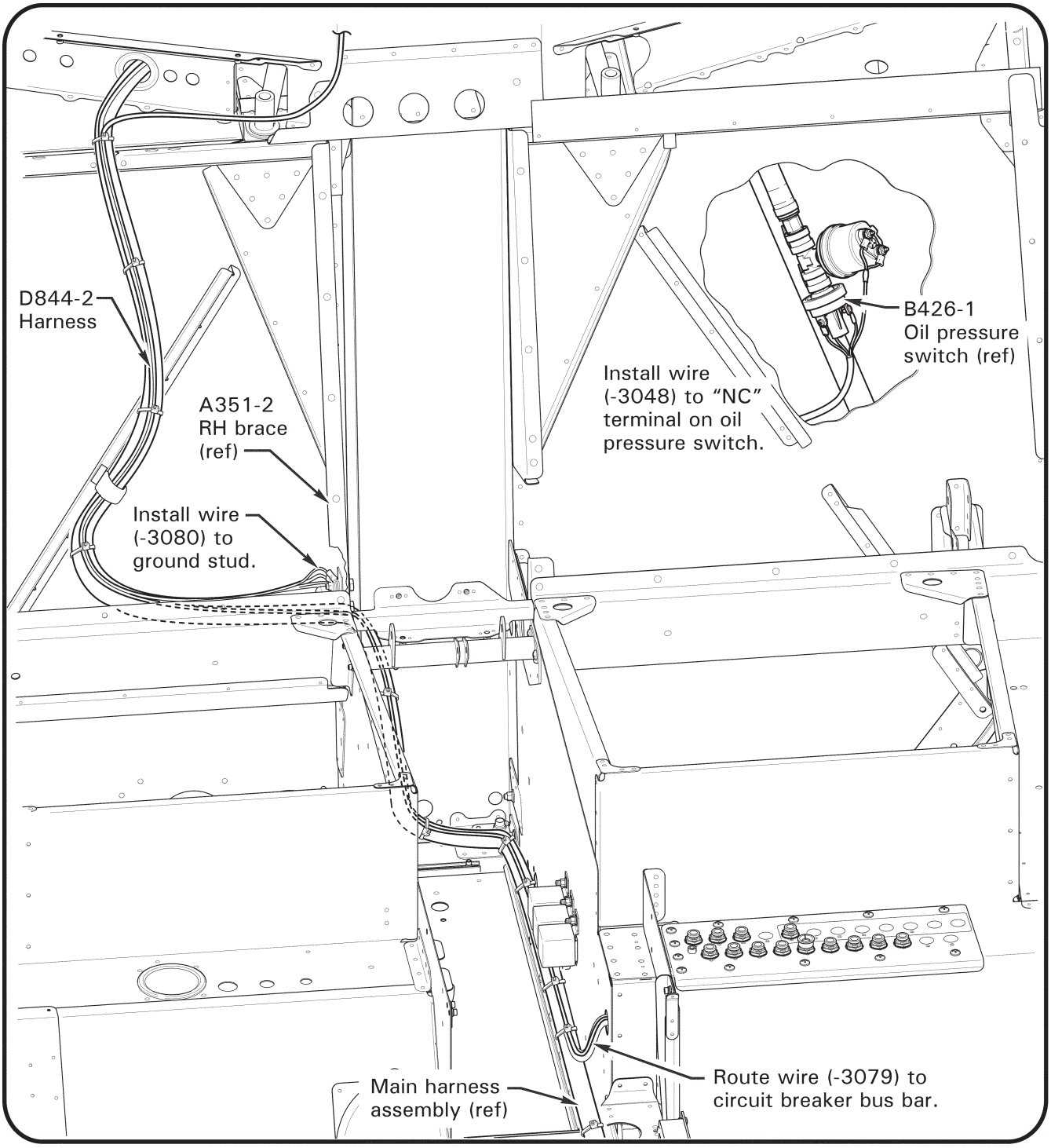


FIGURE 4 Terminating locations for D844-2 harness wiring
(view looking aft)

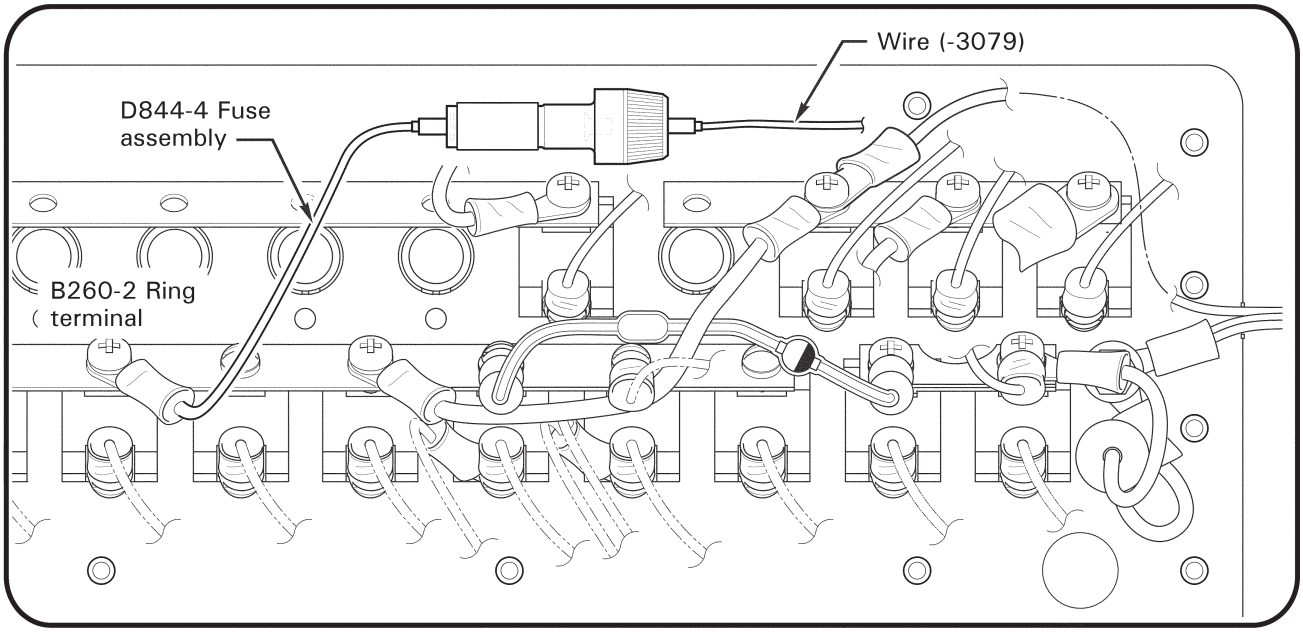


FIGURE 5 Fuse block assembly installation
(location shown for D844-4 is typical)

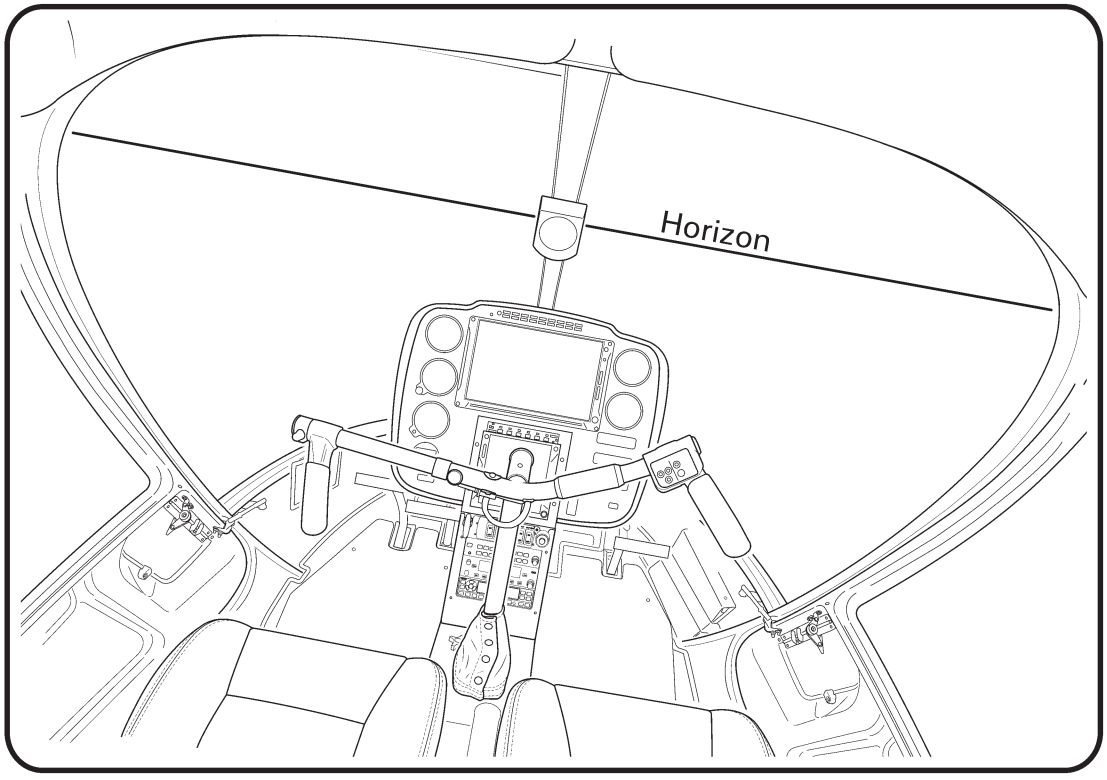


FIGURE 6 Camera view angle
(angle shown requires adjustment)