

28V Heated Pitot Tube Installation Kit Instructions

Kit replaces existing pitot tube with heated pitot tube installation. Eligible for installation on (28V) R44-series helicopters only.

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 Service if parts are missing or damaged.

ITEM	PART NUMBER	KIT CONTENTS	QTY
1	KI-104-2Instr.	Kit Instructions	1
2	A448-10	Bus Bar – 4 Hole	1
3	A880-304	Sleeve	1
4	B260-2	Terminal – Ring	2
5	B266-4	Sleeving – Expandable (1-foot length).	2
6	B297-10	Circuit Breaker – 10 Amp	1
7	B300-4	Switch Assembly – Toggle	1
8	C654-26	Decal – “PITOT HEAT”	1
9	D339-1	Mount	1
10	D339-2	Brace	1
11	D339-3	Nameplate	1
12	D339-4	Tube	1
13	D340-2	Pitot Tube Assembly – Heated	1
14	D341-710	Wire – 18-gage, unshielded (60 inch length, marked “-710”)	1
15	15-4-N-O	Union	1
16	AN502-6-6	Screw	3
17	AN818-4D	Nut	1
18	MS3367-4-9+	Ty-rap (Note: “+” in part number indicates 20-qty pack)	1
19	MS3367-5-9+	Ty-rap (Note: “+” in contents part number indicates 20-qty pack)	1
20	MS3367-6-0	Ty-rap	20
21	MS3367-7-9+	Ty-rap (Note: “+” in contents part number indicates 10-qty pack)	1
22	MS20426AD3-4+	Rivet (Note: “+” in part number indicates 50-qty pack)	1
23	MS20470AD4-4+	Rivet (Note: “+” in part number indicates 50-qty pack)	1
24	MS21069L08	Nutplate	2
25	MS21266-1N	Grommet (12-inch length)	1
26	MS21919WDG4	Clamp	1
27	MS27039C0806	Screw	2
28	MS35206-226	Screw	1
29	MS35489-6	Grommet	1

ITEM	PART NUMBER	KIT CONTENTS (continued)	QTY
30	MS35489-17X	Grommet	1
31	NAS620-6+	Washer (Note: "+" in part number indicates 20-qty pack)	1

Consumables

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

- B270-8 Adhesive
- Primer paint
- 0.032-inch diameter safety wire

Special Tools

- Drilling, deburring, and countersinking tools

Kit Instructions

NOTE
Unless otherwise specified, torque all fasteners per MM § 23-32.

1. Turn battery switch OFF. Disconnect negative (ground) cable from battery per MM § 37-10.
2. Refer to R44 Illustrated Parts Catalog (IPC) Figures 6-5, 6-13, & 67-1. Remove C445-1 forward tunnel cover, C444 cyclic box cover, and C794-1 forward belly panel.
3. Refer to Figure 1. Locate and drill 0.468–0.475 inch diameter hole in C444 cyclic box cover. Deburr hole & clean up debris. Install B300-4 switch and D339-3 nameplate as shown in Detail A.
4. Trim MS21266-1N grommet to fit cyclic box edge (approximately 2.5 inches). Install grommet using B270-8 adhesive as shown in Figure 1.
5. Open circuit breaker panel. Install B297-10 (10-amp) circuit breaker in open hole labeled "PITOT HEAT"; connect breaker to bus bar. If no hole is labeled, use any open hole and label using C654-26 decal. If existing bus bar does not extend to newly installed breaker, trim supplied A448-10 bus bar to length (trimming end 0.2 inch from adjacent screw hole center) to extend to nearest avionics bus bar-breaker connection. Connect new bus bar to "PITOT HEAT" breaker and attach opposite end to nearest avionics circuit breaker with MS35206-226 screw, overlapping existing bus bar.

NOTE
Parenthetic dash numbers, such as (-709), indicate number marked on wiring insulation (if single conductor), or jacket (if multi-conductor and/or shielded).

6. Locate wires oriented laterally on chin, underneath cyclic box. Cut ty-raps securing wires, as required to identify & free wire (-709). Remove heat shrink covering existing B260-2 ring terminal on end of wire (-709). Route terminal end of wire (-709) laterally beneath heater duct, then up keel panel along O.A.T. gage harness to cyclic box. Install B266-4 sleeving on wire (-709) and connect to middle tab on B300-4 switch.

Kit Instructions (continued)

7. Strip end of supplied wire D341-710 and crimp on B260-2 terminal. Inspect crimp per MM § 23-84 and verify security of terminal. Install terminal to aft tab of B300-4 switch. Route wire (-710) thru B266-4 sleeving, adjacent to wire (-709). Continue routing wire (-710) along main harness to circuit breaker panel.

R44 II only: Replace existing MS21919WDG3 clamp (securing O.A.T. gage wiring) with MS21919WDG4 clamp and secure both O.A.T. gage and heated pitot switch wires.

Install cyclic cover. Secure wiring in tunnel with appropriately-sized ty-raps as required.

8. Route wire (-710) along circuit breaker panel wiring to "PITOT HEAT" circuit breaker. Secure wires using appropriately-sized ty-raps. Trim wire (-710) to length, as required. Strip end of wire (-710) and crimp on B260-2 terminal. Inspect crimp per MM § 23-84 and verify security of terminal. Connect terminal to breaker tab opposite bus bar. Close and secure circuit breaker panel.
9. Refer to Figure 2. Open mast fairing and remove pitot tube and elbow. Enlarge existing pitot tube hole in mast fairing to 0.85–0.91 inch diameter. Deburr hole and clean up debris. Alodine and/or prime/paint hole edge as described in NOTE below. Install MS35489-17X grommet.

NOTE

After trimming or filing aluminum, finish edges as follows: Deburr trimmed edges with 220-grit or finer wet-or-dry aluminum oxide abrasive paper. Solvent-clean deburred edge and apply Bonderite M-CR 1132, or Bonderite M-CR 1201 Aero in accordance with manufacturer's instructions. Apply epoxy primer to dry edge. Touch up with helicopter paint color, where applicable, is optional.

10. Refer to Figure 3. Mask area beneath forward portion of lower ribs. Locate (2) 0.170 inch diameter holes, one in each rib. If holes are not present, locate & drill 0.169–0.175 inch diameter holes as shown, using drill fitted with drill stop.
11. Using MS21069L08 nutplate as template (or appropriately-sized nutplate jig) and drill fitted with drill stop, drill (2) 0.097–0.102 inch diameter rivet holes at each 0.170 inch diameter hole in lower ribs. Deburr holes and create 0.180 inch diameter, 100° countersink. Install nutplates as shown in Figure 3, using (4) MS20426AD3-4 rivets.
12. Refer to Figure 2. Assemble D340-2 pitot tube, D339-1 mount, and D339-2 brace using (3) AN502-6-6 screws & (3) NAS620-6 washers as shown. Secure screws using 0.032-inch diameter safety wire.
13. Using D339-1 mount as template, locate and drill (2) 0.127–0.133 inch diameter holes on vertical centerline of 0.88 inch diameter hole. Deburr holes. At installer's discretion, alodine and/or prime/paint hole edges as described in NOTE above. Clean up debris and remove masking. Attach mount using (2) MS20470AD4-4 rivets as shown. Attach brace to lower rib using (2) MS27039C0806 screws.
14. Refer to Figure 2. Attach D339-4 tube to pitot tube assembly using A880-304 sleeve and AN818-4D nut as shown. Torque nut to 50-65 in-lb. Cut off 7.75 inches of exposed end of A729-14 (pitot) tube, retaining cut portion to use for stand-offs in next step. Attach remaining portion of A729-14 tube to D339-4 tube using 15-4-N-O union.

Kit Instructions (continued)

- 15. Refer to Image 1. Connect pitot tube wire harness receptacle to pitot tube’s electrical pins. Using retained A729-14 tube, create stand-offs and route wires (-708) & (-709) as described in Image 1.
- 16. Refer to Images 2 & 3, and Figure 3. Route wires (-708) & (-709) thru MS35489-6 grommet, then thru open hole in C261 LH lower rib. Install grommet in rib. Continue routing wires down & aft, adjacent to mast tube, creating stand-offs as shown in Image 3.
- 17. Refer to Image 4. Route wires (-708) & (-709) to main wire harness/bundle below main rotor gearbox, as shown. Connect wire (-708) to least populated ground stud located on stiffener near right side of main rotor gearbox and secure with existing nut. Connect wire (-709) to matching 1-pin connector on existing wire (-709) in bundle. Ty-rap wiring using appropriately-sized ty-raps, as required.
- 18. Perform pitot system leak test per MM § 13-10, noting heated pitot tube does not have a drain hole. Correct any detected leaks and repeat pitot system leak test, as required.
- 19. Manipulate all flight controls through full range of travel and verify no interference between wiring, pitot line and controls.
- 20. Close and secure mast fairing. Install C445-1 forward tunnel cover and C794-1 forward belly panel.
- 21. Test heated pitot installation:

CAUTION

Pitot tube becomes extremely hot when switched on. Touching pitot tube after it has been on for more than 30 seconds can result in severe burns.

- a. Turn master switch on. With strobe, nav lights, pitot heat, and radio off, ammeter needle should be approximately centered.
 - b. Turn on pitot heat and verify ammeter needle deflects approximately one needle width left (discharge). Turn off pitot heat and master switch.
22. 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
Standard Pitot Tube	-0.04 lb	86.5 in.	-3.5 in-lb	0.0 in.	0.0 in-lb

Add:

Item	Weight	Long. Arm	Long. Moment	Lat. Arm	Lat. Moment
KI-104-2 Heated Pitot Tube Installation	+0.77 lb	77.5 in.	59.7 in-lb	0.0 in.	0.0 in-lb

- 23. Update POH Section 9 with Heated Pitot Supplement, available at <https://robinsonheli.com/> >Publications >R44 series >[\[select helicopter model\]](#) Pilot’s Operating Handbook >Section 9 Supplements.
- 24. Make appropriate maintenance record entries.

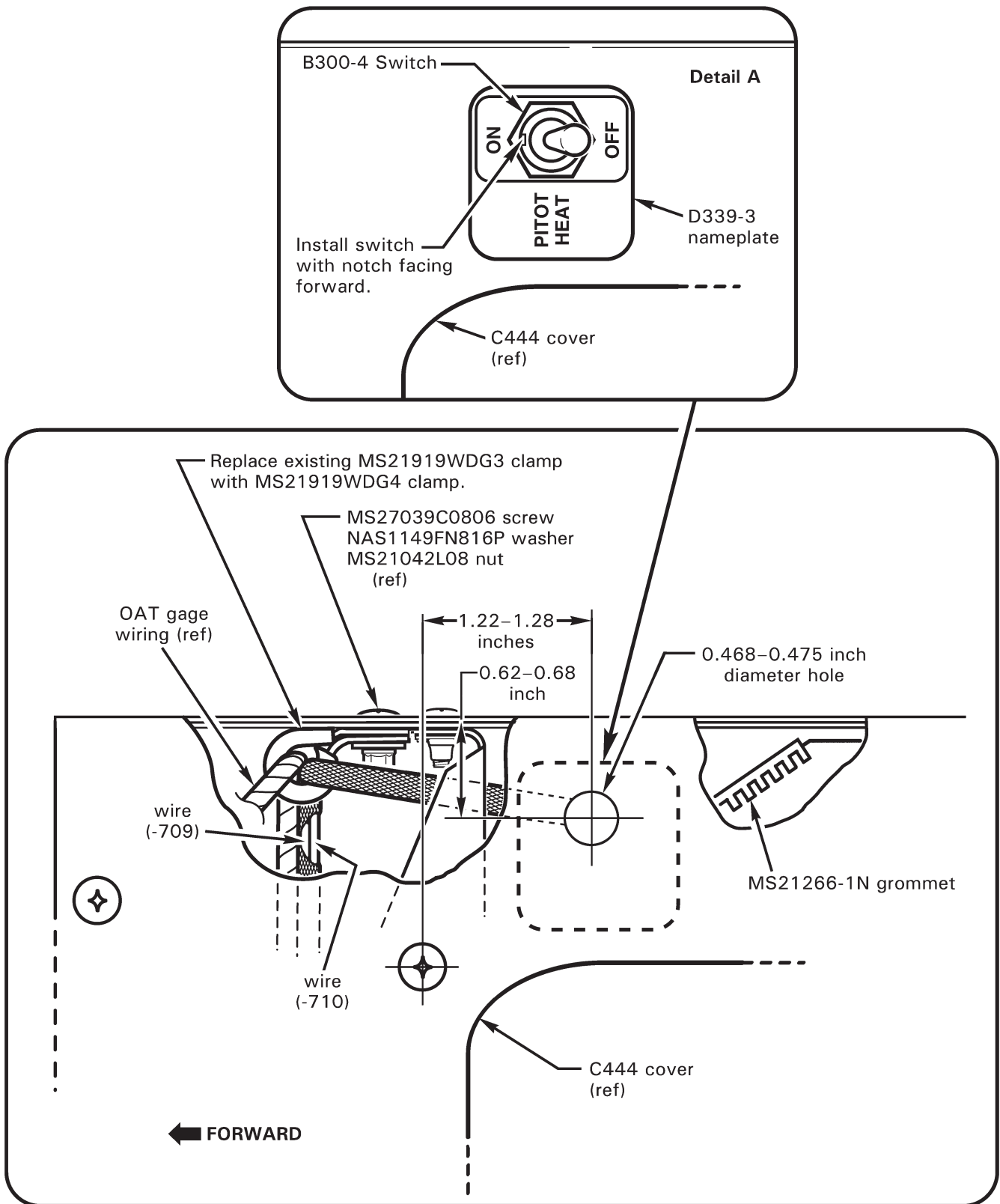


FIGURE 1 Cyclic cover switch installation
(view looking down)

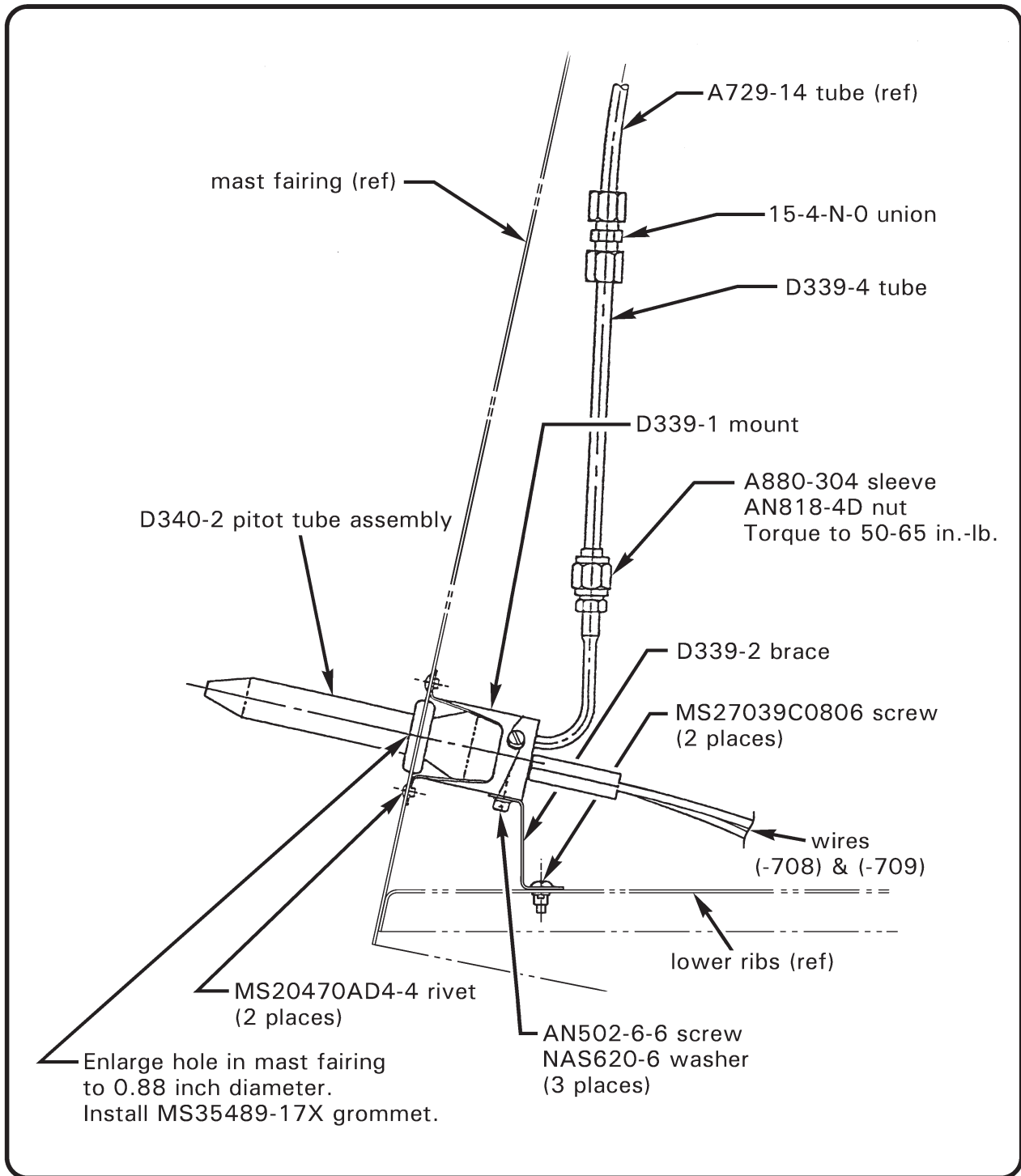


FIGURE 2 Heated pitot installation
(view from helicopter LH side; mast fairing not shown for clarity)

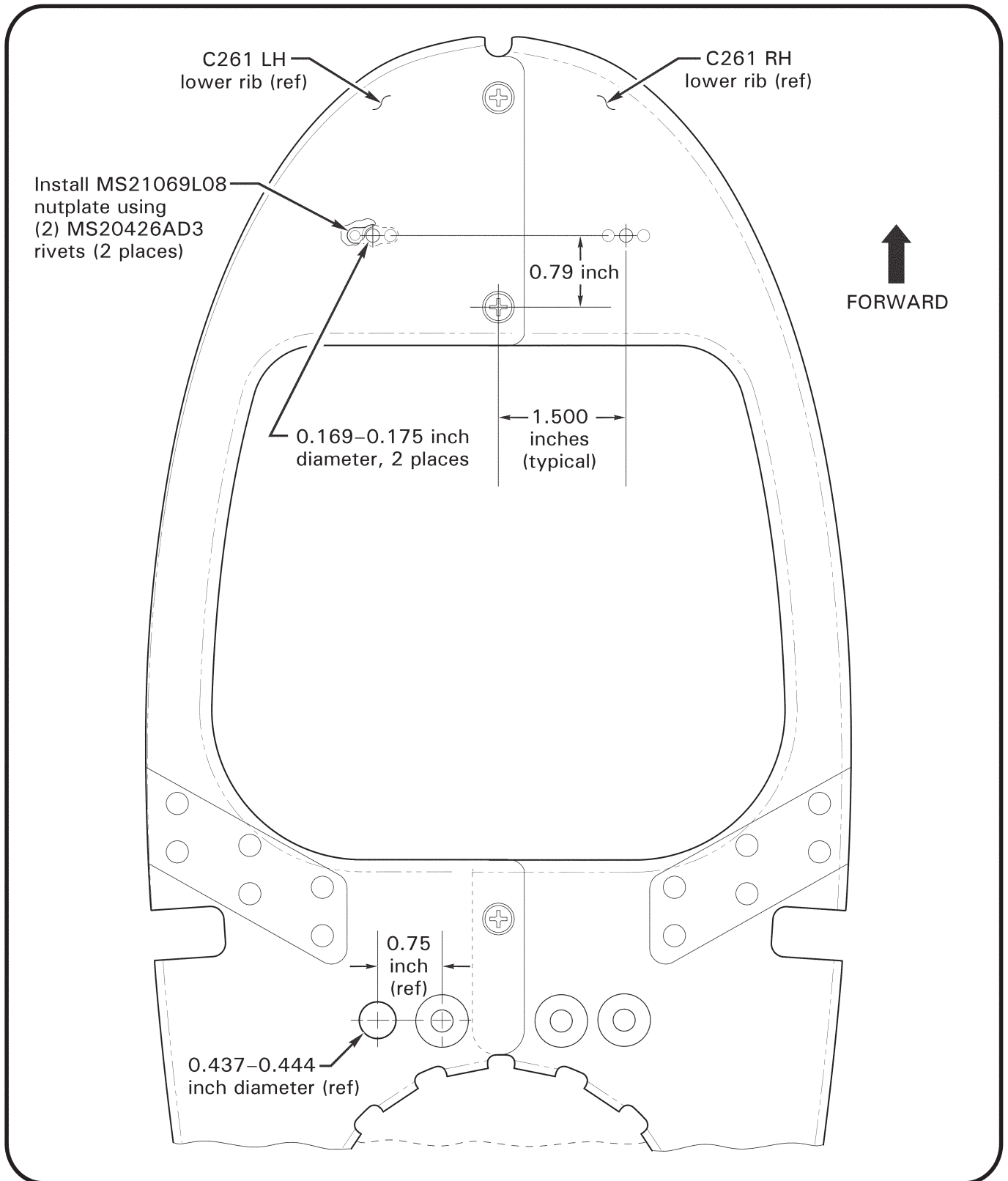


FIGURE 3 Installing nutplates in mast fairing ribs
(view looking down)

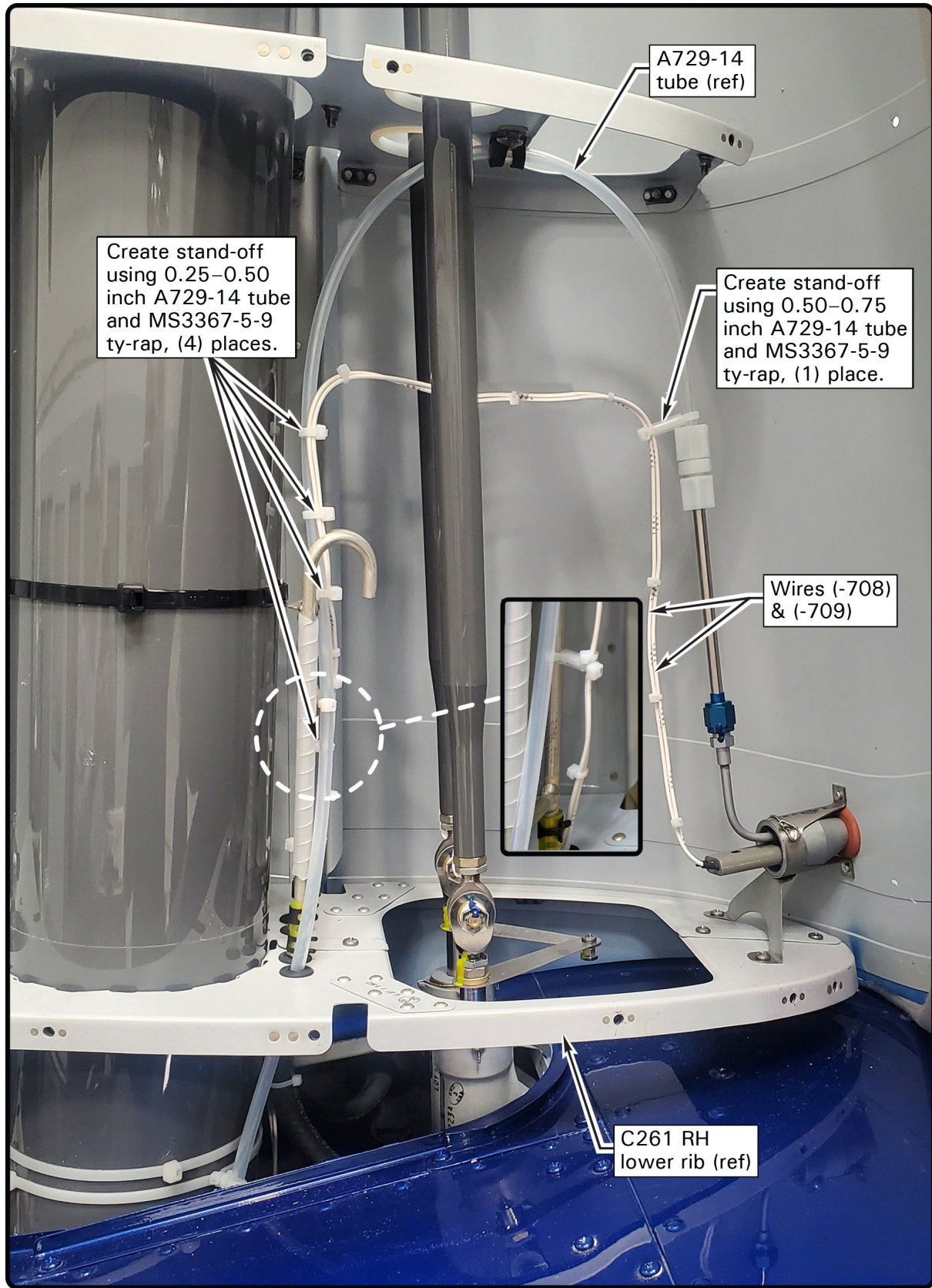


Image 1 Route and secure wires (-708) & (-709)
(view from helicopter RH side)



Image 2 Grommet installation
(view looking aft from helicopter RH side)

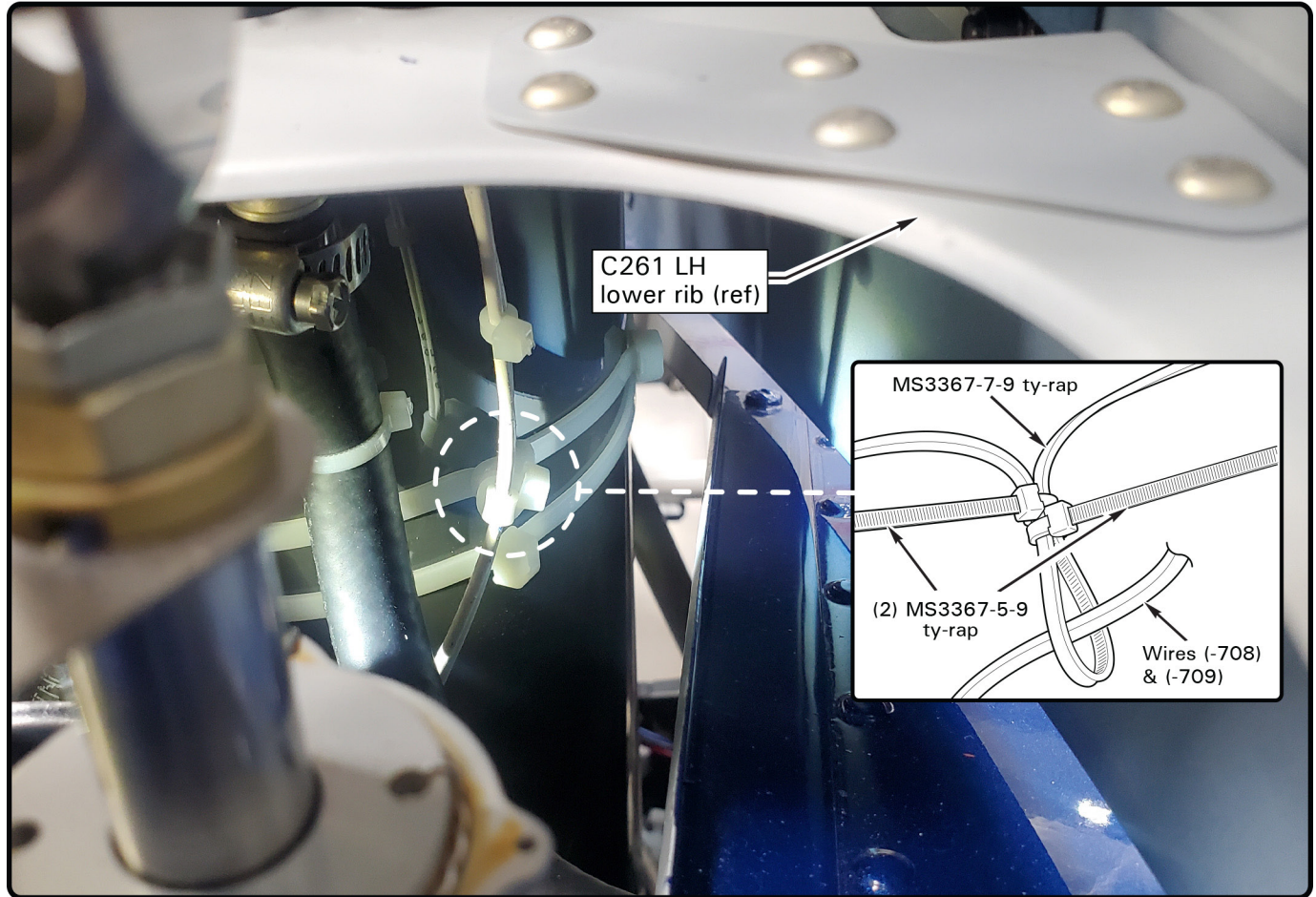


Image 3 Create stand-off to secure wires
(view looking aft)

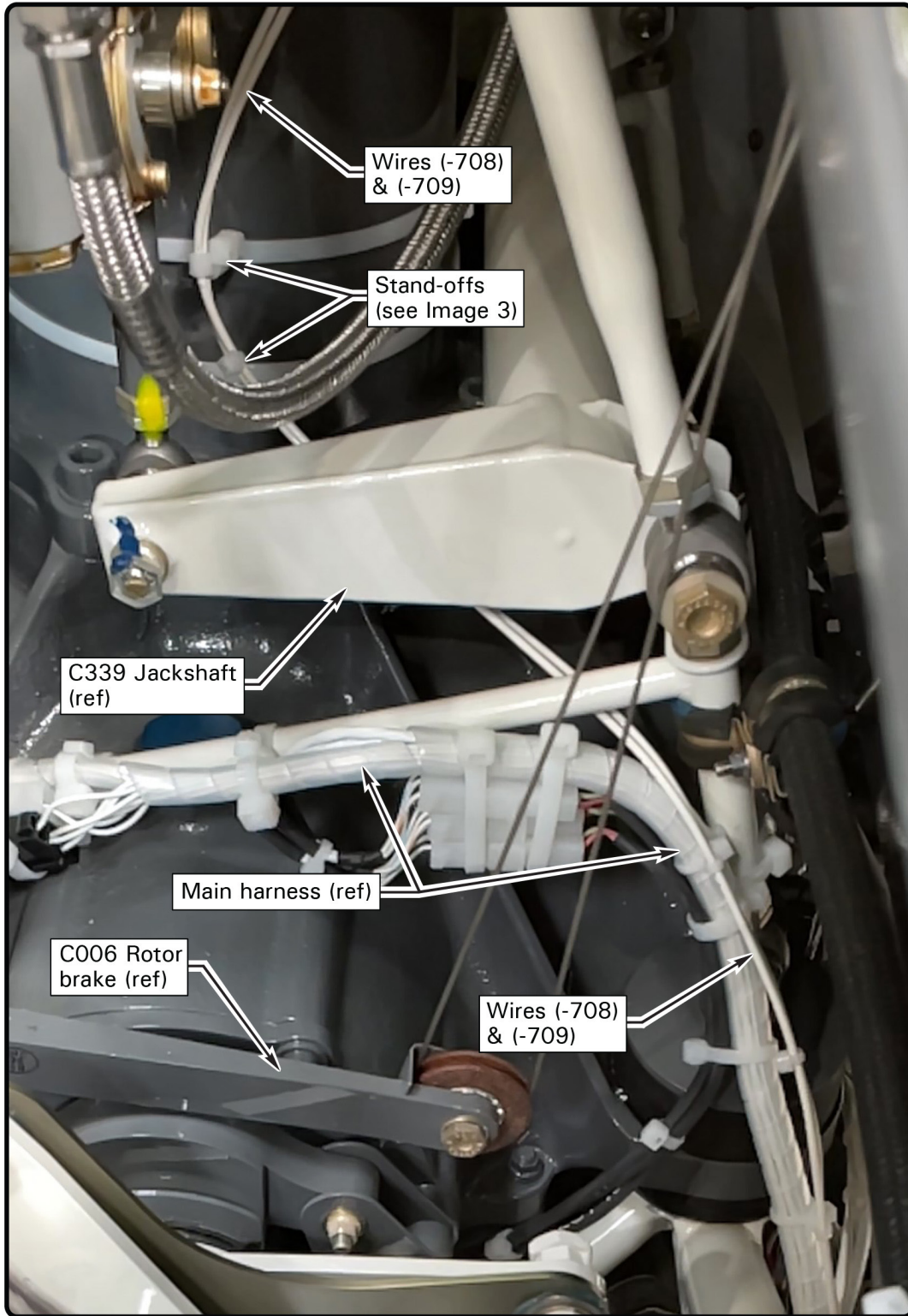


Image 4 Route and secure wires (-708) & (-709)
(view looking forward)