

### R22-series Symmetrical Stabilizer Upgrade & Empennage Installation Kit Instructions

Kit replaces A004-2 empennage assembly with A004-5 empennage assembly, and installs B375-2 horizontal (symmetrical) stabilizer assembly. Kit is eligible for installation on all R22 models **except R22 Mariner**. Additionally, helicopter must be equipped with A958-1 bellcrank, originally installed on S/N 0256, 0301, 0350, 0351, and 0357 & subsequent. Helicopter serial numbers not in this range must upgrade bellcrank per R22 Maintenance Manual § 8.111. To determine eligibility for installation, refer to R22 Service Letter SL-98 (current-revision).

#### 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-285-4Instr.	Kit Instructions . . . . .	1
2	A004-5.CS*	Empennage Assembly . . . . . Includes: [1] A042-1 Stabilizer – Vertical Upper [1] A043-1 Stabilizer – Vertical Lower [2] A470-1 Skid – Vertical Stabilizer [1] B902-1 Mount Assembly – Vertical Stabilizers	1
3	A654-3	Decal – “DANGER” . . . . .	2
4	B204-5	Blind Rivet (includes 2 extra) . . . . .	10
5	B330-13	Palnut . . . . .	2
6	B375-2.CS*	Horizontal Stabilizer Assembly . . . . .	1
7	B379-2**	Doubler (This part will be provided unless alternate part [below] is selected.) .	2
	B379-2.CS*	Doubler . . . . .	0
8	B379-3**	Bracket (Field; This part will be provided unless alternate part [below] is selected.) . . . . .	1
	B379-3.CS*	Bracket (Field). . . . .	0
9	B900-17	Component Modifications Plate . . . . .	1
10	D210-3	Nut . . . . .	2
11	D210-4	Nut . . . . .	2
12	MT858	Locator Tool – Horizontal Stabilizer. . . . . Includes: [1] MT858-1 Bracket [1] MT858-2 Cover [2] MT858-3 Plate [1] MT858-4 Template	1
13	MS21069L3	Nutplate . . . . .	4
14	MS3367-4-9+	Ty-rap (Note: “+” in part number indicates 20-qty pack) . . . . .	1
15	MS3367-5-9+	Ty-rap (Note: “+” in part number indicates 20-qty pack) . . . . .	1

ITEM	PART NUMBER	KIT CONTENTS (continued)	QTY
16	NAS1149F0332P+	Washer (Note: "+" in part number indicates 20-qty pack) . . . . .	1
17	NAS1149F0432P+	Washer (Note: "+" in part number indicates 20-qty pack) . . . . .	1
18	NAS1149F0463P+	Washer (Note: "+" in part number indicates 20-qty pack) . . . . .	1
19	NAS6603-2	Bolt . . . . .	6
20	NAS6604-28	Bolt . . . . .	2
21	NAS9301B-5-02	Blind Rivet (includes 3 extra) . . . . .	15
22	NAS9301B-5-03	Blind Rivet (includes 1 extra) . . . . .	5

\* ".CS" suffix indicates part has paint finish options; contact Customer Support.

\*\* Finish is primer only.

### **Consumables**

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

- B270-1 Sealant

### **Special Tools**

- Precision hand drill (less than 0.001 inch runout measured 1 inch from chuck)
- Deburring tool
- 10-32 thread nutplate jig
- Step drill or hole saw
- 12-inch (minimum) straight edge
- Digital protractor, having 0.1 degree resolution
- Rivet puller, suitable for structural #5 blind rivets
- #30 hole finder

### **Kit Instructions**

#### **CAUTION**

It is vital the protractor is level when indicating 0.0 degrees. Review and understand protractor's operating instructions before proceeding.

1. Ensure ignition switch is OFF; remove key. Turn BATTERY switch OFF.
2. Remove A004-2 empennage assembly (and A301 ballast weights, if installed) per MM § 4.500. Remove and retain tail light & screws per MM § 24-12. Remove DANGER decal from both sides of tailcone.

#### **CAUTION**

When leveling helicopter laterally, ensure protractor display faces forward.

3. Visually inspect four rubber mounts on main rotor gearbox and verify no contamination or damage; replace as required. Level helicopter per MM § 18-10.

**Kit Instructions (continued)****CAUTION**

Prior to drilling, inspect opposite side for obstruction(s). As required, relocate and/or remove obstruction(s).

4. Refer to Figure 1. Locate 3rd and 6th longitudinal rivets, counting from first rivet as shown. Drill out noted rivets using #30 drill fitted with drill stop.
5. Refer to Figures 2 and 3. Place MT858-1 bracket on tailcone, with "FWD" marking as indicated. Secure with clecos at newly drilled-out rivet locations. Attach MT858-2 cover to bracket using clecos. With dial/display facing forward, place protractor laterally across forward posts of bracket as shown and verify locator tool is level (use straight edge atop posts if protractor cannot contact both posts). As required, rotate locator tool on tailcone by lightly tapping with a rubber or plastic mallet (bottom holes are slotted), until protractor indicates level/zero. Repeat procedure with protractor placed laterally across aft posts.

**NOTE**

Once protractor indicates zero with first reading, subsequent readings are allowed a tolerance of  $\pm 0.2$  degree.

6. Using #30 drill fitted with drill stop, drill thru skin at LH forward hole in bracket and install cleco. Verify locator tool remains level. Drill #30 pilot hole thru skin at RH forward hole in bracket and install cleco. Verify locator tool remains level. Drill #30 pilot hole thru skin at LH aft hole in bracket and install cleco. Drill #30 pilot hole thru skin at RH aft hole in bracket. Remove clecos and locator tool.
7. Refer to Figure 4. Enlarge (4) newly-drilled pilot holes to 0.195–0.201 inch diameter using #8 drill fitted with drill stop. Layout dimensions to locate center of (2) 0.75 inch diameter holes, one each LH & RH side of tailcone, as shown. Drill (2) #30 pilot holes using drill fitted with drill stop at marked (center) location. Using a step drill or hole saw, enlarge (2) newly-drilled pilot holes to 0.750 inch diameter. Deburr holes. At installer's discretion, alodine and/or prime/paint hole edges as described in NOTE below.

**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.

8. Refer to Figures 4 & 5. Using appropriate 10-32 thread nutplate drill jig, match drill (8) 0.097–0.102 inch diameter nutplate installation rivet holes in A023-12 skin. Create 0.135–0.155 inch diameter, 100° countersinks at rivet installation holes. Install (4) MS21069L3 nutplates using (8) B204-5 rivets on A023-12 skin.

**Kit Instructions (continued)**

9. Refer to Figure 5. Temporarily attach (2) B379-2 doublers to tailcone using (4) NAS6603-2 bolts. Using doublers as templates, progressively match drill (6) 0.158–0.164 inch diameter holes and install clecos thru A023-12 skin. Make a non-permanent mark on doubler to indicate doublers' position relative to tailcone; also mark doubler to indicate left or right side of helicopter. Remove doublers, deburr holes and clean up debris. Strobe light may be removed to access inside tailcone (ref. MM § 24-11). At installer's discretion, alodine and/or prime/paint hole edges as described in NOTE in step 7.
10. Refer to Figure 6. Install doublers to tailcone skin using (12) NAS9301B-5-02 rivets, removing clecos one at a time as required. Inspect installed rivets per manufacturers' specifications at: [CA-1015.pdf \(cherryaerospace.com\)](#).
11. Refer to Figures 7 & 8. Using hardware provided in kit, install one MT858-3 plate to each side of tailcone and attach B379-3 bracket (with apex forward as shown in Figure 8 and flanges pointing up as shown in Figure 7) to plates.
12. Using hole finder and #30 drill fitted with drill stop, locate holes in tailcone and progressively match drill & cleco (2) holes thru B379-3 bracket. Enlarge holes in bracket & tailcone to 0.158-0.164 inch diameter using #21 drill fitted with drill stop. Temporarily attach MT858-4 template to bracket & tailcone using clecos. Drill (2) 0.158–0.164 inch diameter holes in tailcone skin thru template, bracket & tailcone. Remove template and B379-3 bracket. Deburr holes & clean up debris. At installer's discretion, chemically treat and/or prime/paint hole edges as described in NOTE in step 7.
13. Apply B270-1 sealant around B379-2 doubler as shown in Figure 6. Apply a small bead of B270-1 sealant around the two rivet holes in B379-3 bracket (two places), as shown in Figure 9.
14. Install B379-3 bracket (with apex forward) using four clecos. Replace clecos, one at a time, with NAS9301B-5-03 rivets. Inspect installed rivets per manufacturers' specifications at: [CA-1015.pdf \(cherryaerospace.com\)](#).
15. Refer to Illustrated Parts Catalog (IPC) Figure 53-29. While supporting B375-2 horizontal stabilizer assembly, secure stabilizer to tailcone using (4) NAS6603-2 bolts and (4) NAS1149F0332P washers. Secure stabilizer to B379-3 bracket using (2) NAS6603-2 bolts, (4) NAS1149F0332P washers, and (2) D210-3 nuts. Special torque hardware per MM § 23-33, and torque stripe per MM Figure 2-1.
16. Install strobe light per MM § 24-11, if removed.
17. Refer to IPC Figure 53-25. Install A004-5 empennage assembly per MM § 4.500, using hardware provided in kit. Install tail light per MM § 24-12.
18. Refer to Figure 10. Install A654-3 decal to both sides of tailcone in location shown, per MM § 21-10.
19. Install B900-17 component modification plate adjacent to existing A023-XX (tailcone) identification plate.
20. Touch-up paint, as required. Paint codes are located in the Aircraft Logbook.

**Kit Instructions (continued)**

21. Weigh helicopter per MM § 18-20, installing ballast as required. Revise helicopter's Weight and Balance Record in Pilot's Operating Handbook (POH) Section 6.

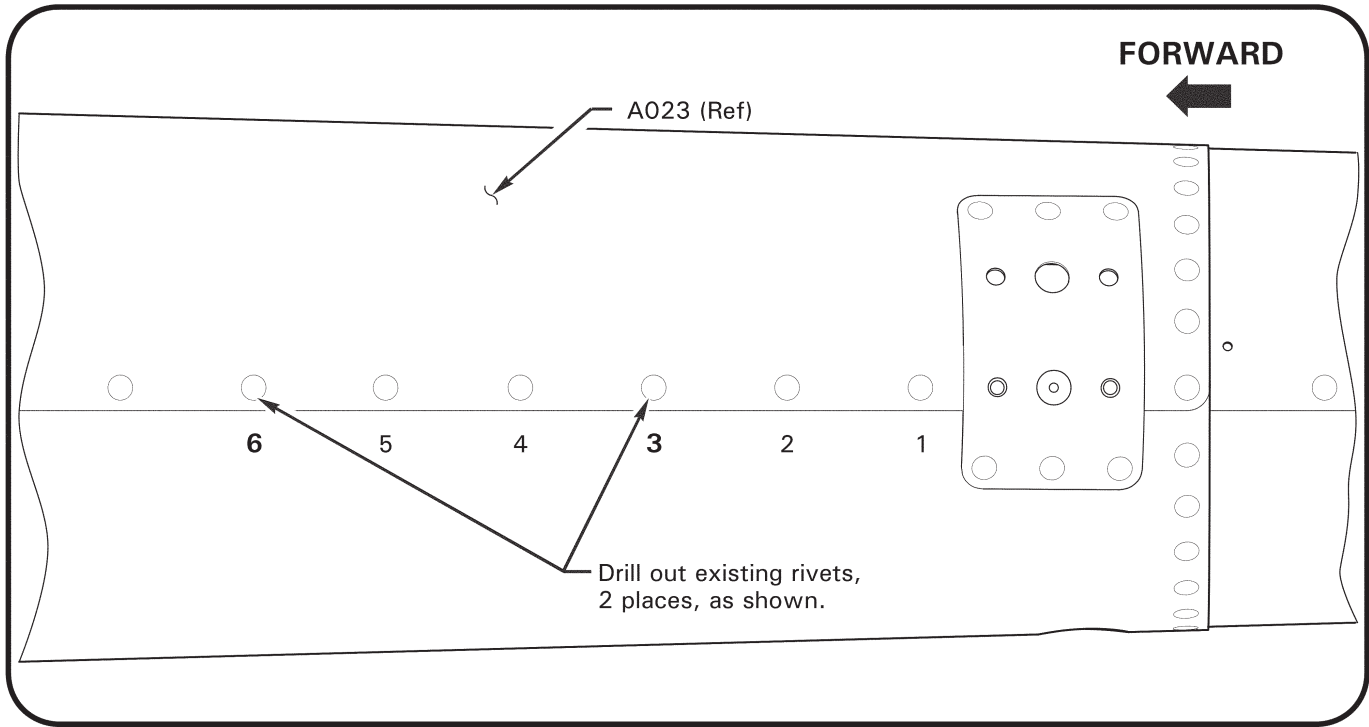
**NOTE**

Remove nose ballast before adding empennage ballast.

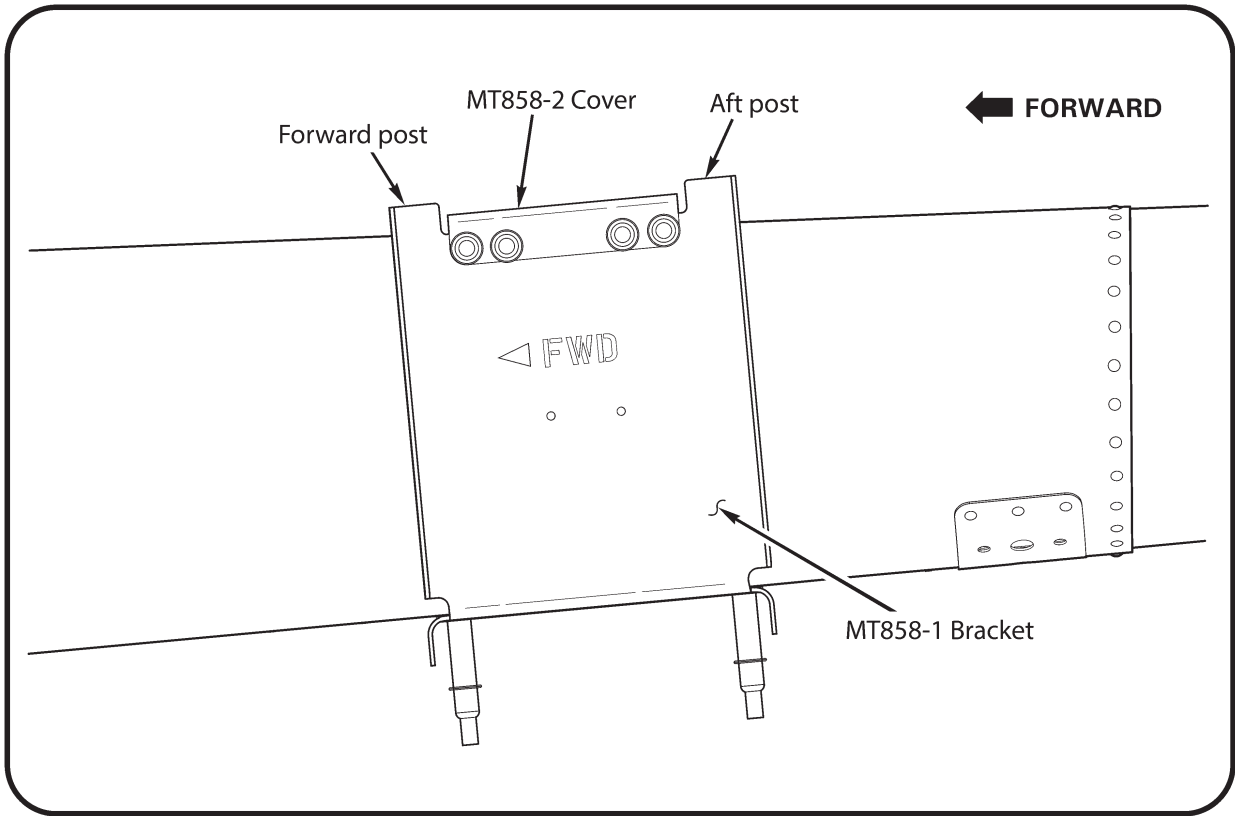
**NOTE**

Component Record (RF 294), required for B375-2 horizontal stabilizer assembly, is printable from our website. Go to: [https://robinsonheli.com/Customer\\_Support/Maintenance\\_Record](https://robinsonheli.com/Customer_Support/Maintenance_Record). Refer to MM § 3.300 Airworthiness Limitations for horizontal stabilizer life limit.

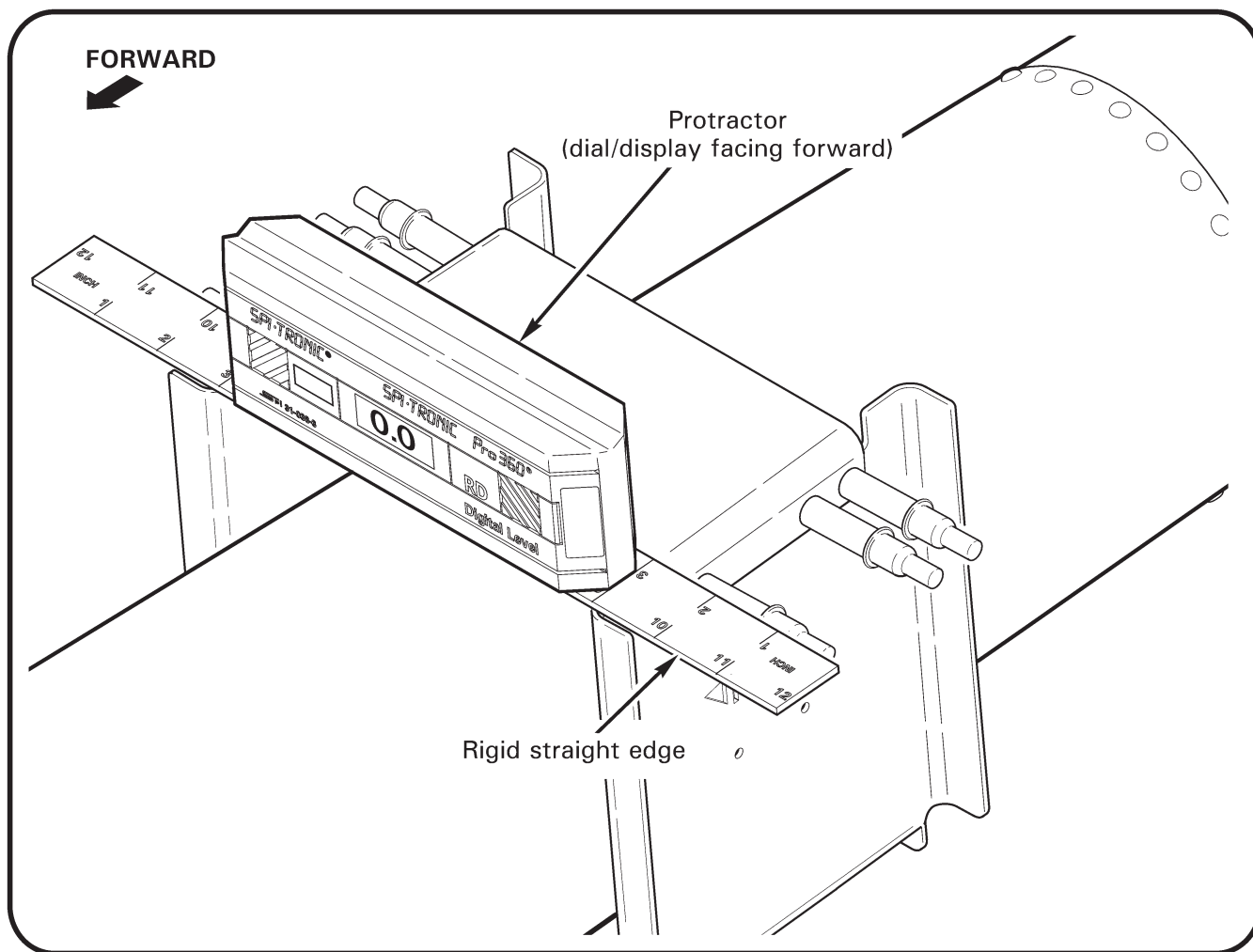
22. Make appropriate maintenance record entries.



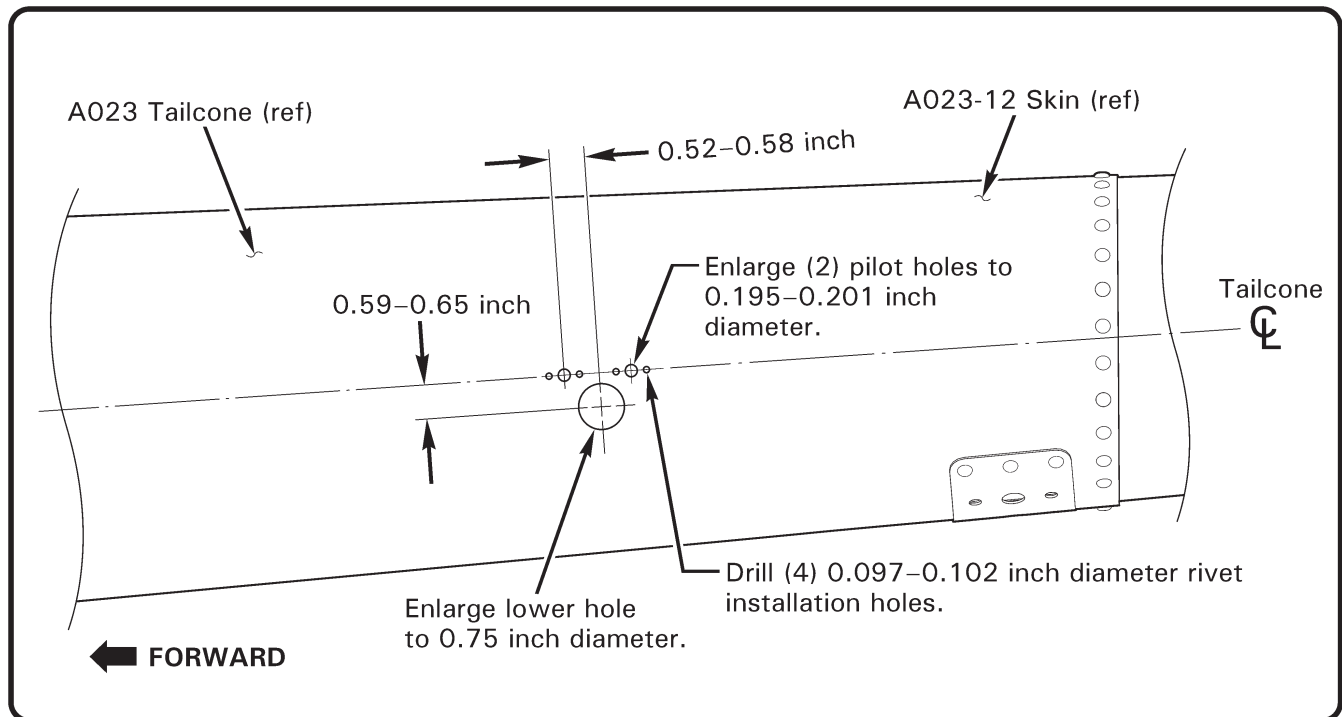
**FIGURE 1 Locate & remove tailcone rivets**  
(tailcone bottom, view looking up)



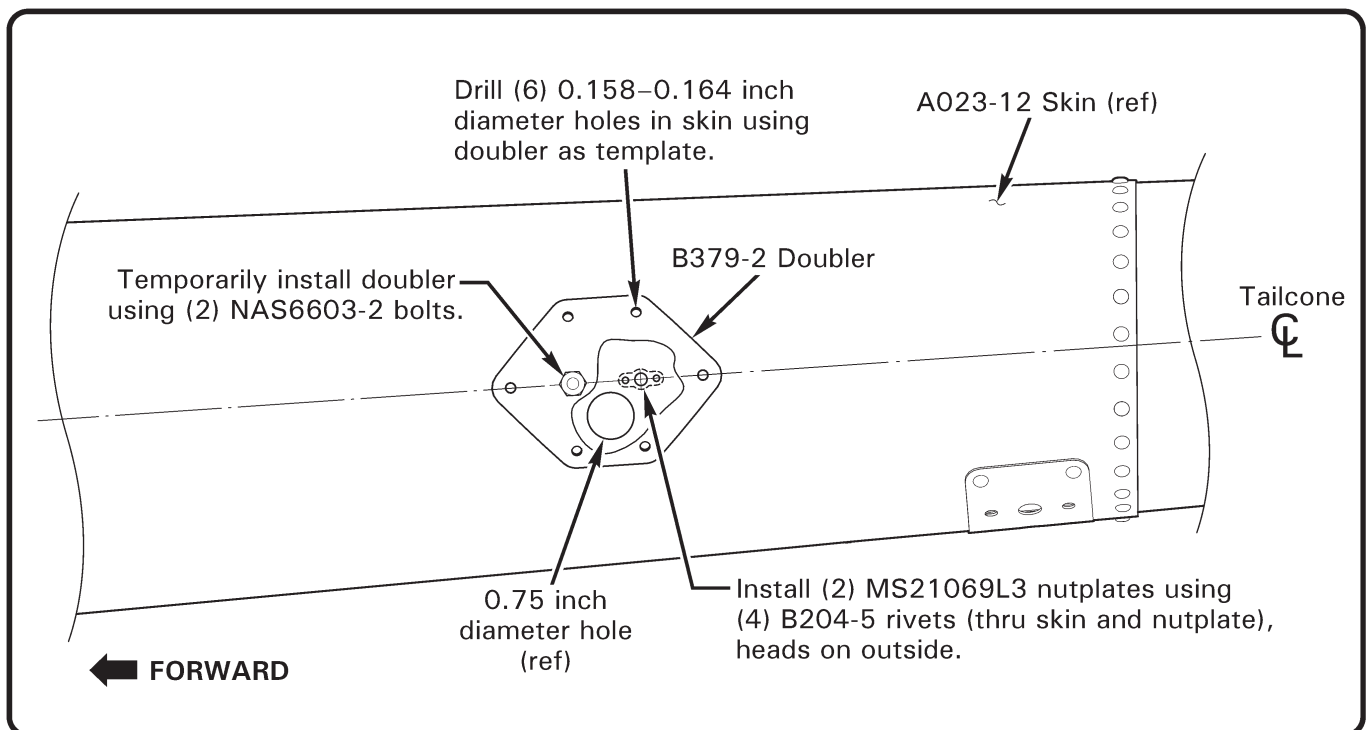
**FIGURE 2 Positioning MT858 Locator tool**  
(verify tool is laterally level)



**FIGURE 3 Positioning MT858 Locator tool**  
(verify tool is laterally level)

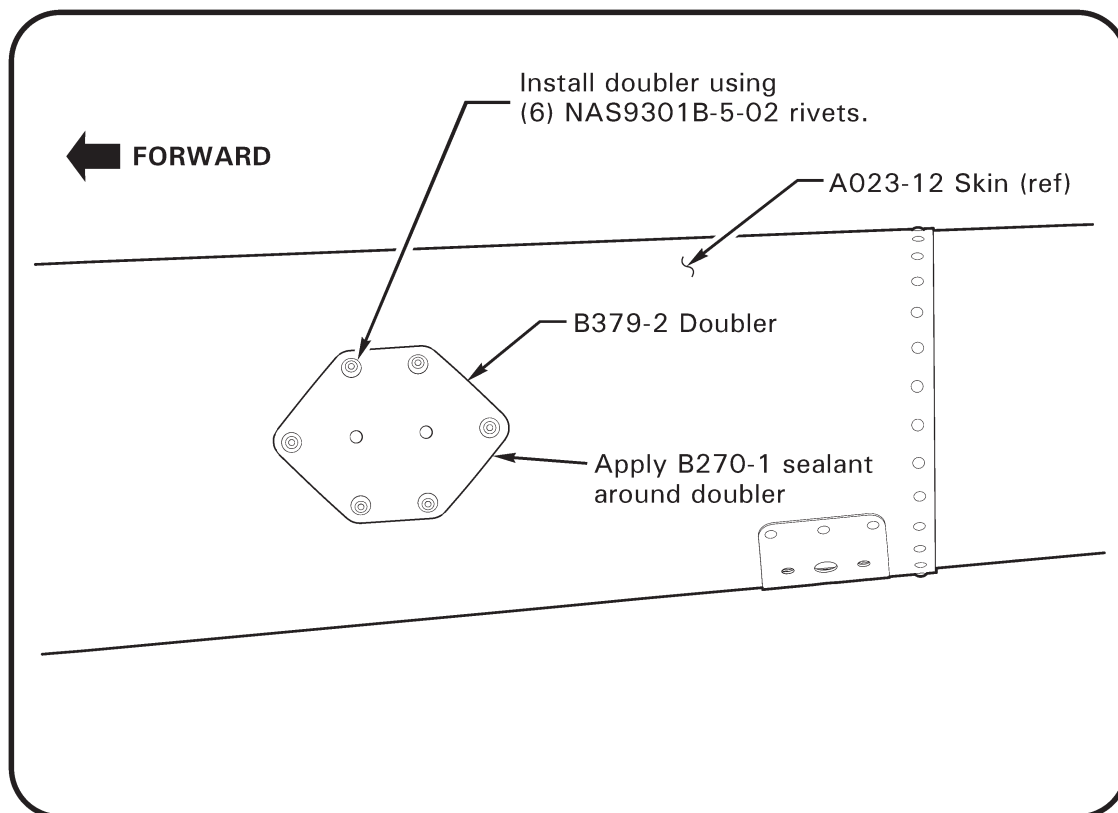
**FIGURE 4 Holes for nutplate installation**

(LH side shown, RH side similar)

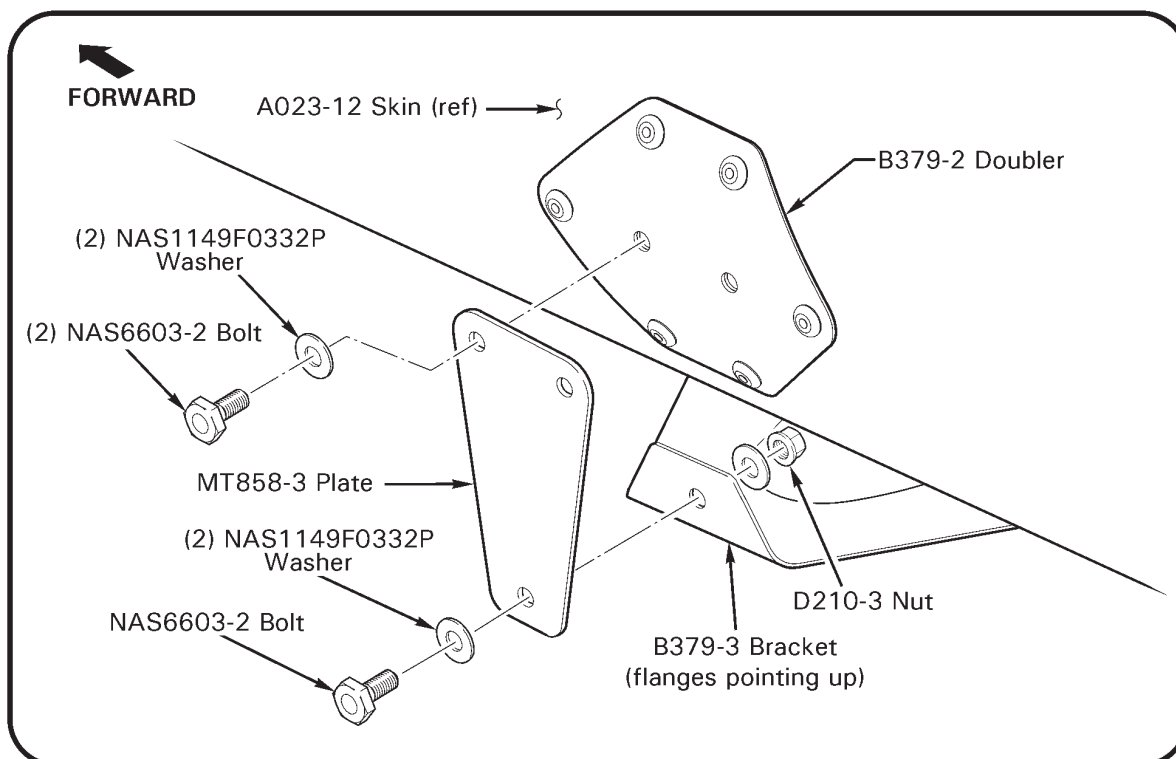
**FIGURE 5 Positioning doubler for drilling**

(LH side shown, RH side similar)

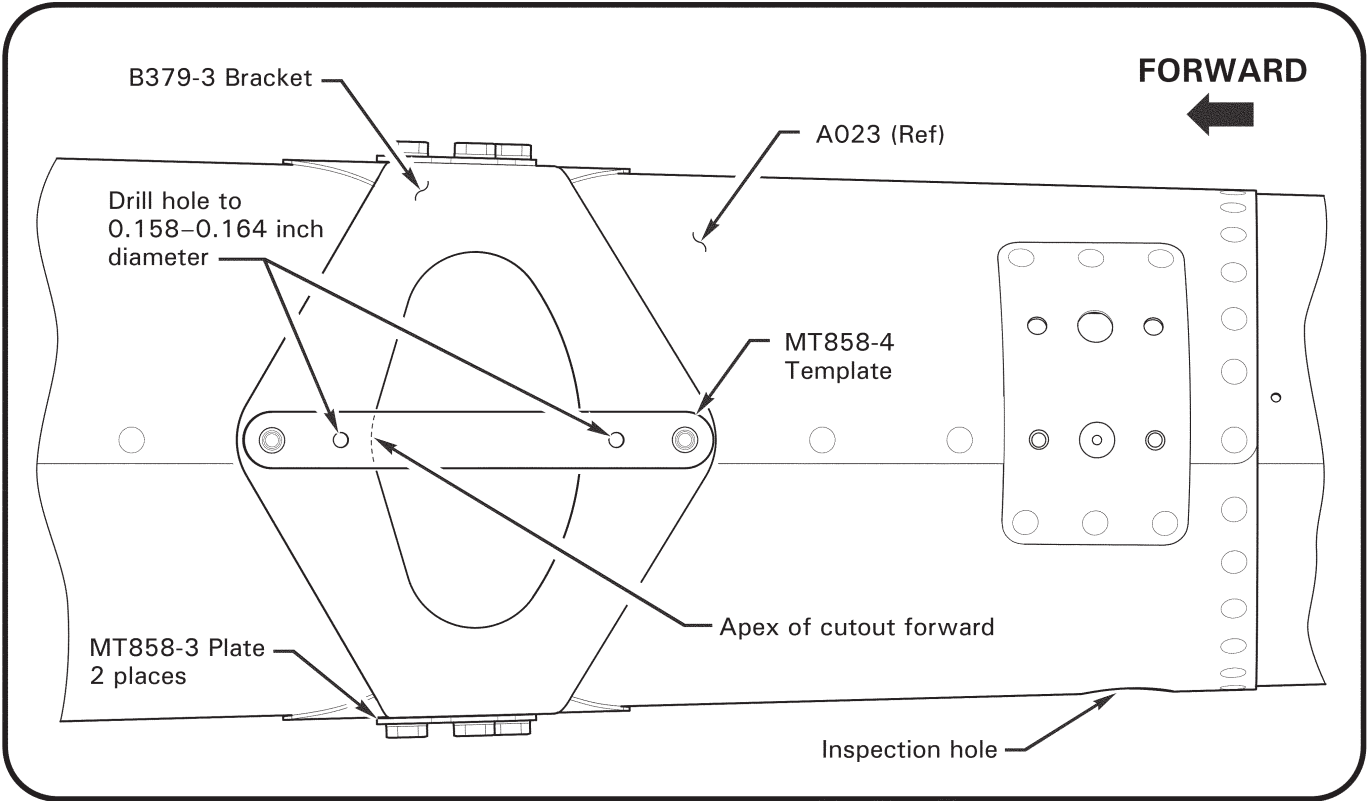




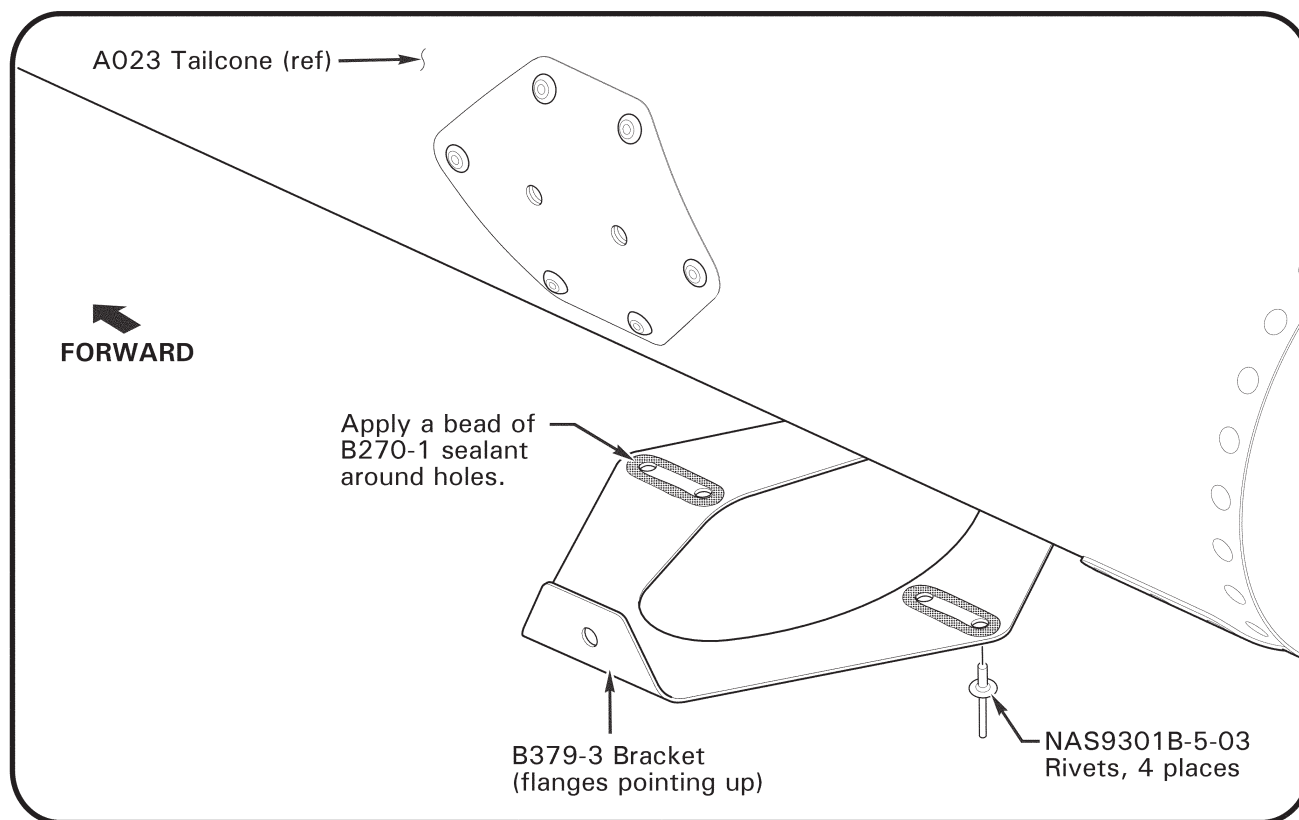
**FIGURE 6 Doubler installation**  
(LH side shown, RH side similar)



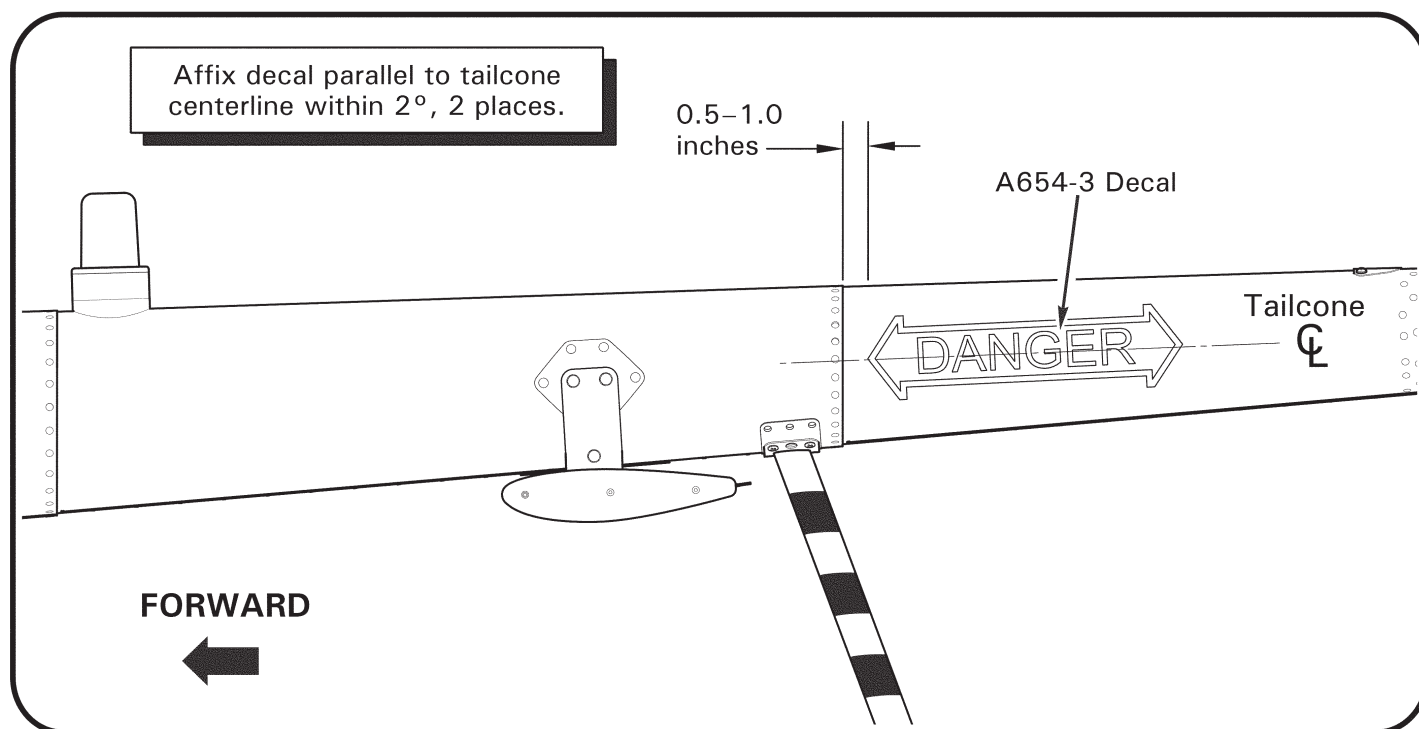
**FIGURE 7 MT858-3 plate & B379-3 bracket installation**  
(LH side shown, RH side similar)



**FIGURE 8 Drilling of B379-3 bracket**  
(view looking up)



**FIGURE 9 B379-3 bracket installation**  
(application of B270-1 sealant)



**FIGURE 10 A654-3 decal installation**  
(LH side shown, RH side similar)