Publication No. CSP -094

# Illustrated Parts List
# and
# Maintenance Instructions
# with Initial Installation Instructions

FOR

ENGINE AIR INLET DIVERTER KIT

PART NO. 369D292044, -501
PART NO. 369D292045

USED ON HUGHES MODEL 500D/E (369D/E) HELICOPTERS

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**Hughes Helicopters, Inc.** Culver City, California 90230
A Subsidiary of McDonnell Douglas

COD831103

Issued 15 August 1983
Reissued 1 January 1985
Revised 15 July 1985

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# HUGHES HELICOPTERS, INC. TECHNICAL MANUAL RECOMMENDED CHANGE REPORT

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# FOREWORD

F-1. PURPOSE AND CONTENT OF THIS MANUAL.

F-2. This manual supplements information contained in the Basic Handbook of Maintenance Instructions (HMI - Vol 1) and the Illustrated Parts Catalog (369D/E - IPC), and contains instructions for initial installation and continuing maintenance for the engine air inlet diverter. Weight and balance data is included. This manual also contains parts lists for procuring replacement parts for the engine air inlet diverter

F-3. APPLICABILITY.

F-4. The engine air inlet diverter is applicable for use on any Hughes Model 500D/E (369D/E) helicopter. Part No. 369D292044 and 369D292044-501 have been superseded by 369D292045. For replacement of 369D292044, -501 order 369D292045.

F-5. COMPATIBILITY OF COMBINED OPTIONAL EQUIPMENT.

F-6. For compatibility information on which optional equipment may or may not be used in combination at the same time, refer to Section 21, HMI - Vol 1.

F-7. ORGANIZATION OF CONTENTS.

F-8. The contents of this manual are grouped into sections as outlined in the Table of Contents. Each section is organized to provide comprehe sive coverage of entire systems, major equip- ment groupings, and major components that ar similar or associated. Procedures for each o these are presented in sequence as defined in Section 1, HMI - Vol 1.

F-9. USE OF THIS MANUAL.

F-10. This manual is for use by operators of the model 500D/E helicopter equipped with a engine air inlet diverter. Although this manua is a separate publication, it should be kept wit HMI - Vol 1, HMI - Vol 2, 369D/E - IPC and o handbooks listed in Section 1, HMI - Vol 1 that form the primary information file for the helicopter.

F-11. RELATED PUBLICATIONS.

F-12. Reference is made to applicable portion of HMI - Vol 1, 369D/E - IPC and applicable O Eqpt Manuals as required to accomplish instru tions contained herein.

F-13. LITERATURE CHANGES AND REVISIO

F-14. Changes and revisions to contents of thi manual are made as defined in Section 1, HMI - Vol 1.

# SECTION 1
# ILLUSTRATED PARTS LIST

1-1. SCOPE AND CONTENTS.

1-2. This illustrated parts list provides, by means of text (parts lists) and companion illustrations, a complete parts definition of the engine air inlet diverter kit configuration, manufactured by Hughes Helicopters, Inc., Culver City, California.

NOTE

The illustrated parts list is organized and presented in the same manner as the 369D/E Series Illustrated Parts Catalog (369D/E - IPC). (For information on use, refer to 369D/E - IPC.)

1-3. GROUP ASSEMBLY PARTS LIST.

1-4. The parts list furnish information for procuring replacement parts for the engine air inlet diverter and shall not be used for any other purpose. For information or procurement of other replacement parts, refer to the 369D/E - IPC.

1-5. ILLUSTRATIONS.

1-6. Isometric illustrations are provided for each group assembly parts list. Each illustration is exploded to the extent necessary to show parts relationship for the engine air inlet diverter.

1-7. USABLE ON CODE.

1-8. The USABLE ON CODE column located at the right-hand side of the Group Assembly Parts List pages indicates the effectivity of parts by aircraft serial number. In many cases two different parts are listed, one representing the original installation and another representing an improved replacement item. Alphabetic codes are used to indicate the aircraft serial number applications of a given part. When no USABLE ON CODE is listed, items are understood to have full effectivity.

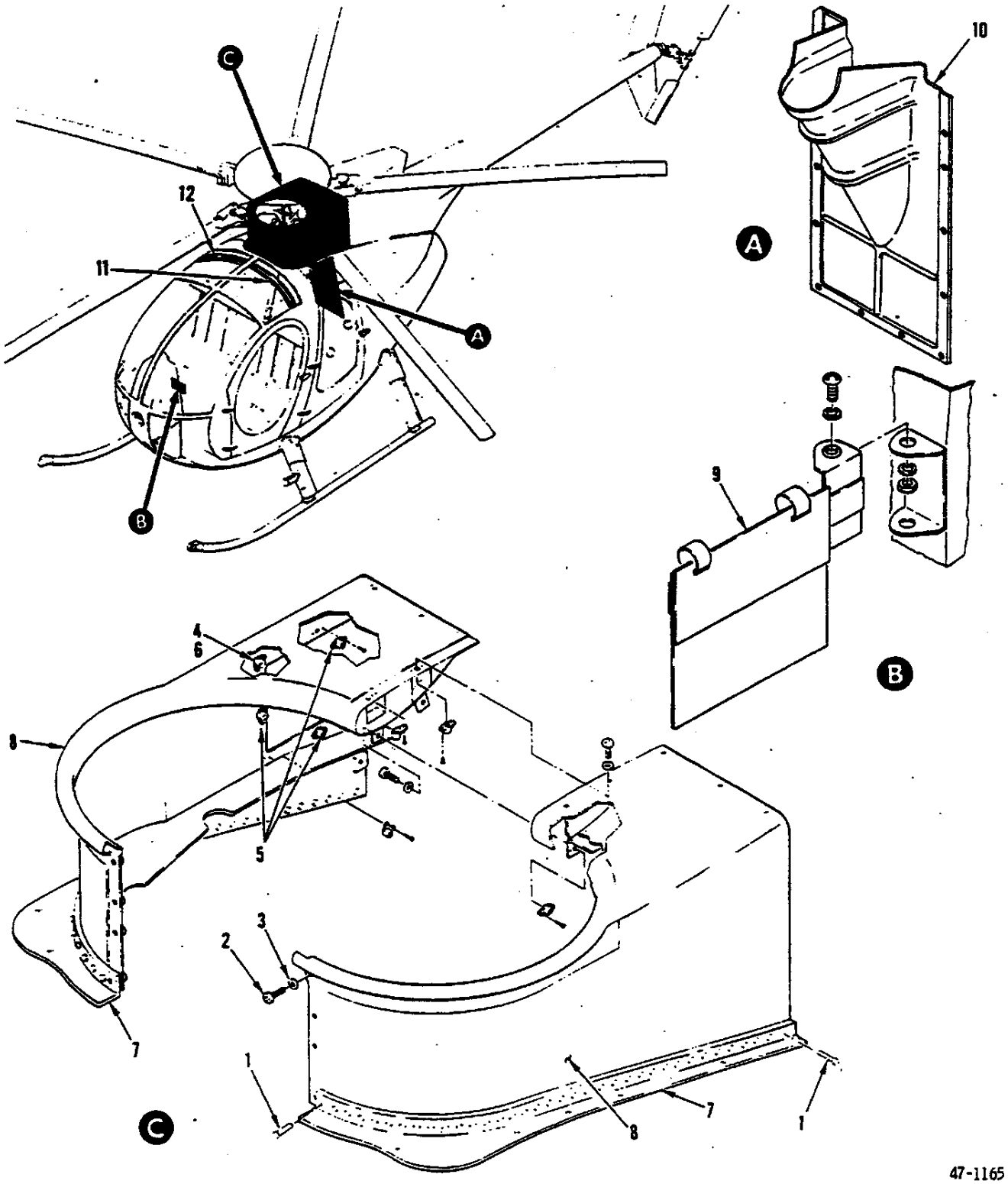


Figure 1-1. Engine Air Inlet Diverter 500D

| FIG. & INDEX NO. | PART NO. | DESCRIPTION | UNITS PER ASSY | USABLE ON CODE |
|---|---|---|---|---|
| 1-1- | 369D292044 | ENGINE AIR INLET DIVERTER . . . . . (For replacement order 369D292045 see figure 1-3.) | 1 | |
| -1 | NAS1738B4-3 | . RIVET. . . . . | 72 | |
| -2 | NAS623-3-3 | . SCREW . . . . . | 4 | |
| -3 | AN960PD10L | . WASHER . . . . . | 4 | |
| -4 | MS20426AD3 | . RIVET . . . . . | 10 | |
| -5 | NAS698A3 | . NUTPLATE . . . . . | 4 | |
| -6 | NAS697A3 | . NUTPLATE . . . . . | 5 | |
| -7 | 369D2044-35 | . FLANGE ASSY, LH. . . . . | 1 | |
| | 369D2044-36 | . FLANGE ASSY, RH . . . . . | 1 | |
| -8 | 369D292044-1 | . FAIRING ASSY, LH . . . . . | 1 | |
| | 369D292044-2 | . FAIRING ASSY, RH . . . . . | 1 | |
| -9 | 369D292579-3 | . CARD, $V_{NE}$ . . . . . | 1 | |
| | 369D292579-5 | . CARD, $V_{NE}$. . . . . | 1 | |
| | 369D292579-7 | . CARD, $V_{NE}$ . . . . . | 1 | |
| -10 | 369D22070-501 | . BLOWER ACCESS DOOR . . . . . | 1 | |
| -11 | 369D2405-29 | . PLEXIGLASS STIFFENER . . . . . | 1 | |
| -12 | 369D2405-30 | . PLEXIGLASS STIFFENER . . . . . | 1 | |

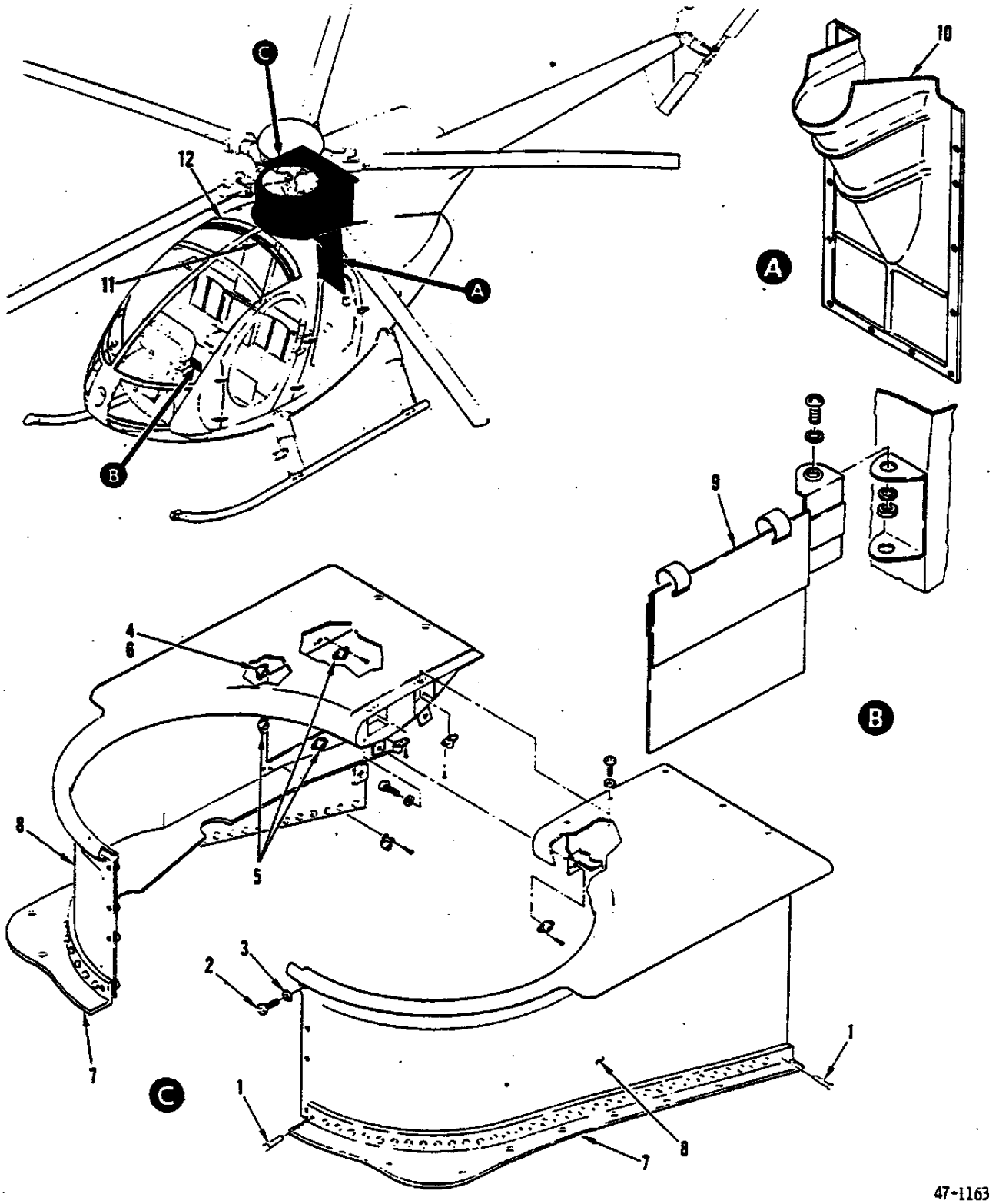


Figure 1-2. Engine Air Inlet Diverter 500E

| FIG. & INDEX NO. | PART NO. | DESCRIPTION | UNITS PER ASSY | USABLE ON CODE |
|---|---|---|---|---|
| 1-2- | 369D292044-501 | ENGINE AIR INLET DIVERTER . . . . . (For replacement order 369D292045, see figure 1-3) | 1 | |
| -1 | NAS1738B4-3 | . RIVET . . . . . | 72 | |
| -2 | NAS623-3-3 | . SCREW . . . . . | 4 | |
| -3 | AN960PD10L | . WASHER . . . . . | 4 | |
| -4 | MS20426AD3 | . RIVET . . . . . | 10 | |
| -5 | NAS698A3 | . NUTPLATE . . . . . | 4 | |
| -6 | NAS697A3 | . NUTPLATE . . . . . | 5 | |
| -7 | 369D2044-35 | . FLANGE ASSY, LH . . . . . | 1 | |
| | 369D2044-36 | . FLANGE ASSY, RH . . . . . | 1 | |
| -8 | 369D292044-41 | . FAIRING ASSY, LH . . . . . | 1 | |
| | 369D292044-42 | . FAIRING ASSY, RH . . . . . | 1 | |
| -9 | 369D292582-3 | . CARD, $V_{NE}$ . . . . . | 1 | |
| | 369D292582-5 | . CARD, $V_{NE}$ . . . . . | 1 | |
| | 369D292582-7 | . CARD, $V_{NE}$ . . . . . | 1 | |
| -10 | 369D22070-501 | . BLOWER ACCESS DOOR . . . . . | 1 | |
| -11 | 369D2405-29 | . PLEXIGLASS STIFFENER . . . . . | 1 | |
| -12 | 369D2405-30 | . PLEXIGLASS STIFFENER . . . . . | 1 | |

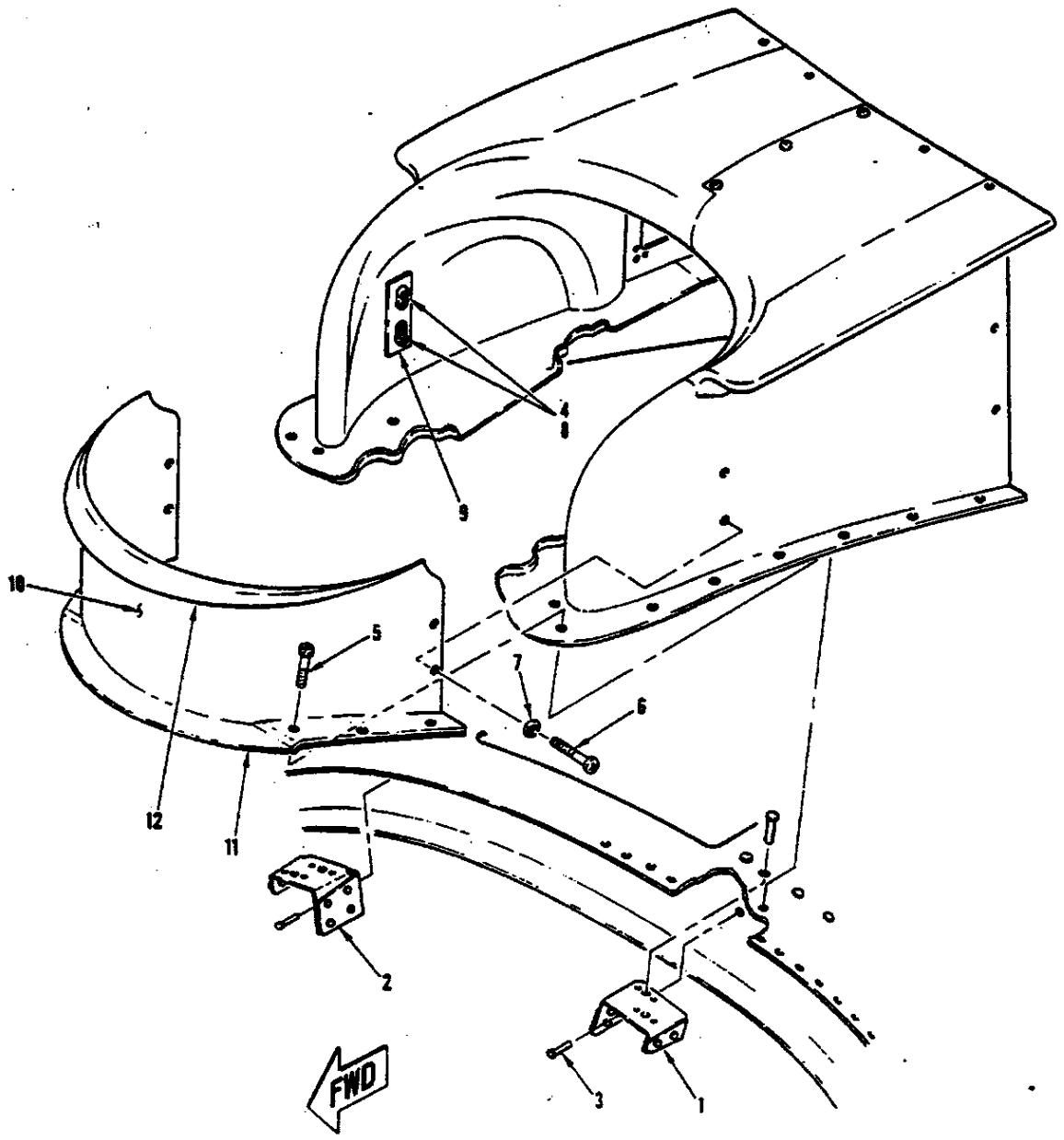


Figure 1-3. Engine Air Inlet Diverter. 500D/E (369D292045)

| FIG. & INDEX NO. | PART NO. | DESCRIPTION | UNITS PER ASSY | USABLE ON CODE |
|---|---|---|---|---|
| 1-3- | 369D292045 | ENGINE AIR INLET DIVERTER ASSY . . . . . (369D292045 supersedes 369D292044 and 369D292044-501) | 1 | |
| -1 | 369D292045-15 | . SUPPORT . . . . . | 1 | |
| -2 | 369D292045-16 | . SUPPORT . . . . . | 1 | |
| -3 | MS20470AD3 | . RIVET . . . . . | A/R | |
| -4 | NAS1097 | . RIVET . . . . . | 8 | |
| -5 | NAS623-3-6 | . SCREW . . . . . | 6 | |
| -6 | NAS623-3-3 | . SCREW . . . . . | 4 | |
| -7 | AN960PD10L | . WASHER . . . . . | 4 | |
| | 369D292045-11 | PLATE ASSY . . . . . | 2 | |
| -8 | MS21072-LK3 | . NUTPLATE . . . . . | 4 | |
| -9 | 369D292045-13 | . PLATE . . . . . | 2 | |
| | 369D292045-3 | FAIRING ASSY . . . . . | 1 | |
| -10 | 369D292045-5 | . SKIN . . . . . | 1 | |
| -11 | 369D292045-7 | . FLANGE . . . . . | 1 | |
| -12 | 369D292045-9 | . LIP . . . . . | 1 | |
| | 369D2405-29 | . PLEXIGLASS STIFFENER . . . . . (Refer to item 11, fig. 1-2.) | 1 | |
| | 369D2405-30 | . PLEXIGLASS STIFFENER . . . . . (Refer to item 12, fig. 1-2.) | 1 | |

# SECTION 2
# MAINTENANCE INSTRUCTIONS

2-1. GENERAL INFORMATION.

2-2. DESCRIPTION. A Hughes Model 500D/E (369D/E) helicopter may be equipped with an engine air inlet diverter, instead of the standard engine air inlet fairings (Section 3, HMI - Vol 1). The engine air inlet diverter is fabricated of glass cloth layers over polyurethane foam fillers. The engine air inlet diverter completely encircles the mast support structure, which reduces the ingestion of foreign objects into the engine air inlet which might be of sufficient mass to puncture the screen particle separator and damage the engine. The engine air inlet diverter establishes the main air inlet duct which directs ambient outside air to the engine inlet, oil cooler blower, and main transmission. It also reduces ingestion of large dust and sand particles, as well as snow and slush, which may accumulate on the canopy at low speeds and subsequently swept toward the air inlet when forward speed is increased.

2-3. MAINTENANCE OF THE ENGINE AIR INLET DIVERTER. Maintenance of the engine air inlet diverter is similar to that of standard engine air inlet fairing (Section 3, HMI - Vol 1).

# SECTION 3
# INSTALLATION INSTRUCTIONS

3-1. GENERAL INFORMATION.

3-2. SCOPE. Procedures in this section may be performed at the operators discretion and are applicable to all 369D/E helicopters. These instructions provide for the installation of the engine air inlet diverter kit.

3-3. REFERENCE DATA. Table 3-1 lists tools and equipment. Consumable materials and expendable items are listed in Table 3-2. Items listed in the tables are recommended by the manufacture for use in Hughes Model 500D/E Series helicopter.

3-4. PREPARATION FOR INSTALLATION. Preparation for installation of the engine air inlet diverter kit includes the following:

a. Ensure all electrical switches are set to OFF. Ensure that BATTERY-OFF-EXT switch is OFF.

b. Identify all components, including attaching hardware, to be removed for access to work areas. Protect components from damage and foreign matter until reinstalled.

3-5. REMOVAL OF ENGINE AIR INLET FAIRINGS. (369D292044, -501 ONLY)

a. Remove inspection access door from existing right inlet fairing assembly.

b. Remove existing engine left and right inlet fairing assemblies by removing 16 screws securing fairing flanges, 14 screws joining aft section engine inlet fairing, and 2 screws joining left and right fairings inside.

NOTE

Identify and retain all components, including hardware, removed from helicopter.

3-6. REMOVAL OF ENGINE FAIRING SUPPORTS. (369D292045 ONLY)

a. Remove existing 369D22400-3 and -4 supports and attaching hardware by removing rivets and nutplates. (See fig. 3-3.)

3-7. INSTALLATION OF ENGINE AIR INLET DIVERTER FAIRINGS.

NOTE

On helicopters utilizing PN 369D292045, proceed to step q.

a. On helicopters utilzing PN 369D292044, -501, set new left and right fairings in final assembly position. Attach them to engine aft section inlet fairing with one screw at top center. (See fig. 3-1 for 500D and fig. 3-2 for 500E.)

NOTE

PN 369D292044-15/16 Closures (components of PN 369D292044 Fairing Assembly) may require trimming to clear mast and control; trim as required. (See fig. 3-1 for 500D and fig. 3-2 for 500E.)

b. Install two screws through left and right fairings along rear top center and two inside, also install four screws through overlapping front vertical edges of left and right fairings.

c. Set left and right flange assemblies against base of fairings in final assembly position, and verify that flanges are in proper contact with each other at front end, then tape flanges to fairings and to fuselage.

d. Insert 1/16-inch drill bit into front pilot holes in flanges and drill holes in fairings, then install black, 1/16-inch Wedgelock (or similar) fasteners in holes, readjust flanges to proper position as required, then drill through remaining pilot holes, each side. Install fasteners in approximately every other pilot hole.

e. Remove fairings from helicopter, and enlarge pilot holes in fairings to 0.128 inch for 1/8 inch rivets. Use No. 30 drill.

f. Install NAS1738B4-3 rivets in flange to fairing holes, with Cherry 350 gun and 35004 nose assembly, or equivalent.

Table 3-1. Tools and Equipment

| Item No. | Part Number | Nomenclature | Manufacturer |
|---|---|---|---|
| 1 | AT550M (46) | Wedgelock Fastener | Wedgelock Division, Monogram Industries, Inc. 1001 Monterey Pass Road Monterey Park, CA 91754 |
| 2 | 200 | Pliers | Wedgelock |
| 3 | AT532-65 or AT500-55 | No. 10 Hole Finder | ATI Industries, Inc. 220 N. Tulip Street Escondido, CA 92025 |
| 4 | 350 | Rivet Gun | Cherry Fasteners, Townsend Div. of Textron, Inc. 1224 E. Warner Avenue Santa Ana, CA 92707 |
| 5 | 35004 | Nose Assy | Cherry Fasteners |
| 6 | | Drill Motor, Portable 1/4 inch | Commercial |
| 7 | | Drill Bits: 1/16 inch No. 30 (0.128 inch) No. 9 (0.1960 inch) No. 7 (0.2010 inch) | Commercial |

Table 3-2. Consumable Materials and Expendable Items

| Item | Material | Specification No. (1) | Commercial Product (2) | |
|---|---|---|---|---|
| | | | Name/No. | Manufacturer |
| 1 | Primer coating, zinc chromate, Low-moisture-sensitive (Federal Spec TT-P-1757) | 908-L-02110 | | Glidden-Durkee Div., SCM Corp. 900 Union Commerce Building Cleveland, OHIO 44115 |
| 2 | Acrylic Lacquer | 1063-166 | | E.I. DuPont de Nemours and Co. Marshall Laboratory 3500 Grays Ferry Avenue Philadelphia, PA 19146 |
| 3 | Acrylic Cement, Type III, Non-Solvent, Medium Viscosity | MIL-A-8576 | | Commercial |

NOTES: (1) Numbers are U.S.A. Specifications and Standards. The prefix symbols are defined as follows: AMS - American Material Standard; MS - Military Standard; MIL - Military Specification; Single, double or triple alpha prefix of the same letter - Federal Specification; AN - Air Force - Navy Aeronautical Standard; NAS - National Aerospace Standard.

(2) Primary selection. Any equivalent material may be used as an alternate selection.

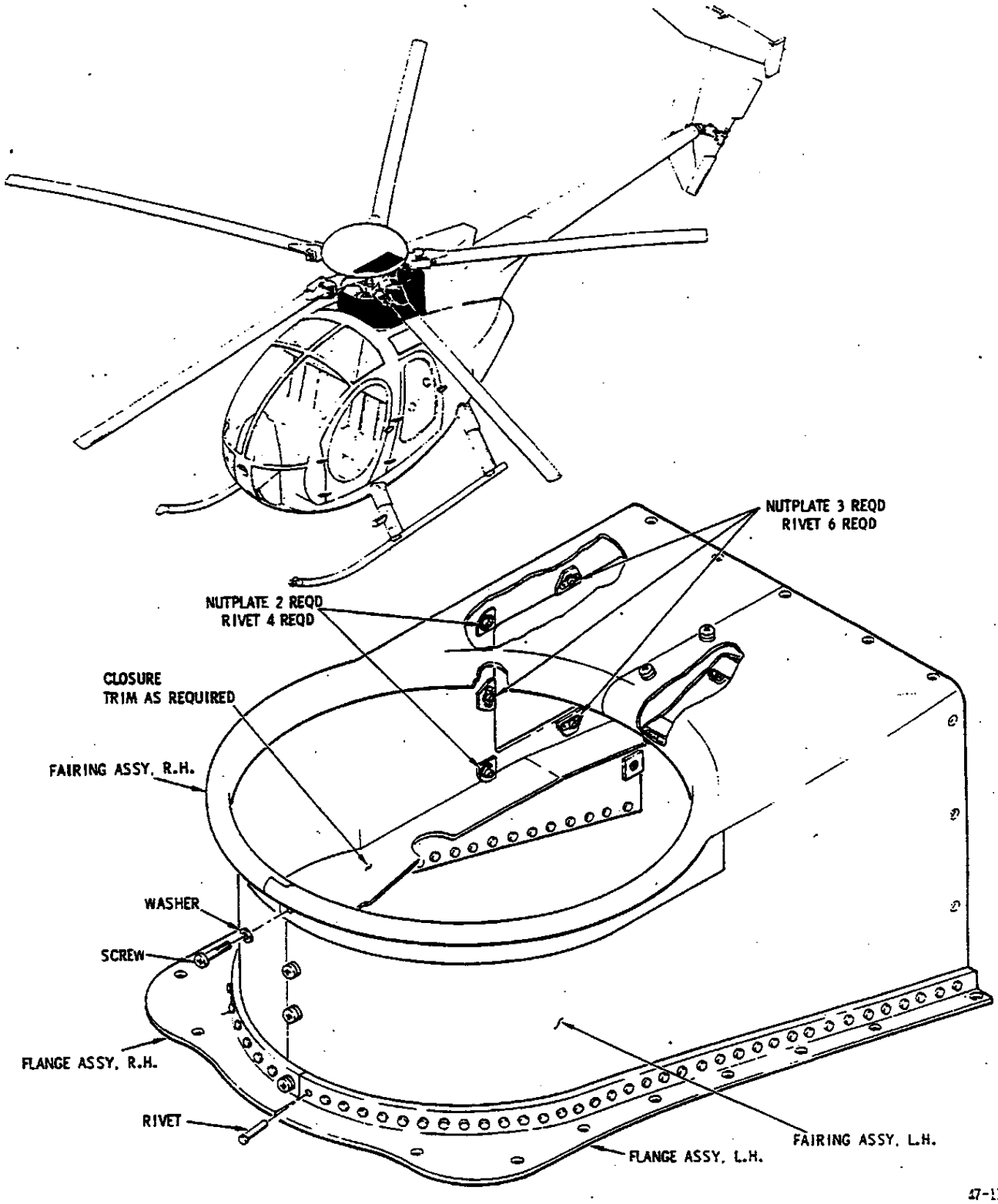


Figure 3-1. Engine Air Inlet Diverter Kit for 500D Helicopter

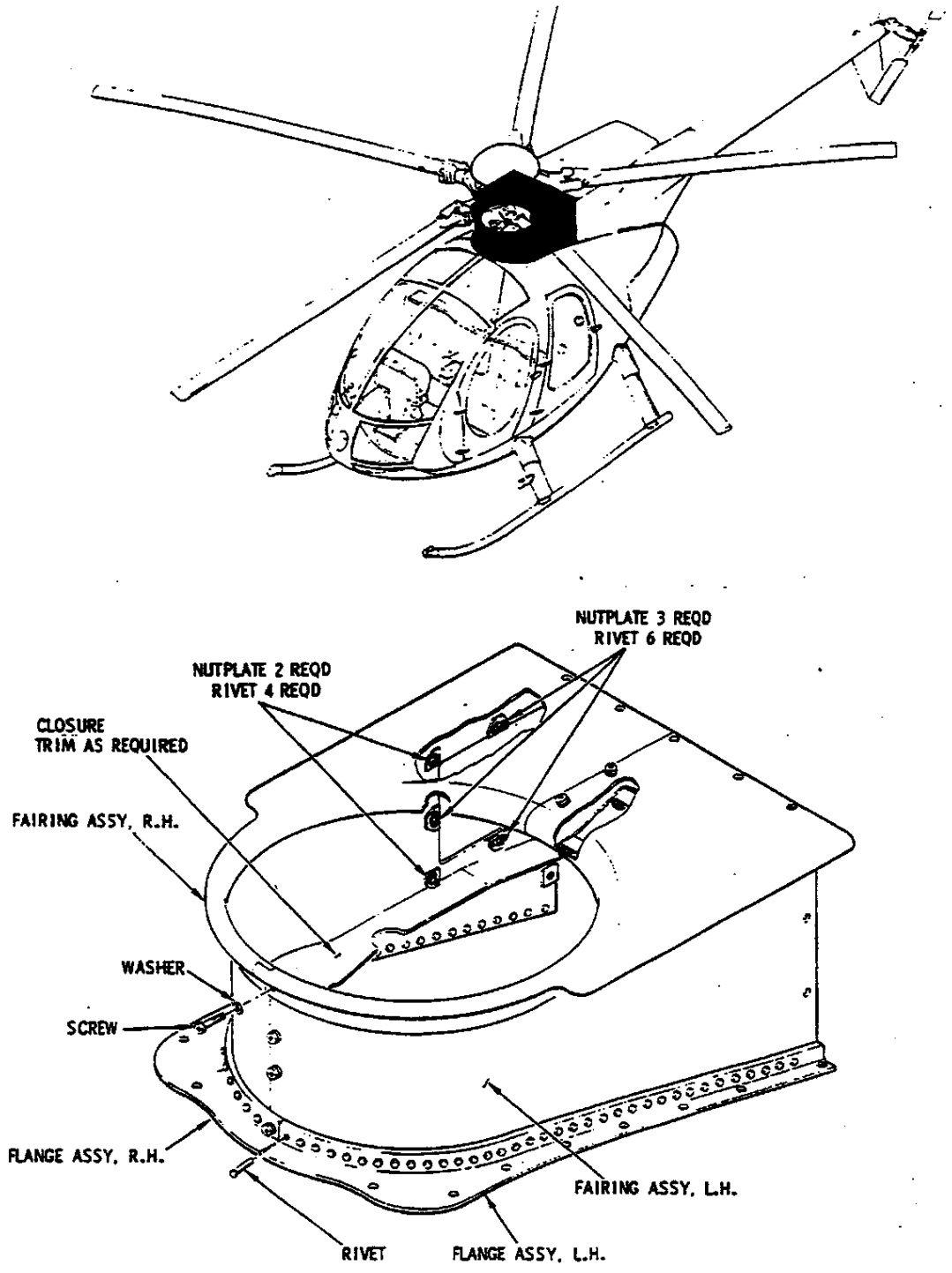


Figure 3-2. Engine Air Inlet Diverter Kit for 500E Helicopter

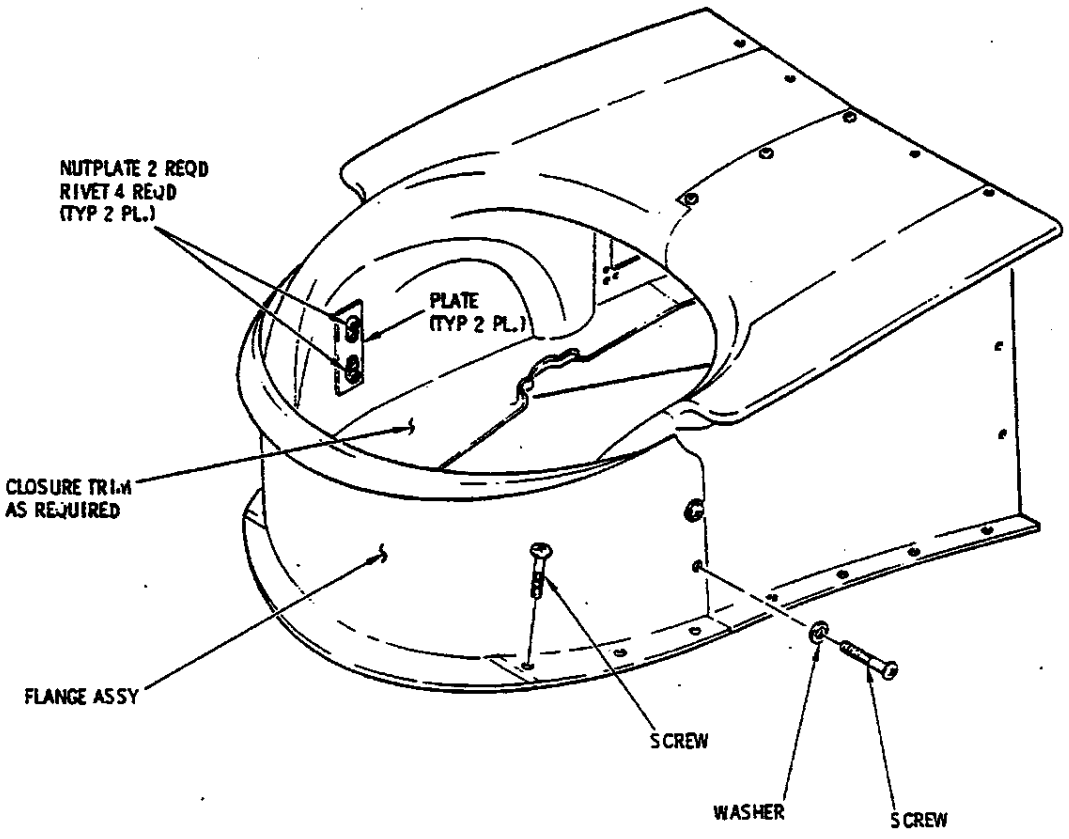


Figure 3-3. Engine Air Inlet Diverter Kit for 500D E. (369D292045)

NOTE

Before installing rivets, deburr holes as required, and coat holes in aluminum flanges with 908-L-02110 primer coating, or equivalent. Install rivets while coating is wet.

g. Reinstall fairing assemblies, and secure each with screws as before (para 3-7).

NOTE

Before drilling pilot holes in flanges, remove interior paneling from ceiling so frequent checks of accuracy can be made. Cover lower interior of helicopter with drop cloth to catch metal chips.

h. Using a No. 10 hole finder, locate and drill holes in new left and right flanges assemblies. Remove hole finder and enlarge holes, using No. 7 (0.2010 inch) drill.

i. Remove fairing assemblies from helicopter, and install nutplates for access door. (See figures 1-1 for 500D and 1-2 for 500E.)

j. Apply primer coating inside holes in flange assemblies, then allow primer to dry thoroughly. After coating has dried, apply top coats of acrylic lacquer to match original pattern.

k. Install fairing assemblies, then install access door.

l. Remove drop cloth, and vacuum interior of helicopter.

m. Reinstall ceiling paneling.

n. If ship is equipped with PN 369D22070-BSC blower access door assembly, remove and replace with PN 369D22070-501 blower access door assembly.

o. Replace PN 369D26531-35, -37, -39 and/or 369D26531-29, -31, -33 $V_{ne}$ cards with PN 369D292579-3, -5, -7 $V_{ne}$ cards for 500D helicopter.

p. Replace PN 369D292579-3, -5, -7, $V_{ne}$ cards with PN 369D292582-3, -5, -7, $V_{ne}$ cards for 500E helicopter.

NOTE

For helicopters utilizing PN 369D292045, refer to fig. 3-3 when performing the following steps.

q. Position supports (1, 2, fig. 1-3) into place to mark points for any required new drilling. (Use as many existing attach points as possible.) Using No. 7 drill bit, locate and drill required new holes.

r. Install rivets and nutplates as required for each support.

s. Position fairing assembly (11, fig. 1-3) into place. Locate hole locations for the installation of the plate assemblies (8, fig. 1-3) which bonds the fairing assembly to the existing engine fairing.

t. Using a No. 7 drill bit, drill required holes into both fairing assemblies.

u. Install screws (6, fig. 1-3) and washers (7, fig. 1-3).

v. Using a No. 7 drill bit, locate and drill holes through flange (13, fig. 1-3). Install screws (5, fig. 1-3) into flange securing the fairing assembly (11, fig. 1-3).

3-8. INSTALLATION OF PLEXIGLASS STIFFENERS TO UPPER CANOPY WINDSHIELD.

a. Trim 0.75 inch from outboard end of each stiffener.

b. Prepare acrylic cement per manufacturer's instructions.

c. Apply cement per manufacturer's instructions to stiffeners and canopy and install stiffeners as shown in figure 1-2. (Approximately 6.0 inches forward of station 89.39 on the interior surface of the canopy.)

3-9. WEIGHT AND BALANCE DATA.

3-10. Weight and balance data resulting from installation of engine air inlet diverter kit is listed in Table 3-3. After installation of kit, incorporate changes in helicopter weights and balance records as instructed in HMI - Vol 2.

Table 3-3. Weight and Balance Data

| | Weight (Pounds) | Arm (Inches) | Moment (in. -lb/100) |
|---|---|---|---|
| Added | 11.52 | 92.8 | 1.41 |
| Removed | -0.02 | 90.4 | -0.02 |
| Change | -1.50 | 92.7 | -1.39 |