

**LIST OF FIELD MODIFICATIONS**

**WASP 985 AN-5, -14B ENGINES**

(This EO replaces EO 10A-10AA-6A dated 13 Nov 63)

**TABLE OF CONTENTS**

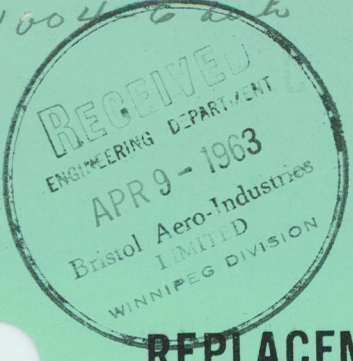
| LATEST DATE | EO NO         | TITLE   |
|-------------|---------------|---|
|             | 10A-10AA-6A/1 | (Rescinded)   |
| *           | /2            | (Rescinded) Installation of 2:1 Generator Drive Gears |
|             | /3            | (Replaced by EO 10A-10AA-6A/4)                        |
| 11 Dec 59   | /4            | Plate Assembly, Intercylinder Deflector Part 49403    |
| 10 May 61   | /5            | Rework of Swivel Breather                             |
| 16 Sep 63   | /6            | Improved Intercylinder Baffles                        |
| 29 Jul 63   | /7            | Replacement of Valve Rockershaft Nuts & Seals         |

**RELEASE IS AUTHORIZED  
BY ENGINEERING**

\* Asterisks appearing opposite entries denote changes since last issue.

ISSUED ON AUTHORITY OF THE CHIEF OF THE DEFENCE STAFF





MODIFICATION

REPLACEMENT OF VALVE ROCKERSHAFT NUTS AND SEALS

EQUIPMENT AFFECTED: R985-AN14B, AN5 Engines

BY WHOM WORK WILL BE PERFORMED: Operating Units, Contractors

WHEN WORK WILL BE PERFORMED: Operating Units when oil leaks develop in this area. Contractors at overhaul

RCAF FORM ENTRIES: L14-7

MODIFICATION OF SPARES IN STOCK: NA

**SUPERSEDED**  
29 July 63

PURPOSE

1 To improve oil sealing characteristics at the inner end of the rockershaft.

MODIFICATION DATA

2 The modification is to be embodied as follows:

- (a) Remove inner rockershaft nut 36P/16405; gasket 36P/8955 or 36P/17354 and seal 36P/30489.
- (b) Install "O"-ring seal 28/AN123867 and nut 36P/343986.
- (c) Tighten the valve rockershaft nut 36P/343986 snug against the bushing, then further tighten to the next cotterpin slot.

PARTS REQUIRED

3 The following parts are required per engine and are to be demanded from 7SD as Mod. Kit Ref. 57/10A10AA6A7.

| RCAF REF. | PART     | DESCRIPTION             | QTY. |
|-----------|----------|-------------------------|------|
| 36P/      | 343986   | Nut - valve rockershaft | 18   |
| 28/       | AN123867 | "O"-ring seal           | 18   |

PARTS RENDERED SURPLUS OR OBSOLETE

4 Parts removed as a result of this modification are of no further use to the RCAF. Serviceable items in stock are required.

| RCAF REF. | PART  | DESCRIPTION             | QTY. |
|-----------|-------|-------------------------|------|
| 36P/      | 16405 | Nut - valve rockershaft | 18   |
| 36P/      | 8955  | Gasket                  | 18   |
|           | or    |                         |      |
|           | 17354 |                         |      |
| 36P/      | 30489 | Seal                    | 18   |

THIS E.O. ~~IS~~ <sup>IS NOT</sup> APPLICABLE TO  
 ALL A/E WHEN OIL LEAK DEVELOPS  
 [Signature]

APRIL 10/62

WEIGHT, LOADING AND BALANCE DATA

5 There is no change in weight or centre of gravity due to this modification.

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

Prepared by:  
AMC/SAMO/PA1

## MODIFICATION

# IMPROVED INTERCYLINDER BAFFLES

(This EO replaces EO 10A-10AA-6A/6 dated 9 Jan 62)

|                                  |   |
|----------------------------------|---|
| EQUIPMENT AFFECTED:              | R985 - AN14B Aero Engine  |
| BY WHOM WORK WILL BE PERFORMED:  | Operating Units, RDs and Contractors                                  |
| WHEN WORK WILL BE PERFORMED:     | Operating Units, RDs, at engine installation. Contractors on overhaul |
| RCAF FORM ENTRIES:               | L14-7   |
| MODIFICATION OF SPARES IN STOCK: | NA  |

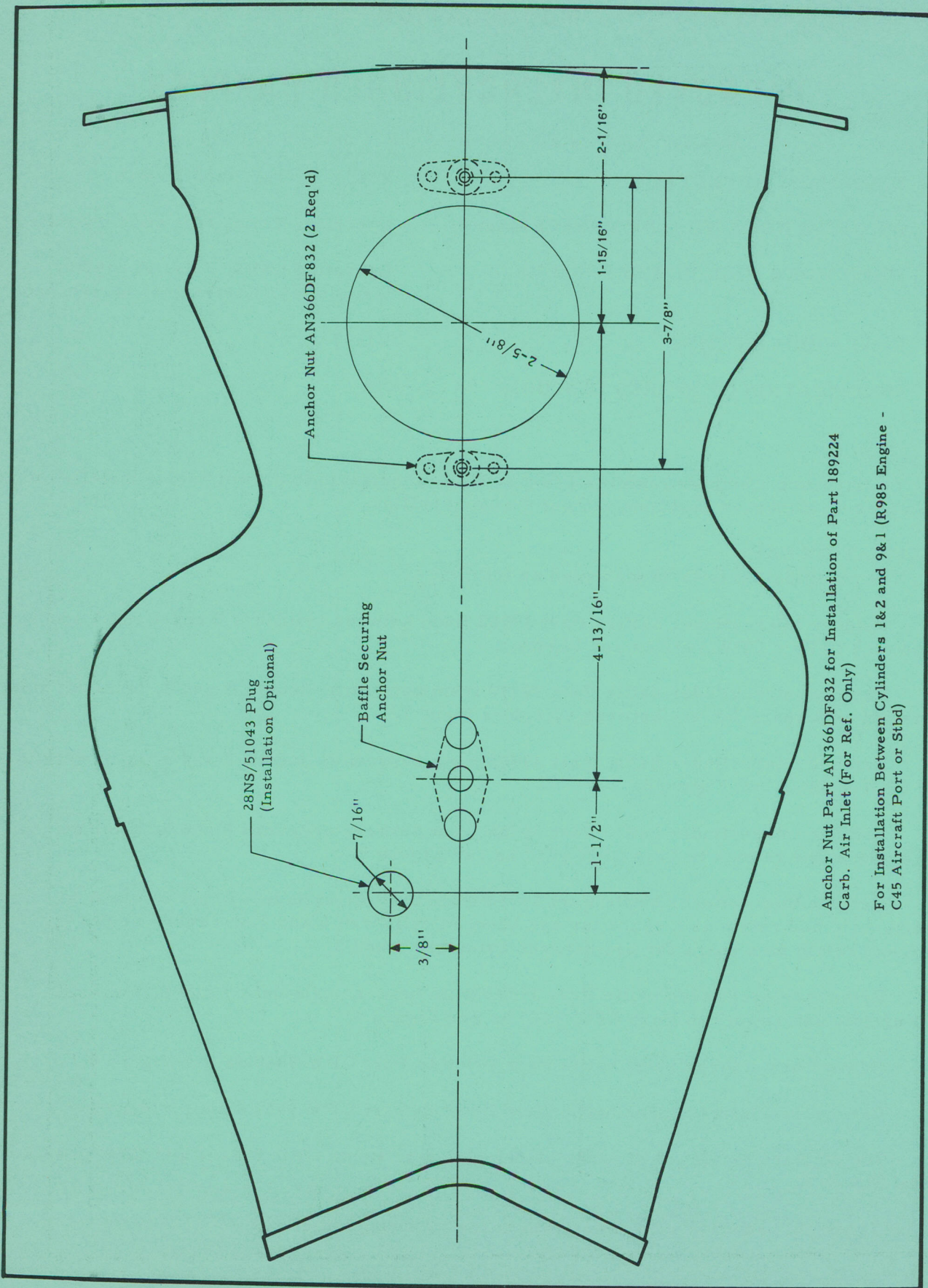
### PURPOSE

1 To introduce a standard intercylinder baffle configuration to permit engine installation in either port or starboard positions without changing baffles.

### MODIFICATION DATA

2 The modification is to be embodied as follows:

- (a) Remove intercylinder baffles Part 39982 from between cylinders 9 and 1 and 4 and 5 and rework to Part CPW 9437 as per Figure 1.
- (b) Remove intercylinder baffle Part 39990 from between cylinders 1 and 2, blank off hole and retain as a spare for use between cylinders 6 and 7.
- (c) Remove intercylinder baffle Part 39988 from between cylinders 2 and 3 and rework to Part CPW 9438 as per Figure 2.
- (d) Remove intercylinder baffle Part 39986 from between cylinders 8 and 9, blank off existing hole and rework to Part CPW 9442 as per Figure 5.
- (e) Remove intercylinder baffle Part 39986 from between cylinders 3 and 4, blank off existing hole and retain as a spare for use between cylinders 6 and 7 or rework as per (d) above and retain as a spare for use between cylinders 4 and 5.
- (f) Remove intercylinder baffle Part 39992 from between cylinders 7 and 8, blank off existing hole and rework to Part CPW 9440 as per Figure 4.
- (g) Rework new intercylinder baffle Part 39986 to Part CPW 9440 as per Figure 4.
- (h) Rework new intercylinder baffle Part 39982 to Part CPW 9439 as per Figure 3.
- (j) Manufacture locally, 1 of each, blanking plates, Parts CPW 9441-1 and CPW 9441-2 as per Figure 6.
- (k) Assemble baffles to engine as given in the following table.



Anchor Nut Part AN366DF832 for Installation of Part 189224  
Carb. Air Inlet (For Ref. Only)  
For Installation Between Cylinders 1&2 and 9&1 (R985 Engine -  
C45 Aircraft Port or Stbd)

Figure 1 (Issue 3)

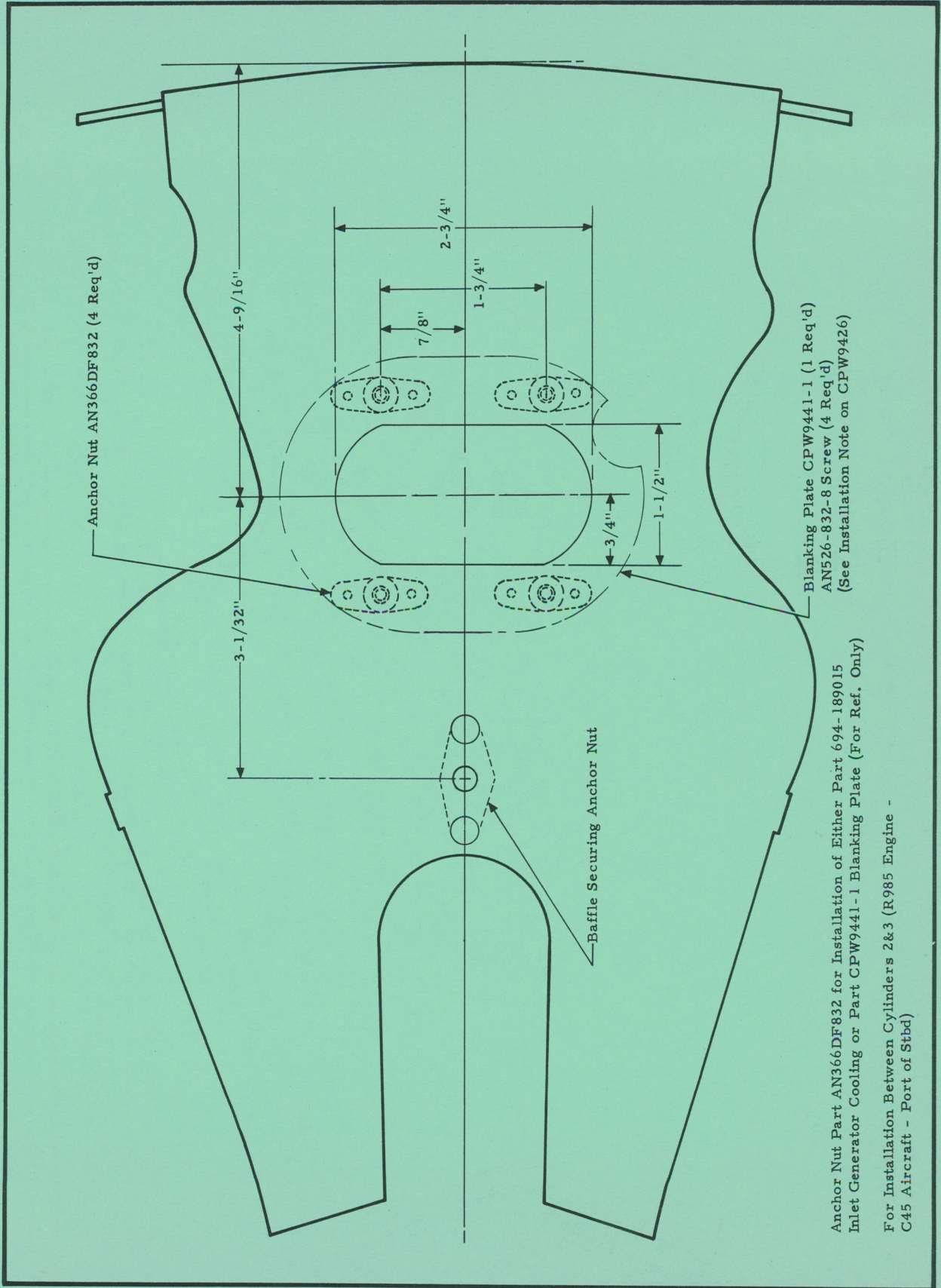
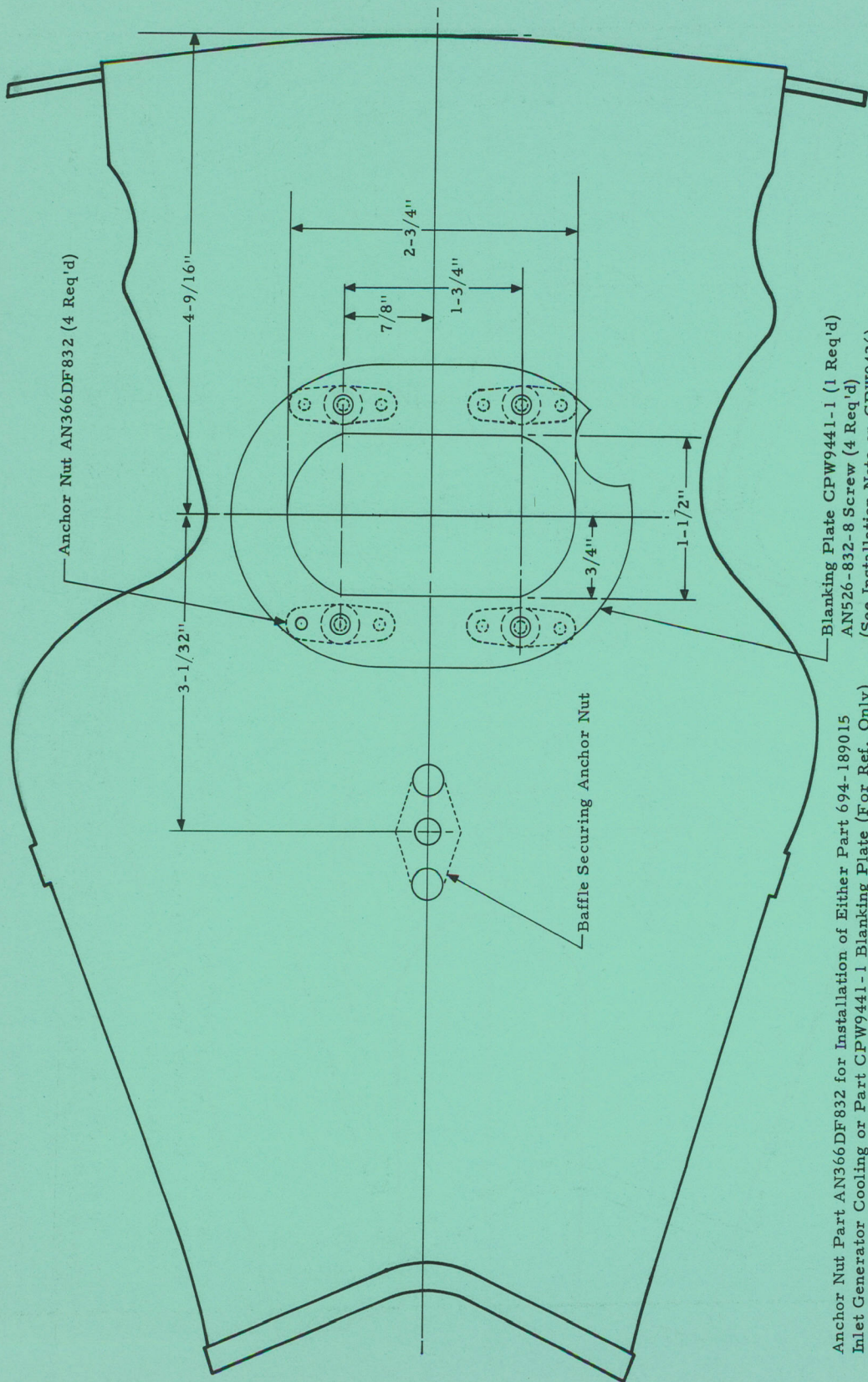


Figure 2



Anchor Nut Part AN366DF832 for Installation of Either Part 694-189015  
Inlet Generator Cooling or Part CPW9441-1 Blanking Plate (For Ref. Only)  
For Installation Between Cylinders 8&9 (R985 Engine -  
C45 Aircraft - Port or Stbd)

Figure 3



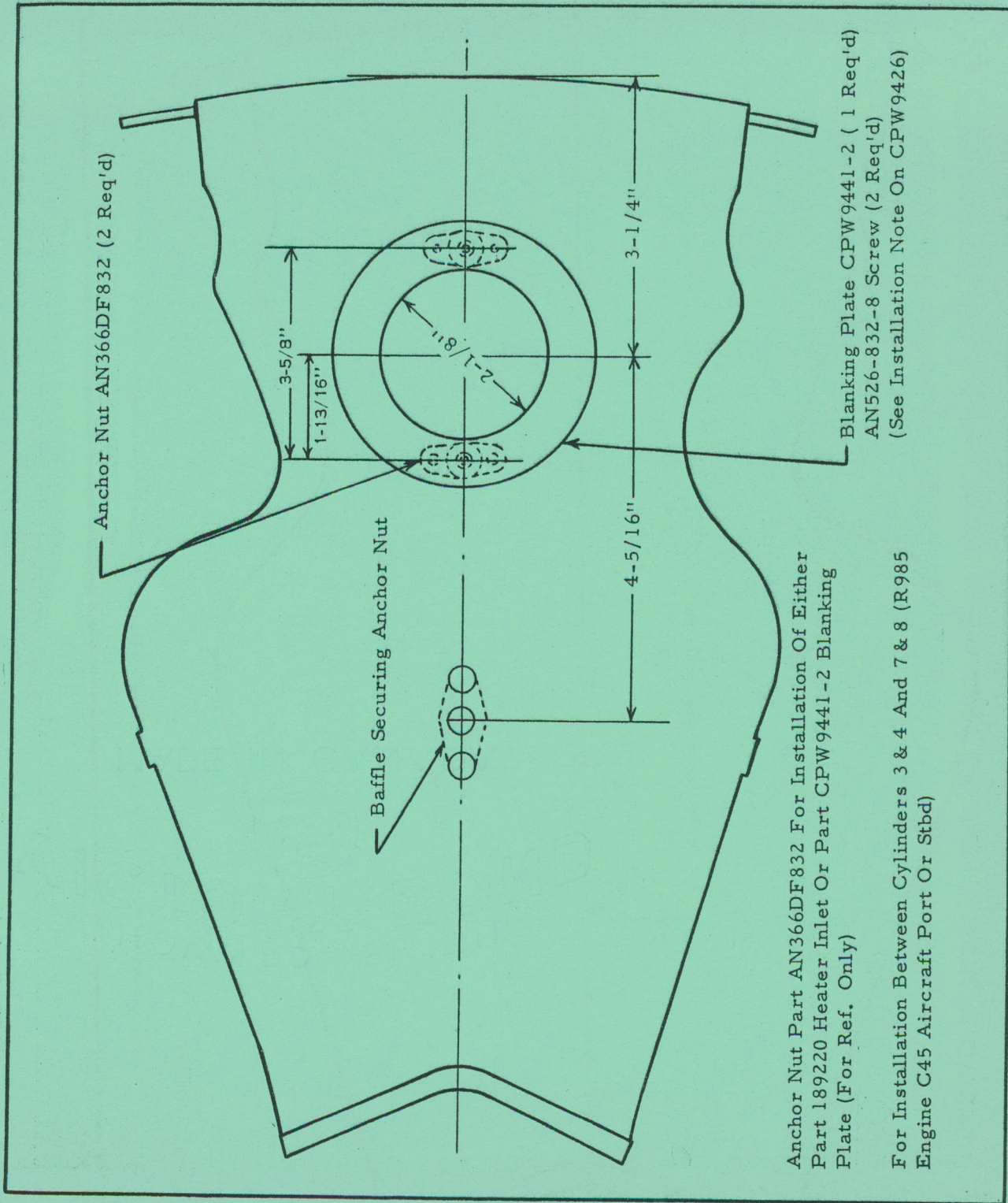
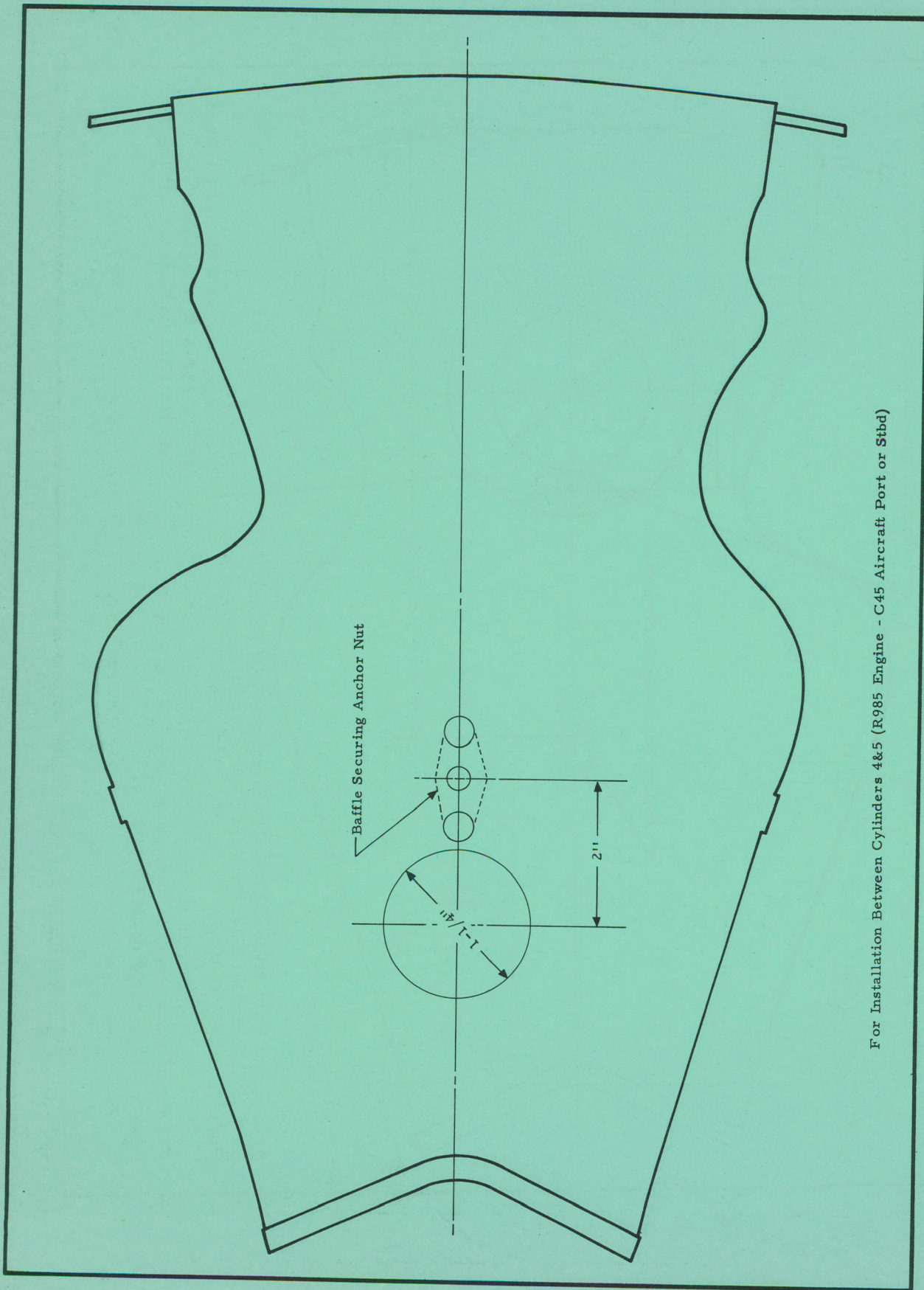
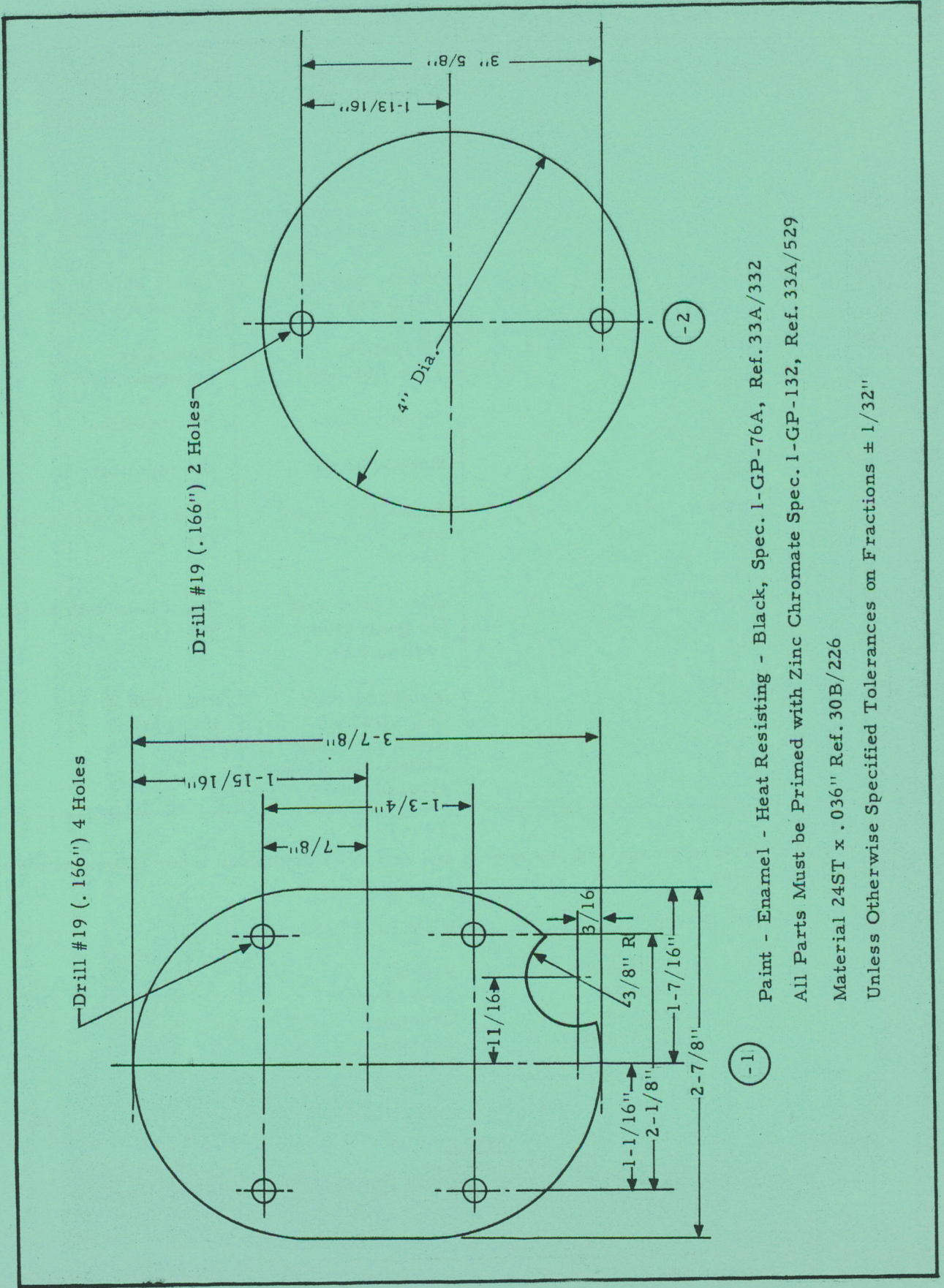


Figure 4 (Issue 3)



For Installation Between Cylinders 4&5 (R985 Engine - C45 Aircraft Port or Stbd)

Figure 5 (Issue 2)



-1

-2

Paint - Enamel - Heat Resisting - Black, Spec. 1-GP-76A, Ref. 33A/332  
 All Parts Must be Primed with Zinc Chromate Spec. 1-GP-132, Ref. 33A/529  
 Material 24ST x .036" Ref. 30B/226  
 Unless Otherwise Specified Tolerances on Fractions ± 1/32"

Figure 6 (Issue 3)

| Part No.  | Installed<br>Between<br>Cylinders | Figure | Engine Location  |  |
|-----------|-----------------------------------|--------|--|--|
|           |                                   |        | Port   | Starboard  |
| CPW 9437  | 1 and 2                           | 1      | Plug hole with<br>28NS/51043   | Install de-icer line<br>through hole with<br>AN832-4 bulkhead union<br>AN960-716 washer<br>AN924-4 NWT |
| CPW 9438  | 2 and 3                           | 2      | Blank hole with<br>Plate 9441-1  | Leave hole open for<br>generator cooling tube  |
| CPW 9440  | 3 and 4                           | 4      | Blank hole with<br>Plate 9441-1  | Leave hole open for<br>cabin heat intake   |
| CPW 9442  | 4 and 5                           | 5      | Propeller<br>governor line   | Propeller<br>governor line   |
| CPW 41463 | 5 and 6                           | -      | Not modified   | Not modified   |
| CPW 39982 | 6 and 7                           | -      | Not modified   | Not modified   |
| CPW 9440  | 7 and 8                           | 4      | Leave hole open<br>for cabin heat<br>intake  | Blank hole with plate<br>9441-2  |
| CPW 9439  | 8 and 9                           | 3      | Leave hole open<br>for generator<br>cooling tube                                     | Blank hole with plate<br>9441-1  |
| CPW 9437  | 9 and 1                           | 1      | Install de-icer<br>line AN832-4<br>Bulkhead union<br>AN960-716 washer<br>AN924-4 NWT | Plug hole with<br>28NS/51043   |

## PARTS REQUIRED

3 The following parts are required per engine and are to be demanded from 7SD as mod kit Ref. 57/10A10AA6A6:

| RCAF REF. | PART         | DESCRIPTION                          | QTY. |
|-----------|--------------|--------------------------------------|------|
| 28/       | AN526-832-8A | Screw                                | 6    |
| 28/       | NAS680A08    | Anchor nut                           | 16   |
| 28/       | AN931-5-9    | Grommet                              | 1    |
| 28/       | AN931-14-20  | Grommet                              | 1    |
| 28NS/     | 51043        | Plug                                 | 1    |
| 30B/      | 226          | Aluminum alloy sheet<br>24ST x .036" | AR   |

NOTE

Aluminum alloy sheet 24ST x .036 Ref. 30B/226 to be obtained locally.

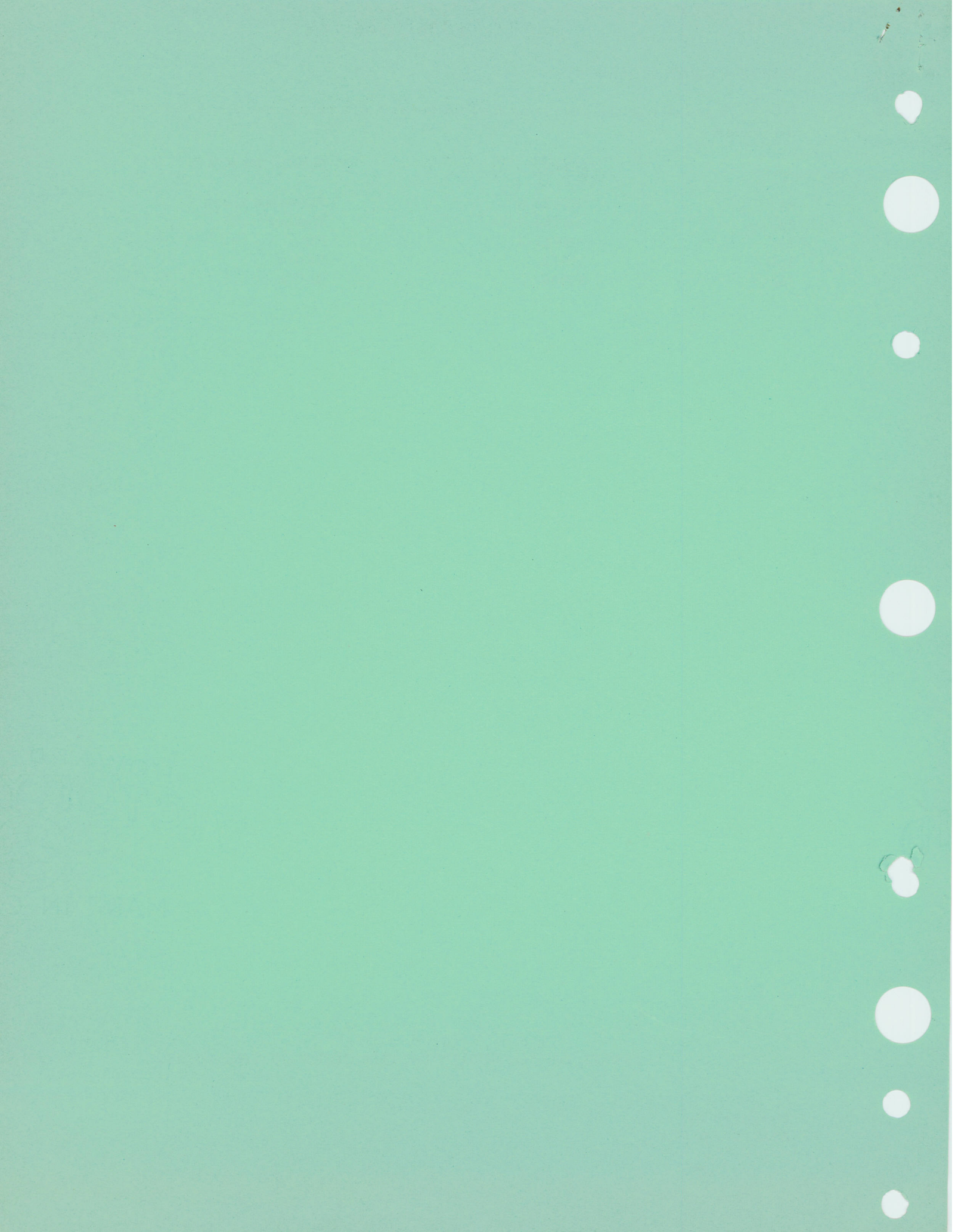
## PARTS REQUIRED (Cont'd)

(a) In addition to the preceding mod kit the following parts are also required and are to be demanded:

| RCAF REF. | PART      | DESCRIPTION    | QTY. |
|-----------|-----------|----------------|------|
| 28/       | AN832-4   | Bulkhead union | 1    |
| 28/       | AN960-716 | Washer         | 1    |
| 28/       | AN924-4   | Nut            | 1    |
| 36P/      | 39982     | Baffle         | 1    |
| 36P/      | 39986     | Baffle         | 1    |

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

Prepared By:  
AMC/SAMO/PA1



## MODIFICATION

# REWORK OF SWIVEL BREATHER

(This EO replaces EO 10A-10AA-6A/5 dated 10 Feb 61)

|                                  |   |
|----------------------------------|---|
| EQUIPMENT AFFECTED:              | R985-AN-14B Engines   |
| BY WHOM WORK WILL BE PERFORMED:  | Operating Units, Contractors  |
| WHEN WORK WILL BE PERFORMED:     | Operating Units, at engine change or when an unacceptable oil leak occurs in this area. Contractors, at overhaul as per para. 6 |
| RCAF FORM ENTRIES:               | L14, Log Book   |
| MODIFICATION OF SPARES IN STOCK: | NA  |

**PURPOSE**

1 To reduce incidence of oil leaks at swivel breather.

**MODIFICATION DATA**

2 The modification is to be carried out as follows:-

(a) On side where swivel breather is blanked off remove items 51, 53, 63, 64, 65 and 66 detailed in Figure 2-10 Sheet 2 page 78 of EO 10A-10AA-4. Replace with items 51 (Part 10682 bushing) and item 53 (Part AN913-3S plug).

(b) Crankcase breather line is to be installed using the existing bushing 10682 and the following parts, AN914-3D elbow 90°, AN911-3D nipple, AN917-3D tee, AN823/8 elbow 45°, AN912-3D bushing, and AN823/4 elbow 45°.

**PARTS REQUIRED**

3 The following parts are required:-

| RCAF REF. | PART     | DESCRIPTION | QUANTITY |
|-----------|----------|-------------|----------|
| 28/       | AN914-3D | Elbow 90°   |          |
| 28/       | AN911-3D | Nipple      |          |
| 28/       | AN917-3D | Tee         |          |
| 28/       | AN823/8  | Elbow 45°   |          |
| 28/       | AN912-3D | Bushing     |          |
| 28/       | AN823/4  | Elbow 45°   |          |

THIS E.O. 15 IS APPLICABLE TO

*all a/c as above*

*[Signature]*  
 PROJECT ENGINEER

## PARTS RENDERED SURPLUS OR OBSOLETE

4 The following parts are rendered surplus by this modification and are to be disposed of in accordance with CAP 16, Vol. 1, Part 1, Chap. 13.1.01, paras. 1 and 2:-

| RCAF REF. | PART  | DESCRIPTION      | QUANTITY |
|-----------|-------|------------------|----------|
| 36P/      | 46253 | Fitting - swivel |          |
| 36P/      | 46254 | Support - swivel |          |
| 36P/      | 48139 | Gasket           |          |
| 36P/      | 46255 | Plug             |          |

## WEIGHT, LOADING AND BALANCE DATA

5 There is no change in weight or centre of gravity due to this modification.

## ADDITIONAL DATA

6 Contractors are to carry out para. 2(a) only on both swivel breathers.

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

Prepared By:-  
AMC/SACO/ACR



MODIFICATION

PLATE ASSEMBLY, INTERCYLINDER  
DEFLECTOR PART 49403

(This EO replaces EO 10A-10AA-6A/4 dated 18 Aug 59)

|                                  |                                       |
|----------------------------------|---------------------------------------|
| EQUIPMENT AFFECTED:              | Wasp R985-AN 14B Engines              |
| BY WHOM WORK WILL BE PERFORMED:  | Operating units, RDs, and Contractors |
| WHEN WORK WILL BE PERFORMED:     | Not later than next Major Inspection  |
| RCAF FORM ENTRIES:               | L14, Log Book                         |
| MODIFICATION OF SPARES IN STOCK: | NA                                    |

PURPOSE

1 To re-inforce intercyylinder baffle assembly between #5 and #6 cylinder thus preventing chafing to front plug boss and sides of oil pump.

MODIFICATION DATA

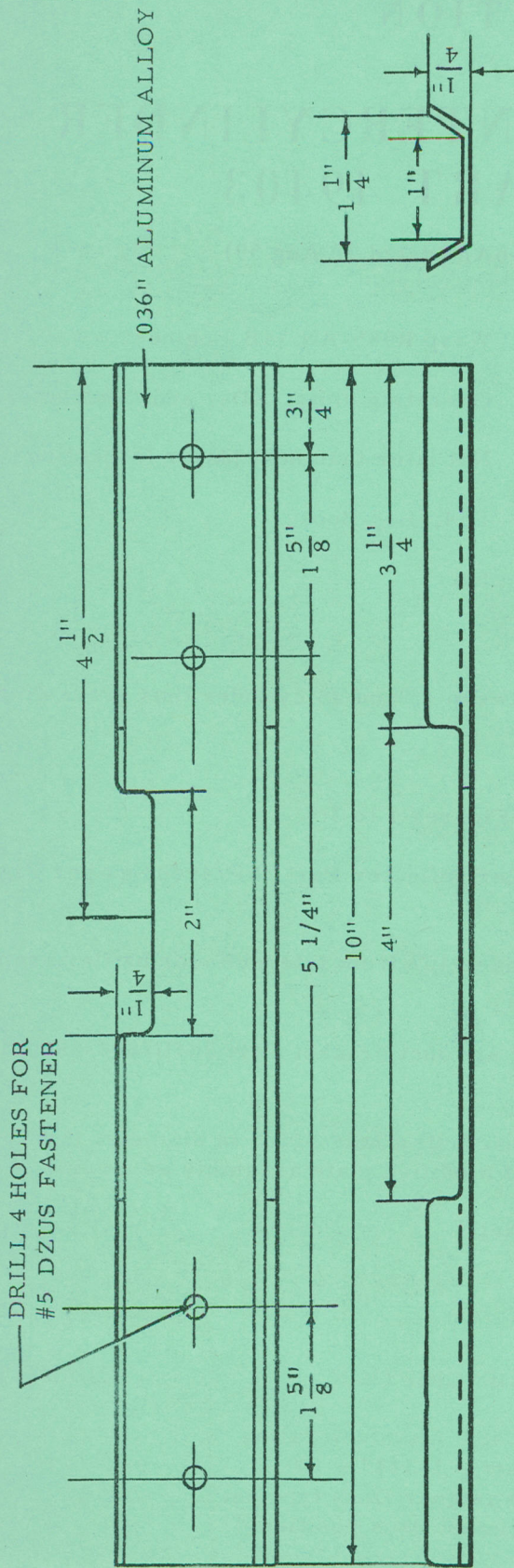
2 The following procedure is to be followed, see Figures 1 to 3:-

- (a) Construct modified plate assembly intercyylinder deflector Part 36P/49403 as per Figure 1.
- (b) Remove latches and spring Part 36P/49406 and 49407 from intercyylinder baffle assembly 36P/71538.
- (c) Remove wedge type anchors from carburettor air duct bracket Part 26JU/804-189061 RH and 26JU/804-189062 LH.
- (d) Place modified plate assembly into position and drill a hole 5/16" in diameter through centre base of each bracket using the outside holes of modified plate assembly as a guide.
- (e) Install spring for Dzus fastener on each bracket.

PARTS REQUIRED

3 The following parts are required:-

| RCAF REF. | PART    | DESCRIPTION                                     | QUANTITY |
|-----------|---------|---|----------|
| 30B/      | 226     | 24ST Aluminum alloy strip 1-3/4" x 10"          | 1        |
| 28NS/     | A5 - 60 | Fastener Dzus type ea. 2 (inner Dzus positions) | 2        |



MANUFACTURING PROCEDURES

1. CONSTRUCT MODIFIED PLATE ASSEMBLY - INTER CYLINDER DEFLECTOR PART 49403 AS SHOWN
2. USE ALUMINUM ALLOY 24ST, SEC./REF. 30B/226
3. SURFACE TREATMENT - ZINC CHROMATE PRIMER REF. 33A/462, MIL-P-6889A
4. FINISH WITH BLACK ENAMEL PAINT REF. 33A/332, SPEC. 1-GP-76-LPO

ALL RADII 1/8" UNLESS OTHERWISE SPECIFIED

Figure 1 (Issue 1)

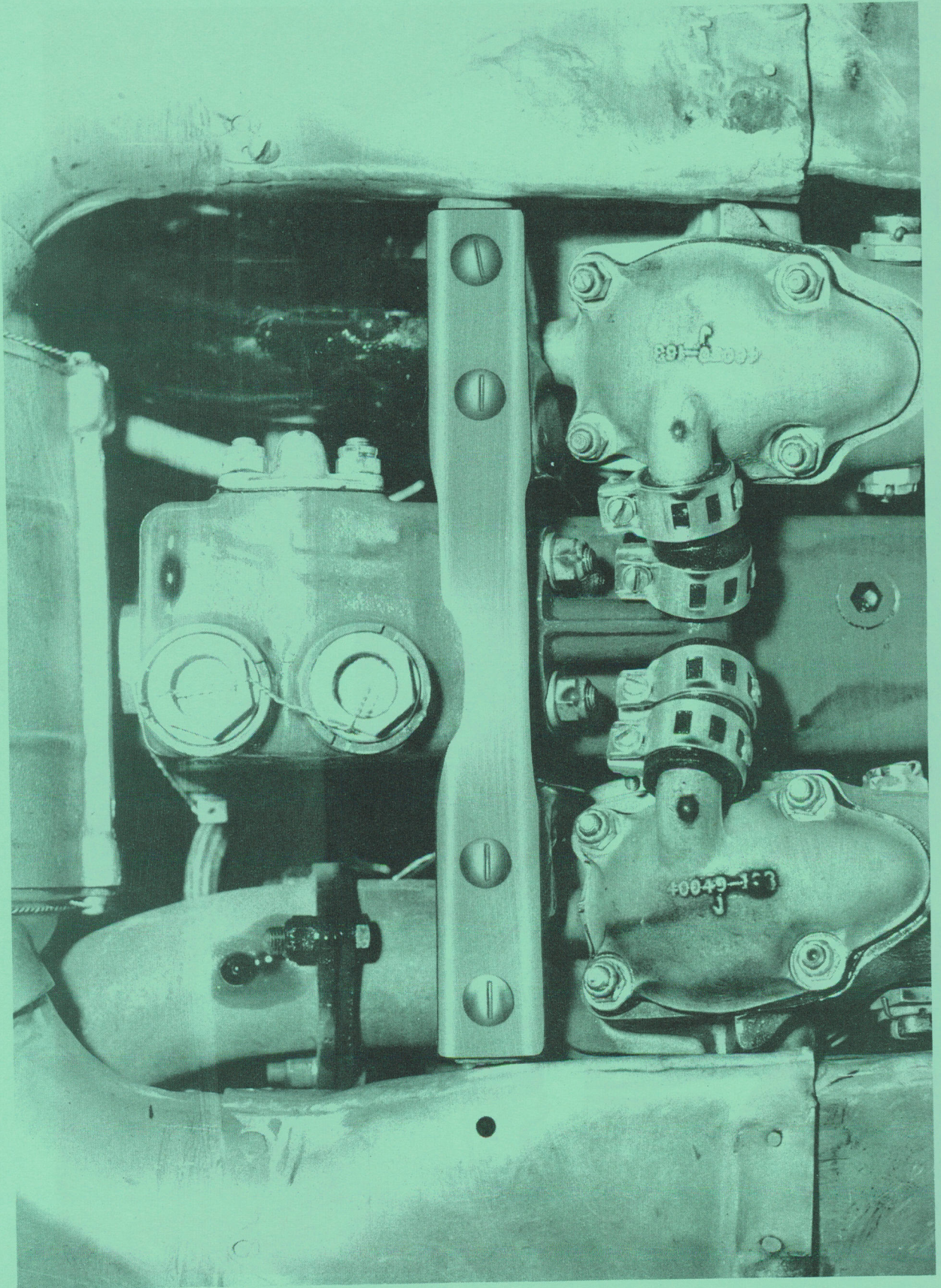


Figure 2

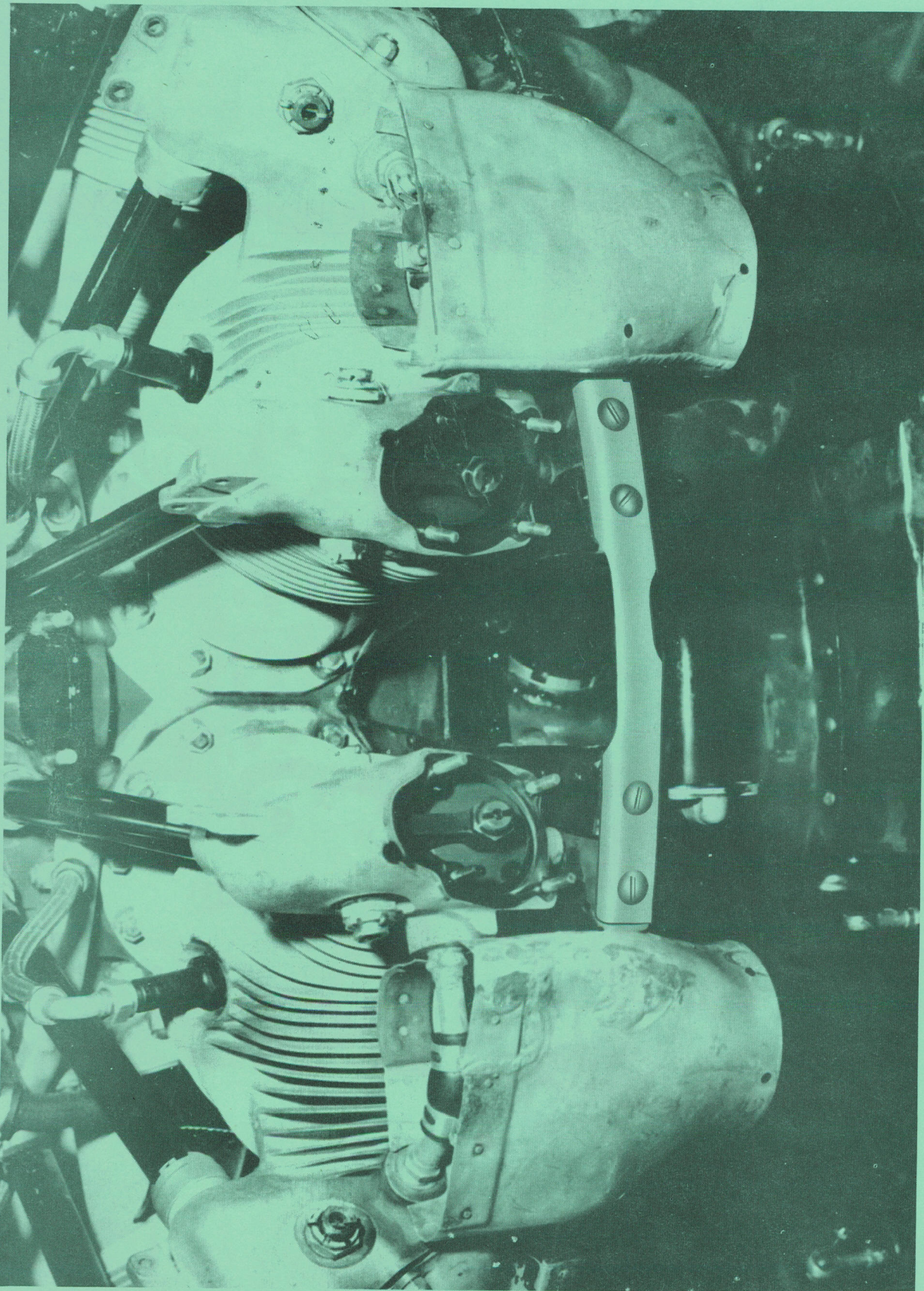


Figure 3

## PARTS REQUIRED (Cont'd)

| RCAF REF. | PART       | DESCRIPTION  | QUANTITY |
|-----------|------------|--|----------|
| 28NS/     | A5 - 40    | Fastener Dzus type<br>(outer Dzus positions)                     | 2        |
| 28/       | AN455AD4-5 | Rivet brazier head<br>.126DIA x .310" long<br>(P & W part 58322) | 4        |

## PARTS RENDERED SURPLUS OR OBSOLETE

4 The following parts are rendered surplus:-

| RCAF REF. | PART    | DESCRIPTION                          | QUANTITY |
|-----------|---------|--------------------------------------|----------|
| 36P/      | 49406   | Latch LH intercyylinder<br>deflector | 1        |
| 36P/      | 49407   | Latch RH intercyylinder<br>deflector | 1        |
| 36P/      | 93314   | Spring guide                         | 2        |
| 36P/      | 49403   | Plate intercyylinder<br>deflector    | 1        |
| 28NS/     | A5 - 60 | Fastener Dzus type                   | 2        |

## WEIGHT, LOADING AND BALANCE DATA

5 There is no change in weight or centre of gravity due to this modification.

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

Prepared By:-  
AMC/SACO/ACR



EO.10A-10AA-6A/2  
Oct. 31/55

A M E N D M E N T

The following amendment to be incorporated in  
E.O.10A-10AA-6A/2.

"OIL SEAL SHOWN IS ACTUALLY 1189 GASKET AND  
SHOULD APPEAR BETWEEN THE GEAR ASSY. AND GENERATOR

AN O SECTION OIL SEAL PART 31123 SHOULD BE SHOWN  
BETWEEN REAR CASE AND GEAR ASSEMBLY. LEAFLET BEING  
AMENDED MEANTIME. ENSURE CONTRACTOR AWARE".

REF. R.C.A.F MESSAGE LOG 3322, 25 OCTOBER 1955.

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## MODIFICATION

# INSTALLATION OF 2:1 GENERATOR DRIVE GEARS

(This EO replaces EO 10A-10AA-6A/2 dated 17 May 55)

|                                  |   |
|----------------------------------|---|
| EQUIPMENT AFFECTED:              | Pratt & Whitney R985-AN14B Engines  |
| BY WHOM WORK WILL BE PERFORMED:  | Contractors at Overhaul<br>Operating Units under the supervision<br>of a 6 RD or CPA(R) representative<br>Repair Depots as directed by AMC  |
| WHEN WORK WILL BE PERFORMED:     | By Contractors at Engine Overhaul<br>By Operating Units on Receipt of Parts<br>and as directed by AMC. A 6 RD or CPA(R)<br>field representative is to be requested for<br>installation supervision<br>By Repair Depots as directed by AMC |
| RCAF FORM ENTRIES:               | L14, Log Book   |
| MODIFICATION OF SPARES IN STOCK: | NA  |

# RESCINDED

AUTH. *Just. 13 Sept. 66*

### PURPOSE

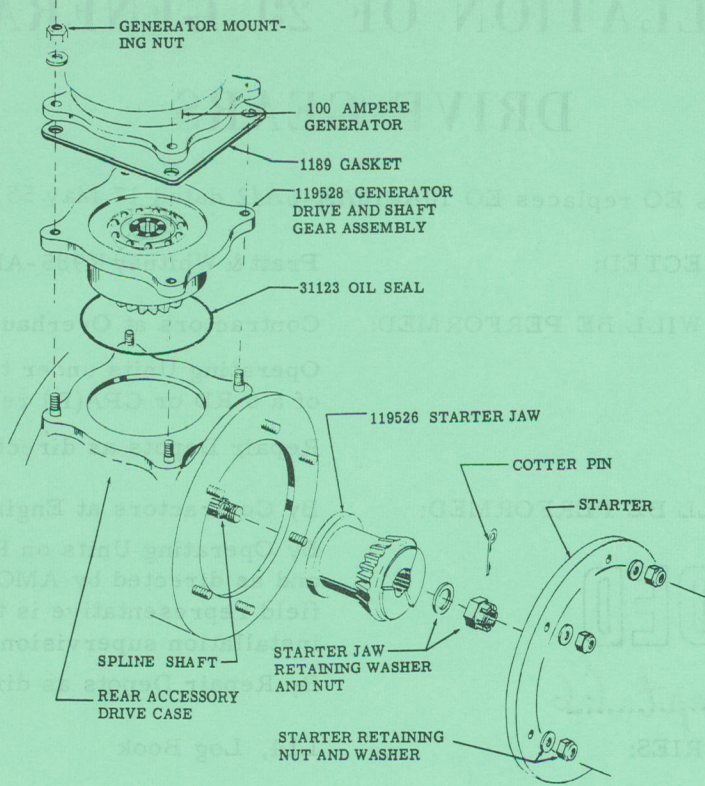
1 To increase the output of the present 50 ampere generator and provide gearing necessary for eventual change to 100 ampere generator installation.

### MODIFICATION DATA

2 The modification is to be carried out as follows:-

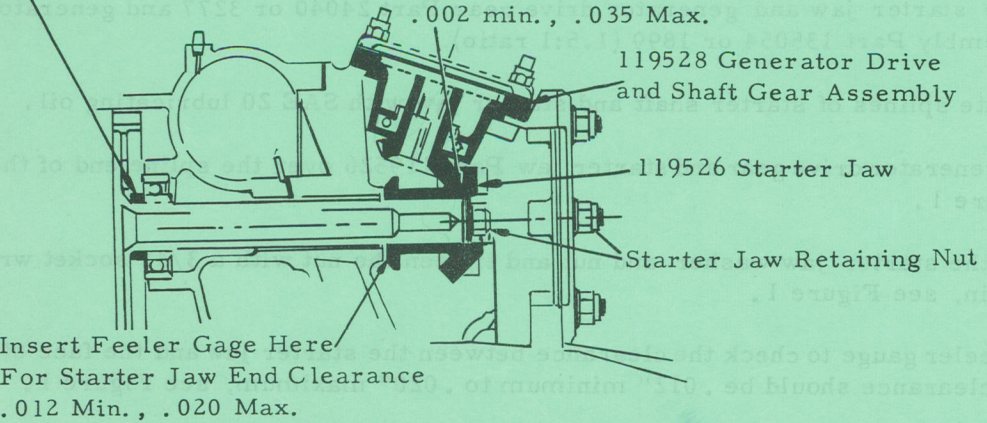
- (a) Remove starter jaw and generator drive gear Part 24040 or 3277 and generator housing shaft gear assembly Part 135054 or 1899 (1.5:1 ratio).
- (b) Lubricate splines of starter shaft and starter jaw with SAE 20 lubricating oil.
- (c) Install generator drive gear and starter jaw Part 119526 over the spline end of the starter shaft, see Figure 1.
- (d) Install the starter jaw washer and nut and tighten the nut with a 3/4" socket wrench and install cotter pin, see Figure 1.
- (e) Use a feeler gauge to check the clearance between the starter jaw and the face of the gear\* bushing. This clearance should be .012" minimum to .020" maximum, see Figure 1.
- (f) Install the generator drive gear assembly Part 119528 in position in the rear section. A rubber oil seal Part 31123 is required between the flange of the generator bearing housing and the mounting pad of the rear section, see Figure 1.

THIS E.O. IS APPLICABLE TO  
ALL A/C  
(REF. 05-45B-6A/78)  
*J. Medicus*  
PROJECT ENGINEER



Check Starter Jaw Generator Drive Gear Backlash With Dial Indicator and PWA 2003 Arbor  
 .002 min. , .035 Max.

Starter Shaft Spacer



Rear Engine Accessory Drive Section

Figure 1 (Issue 1)

## MODIFICATION DATA (Cont'd)

- (g) Check the backlash between the generator drive gear and the starter jaw gear using a dial indicator and PWA 2003 arbor. First check the backlash with the starter jaw as far forward (towards the power section) as possible and again with the starter jaw as far to the rear as possible. In the forward position the backlash should not be less than .002". In the rear position the backlash should not exceed .035", see Figure 1.
- (h) Tighten the four nuts on the generator drive cover and lockwire the nuts.
- (j) Replace the starter and generator in the normal manner.

NOTE

Should it not be possible to obtain the required clearance between the starter jaw and bushing or the backlash between the gears, it may be necessary to try selective fitting of different assemblies. In the rear case when it is still impossible to obtain the correct clearance it will be necessary to install a thicker starter gear spacer or grind the original spacer. This would require removal of the rear case and AMC should be contacted for further instructions before this is attempted.

## PARTS REQUIRED

3 The following parts are required:

| RCAF REF. | PART   | DESCRIPTION                             | QUANTITY |
|-----------|--------|---|----------|
| 36P       | 119528 | Generator drive and shaft gear assembly | 1        |
| 36P       | 119526 | Generator drive gear and starter jaw    | 1        |

## PARTS RENDERED SURPLUS OR OBSOLETE

4 The following parts are rendered surplus by this modification and are to be disposed of in accordance with CAP 16, Vol. 1, Part 1, Q13/1:

| RCAF REF. | PART   | DESCRIPTION                             | QUANTITY |
|-----------|--------|---|----------|
| 36P       | 135054 | Generator drive and shaft gear assembly | 1        |
| 36P       | 24040  | Generator drive gear and starter jaw    | 1        |

(a) The following parts are to be declared for "RER" action in accordance with CAP 16, Vol. 1, Q12/2:

| RCAF REF. | PART | DESCRIPTION                                    | QUANTITY |
|-----------|------|--|----------|
| 36P       | 1899 | Pinion and housing assembly<br>generator drive | 1        |
| 36P       | 3277 | Jaw starter and generator drive                | 1        |

## WEIGHT, LOADING AND BALANCE DATA

5 The effect on weight and balance is negligible.

## ADDITIONAL DATA

6 During the installation of generator drive gear assembly Part 119528, para. 2 (f), check and ensure for fitment of hollow cork Part 50681 in accordance with EO 10A-10AA-5/5.

(a) Modified engines are to be suitably marked by stamping the engine data plate, e.g., (Gen. DR.2:1).

MODIFICATION DATA (Cont'd)

(b) Cocooned Engines - The cocoon is to be suitably stencilled indicating "2:1 Generator Drive Gears Installed".

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

- (i) Replace the starter and generator in the normal manner.
- (ii) Tighten the four nuts on the generator drive cover and lockwire the nuts.

NOTE

Should it not be possible to obtain the required clearance between the starter jaw and bushing or the backlash between the gears, it may be necessary to try selective fitting of different assemblies. In the rare case when it is still impossible to obtain the correct clearance, it will be necessary to install a thicker starter gear spacer or grind the original spacer. This would require removal of the rear case and AMC should be contacted for further instructions before this is attempted.

PARTS REQUIRED

The following parts are required:

| QUANTITY | DESCRIPTION                             | PART   | RCAP REF. |
|----------|---|--------|-----------|
| 1        | Generator drive and shaft gear assembly | 119258 | 36P       |
| 1        | Generator drive gear and starter jaw    | 119256 | 36P       |

PARTS RENDERED SURPLUS OR OBSOLETE

The following parts are rendered surplus by this modification and are to be disposed of in accordance with CAP 16, Vol. I, Part 1, Q141:

| QUANTITY | DESCRIPTION                             | PART   | RCAP REF. |
|----------|---|--------|-----------|
| 1        | Generator drive and shaft gear assembly | 119258 | 36P       |
| 1        | Generator drive gear and starter jaw    | 119256 | 36P       |

(a) The following parts are to be declared for FRRR action in accordance with CAP 16, Vol. I, Q142:

| QUANTITY | DESCRIPTION                     | PART | RCAP REF. |
|----------|---------------------------------|------|-----------|
| 1        | Pinion and housing assembly     | 1899 | 36P       |
| 1        | generator drive                 |      |           |
| 1        | Jaw starter and generator drive | 3277 | 36P       |

WEIGHT, LOADING AND BALANCE DATA

The effect on weight and balance is negligible.

ADDITIONAL DATA

During the installation of generator drive gear assembly Part 119258, para. 2 (f), check and ensure for fitment of hollow cork Part 50881 in accordance with EO 10A-10AA-5 (2).

(a) Modified engines are to be suitably marked by stamping the engine (Gen. DR. 2:1).

Prepared By  
AMC/SACO/ACR