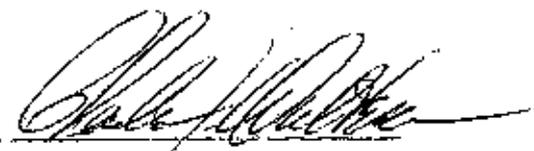


BRITAIN INDUSTRIES, INC.  
INSTALLATION INSTRUCTIONS  
402-700-507  
FOR MODEL PC/AH II  
PITCH STABILIZATION & ALTITUDE HOLD SYSTEM  
MOONEY MODELS M20, M20A, M20B, M20C,  
M20E, M20F, M20G, & M20J

LOG OF REVISIONS

MANUAL		DRAWINGS	
PAGE	REV.	PAGE	REV.
1	B	1	
2	A	2	A
3	A	3	B
		4	A
		5	A
		6	A
		7	B
		8	A
		9	
		10	A
		11	A

Approved: 

Date: November 19, 1981

## 1. INTRODUCTION:

- 1.1 This installation is applicable to those aircraft which may have another manufacturer's F.A.A. approved roll/yaw flight control system installed. The manual is compiled in such a manner as to allow the installation of the PC/AH II in those aircraft, without interfacing or interfering in any manner with the existing flight control system.
- 1.2 This manual contains all specific data and drawings to complete the installation. If, after completing the installation, and associated ground and flight test, the system does not function properly, consult the accompanying operation and service manual.
- 1.3 Read this manual completely before beginning the installation.
- 1.4 Inspect aircraft to insure the control systems are free from friction.
- 1.5 Do not route plastic tubing near heater ducts or other heat sources.
- 1.6 Make certain all tubing connections are tight and secure with clamps where required. Purge all tubing with air to remove any foreign material that may have accumulated prior to connecting.

## 2. SPECIFICATIONS:

- |     |                     |   |
|-----|---------------------|---|
| 2.1 | Type:               | Model PC/AH II Dynertial Pitch/<br>Altitude system  |
| 2.2 | Power Requirements: | 5.25 +0 -.25 hg Vac.  |
| 2.3 | Weight & Balance:   | M20, M20A, M20B 6.5 @ 96.0<br>With 11300 in Cabin 5.3 @ 57.8<br>With 11300 Aft of Cabin 5.3 @ 104.0 |
| 2.4 | Approval Basis:     | STC: SA4606SW   |

## 3. MASTER VALVE/TRIM PANEL:

- 3.1 Mount the P/N 1895 trim panel as shown on drawing 402-700-507, sheet 1. Attach with hardware provided.

## 4. PITCH/ALTITUDE SENSOR:

- 4.1 Mount the P/N 11300 Pitch/Altitude Sensor as shown on drawing 402-700-507, sheets 2, 3, 4, or 5, as indicated for the particular aircraft model involved. Attach with hardware provided.

5. SERVO INSTALLATION:

5.1 Install the elevator servo assembly, P/N 11556 or P/N 2982 as shown on 402-700-507, sheets 6 or 7, as indicated for the particular aircraft model involved. Attach with hardware provided.

6. ALTITUDE REFERENCE CHAMBER:

6.1 Install the P/N 11353 Reference Chamber as shown on 402-700-507, sheet 8. Attach with hardware provided.

7. TUBE ROUTING:

7.1 Should the aircraft require vacuum plumbing from fore to aft, through the cabin area, route and secure as per drawing 402-700-507, sheet 9.

8. VACUUM PLUMBING:

8.1 Plumb system in accordance with the drawing 402-700-507, sheets 1 through 11.

9. VACUUM ADJUST:

9.1 With the aircrafts engine running, at sufficient R.P.M. to produce maximum vacuum, adjust the regulator to produce  $5.25 +0 -.25$  as indicated on aircraft vacuum gauge.

10. CONCLUDING STEPS:

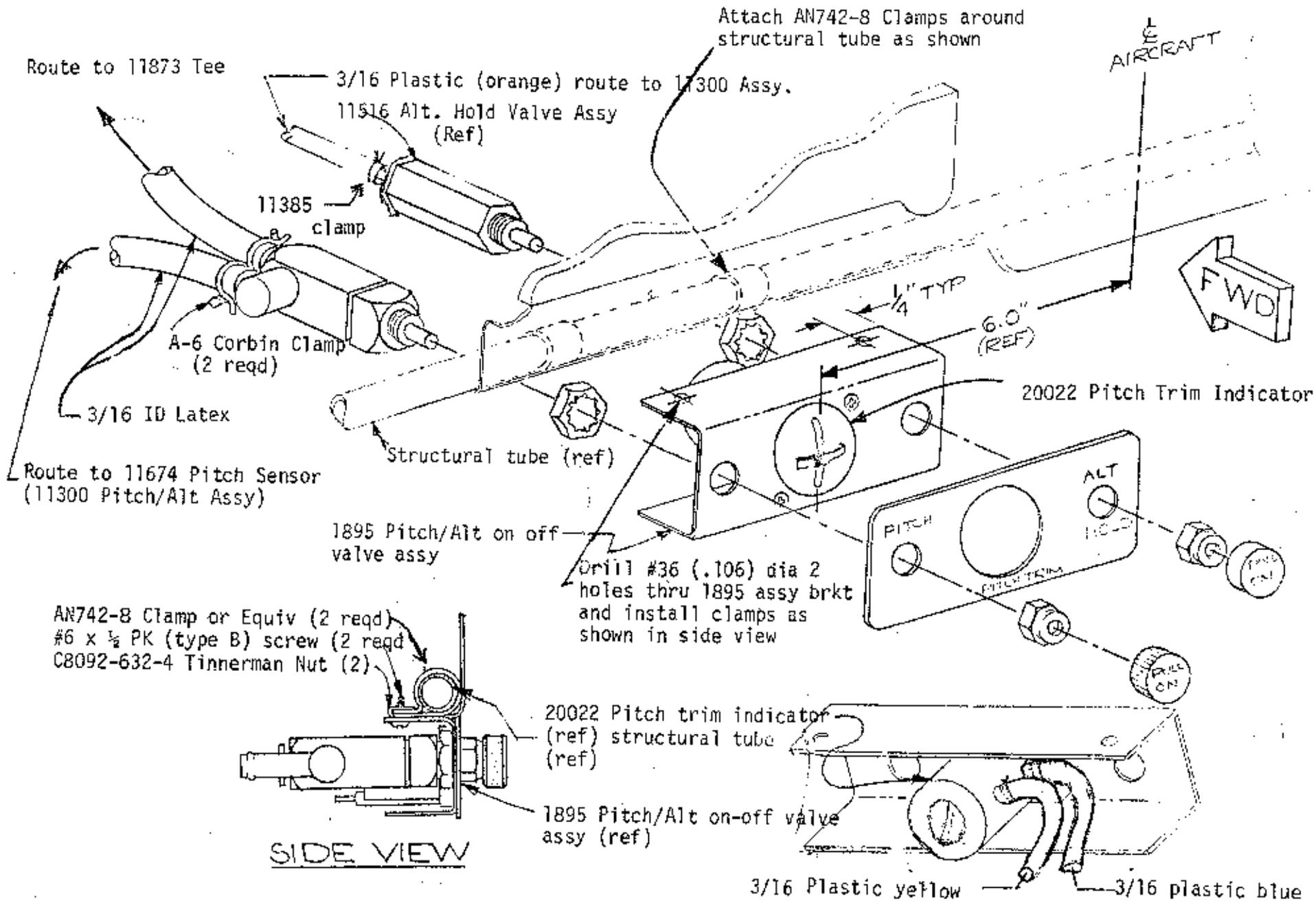
10.1 Move the aircraft controls through their complete travel. No interference must exist between the aircrafts primary controls, and the autopilot system.

11. GROUND TEST:

11.1 Conduct Ground Test Procedures in accordance with instruction manual 11804.

12. FLIGHT TEST:

12.1 Conduct Flight Test Procedures in accordance with instruction manual 11804.



BRITAIN INDUSTRIES, INC.  
Tulsa, Oklahoma

VALVE & TRIM PANEL MOUNTING

402-700-507  
sht 1 of 11  
DRAWING NUMBER

CHANGE

A  
CHANGE

REASON:

APPROVED BY

*B. W. Cotton*

DATE

*5-82*

APPROVED BY: *C. W. Cotton*

DATE: *11-15-81*

CHECKED BY:

DATE:

DRAWN BY: *60249*

DATE: *1-3-82*

402-700-507

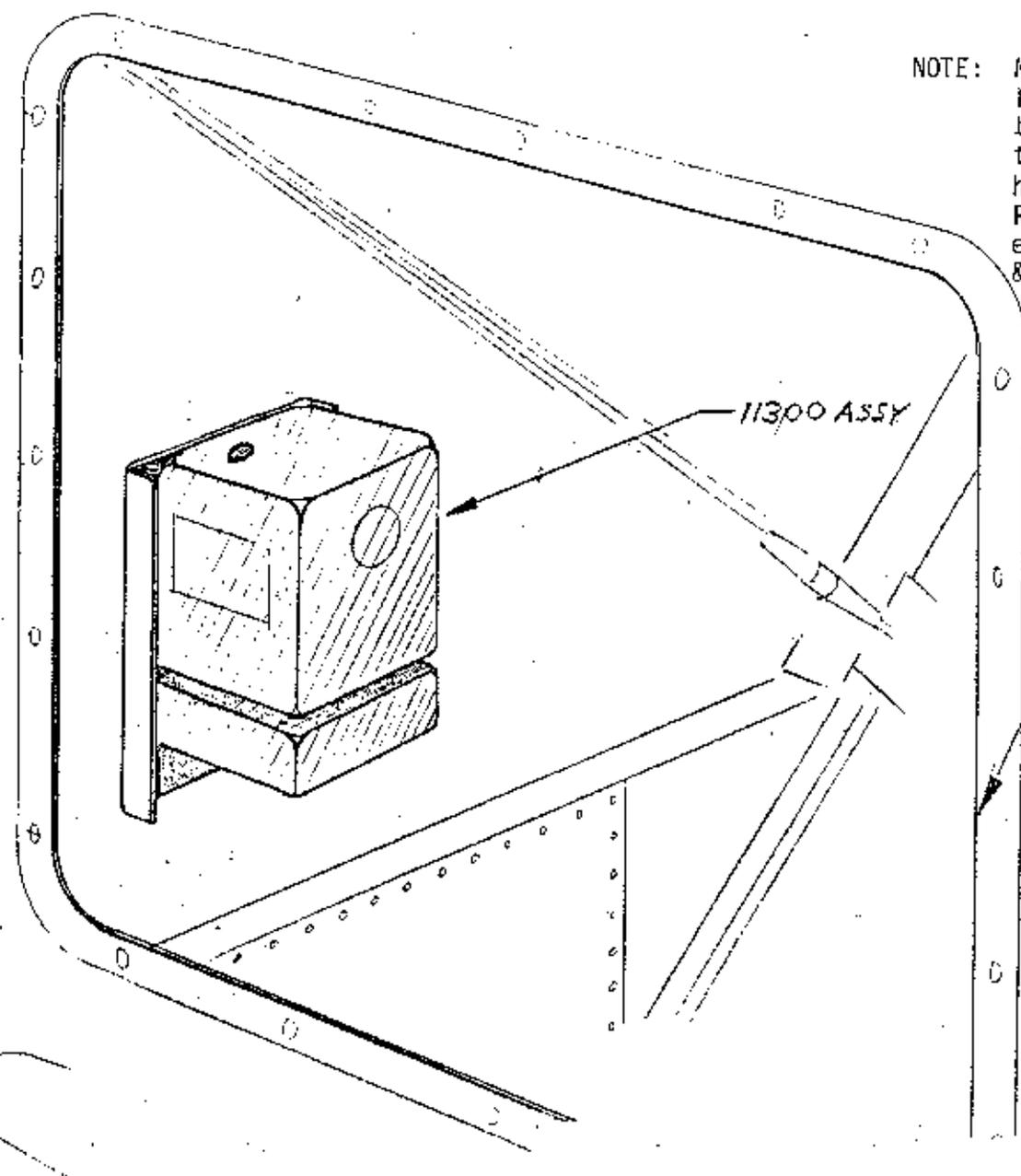
sht 2 of 11

DRAWING NUMBER

A  
CHANGE



FUS  
STA  
103



NOTE: Mount to clear upcoming step  
Remove 11674 & 12000 from  
back plate, using plate as  
template, drill 6 ea. .187  
holes thru Fus. Sta 103.  
Reassemble as shown using  
existing AN525-832-R3 screws  
& AN93613-8 Washers

11300 ASSY

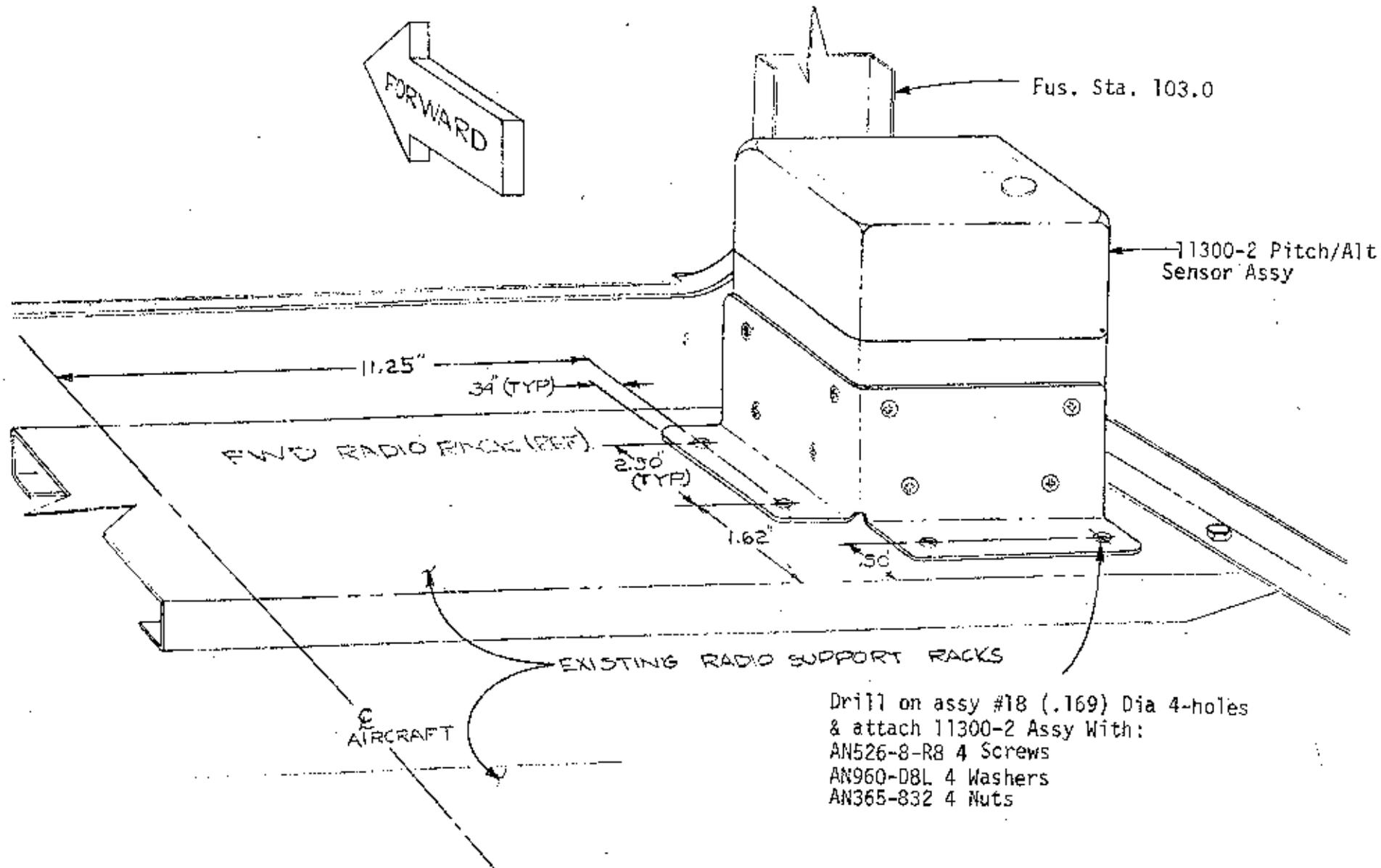
L.H. Fuselage Access  
Cover

BRIJAIN INDUSTRIES, INC.  
Tulsa, Oklahoma

PITCH/ALTITUDE SENSOR MOUNTING  
M20, M20A, & M20B (1955 thru 1962)

402-700-507  
sht 2 of 11  
DRAWING NUMBER

A  
CHA



BRITAIN INDUSTRIES, INC.  
 Tulsa, Oklahoma  
 PITCH/ALTITUDE SENSOR MOUNTING  
 M20C & M20E (1962 thru 1967)  
 402-700-507  
 Sht 3 of 11  
 DRAWING NUMBER  
 B  
 CHANG

A  
CHANGE

REASON:  
APPROVED BY: *C. Walters*

DATE: 1-5-82

APPROVED BY: *C. Walters* DATE: 1/15/81  
CHECKED BY: DATE:  
DRAWN BY: *C. Walters* DATE: 1-10-81

402-700-507  
sht 4 of 11  
DRAWING NUMBER

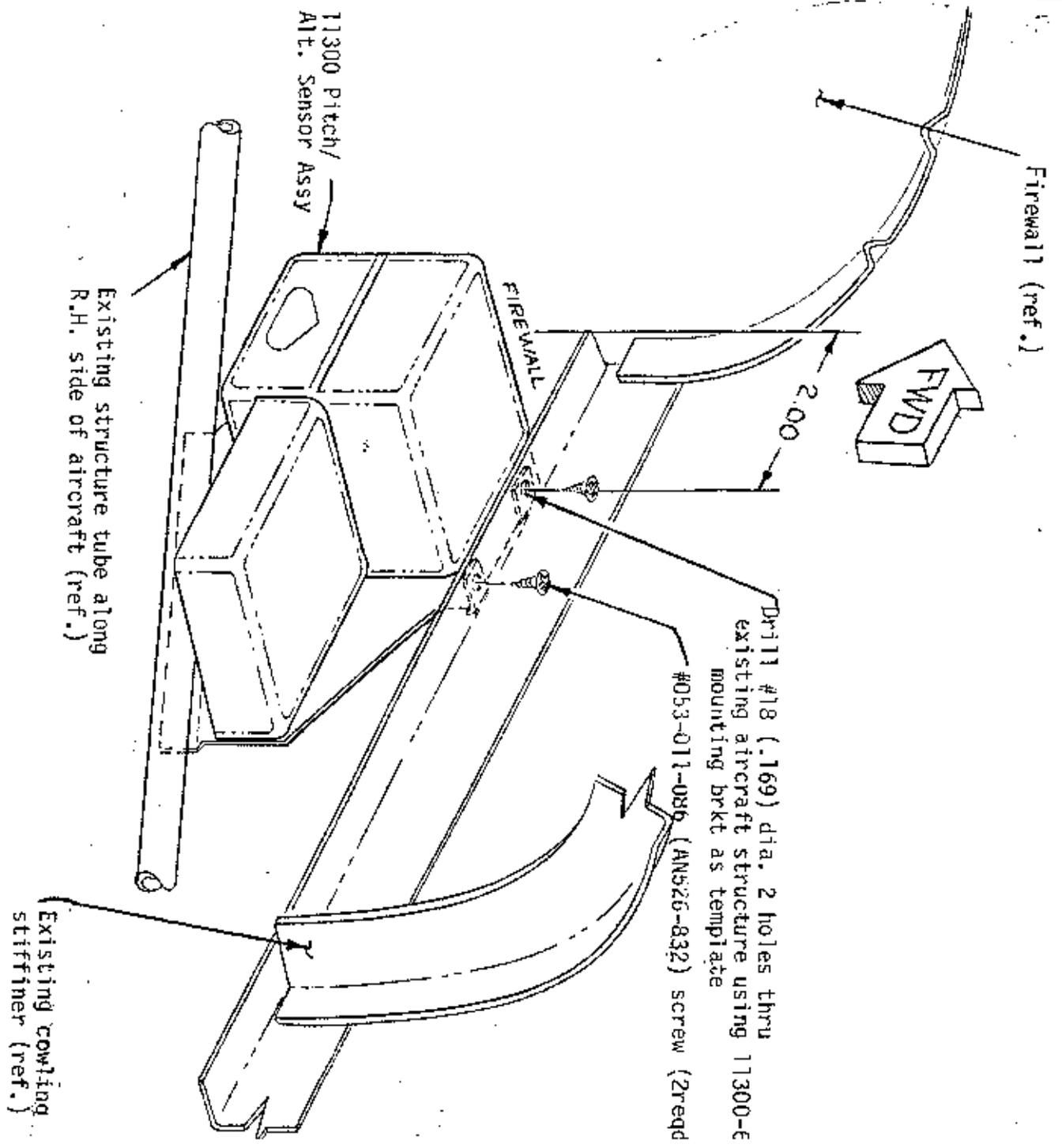
A  
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BRILLIANT INDUSTRIES, INC.  
Tulsa, Oklahoma

PITCH/ALTITUDE SENSOR MOUNTING  
M20C, M20E, & M20F (1966 thru 1967)

402-700-507  
sht 4 of 11  
DRAWING NUMBER.

A  
CHAN



VIEW SHOWING ACCESS PANEL REMOVED FWD OF CO-PILOTS WINDSHIELD

A  
CHANGE

REASON:

APPROVED BY *C. Walters*

DATE *1-5-82*

APPROVED BY: *P. W. 492*  
CHECKED BY:  
DRAWN BY: *C. Walters*

DATE: *11-10-81*  
DATE: *11-10-81*

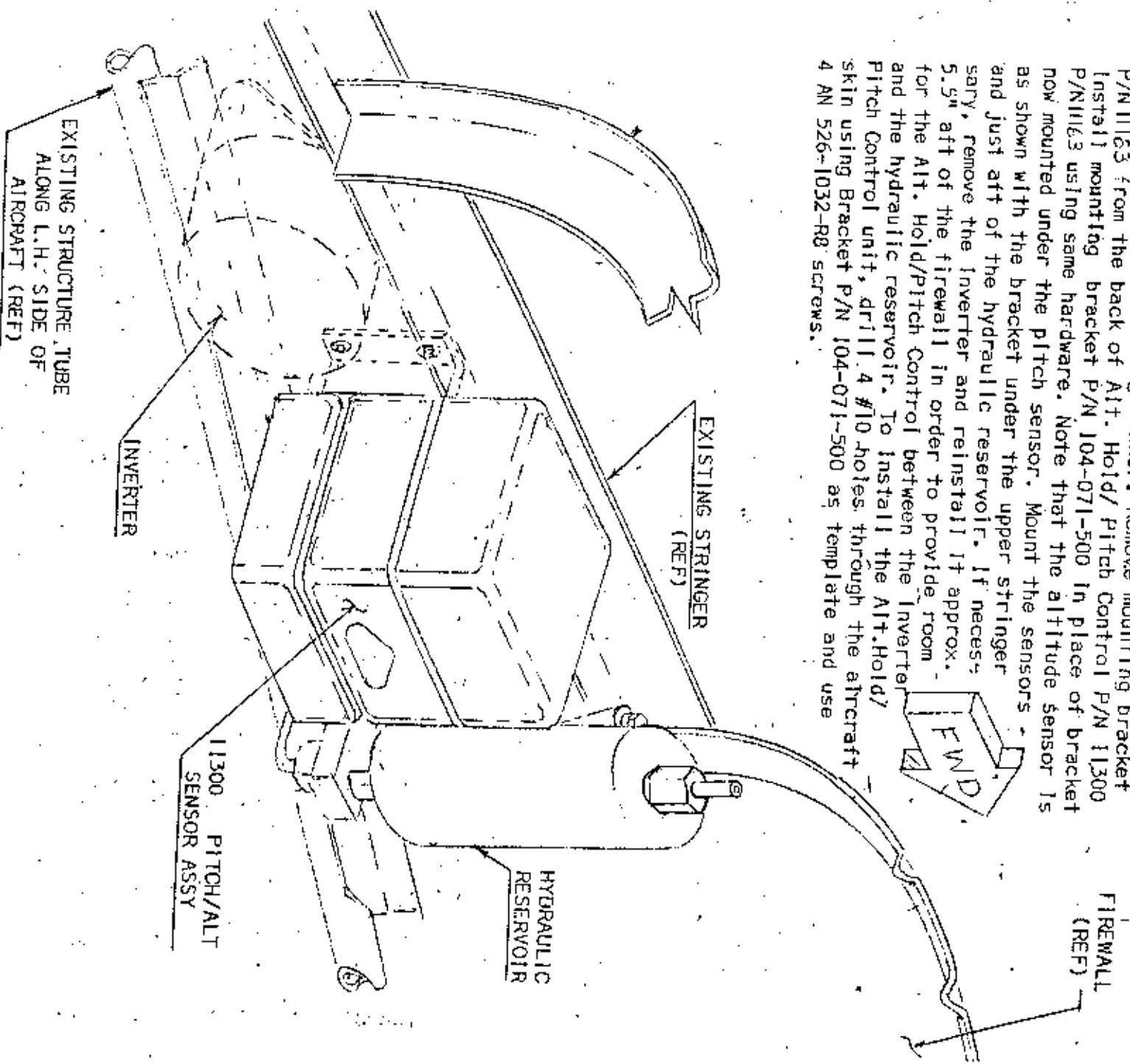
402-700-507  
sht 5 of 11  
DRAWING NUMBER

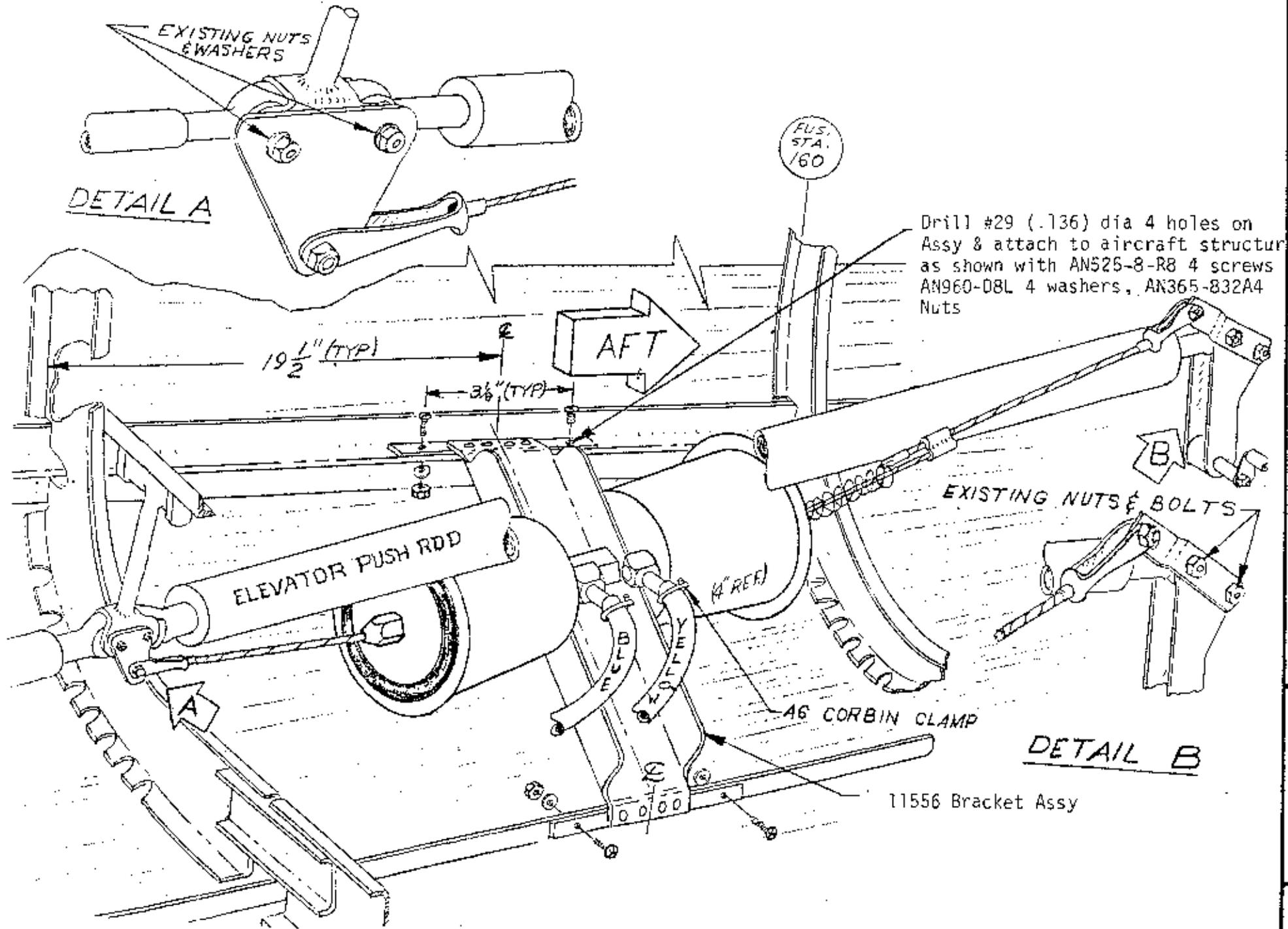
A  
CHANGE

OKLAHAIN INDUSTRIES, INC.  
Tulsa, Oklahoma  
PITCH/ALTITUDE SENSOR MOUNTING  
M20C, M20F, & M20J (1977 & Subsequent)

402-700-507  
sht 5 of 11  
DRAWING NUMBER  
A  
CHANGE

Note: In 1976 and later airplanes, the altitude hold/pitch control is installed on the left side of the airplane instead of the right side in the following manner. Remove mounting bracket P/N 11163 from the back of Alt. Hold/ Pitch Control P/N 11300. Install mounting bracket P/N 104-071-500 in place of bracket P/N 11163 using same hardware. Note that the altitude sensor is now mounted under the pitch sensor. Mount the sensors as shown with the bracket under the upper stringer and just aft of the hydraulic reservoir. If necessary, remove the inverter and reinstall it approx. 5.5" aft of the firewall in order to provide room for the Alt. Hold/Pitch Control between the Inverter and the hydraulic reservoir. To install the Alt. Hold/ Pitch Control unit, drill 4 #10 holes through the aircraft skin using Bracket P/N 104-071-500 as template and use 4 AN 526-1032-R8 screws.

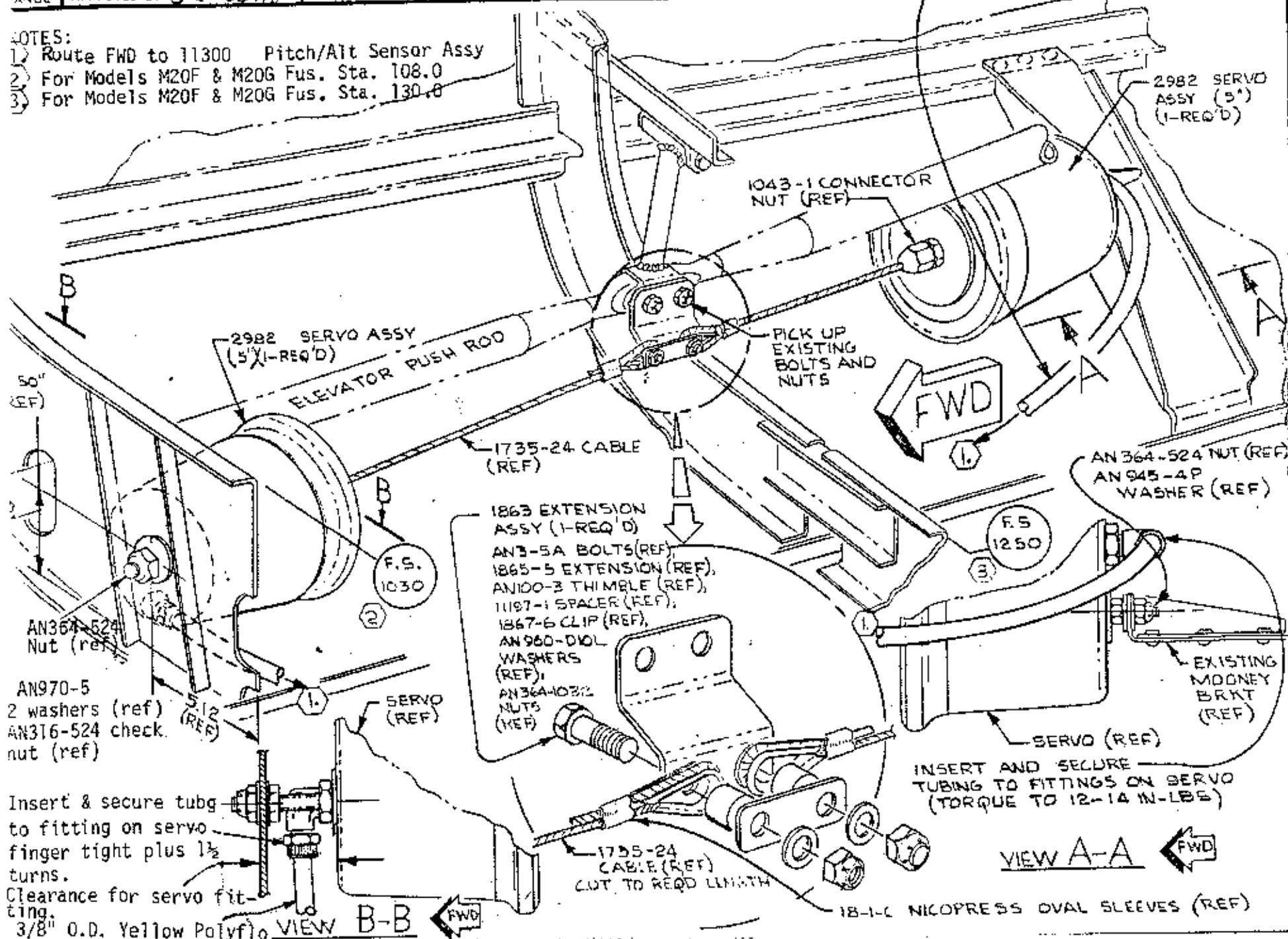




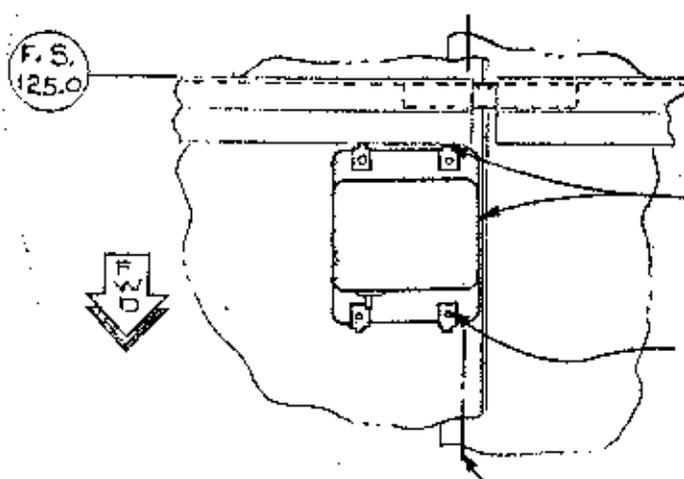
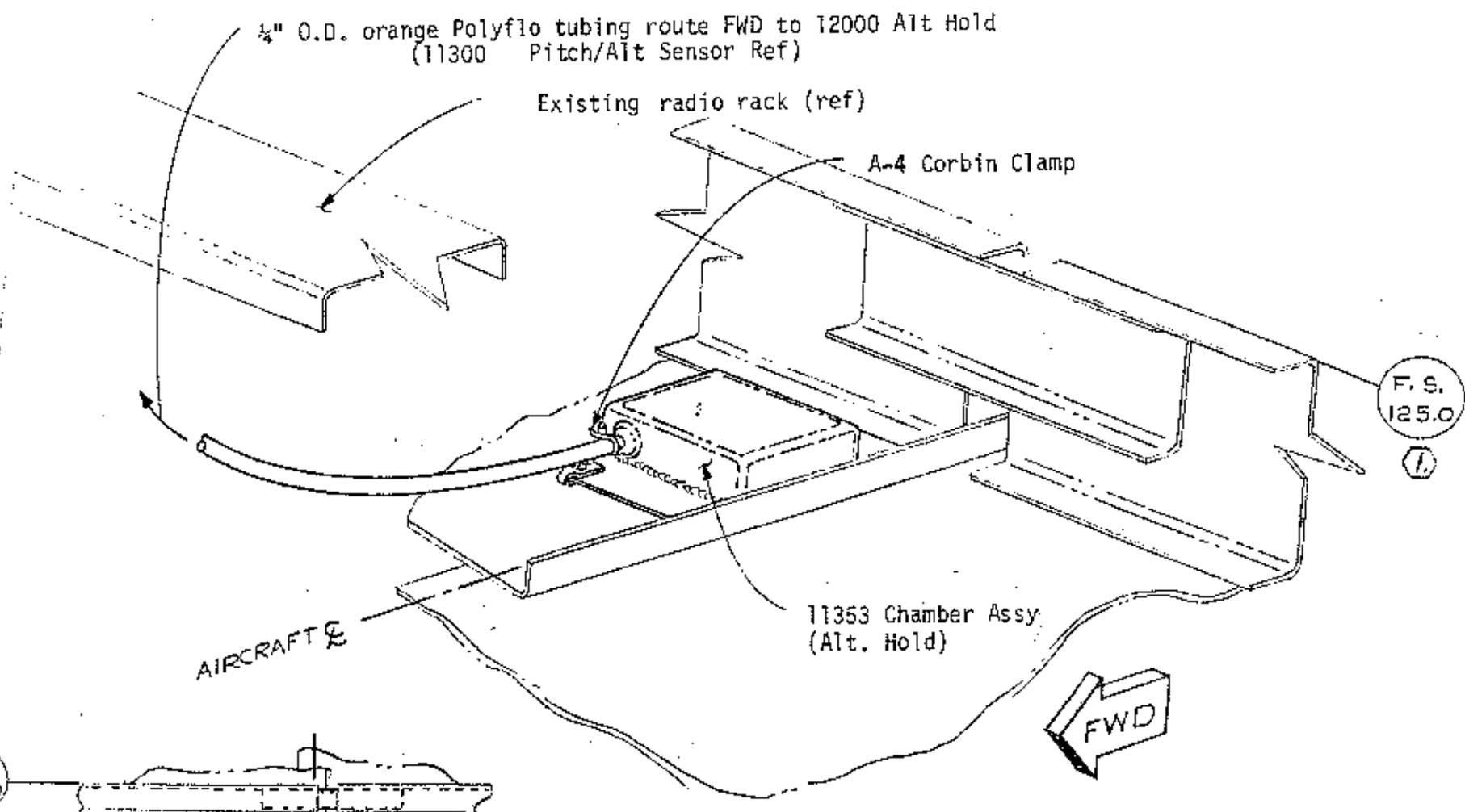
BRITAIN INDUSTRIES, INC.  
 Tulsa, Oklahoma  
 SERVO INSTALLATION  
 M20, M20A, M20B (1955 to 1962)  
 402-700-507  
 sht 6 of 11  
 DRAWING NUMBER  
 CHANGE

BRITAIN INDUSTRIES, INC.  
 Tulsa, Oklahoma  
 M20C, M20E, M20F, M20G, & M20J  
 SERVO INSTALLATION (1962 & Subs)  
 402-700-507  
 Sh 7 of 11  
 DRAWING NUMBER  
 CHANGE

- NOTES:
- 1) Route FWD to 11300 Pitch/Alt Sensor Assy
  - 2) For Models M20F & M20G Fus. Sta. 108.0
  - 3) For Models M20F & M20G Fus. Sta. 130.0



Insert & secure tubg to fitting on servo finger tight plus 1/2 turns.  
 Clearance for servo fitting.  
 3/8" O.D. Yellow Polyfo



Butt 11353 Assy against LWR skin FLG & F.S. 125.0 former FLG

NOTE: ① For Models M20F & G fus. Sta. 130.0

Drill #36 (.106) dia 4 holes thru fus. skin using 11353 as template & attach with supplied hardware. NOTE: Screw heads to be on outside Fus skin 4 ea. #6 x 1/2 P.K. Screws required

REASON:

APPROVED BY: C. D. DAVIS

DATE: 1/18/81

402-700-507

CHANGE

APPROVED BY:

DATE:

CHECKED BY:

DATE:

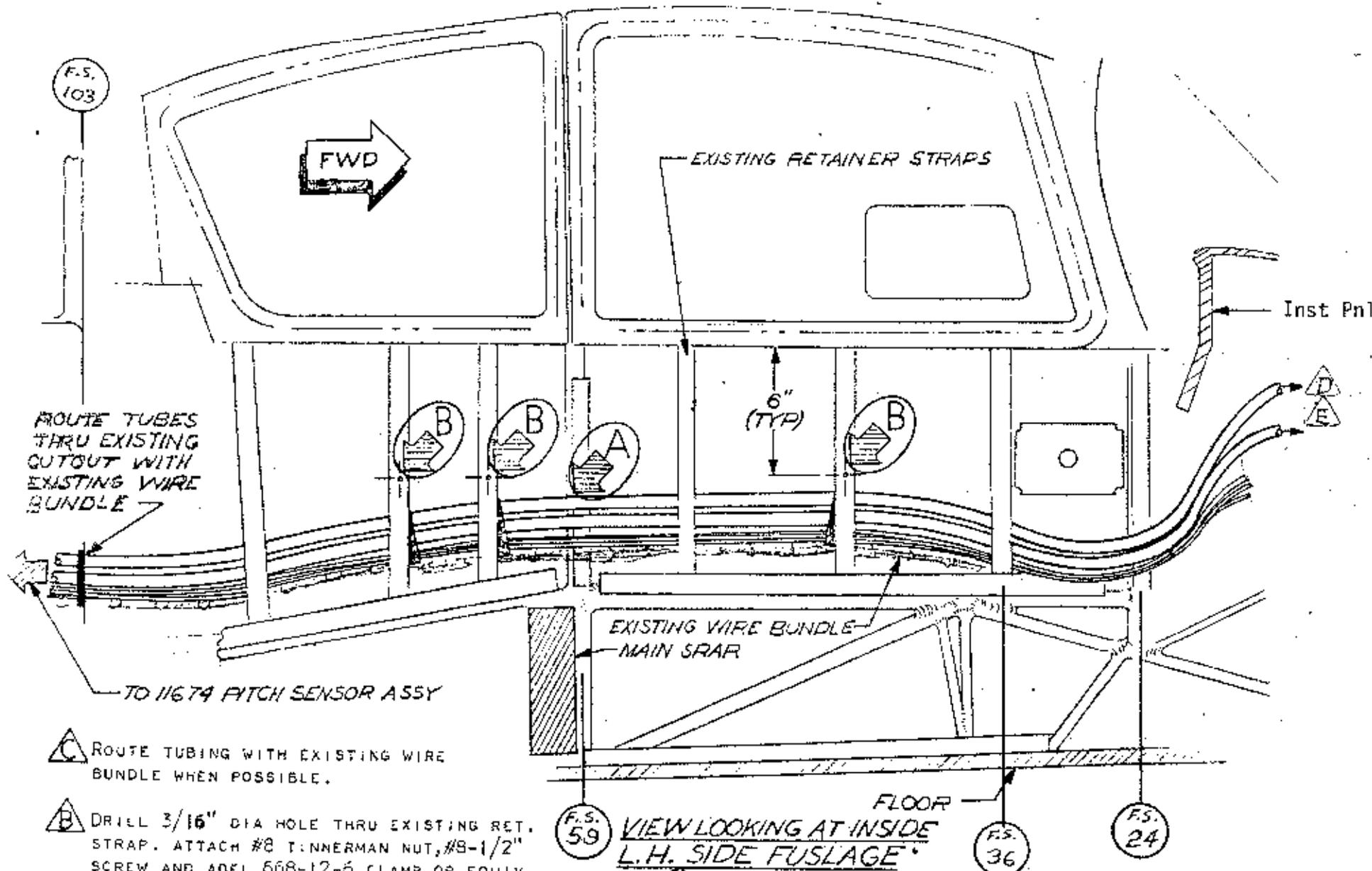
sht 9 of 11

DRAWN BY: C. D. DAVIS

DATE: 1-18-81

DRAWING NUMBER

CHANGE



ROUTE TUBES  
THRU EXISTING  
GROUT WITH  
EXISTING WIRE  
BUNDLE

TO 11674 PITCH SENSOR ASSY

**C** ROUTE TUBING WITH EXISTING WIRE BUNDLE WHEN POSSIBLE.

**B** DRILL 3/16" DIA HOLE THRU EXISTING RET. STRAP. ATTACH #8 TINNERMAN NUT, #9-1/2" SCREW AND ADEL 668-12-6 CLAMP OR EQUIV.

**A** ATTACH TAPE OR GROMMET TO AIRCRAFT STRUCTURE TO PREVENT CHAFING

VIEW LOOKING AT INSIDE  
L.H. SIDE FUSLAGE

**D** With 11300 Pitch/Ait sensor mounted per sht 2 & 3, route  
1 ea gray 3/8 OD Polyflo, 1 ea orange 1/4 OD Polyflo  
1 ea blue, yellow 3/16 Plastic.

**E** With 11300 Pitch/Ait sensor mounted per sht 4 & 5, route  
1 ea blue and yellow 3/8 OD Polyflo & 1 ea orange 1/4 OD  
Polyflo.

BRITAIN INDUSTRIES, INC.  
Tulsa, Oklahoma

PLUMBING ROUTING

402-700-507  
sht 9 of 11  
DRAWING NUMBER

CHANGE

REASON:  
A CHANGE

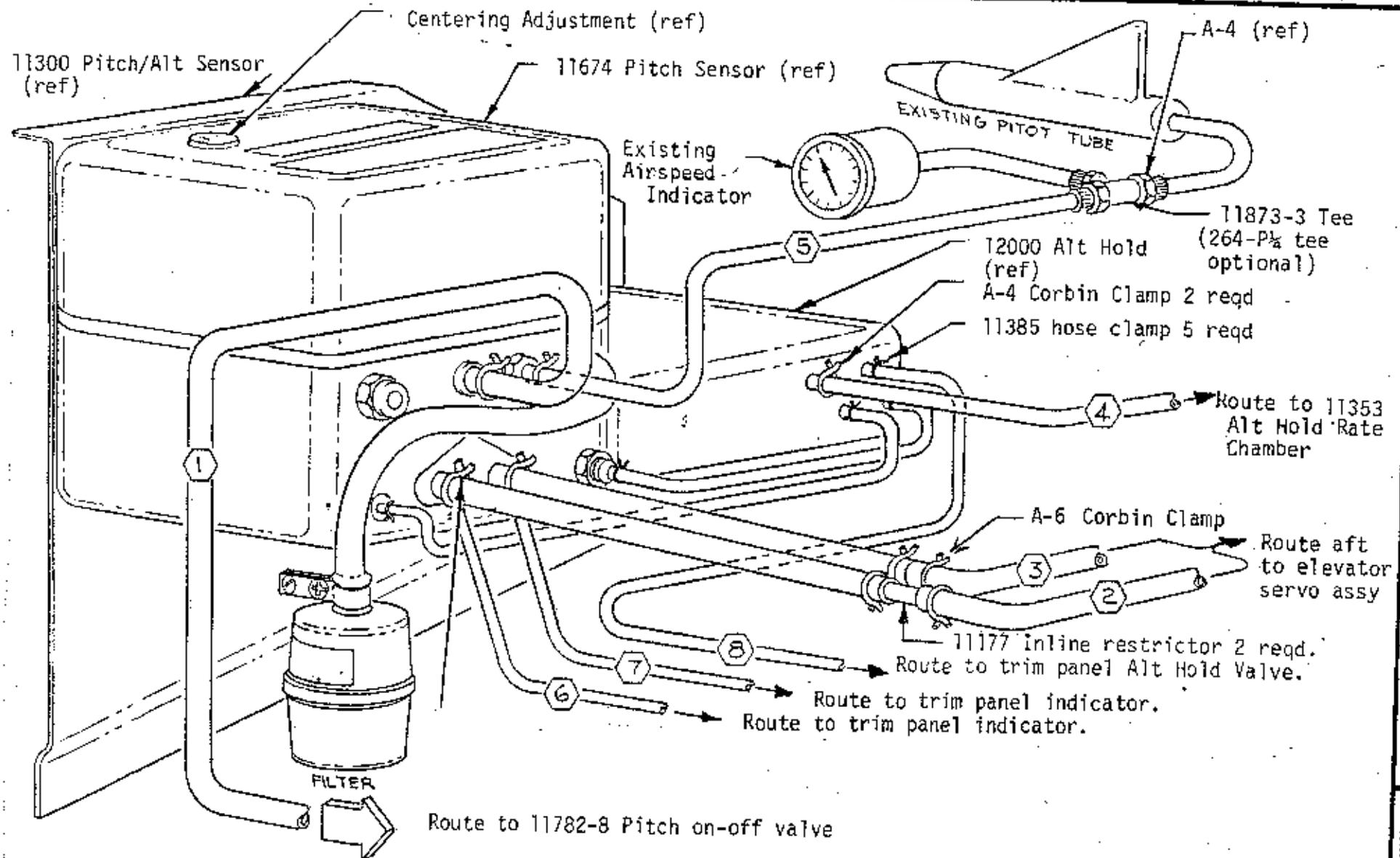
APPROVED BY: *C. W. Watson*

DATE: 1-5-82

APPROVED BY: *C. W. Watson*  
CHECKED BY:  
DRAWN BY: *C. W. Watson*

DATE: 11-2-81  
DATE:  
DATE: 11-10-81

402-700-507  
sht 10 of 11  
DRAWING NUMBER



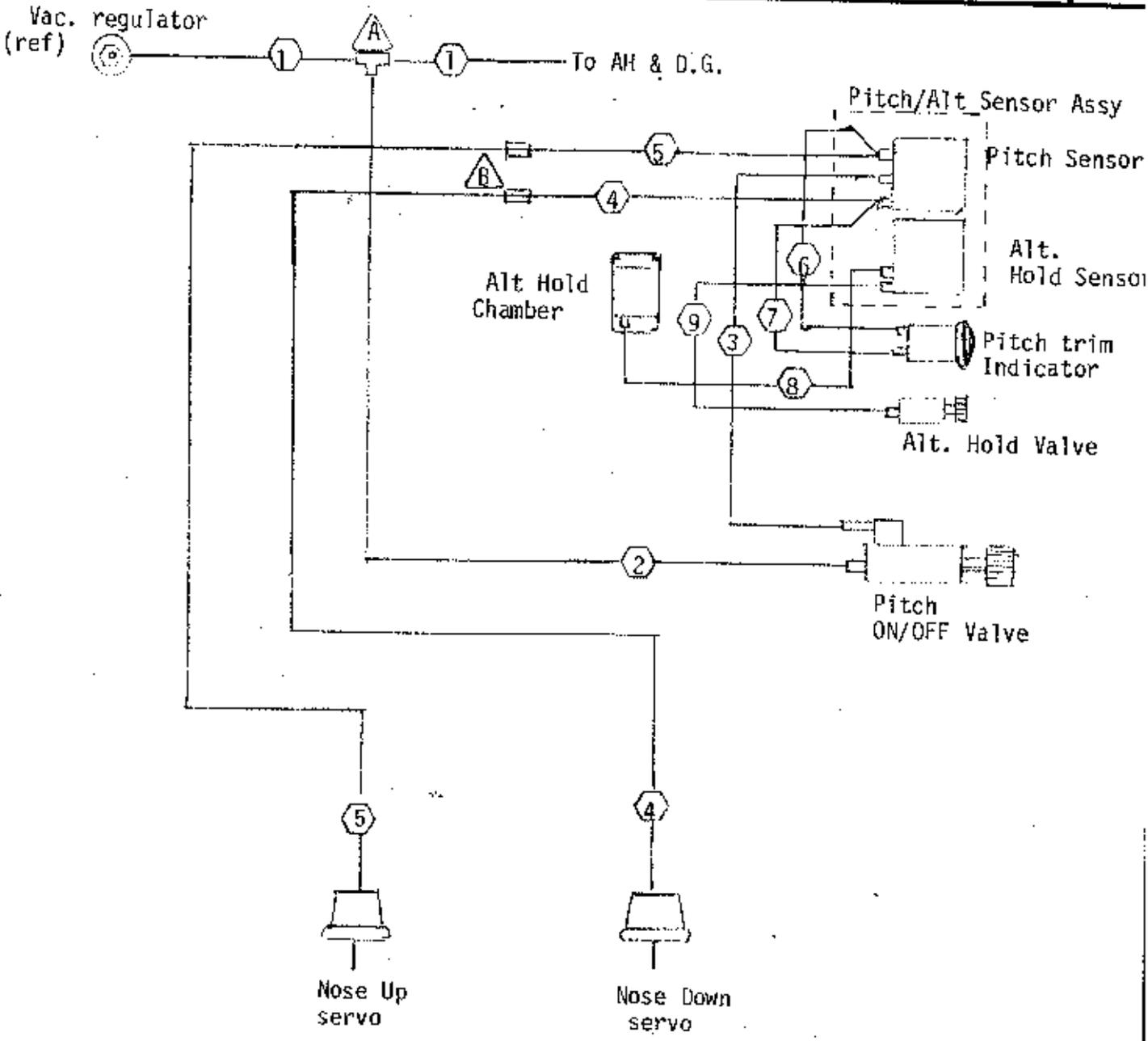
- ① 3/16 I.D. (black) latex
- ② 3/8 O.D. (blue) Polyflo nose up
- ③ 3/8 O.D. (yellow) Polyflo nose DN
- ④ 1/4 O.D. (orange) polyflo

- ⑤ 1/4 O.D. (clear) Polyflo
- ⑥ 3/16 O.D. (blue) Plastic
- ⑦ 3/16 O.D. (yellow) plastic
- ⑧ 3/16 O.D. (orange) plastic

BRILLIANT INDUSTRIES, INC.  
 Tulsa, Oklahoma  
 PLUMBING SCHEMATIC  
 11300 Pitch/Altitude Sensor  
 402-700-507  
 sht 10 of 11  
 DRAWING NUMBER  
 A CHANGE

402-700-507  
 sht 11 of 11  
 DRAWING NUMBER

APPROVED BY: *C. Walters* DATE: 11-15-82  
 CHECKED BY: *C. Walters* DATE: 11-10-81  
 DRAWN BY: *C. Walters* DATE: 11-10-81



- 11873 Tee
- 11177 Restrictor

- Existing in Aircraft
- 3/16 I.D. Latex
- 3/16 ID Latex or 3/8 Gray OD Polyflo
- 3/8 OD Yellow Polyflo
- 3/8 OD Blue Polyflo
- 3/16 OD Blue Plastic
- 3/16 OD Yellow Plastic
- 1/4 OD Orange Polyflo
- 3/16 OD Orange Plastic

APPROVED BY: *C. Walters*