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Illustrated Parts List and Maintenance Instructions with Initial Installation Instructions

FOR

ATTITUDE GYRO INDICATOR
Part No. 369H90038-501

USED ON HUGHES 500D (MODEL 369D) HELICOPTERS

Hughes Helicopters division of summa corporation / culver city, california

COD671040

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FOREWORD

F-1. PURPOSE AND CONTENT OF THIS MANUAL. This manual supplements information contained in HMI - Vol 1 and 369D - IPC, and contains instructions for initial installation and continuing maintenance for the R. C. Allen 102-0045-01 artifical horizon gyro indicator, also known as the attitude gyro indicator. Weight and balance data is included. This manual also contains parts lists for procuring replacement parts for the attitude gyro indicator installation.

F-2. APPLICABILITY. The attitude gyro indicator is applicable for use on any Hughes 500D (Model 369D) helicopter.

F-3. COMPATIBILITY OF COMBINED OPTIONAL EQUIPMENT. 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-4. ORGANIZATION OF CONTENTS. The contents of this manual are grouped into sections as outlined in the Table of Contents. Each section is organized to provide comprehensive coverage of entire systems, major equipment groupings, and major components that are similar or associated. Procedures for each of these are presented in sequence as defined in Section I, HMI - Vol 1.

F-5. USE OF THIS MANUAL. This manual is for use by operators of the Model 369D helicopter equipped with attitude gyro indicator. Although this manual is a separate publication, it should be kept with HMI - Vol 1, HMI - Vol 2, 369D - IPC and other handbooks listed in Section I, HMI - Vol 1 that form the primary information file for the helicopter.

F-6. RELATED PUBLICATIONS. Reference is made to applicable portions of HMI - Vol 1 and 369D - IPC as required to accomplish instructions contained herein.

F-7. LITERATURE CHANGES AND REVISIONS. Changes and revisions to contents of this manual are made as defined in Section I, HMI - Vol 1.

SECTION I
ILLUSTRATED PARTS LIST

1-1. SCOPE AND CONTENTS. This illustrated parts list provides, by means of text (parts lists) and companion illustrations, a complete parts definition of the 369H90038-501 Attitude Gyro Indicator Installation, manufactured by Hughes Helicopters, Culver City, California.

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

1-2. GROUP ASSEMBLY PARTS LIST. The parts lists furnish information for procuring replacement parts for the attitude gyro indicator installation and shall not be used for any other purpose.

1-3. ILLUSTRATIONS. An isometric illustration is provided for the group assembly parts list. The illustration is exploded to the extent necessary to show parts relationship for the complete attitude gyro indicator installation.

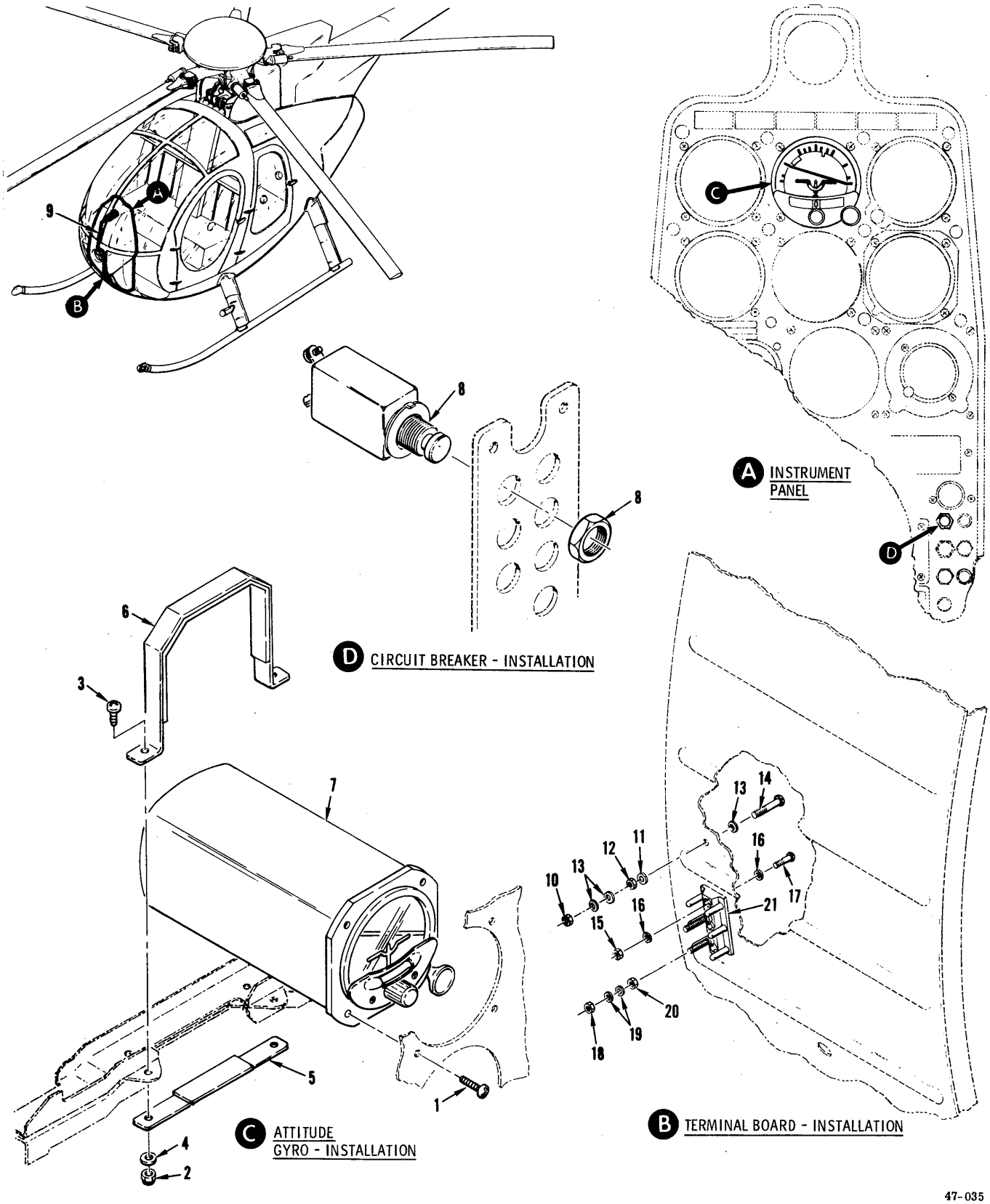


Figure 1-1. Attitude gyro indicator installation

FIG. & INDEX NO.	PART NO.	DESCRIPTION	UNITS PER ASSY
1-1-	369H90038-501	ATTITUDE GYRO INDICATOR INSTL	REF
-1	MS35214-26	. SCREW	3
-2	AN960PD6L	. WASHER	3
-2	MS21043-3	. NUT	2
-3	NAS1635-3-7	. SCREW	2
-4	AN960C10L	. WASHER	2
-5	369H6455-41	. STRAP ASSY (Not used when optional 369H90039 directional gyro indicator is installed)	1
-6	369H6455-21	. CLAMP ASSY	1
-7	369H92831	. INDICATOR ATTITUDE GYRO. (R. C. Allen 102-0045-01 artificial horizon gyro indicator - modified)	1
-8	2TC13-5	. CIRCUIT BREAKER	1
-9	369H90038-3	. HARNESS ASSY.	1
-10	MS21083C08	. NUT	1
-11	MS35338-42	. LOCKWASHER	1
-12	NAS671-8	. NUT	1
-13	AN960C8L	. WASHER	3
-14	NAS1096-2-10	. SCREW	1
-15	MS21043-04	. NUT	2
-16	AN960PD4L	. WASHER	4
-17	NAS1635-04-7	. SCREW	2
-18	MS21083C06	. NUT	2
-19	AN960C6L	. WASHER	4
-20	NAS671C6L	. NUT	2
-21	MS27212-1-2	. TERMINAL BOARD	1

SECTION II
MAINTENANCE INSTRUCTIONS

2-1. GENERAL INFORMATION. The attitude gyro indicator is an all-electric gyro indicator with a pictorial horizon and rotating dial that continuously indicates helicopter pitch and roll compared to pitch and roll references established by an internal gyro. The indicator is mounted upper center in the instrument panel (fig. 2-1). The instrument provides attitude indication by means of a horizon bar, turn index mark and the outline of an airplane. Attitude indication results from internal gyro reactance to a corresponding pitch and roll attitude of the helicopter. Slip indication is by means of a conventional ball and tube at the lower front of the instrument face. The instrument requires and uses 28 vdc electrical power from the GYROS circuit breaker CB105. The gyro is caged by use of a knob at lower right of instrument. A knob at the lower center of the instrument allows aligning the airplane outline with the horizon bar when the helicopter is in level flight and permits pilot selection of desired pitch attitude reference. A knob at lower right is for erecting the gyro. Figure 2-2 provides a wiring diagram for the installation and an internal schematic for the indicator.

NOTE: To eliminate possibility of electrical interference with KR 85 ADF equipment installed, a noise filter is included as part of the ADF option. (For more information on the filter installation, refer to the applicable ADF Opt Eqpt Manual.)

2-2. MAINTENANCE OF ATTITUDE GYRO INDICATOR. Maintain the gyro indicator as instructed in Section 17, HMI - Vol 1, except replace according to paragraph 2-3.

2-3. REPLACEMENT OF ATTITUDE GYRO INDICATOR. (See figure 2-1.)

a. Check that all electrical power is OFF.

b. Remove instrument panel hood and left and right fairings (Section 17, HMI - Vol 1).

c. Remove screws from front of indicator. Disconnect electrical connector from back of indicator. Remove clamp, then remove indicator.

d. Install replacement indicator in reverse order to removal.

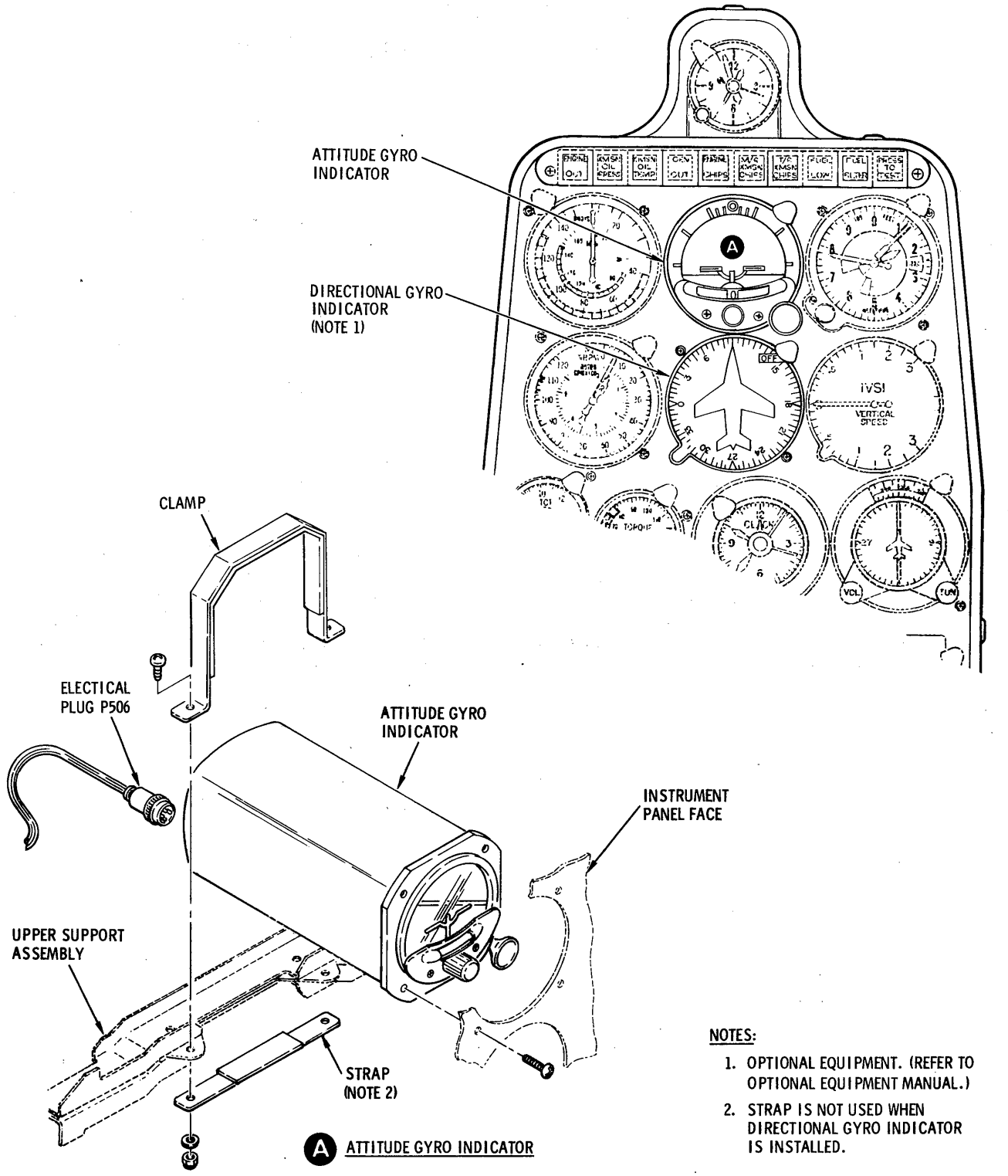
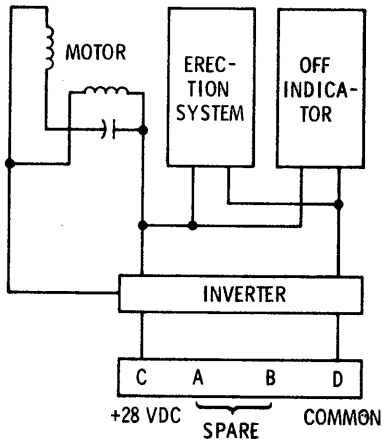
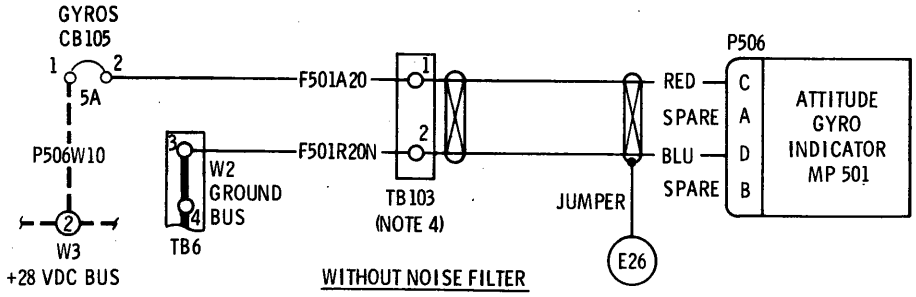


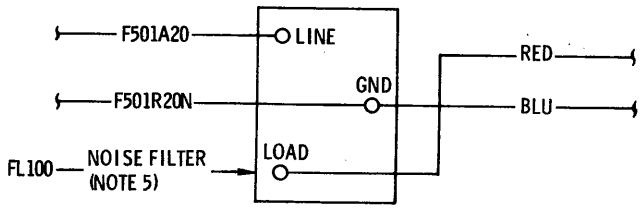
Figure 2-1. Attitude gyro indicator - replacement



GYRO INTERNAL SCHEMATIC



WITHOUT NOISE FILTER



WITH NOISE FILTER (NOTE 4)

WIRING DIAGRAM

NOTES:

1. THIS WIRING DIAGRAM SHOULD BE USED WITH ELECTRICAL SYSTEM WIRING DIAGRAM IN HMI-VOL 1 FOR COMPLETE CIRCUIT IDENTIFICATION.
2. DASHED LINE (- - - -) ITEMS ARE PART OF HELICOPTER BASIC ELECTRICAL SYSTEM.
3. TERMINAL NUMBERS ARE FOR REFERENCE ONLY AND MAY NOT BE ON COMPONENTS.
4. ELECTRICAL NOISE FILTER IS USED INSTEAD OF TB103, IF KING KR 85 ADF EQUIPMENT IS INSTALLED.
5. CASE ELECTRICALLY BONDED TO STRUCTURE (SECTION 19, HMI-VOL 1).

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Figure 2-2. Wiring and schematic diagrams - attitude gyro

SECTION III
INSTALLATION INSTRUCTIONS

3-1. GENERAL INFORMATION. Procedures in this section may be performed at operator's discretion and provide complete instructions for initial installation of the attitude gyro indicator. Information in the installation instructions is presented as additional procedures to those for maintenance of standard instruments in HMI - Vol 1. (Reference is made in instructions to applicable data in HMI - Vol 1 to accomplish installation of the attitude gyro indicator.)

3-2. REFERENCE DATA. Table 3-1 lists consumable materials and expendable items required for the installation. Items listed in the consumable materials and expendable items table are recommended items and are of a commercial nature that should be procurable locally. Alternate, but equivalent, items are acceptable.

3-3. PREPARATION. Preparation for installation of the attitude gyro indicator includes the following:

a. Identify all components, including attaching hardware, or components removed for access to work areas. Protect components from damage and foreign matter until installed.

b. Check that all electrical switches are OFF.

NOTE: Make sure that BATT-OFF-EXT switch is OFF.

Table 3-1. Consumable materials and expendable items.

Item No.	Material	Specification No.	Commercial Product	
			Name/No.	Manufacturer
1	Compound sealant		EP711 or Pro-Seal 247	Coast Pro-Seal Compton, CA
2	Decal		369H6615-161	Hughes Helicopter, Culver City, CA
3	Decal		369H6615-163	Hughes
4	Terminal	MS25036-101		
5	Terminal	MS25036-103		
6	Terminal	MS25036-149		
7	Grommet	MS21266-1		
8	Tie strap base		TC112	Thomas and Betts Co. Elizabeth, NJ
9	Tie strap, nylon	MS17821-1-9		
10	Washer	AN960C6L		
11	Rivet	MS20470M4		
12	Strip		369H6455-19	Hughes

3-4. REMOVAL OF INSTRUMENT PANEL EQUIPMENT.

a. Remove instrument panel hood and left and right instrument panel side fairings (Section 17, HMI - Vol 1.)

b. Remove blank panel from upper center of instrument panel between airspeed indicator and altimeter. Retain washers for reuse.

3-5. MODIFICATION OF INSTRUMENT PANEL. Prior to installing the attitude gyro indicator, it is necessary to modify cutouts in instrument panel structure and instrument panel hood. Make modifications as shown in figure 3-1.

3-6. INSTALLATION OF ATTITUDE GYRO INDICATOR.

a. Locate and drill mounting holes for terminal board and ground stud as shown in figure 3-2.

b. Install terminal board (21, figure 1-1) using screws (17), washers (16) and nuts (15). Install nuts (18,20) and washers (19) on terminal board (21).

c. Install screw (14), washers (11, 13) and nuts (10, 12).

d. Apply decals (2, 3 table 3-1) at locations shown in figure 3-2.

e. Install circuit breaker (8, fig. 101). Attach harness assembly (9) to circuit breaker (8), terminal board (21), and screw (14) using terminals (4, 5, 6 table 3-1) as shown in figure 2-3.

f. Install attitude gyro indicator (7) using clamp (6), strap (5), screws (3), washers (4), nuts (2) and screws (1).

NOTE: Strap (5) is not used if directional gyro indicator is installed. Apply strip (12, table 3-1) using sealant compound (1) in place of strap (5, fig. 1-1).

g. Attach harness assembly (9) to attitude gyro indicator (7). Secure harness assembly to instrument panel structure at existing tooling holes using tie strap base (8, table 3-1), washers (10), nylon tie straps (9) and rivets (11) as required. Protect harness assembly from chafing using grommet (7).

3-7. COMPLETION OF INSTALLATION.

a. Check entire installation for completeness.

b. Check all electrical wiring.

c. Clean all foreign material from instrument panel.

d. Reinstall instrument panel left and right fairing and hood (Section 17, HMI - Vol 1).

e. Perform operational check of completed attitude gyro indicator installation.

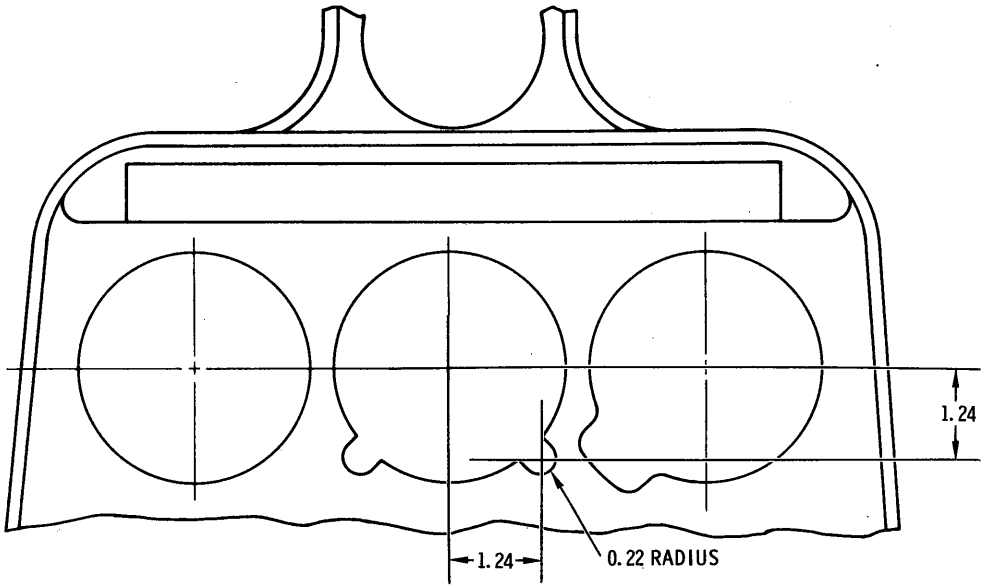
f. Revise weight and balance records (para 3-8).

3-8. WEIGHT AND BALANCE.

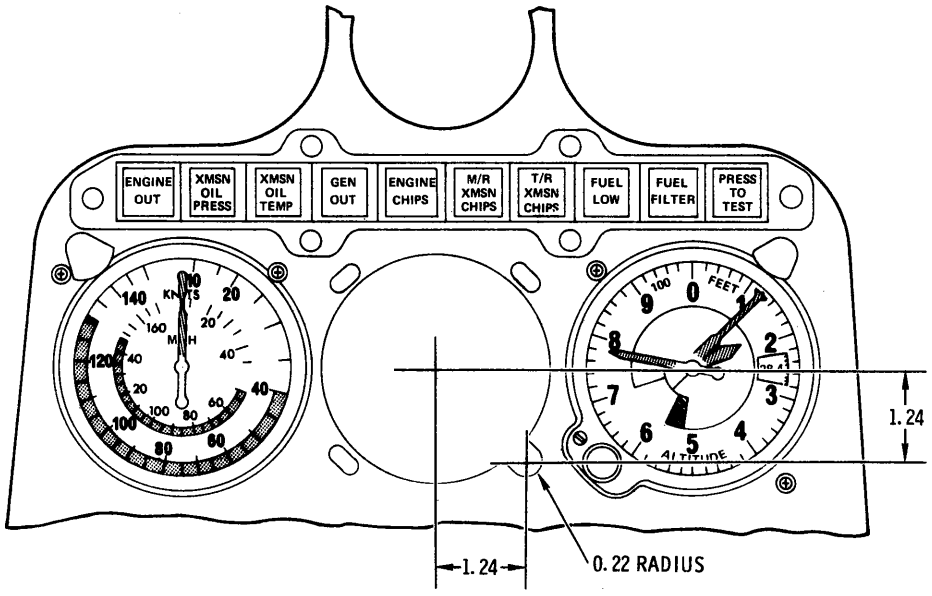
3-9. GENERAL. Weight and balance changes resulting from installation of the attitude gyro are listed in table 3-2. After installation of attitude gyro, incorporate changes in helicopter weight and balance records as instructed in HMI - Vol 2.

Table 3-2. Weight and balance data

	Weight (lb)	Arm (in.)	Moment (in. - lb/100)
Added	2.8	43.0	1.2
Remove	0.0	-	0.0
Changed	+2.8	43.0	+1.2



INSTRUMENT PANEL HOOD



INSTRUMENT PANEL

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Figure 3-1. Instrument panel-modification

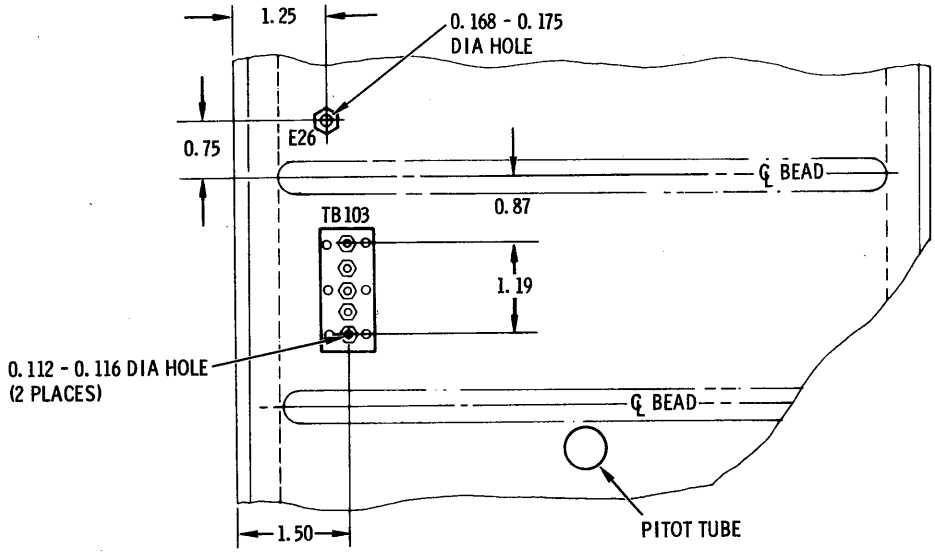

Figure 3-2. Terminal board-installation