Honeywell

MAINTENANCE MANUAL

BENDIX/KING®

KI 525

PICTORIAL NAVIGATION INDICATOR

MANUAL NUMBER 006-15620-0007
REVISION 7 JULY, 2001

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PICTORIAL NAVIGATION INDICATOR

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REVISION HISTORY

KI 525 Maintenance Manual

Part Number: 006-15620-XXXX

For each revision, add, delete, or replace pages as indicated.

REVISION No. 7, July 2001

ITEM	ACTION
All pages	Full Reprint, new manual

Revision 7 creates a new stand-alone manual for the KI 525 which was extracted from revision 6 of the KCS 55/55A maintenance manual, (P/N 006-05111-0006). Any revisions to the KI 525, beginning with revision 7, will not be a part of the KCS 55/55A manual.

THIS PAGE IS RESERVED

TABLE OF CONTENTS

SECTION IV
THEORY OF OPERATION

SECTION V
MAINTENANCE

SECTION VI
ILLUSTRATED PARTS LIST

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS (cont).

THIS PAGE IS RESERVED

SECTION IV
THEORY OF OPERATION

4.1 GENERAL INFORMATION

4.1.1 GENERAL DESCRIPTION

The KI 525 Pictorial Navigation Indicator consists of several functional sections. These include digitally driven heading display card, course datum and heading select optically derived autopilot outputs , a servo driven glideslope pointer using an optical position sensor, a glideslope retract circuit to detect an invalid GS signal, a NAV flag circuit that monitors NAV receiver power and video signal level, a system power flag along with the normal course deviation bar, TO-FROM meter, slaving CT, heading transmitter (on 066-03029-0001 units only) and course resolver.

4.2 HEADING DISPLAY CARD

A digital stepper motor is used to drive the heading display card in response to signals generated in the KG 102 directional gyro. These signals consist of a two phase excitation drive that is connected to the four stepper motor leads as shown in Figure 4-1.

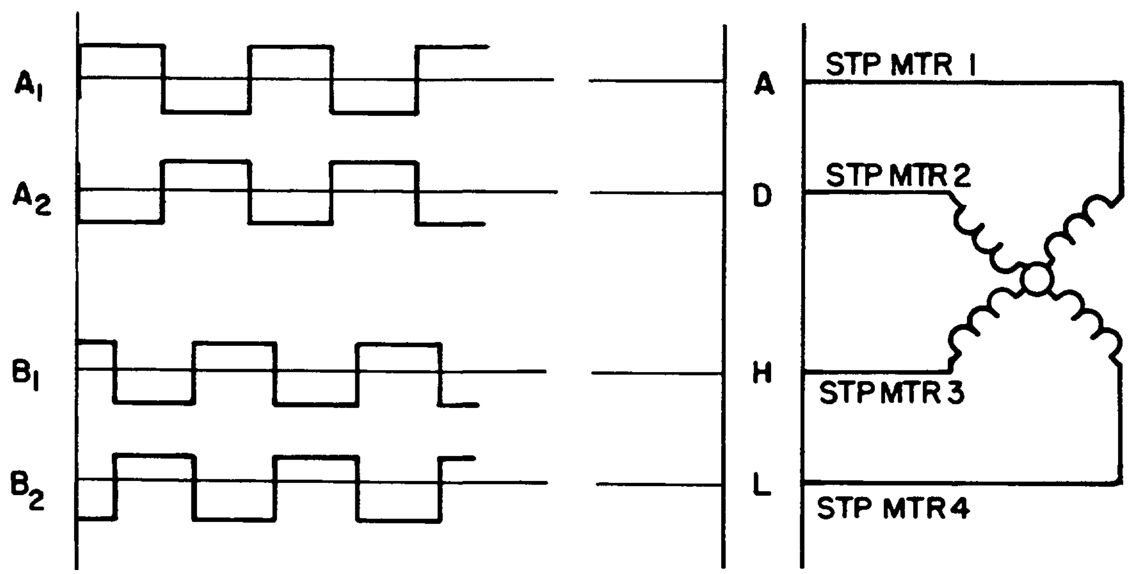

FIGURE 4-1 STEPPER MOTOR DRIVE CIRCUIT

Each time the A or B waveforms change state, the motor shaft moves nine degrees in a direction determined by the previous state of the A and B waveforms. This motion is reduced to 1/4 degree card rotation by a 36:1 gear train assembly.

4.3 G.S. POINTER

Operation of the GS pointer is based on the repulsion of a permanent magnet by an electromagnetic field. The mechanism used to operate the pointer is shown in Figure 4-2. In the quiescent, power off condition, the north and south poles of the circular magnet, which are rigidly attached to the pointer assembly, are attracted to the metal pole pieces at A and B respectively. This attraction causes the pointer to deflect upward behind the front bezel and out of sight. Therefore, the GS invalid signal needs only to remove the pointer drive signal in order to remove the pointer from view.

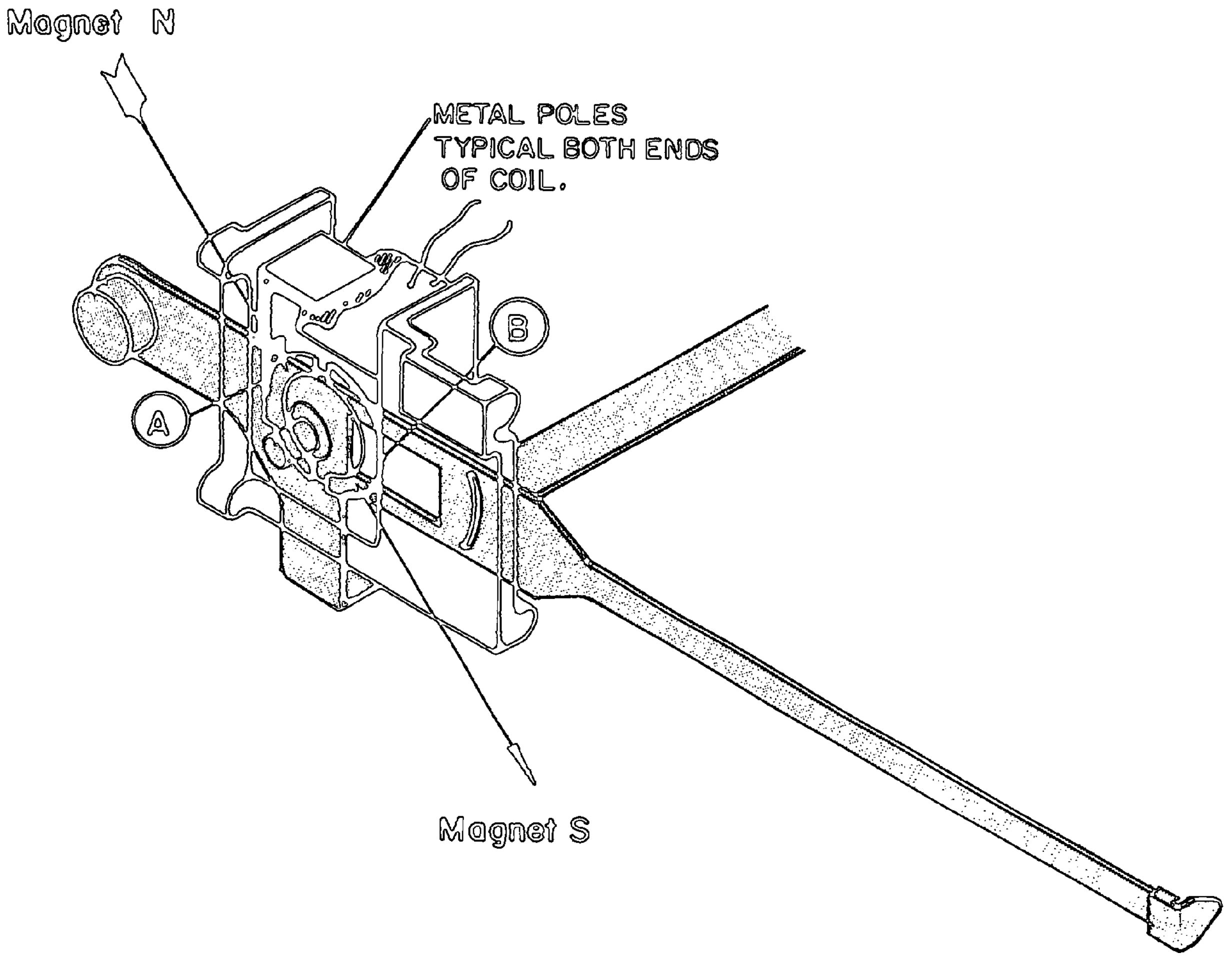

FIGURE 4-2 GS POINTER MECHANISM

4.3.1 GS POINTER DETAILED OPERATION

The glideslope deviation signal is connected to the KI 525 at pins B and E on the lower connector and from there to the P.C. board where resistors R139, R140 and R138 present a standard 1K ohm load to the receiver. (See Figure 4-3). These resistors are connected to differential amplifier 1103A where a gain of approximately sixty is achieved. From there, the signal passes through resistor R142 and thence to amplifier I103B where it is filtered by the RC network of resistor R165 and capacitors C108 and C109. This filtered signal is limited to -8.7v by the combination of forward biased diode CR107 and reverse biased zener diode CR114. This limiting action is required to prevent the GS pointer from deflection up out of view behind the retract shroud during normal operation. Only when a GS invalid signal is present will the pointer disappear from view.

After being amplified, filtered and limited, the command signal passes through resistor R166 to amplifier I105B where it enters the glideslope pointer servo loop. (Figure 4-4)

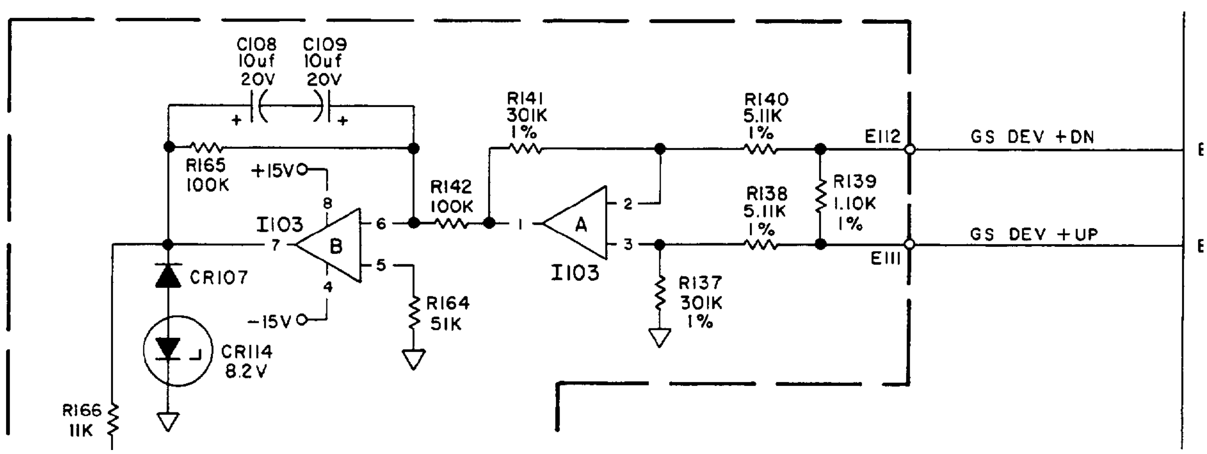

FIGURE 4-3 GLIDESLOPE DEVIATION INPUT CIRCUITRY

Any signal present at the input of I105B will result in a ramping voltage at the output, the rate of which is determined by the magnitude of the input voltage, resistor R160, and capacitors C101 and C102. Positive inputs result in a negative moving ramps and negative inputs result in positive moving ramps. This ramping voltage passes through resistor R159 to low-pass filter consisting of I 105A resistor R 156 and R 15 7, and capacitor C 103. The output of 1105A is connected through R153 to Q109 which forms an emitter follower consisting of resistor R154 and the GS pointer excitation coil. Diode CR106 protects Q109 during the glideslope retract mode of operation and diode CR116 prevents large reverse voltages from developing across the coil when Q109 shuts off. (Figure 4-4).

As the current builds up in the GS excitation coil, poles A and B (Figure 4-2) become magnetized NORTH and SOUTH respectively. This creates a repulsive force on the circular magnet attached to the GS pointer causing it to deflect in a downward direction. This motion causes the infrared light beam generated by LED CR117 to move laterally across the face of dual photocell V101. (Figure 4-5). The lateral motion is caused by the offset slit in the glideslope pointer assembly as shown in the figure, the left side of the photocell will be illuminated to a greater degree than the right side causing the center top of the photocell to become positive. Amplifier I106B compares this voltage with a reference value at the junction of resistors R143 and R144 and is produced by the voltages at each end of the photocell. In this way, variations in the photocell excitation voltages will not result in an offset at the output of I106B. The combination of resistor R104 and zener CR105 produce the +10VDC photocell voltage, and R105 and CR110 produce the -10VDC photocell voltage. From the output of I106B, the signal passes to a lead circuit consisting of resistors R149, R150 and E151 and capacitors C105 and C106. From the output of I106A, the signal passes to another lead circuit consisting of resistors R161 and R162 and capacitors C104 and C107. These lead circuits are required to compensate for the inherent lag in the glideslope pointer assembly and the photocell. The signal at this point is negative, having been inverted by amplifier I106A and tends to cancel the positive voltage produced by the command signal from amplifier I103B discussed above. When this cancellation occurs, the glideslope pointer stops moving and displays the aircraft location relative to the glideslope beam.

4.3.2 GS RETRACT CIRCUIT (Figure 4-6)

As the glideslope signal becomes weaker, the valid signal at bottom connector pin J and top connector pin W begins to decrease. This valid signal from the glideslope receiver is connected to resistors R126, R127 and R125 which represent a 1000ohm load to the receiver. Amplifier 1104A increases the amplitude of the valid signal by approximately forty and drives a level sensing circuit consisting of resistors R129, R130, R131; capacitor C110 and amplifier I104B. Capacitor C110 provides negative rate feedback to cause the circuit to operate as an integrator when the output of I104A becomes more positive than the switching point of I104B. The switching level is established by resistors R129 and E130 at approximately -7. 8VDC. When reduced by a factor of forty, this switching level corresponds to a level of 0. 195VDC at the glideslope receiver. Since amplifier I104A uses negative feedback, the output of this stage is negative, thus requiring the negative bias voltage on amplifier I104B. When the output of I104A exceeds -7. 8VDC, amplifier I104B slowly changes state from +15VDC to -15VDC. While amplifier I104B is in the -15VDC condition, the glideslope receiver is invalid resulting in current flow through forward biased diode CR109 and resistor R134. This negative current will overwhelm any current through resistor R162 or R166 resulting from the photocell or command signal and cause amplifier I105B to saturate at +15VDC. This voltage will cause amplifier I105A to saturate at -15VDC and force transistor Q109 to shut off and allow the glideslope pointer to deflect up and out of view.

As the glideslope valid voltage exceeds 0. 195VDC, amplifier 1104B will slowly switch to +15VDC causing diode CR109 to be reversed biased, preventing current from flowing through resistor R 134. In this configuration, the glideslope pointer will drop into view and conform to the glideslope deviation command signal.

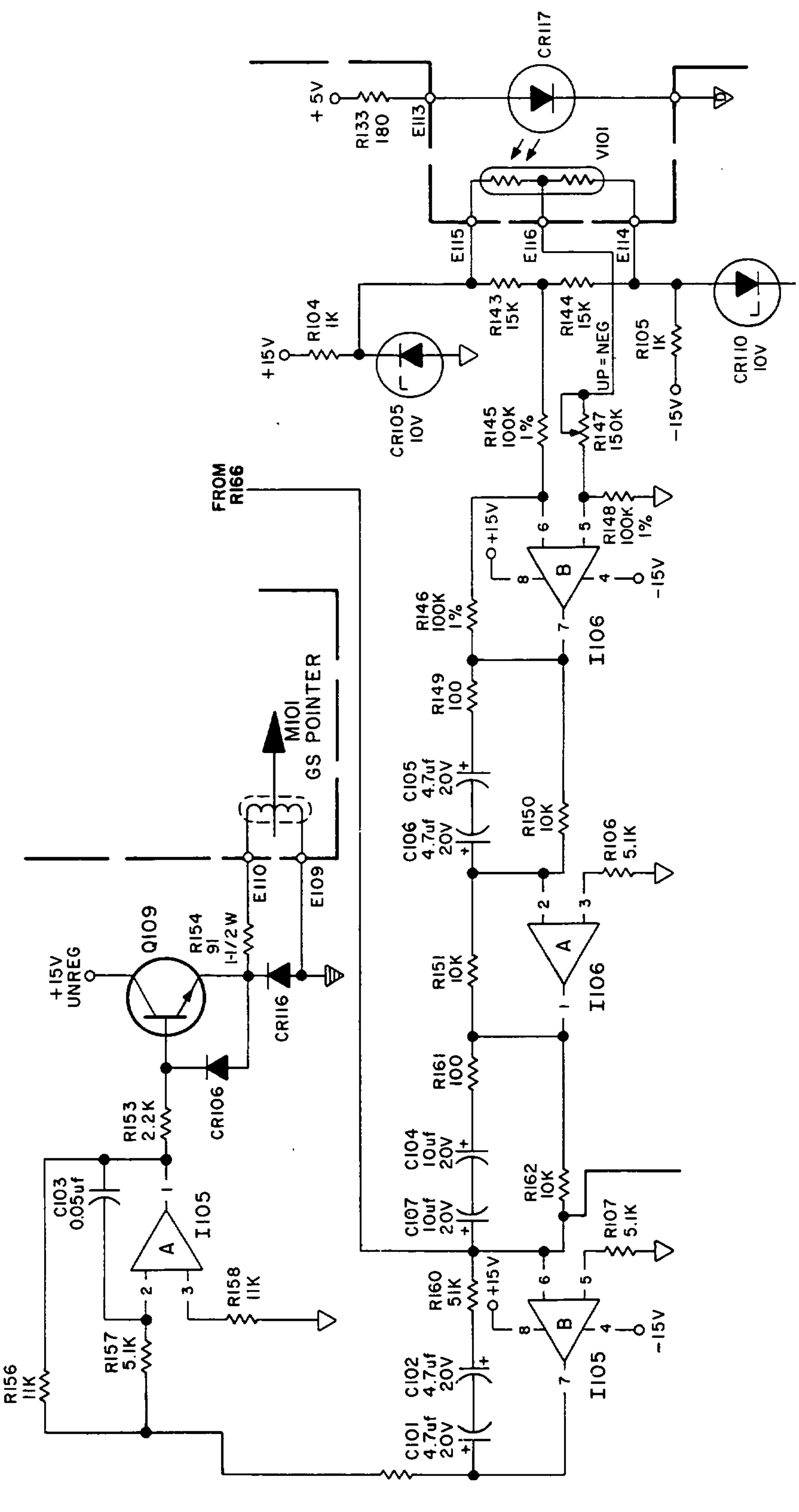

FIGURE 4-4 GLIDESLOPE DEVIATION SERVO LOOP

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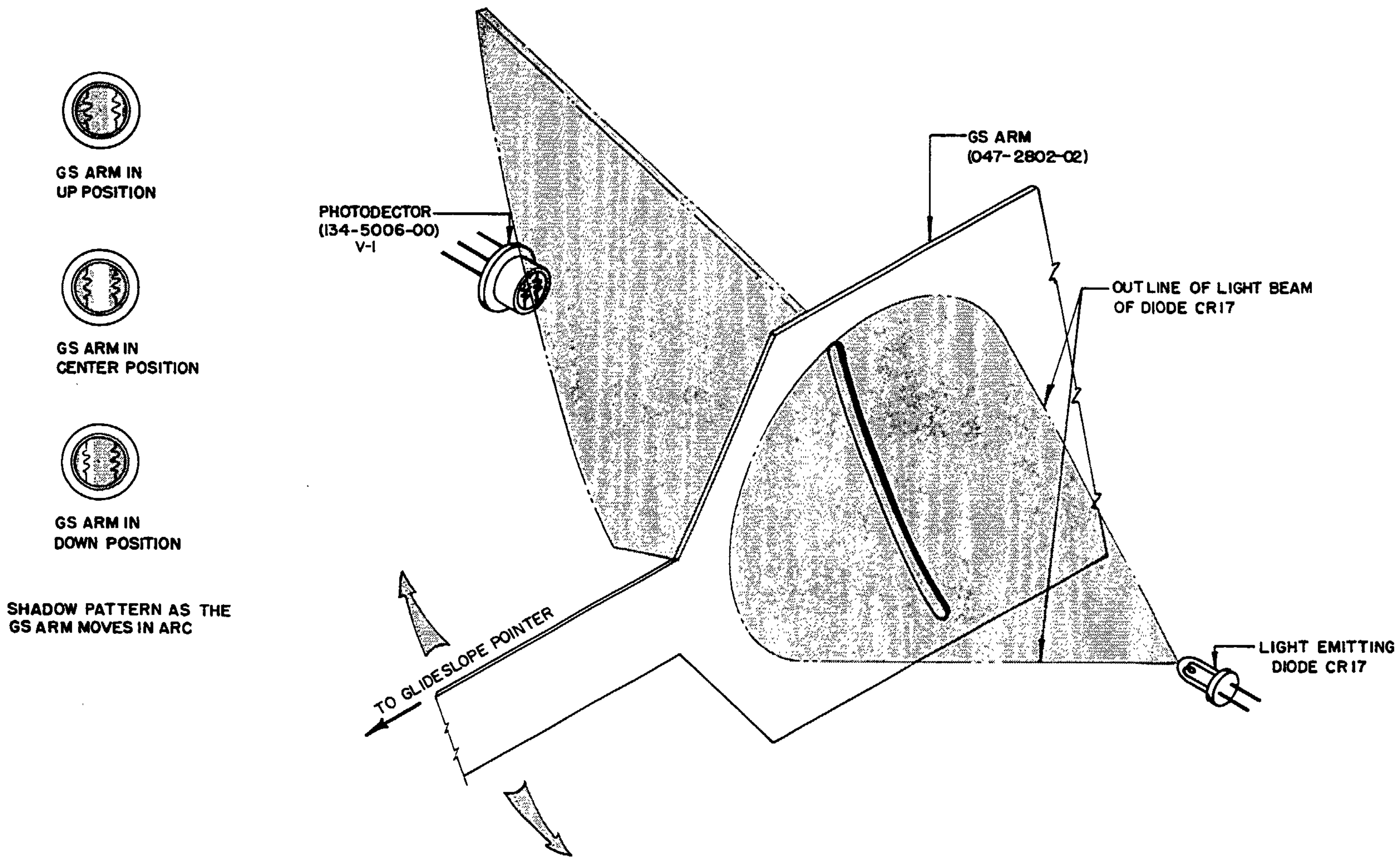

FIGURE 4-5 GLIDESLOPE POSITION FEEDBACK SENSOR

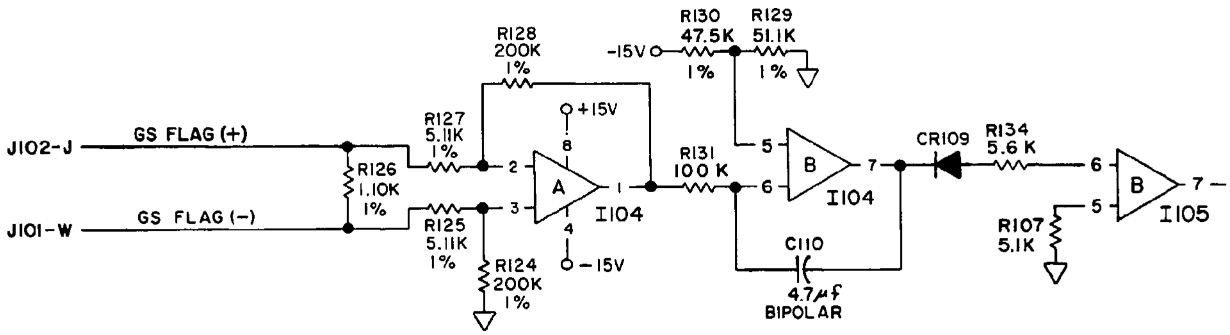

FIGURE 4-6 GLIDESLOPE RETRACT CIRCUITRY

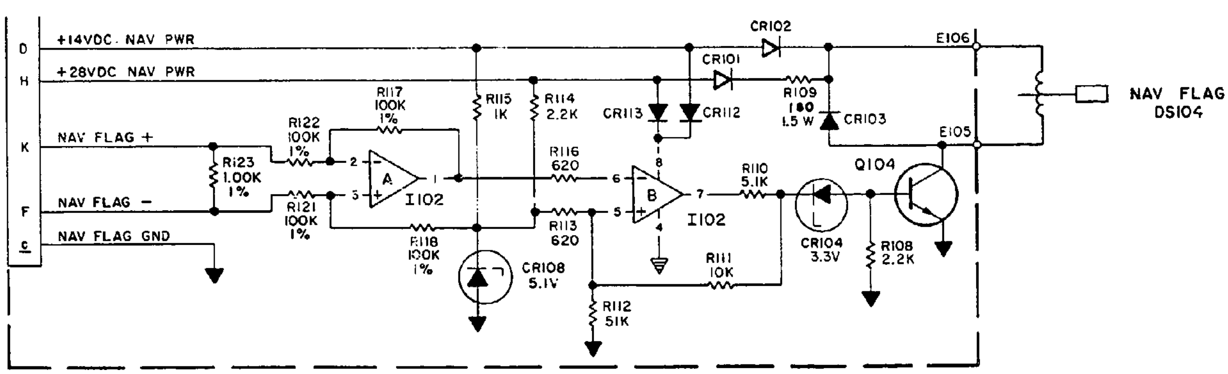

FIGURE 4-7 NAV FLAG CIRCUITRY

4.4 NAV FLAG CIRCUIT (Figure 4-7)

The NAV valid signal originating at the VOR/LOC receiver is connected to pins K and F of the upper P. C. board. Resistor R123 provides a 1Kohm load to the receiver. This signal then passes through resistors R121 and R122 to differential amplifier 1102A. Negative feedback is provided by resistor R117 which also established a gain of ONE for the stage. Since the amplifier is powered by a single ended power supply, i.e., +28VDC or ±14VDC to ground, the summing junctions at pins 2 and 3 of 1102A must be biased positive with respect to ground in order for the op-amp to function. This bias voltage is developed across zener diode CR108 in series with resistor R114 when using +28VDC power, and in series with resistor R115 when using +14VDC power. This +5. 1VDC bias voltage is connected to pin 3 of 1102A through resistor R118 and thus causes the output at pin 1 to stabilize at +5.1VDC also.

The FLAG input voltage level from the NAV receiver will be inverted by 1102A and will appear at pin I in direct proportion to the input voltage change. From pin 1, the signal passes through resistor R116 to pin 6 of I102B. This signal is compared to the bias reference on pin 5 of I102B generated by zener diode CR108. During the NAV invalid condition the input voltage is near zero and the output from 1102A pin 1 is nearly 5. IVDC. The voltage at pin 5 of I102B, however, is less than 5. 1VDC because of the voltage divider consisting of resistors R112 and R113. This causes the voltage to + pin 7 of I102B to switch to ground potential, removing the drive to transistor Q104 and providing a small amount of positive feedback to pin 5 of I102B through resistors R110 and RI1I.

When the input voltage increases to approximately +0. 21VDC, the output of I102A will decrease to +4. 9VDC which is less than the reference voltage on pin 5. This will cause amplifier 1102B to switch from near ground potential to +14VDC or +28VDC depending upon the power supply magnitude. Zener diode CR104 prevents transistor Q104 from turning on when 1102B is low since the output of this stage may be as high as one or two volts. When 1102B switches high, CR104 breaks down in the reverse direction, providing base current for Q104. This results in collector current through the NAV flag coil in series with CRI02 for 14VDC operation and R109 and CRIC1 for 28VDC operation. As the current builds up in the NAV flag coil, the small circular magnet between the coil poles rotates, causing the NAV flag to move up and out of view behind the front bezel.

4.5 POWER FLAG

The power flag operates in the same manner as the NAV flag, in that current flowing through the coil generates a magnetic field opposing the field in the circular magnet to which the flag is attached. This opposition causes the magnet to rotate and position the PWR flag out of view behind the front bezel. When the +15V unregulated supply from the KG 102 gyro drops below 2. OVDC, the attraction of the circular magnet poles to the pole pieces becomes greater than the repulsion force of the coil generated field-and results in a rapid rotation of the circular magnet to align with the pole pieces. This results in the reappearance of the PWR flag from behind the upper bezel.

4.6 HEADING SELECT AND COURSE DATUM PICKOFF ASSEMBLIES

Dual photo detectors V102 and V103 (figure 4-8) provide the DC outputs that correspond to the heading select and course datum signals respectively. A light beam from LED CRI15 illuminates V102, and CR111 illuminates V103. These light beams are partially interrupted by a shutter that rides on the heading select, or course datum cam attached to the center yoke assembly. (Figure 4-8). The horizontal slit in the shutter allows a narrow beam of light to fall on the photocell. This light causes a decrease in resistance of the photocell elements, but if both segments are equally exposed as shown in Figure 4-8B, the output voltage when measured against the mid point of resistor combination R135 and R136, will be zero. Resistors R135 and R136 provide the reference point for both pickoffs and prevents power supply variations from affecting the output voltage.

As the heading bug or course pointer is rotated clockwise, the shutter moves upward in response to the increasing cam radius. This results in greater exposure of the upper half of the dual photocell as shown in Figure 4-8A. A reduction in the resistance of this half unbalances the voltage divider and produces a positive output voltage between the photocell center top and the junction of resistors R 135 and R 136. As the heading bug or course pointer is rotated counterclockwise, the shutter moves downward, exposing the bottom half of the photocell. (figure 4-8). This results in a negative output voltage between the photocell center top and the junction of resistors R 135 and R 136.

Rotation of the heading select bug will produce a continuously changing voltage within plus or minus 30 degrees of the upper lubber line. Beyond that point, the voltage will remain constant at approximately ± 12. 5VDC. When the bug is rotated to the bottom of the instrument, the voltage changes polarity and again remains constant until it is moved within 30 degrees of the upper lubber line where it begins to decrease toward zero volts.

The course datum cam is cut in a similar fashion, except that it is symmetrical on the upper and lower sections allowing for back course autopilot operation. In addition, the course cam has a larger linear range than the heading cam, extending out to 80 degrees on either side of the upper or lower lubber lines with only 20 degrees of constant radius on each side of the instrument.

4.7 NAV DEVIATION AND TO-FROM INDICATORS

Unlike the glideslope pointer, the NAV deviation and TO-FROM indicators are conventional meter movements mounted inside the center yoke assembly. The NAV meter is a 1000n, 15011a unit and the TO-FROM meter is a 200n, 200pa device.

Drive current is supplied by the NAV receiver through P. C. board pins b and V for the NAV meter, and pins Z and T for the TO-FROM meter. From the P. C. board, the current passes through two pairs of brushes attached to the P. C. board that extended down on each side of four metal rings surrounding the.center yoke assembly as shown in Figure 4-9. Wires soldered to the four rings supply current to the respective meter movements.

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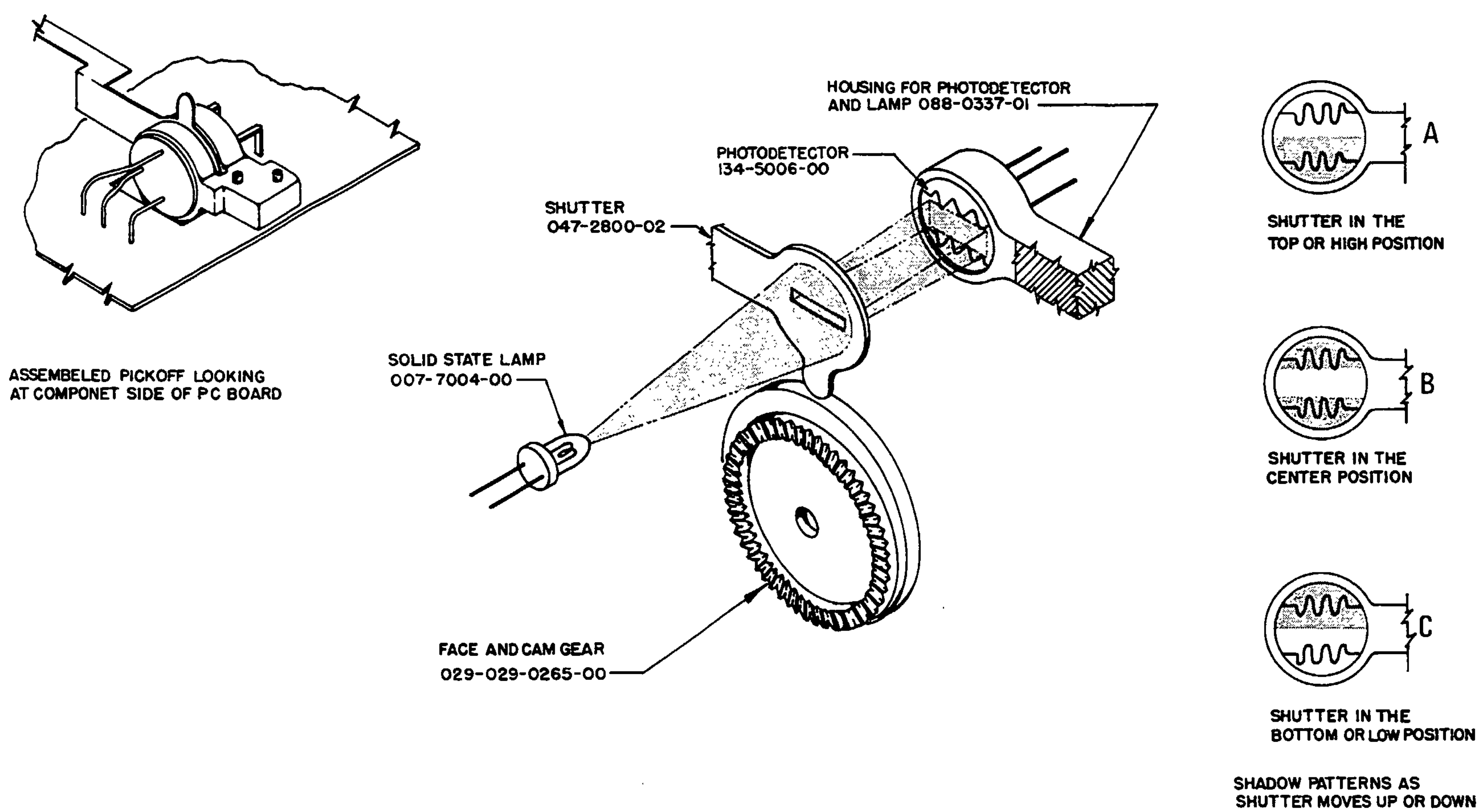

FIGURE 4-8 COURSE DATUM PICKOFF ASSEMBLY

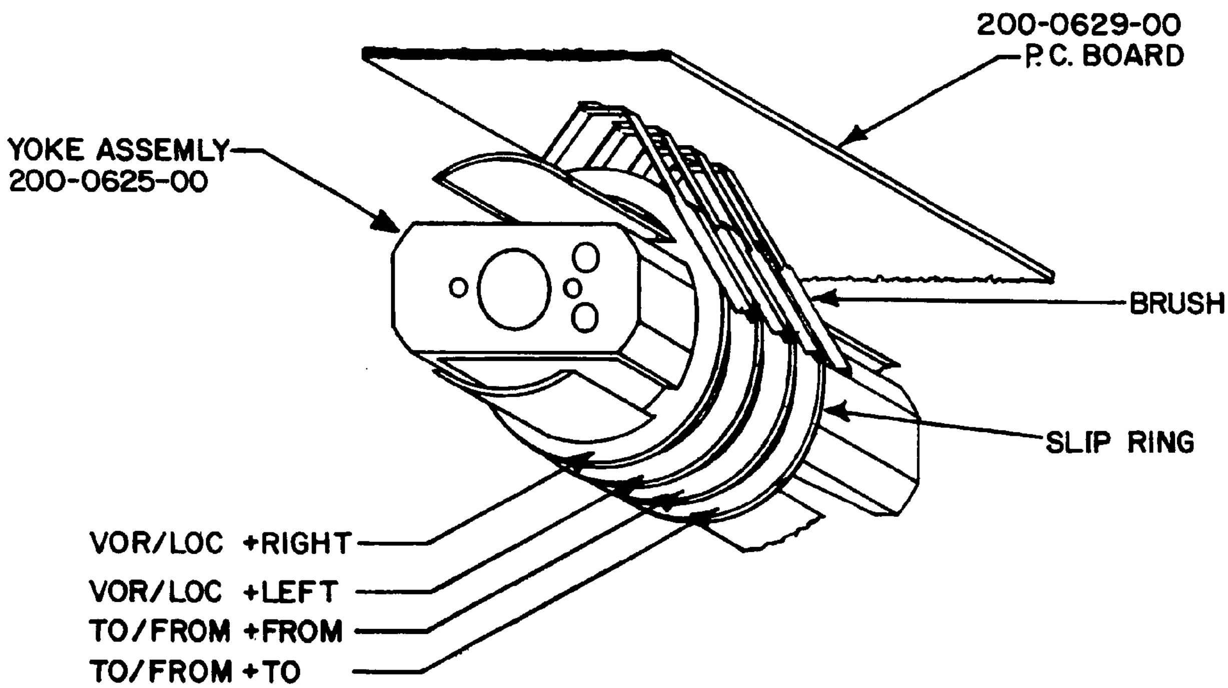

FIGURE 4-9 CENTER YOKE WITH NAV AND TO-FROM BRUSH ASSEMBLY

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SECTION V
MAINTENANCE

5.1 INTRODUCTION

This section deals with the testing, overhaul, and trouble shooting procedure for the KI 525 Pictorial Navigation Indicator.

5.2 TEST AND ALIGNMENT

5.2.1 GENERAL REQUIREMENTS

Unless otherwise specified all tests shall be conducted with the indicator in its normal operating position and at ambient room temperature (25 ±5 degrees C) and humidity not to exceed 80%.

5.2.1.1 ELECTRICAL

Output signals

a)	HDG SEL	0.5	vdc/deg
b)	CRS Datum	0.2	vdc/deg

Input signals

a)	VOR deviation	15	mv/deg
b)	GS deviation	300	mv/deg
c)	VOR Flag valid	210	mv
d)	GS Valid	210	mv
e)	PWR Valid	15	vdc
f)	TO-FROM	± 150	mv
g)	Lighting	± 14	vdc or +28 vdc
h)	Two phase state signal to stepper motor		

5.2.1.2 MECHANICAL

a)	Compass Card	1/4	deg increments
b)	HDG Sel Cam	0.0016	in/deg
c)	CRS DTM Cam	0.0006	in/deg

5.2.2 TEST EQUIPMENT

a) KTS-153 Test Set

b) Precise angle indicator.

c) ORZ test circuit described in RTCA 209-54/DD-62

d) DC voltmeter-Similar to Fluke Model 8000A

e) Oscilloscope-Similar to Tektronix, Model 516.

5.2.3 CALIBRATION PROCEDURE

The initial phase of this procedure shall be performed with the unit in the final stage of assembly. The PC board shall be wired to the harness but not assembled to the main structural casting.

1) Place the KTS-153 Power Switch OFF. Connect the unit to the tester. Connect a precise angle indicator (PAI) to the HDG CX jacks on the front of the tester.
2) Carefully rotate the first gear forward of the slip rings until NORTH is precisely under the lubber line. Loosen the heading repeater hold-down screws, and rotate the synchro for 0.00° on the PAI. Tighten the hold-down screws.
3) Rotate the heading card until EAST appears under the lubber line. The PAI shall read 90 ±1.0°.
4) Return the heading card to 0.0°, and loosen the slaving CT hold-down screws. Switch the PAI to the slaving CT, and rotate the synchro for 0.00° on the PAI. Tighten the hold-down screws.
5) Rotate the heading card until EAST appears under the lubber line. The PAI shall read 90 ±1.0°.
6) Rotate the heading card to NORTH, and position the course pointer at 300°. Connect the ORZ test set to the OBS Resolver jacks. Loosen the course resolver hold-down screws and calibrate the 30 Hz resolver according to the constant rotor voltage test procedures given in RTCA paper 209-54/DO-62. Tighten the hold-down screws. Assemble the PC board to the main structure but do not install the unit cover.
7) Place the following tester switches to the indicated position:

SWITCH	POSITION
RES/DEV	DEV
D-BAR/TO-FM	D-BAR
METER	GS DEV
14/28 vdc	+14 vdc on Panel Meter
±15 vdc	ON
+5 vdc	ON
GS DEV CMR	OFF
GS FLAG CMR	OFF
CCW-CW	CCW
Stepper Drive	OFF
NAV FLAG CMR	OFF
+15 VNREG	NORMAL
115 VAC 400 Hz.	ON

8) Adjust the 14/28 vdc pot for 28 vdc on the tester voltmeter.
9) Place a black cloth over the indicator to remove as much light as possible from the three photocell areas. Adjust the GS flag pot fully clockwise, and the GS DEV pot for 0.0 vdc E(+) to B(-)(J2). Refer to figure 5-1 and loosen the GS photocell assembly hold down screw. Carefully adjust the photocell assembly to position the glideslope pointer directly over the center mark on the glideslope scale when viewing the indicator from 25 degrees above the front. Tighten the photocell assembly hold-down screw.

10) Adjust the GS DEV pot fully clockwise. The GS pointer shall move toward the top of the indicator. Adjust pot R147 until the GS pointer is just in view at the top of the indicator when viewed from 30° above the longitudinal axis of the unit. Adjust the GS DEV pot for 0.0Vdc.
11) Position the heading bug and the course pointer precisely under the lubber line. Loosen the two shutter hold-down screws on each shutter less than 1/2 turn.
12) Monitor the voltage from P(+) to S(-) (J1). With the black cloth covering the unit, move the heading shutter (forward photocell) with the adjusting tool until the voltage P(+) to S(-) (J1) is 0.0Vdc. Carefully tighten the two hold-down screws while maintaining 0.0Vdc from P(+) to S(-).
13) Monitor the voltage from pin e (+) to S(-) (J1). Repeat the above adjustment procedure on the CRS shutter (rearward).
14) Position the HDG bug to 10 ±0.5° to the right of the lubber line and the CRS Pointer to 10 ±0.5° to the left of the lubber line. Adjust R169 for +5.5Vdc from pin P(+) to S(-) (J1) and adjust R170 for -2.1 vdc from pin e (+) to S(-) (J1).
15) Remove all power from the unit. Apply glyptal to the four shutter hold-down screws and to the GS photocell assembly hold-down screw. Place the cover on the unit, and secure it with two rear-mounted screws.

5.2.4 FINAL TEST PROCEDURE

The unit shall be completely assembled with the cover in place.

1) Connect the unit to the tester, and set the panel switches as listed in 5.2.3 (7) above. Place the heading and course pointers under the lubber line, and adjust the GS flag, GS deviation, and NAV flag sources for 0.0 Vdc. Record the following voltages:

   a) J1 Pin P(+) to S(-) 0.0±0.3Vdc

   b) J1 Pin e(+) to S(-) 0.0±0.60Vdc

2) Adjust the 14/28 Vdc pot for +11.2 Vdc on the panel meter. The NAV and PWR flags shall be fully in view. Slowly increase the NAV flag voltage until the NAV flag snaps up out of view. The flag shall be completely out of view.

   NAV flag voltage K(+) to F(-) +0.21 ±0.03Vdc.

   Adjust the 14/28 VDC pot for +14.0Vdc.

3) Switch the NAV flag CMR switch to the POS position. Re-adjust the NAV flag voltage to the value recorded in 2 above. The NAV flag shall not be in view.
4) Switch the 14/28V NAV PWR OFF. The NAV flag shall come completely into view.
5) Switch the 14/28V NAV PWR to the 28V position, and adjust the 14/28 VDC pot for +28.0Vdc. The NAV flag shall go completely out of view.
6) Decrease the voltage to 22.4Vdc. The NAV flag shall remain out of view.
7) Slowly decrease the NAV flag voltage until the NAV flag drops into view. The NAV flag voltage K(+) to F(-) shall be 0.17 ±0.03Vdc. Return the input voltage to +28Vdc.
8) Monitor the voltage on P(+) to S(-) and adjust the heading pointer 10° left of the lubber line.

   P(+) to S(-) -5.5 ±1.2Vdc

9) Continue to rotate the heading pointer to the left until the voltage stops changing. The pointer shall be 30 ±5° right of the lubber line.

   P(+) to S(-) -12.5 ±2Vdc

10) Adjust the pointer 10° right of the lubber line.

    P(+) to S(-) +5.5 ±1.2Vdc

    (Offset recorded in 1)a) shall be used as the reference for this measurement.)

11) Continue to rotate the heading pointer to the right until the voltage stops changing. The pointer shall be 30 ±5° right of the lubber line.

    P(+) to S(-) +12.5 ±2VVdc

12) Continue rotating the heading pointer to the right until the voltage switches to -14±3Vdc. The heading pointer shall be within 10° of the bottom of the indicator.

13) Monitor the voltage J1 e(+) to S(-), and adjust the course pointer 10° left.

    e(+) to S(-) -2.1±0.4Vdc

14) Continue to rotate the course pointer to the left until the voltage stops changing. The pointer shall be 80±10° left of the lubber line.

    e(+) to S(-) -12.5±2Vdc

15) Adjust the course pointer 10° right of the lubber line.

    e(+) to S(-) +2.1 ±0.4Vdc

16) Continue to rotate the course pointer to the right until the voltage stops changing. The pointer shall be 80±10 degrees right of the lubber line.

    e(+) to S(-) +12.5±2Vdc

17) Continue to rotate the course pointer to the right until the voltage begins to decrease.

    CRS pointer 100 ±10 deg. right of the lubber line

18) Continue the right hand rotation until the voltage reads 0.0 vdc. The course pointer shall be within 10 degrees of the bottom of the indicator.

19) Continue the right hand rotation until the voltage stops changing.

    CRS pointer 100 ±10 deg. left of the lubber line

20) Adjust the GS deviation for maximum positive, maximum negative, and then back to zero. At no time shall the GS pointer come into view.

21) Increase the GS flag voltage J2-J(+) to J1-W(-) to 0.215Vdc.

    a) The GS pointer shall drop into view within 10 seconds.
    b) GS pointer center scale ±1/2 needle width (left side).
    c) GS pointer center scale ±1/2 needle width (right side).
    d) The GS pointer shall have no tendency to oscillate.

22) Switch the GS flag CMR switch to the POS, NEG, and then OFF positions. At no time shall the GS pointer move out of view.

23) Adjust the GS pointer to the following positions on the GS scale, and record the input voltages from E to B (J2).

    a) One dot up +75 ±10mVdc
    c) Two dots up +150 ±20mVdc
    d) Maximum up command Pointer in view at top of scale when viewed at 30° above unit centerline
    e) One dot down -75 ±10mVdc
    f) Two dots down -150 ±20mVdc

24) Adjust the GS flag voltage, (J2-J to J1-W), to 0.185Vdc. The GS pointer shall slowly move up out of view.

25) Adjust the GS DEV voltage to 0.0Vdc.

26) Place the RES/DEV switch to RES, and the DEV-BAR/TO-FROM switch to DEV-BAR. Adjust the RES pot for 0.3Vdc at TP-A.

    (J1) Pin b 0.150±0.004Vdc

27) Switch the DEV-BAR TO-FROM switch to the TO-FROM position, and adjust the RES pot for 0.3Vdc at TP-A.

    Pin Z 0.050±0.005Vdc

28) Switch the RES/DEV switch to DEV, and rotate the METER CURRENT adjust for a fully in-view TO indication. Position the course pointer under the lubber line. (TO-FROM flag points toward course pointer.)

    J1 Z(+) to T(-) +200±40 (adc

29) Repeat for a full FROM indication.

    J1 Z(+) to T(-) -200±40 (adc

30) Rotate the Meter Current adjust to 0.0. Slowly rotate the course pointer 360°. The TO-FROM flag shall remain totally out of view when viewed from the front.

31) Tilt the unit 90° up. The TO-FROM flag shall remain out of view.

32) Switch the DEV-BAR TO-FROM switch to the DEV-BAR position, and position the course pointer under the lubber line. With the Meter Current adjust at 0.0Vdc, the course deviation bar shall be aligned with the ends of the course select pointer and the symbolic airplane centerline within 1/4 bar width.

33) Slowly rotate the course pointer 360°. The DEV bar shall not move more than 1/2 bar width.

34) Tilt the unit 90° up. The DEV bar shall not move more than 1/2 bar width.

35) Adjust the DEV bar to the following positions. Record the current readings on the panel Microamp Meter. The movement of the DEV bar shall be unrestricted throughout the travel.

    a) One dot left -30±4 (adc
    b) Two dots left -60±8 (adc
    c) Three dots left -90±12 (adc
    d) Four dots left -120±16 (adc
    e) Five dots left -150±20 (adc
    f) Five dots right +150±20 (adc
    g) Four dots right +120±16 (adc
    h) Three dots right +90±12 (adc
    i) Two dots right +60±8 (adc
    j) One dot right +30±4 (adc

36) Switch the stepper drive ON, and adjust the slew speed for a 1.0-second square wave period at Pin A (J2). The heading card shall move smoothly with uniform steps. Switch the CW/CCW switch to CW, and check for smoothness.

37) Decrease the square wave period at Pin A (J2) to 67ms, and check the display for smoothness in both directions.

38) Switch the stepper drive off, and position the heading bug to 360°, and the course pointer at 90° relative to the compass card. Switch the stepper drive on, and allow the card to make two revolutions. The heading bug and the course pointer shall be within two degrees of the respective starting positions. Repeat this test with the display rotating in the opposite direction.

39) Rotate the heading knob in a direction opposite to that of the compass card. The compass card shall continue rotating smoothly without missing any steps. Repeat for the opposite direction. Allow the compass cards to rotate 360° in each direction.

40) Decrease the square wave period at Pin A (J2) to 33ms, and check the display for smoothness in both directions. There shall be no evidence of missed steps. Increase the square wave period to 0.1 second, and shut off the display.

41) Connect the PAI to the panel jacks shown, and position NORTH under the lubber line using the stepper drive direction and speed control.

a)	PAI:	Slaving CT	0.0±1.0°
b)	PAI:	HDG CX	0.0±1.0°

Position the compass card to the headings shown, and record the PAI values.

c)	HDG: 90°	Slave CT	90±1.0°
		HDG CX	90±1.0°
d)	HDG: 180°	Slave CT	180±1.0°
		HDG CX	180±1.0°
e)	HDG: 270°	Slave CT	270±1.0°
		HDG CX	270±1.0°
f)	HDG: 0.0°	Slave CT	0±1.0°
		HDG CX	0±1.0°

42) The course resolver shall be zeroed at 300° ±1° using the constant rotor voltage test in RTCA paper 209-54/DO-62.

43) The stator output voltages determined in accordance with the constant rotor voltage test shall be 0.180 ±0.012.

44) Connect the resolver to a calibrated resolver, phase shifter, accuracy bridge, or equivalent error-measuring equipment, and excite the rotor with 0.5V 30Hz. Rotate the course knob clockwise to position the course pointer at 60° increments from 0° to 360°. The maximum error shall be ±1°.

45) Switch the +15 unregulated switch to VARIABLE, and rotate the adjust pot fully counter-clockwise. The PWR flag shall be fully in view.

46) Slowly rotate the adjust pot clockwise until the PWR flag snaps out of view.

Pin v (J101) +10 +3/-4Vdc

47) Slowly rotate the pot counter-clockwise until the PWR flag snaps into view.

Pin v (J101) +4 ±3Vdc

48) Place the +15 unregulated switch to NORMAL.

49) Adjust the lighting pot fully CW and observe both lamps on and uniform illumination of the display.

50) Switch the 14/28v switch to l4v and adjust for 14vdc on the panel Meter. Both lamps shall be on and the display shall be illuminated in a uniform manner.

51) Slowly decrease the lighting intensity. The display illumination shall decrease in a smooth and uniform fashion.

52) Switch the 14/28v switch to 28v and adjust for 28vdc on the panel meter. Slowly increase the lighting intensity. The display illumination shall increase in a smooth and uniform manner.

53) Adjust the METER CURRENT pot for half-scale on the DEV-BAR, and slowly rotate the compass card 360° using the stepper drive controls. There shall be no discontinuity in the DEV-BAR display.

54) Place the DEV-BAR/TO-FROM switch to TO-FROM, and adjust the METER CURRENT pot until the flag is just off the stop in either the TO or FROM position. Slowly rotate the compass card 360°. There shall be no discontinuity in the TO-FROM display.

55) Rotate the METER CURRENT pot fully clockwise. Reduce the current to 100 uadc. The TO-FROM flag shall move smoothly off the stop. Repeat for the opposite polarity.

56) Place the DEV-BAR/TO-FROM switch to the DEV-BAR position, and rotate the METER CURRENT pot fully clockwise. Rotate the compass card 360°. The D-bar shall not touch the compass card. Reduce the current to 90 uadc. The D-bar shall move smoothly off the stop. Repeat for the opposite polarity.

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TEST DATA SHEETS

1) CRS AND HDG under lubber line		
a) J1 Pin P to S(-)	______________	0.0 +/-0.3 vdc
b) JI Pin e to S(-)	______________	0.0 +/-0.6 vdc
2) Input voltage to 11.2vdc		
NAV flag out of view		
J1K to P(-)	______________	0.21 +/-0.03 vdc
3) NAV flag CMR to Pos		
NAV flag	______________	out of view
4) 14/28 vdc OFF		
NAV flag	______________	IN VIEW
5) 28v input power		
NAV flag	______________	out of view
6) Input voltage to 22.4 vdc		
NAV flag	______________	out of view
7) NAV threshold		
NAV flag in view		
J1K to F(-)	______________	-0.17+/-0.03vdc
PWR VALID		
PWR flag	______________	Out of view
8) HDG SEL 10 deg Left		
J1P to S(-)	______________	-5.5 +/-1.2 vdc
9) HDG SEL to limit left		
J1P to S(-)	______________	-12.5 +/-2 vdc
10) HDG SEL 10 deg Right		
J1P to S(-)	______________	+5.5 +/-1.2 vdc
11) HDG SEL to limit Right	______________	30 +/-5 deg Right
J1P to S(-)	______________	+12.5 +/-2 vdc
12) HDG SEL Right		
to Crossover	______________	bottom +/- 10 deg
13) CRS 10 deg Left		
J1e to S(-)	______________	-2.1 +/-0.4 vdc
14) CRS to limit left	______________	-2.1 +/-0.4 vdc
J1e to S(-)	______________	12.5 +/-2 vdc
15) CRS 10 deg Right		
J1e to S(-)	______________	+2.1 +/-0.4vdc
16) CRS to limit Right	______________	80 +/-10 deg Right
J1e to S(-)	______________	+12.5 +/-2vdc
17) End of CRS limit Right	______________	100 +/-10 deg Right
18) CRS Null at bottom	______________	bottom +/-10 deg
19) End of CRS limit left	______________	100 +/-10 deg left
20) GS Max Pos, Neg, Zero	______________	Out of view

21) GS Flag to J2-J to JI-W(-)	______________	0.215 vdc
a) GS Pointer	______________	IN VIEW
b) GS Left Pointer	______________	Center +/-1/2 needle
c) GS Right Pointer	______________	Center +/-1/2 needle
d) GS Pointer	______________	Stable
22) GS CMR - Pos, Neg, OFF	______________	IN VIEW
23) GS Scale - J2E to B(-)		
a) One dot up	______________	+75 +/-10mvdc
b) two dots up	______________	+150 +/-20mvdc
c) Max up	______________	IN VIEW at top
d) One dot down	______________	-75 +/-10mvdc
e) Two dots down	______________	-150 +/-20mvdc
24) GS Flag J2 - J to J1 - W		
GS Pointer	______________	Out of view
25) RES pot for 0.3vdc (D-BAR)		
J1-b	______________	0.150 +/-0.004vdc
26) Res Pot for 0.3vdc (TO-FM)		
J1-Z	______________	0.050+/-0.005vdc
27) Full TO indication		
J1-Z to T(-)	______________	+200 +/-40uadc
28) Full FROM Indication		
JI-Z to T(-)	______________	-200 +/-408adc
29) TO-FM to Zero		
Rotate CRS		
TO-FM	______________	OUT OF VIEW
30) Unit 90 degrees UP		
TO-FM	______________	OUT OF VIEW
31) Align D-BAR and CRS Pointer	______________	Center +/-1/4 bar width
32) Rotate CRS		
D-BAR	______________	Center +/- 1/2 bar width
33) UNIT 90 degrees UP		
D-BAR	______________	Center +/- 1/2 bar width
34) D-BAR Scale		
a) One dot left	______________	-30 +/-4uadc
b) Two dots left	______________	-60 +/-8uadc
c) Three dots left	______________	-90 +/-12uadc
d) Four dots left	______________	-120 +/-16uadc
e) Five dots left	______________	-150 +/-20uadc
f) Five dots right	______________	+150 +/-20uadc
g) Four dots right	______________	+120 +/-16uadc
h) Three dots right	______________	+90 +/-12uadc
i) Two dots right	______________	+60 +/-8uadc
j) One dot right	______________	+30 +/-4uadc
35) Pin A Period - 1.0 sec		
Clockwise Motion	______________	OK
Counter Clockwise Motion	______________	OK

36) Pin A Period - 67 ms		
CW Motion	______________	OK
CCW Motion	______________	OK
37) HDG bug at 360 degrees CRS at 90 degrees Two Revolutions		
HDG bug	______________	360 +/-2deg
CRS	______________	90 +/-2 deg
Reverse Direction HDG bug	______________	360 +/-2deg
CRS	______________	90 +/-2-deg
38) HDG bug opposite of Card Compass Card	______________	No missed pulses
Opposite direction Compass Card	______________	no missed pulses
39) Pin A period - 33 Ms. Compass Card	______________	No missed pulses
Pin A period 0.1 second DISPLAY OFF		
40) PAI check - N under lubber line		
a) Slaving CT	______________	0.0 +/-1.0 deg
b) HDG CX	______________	0.0 +/-1.0 deg
Compass Check		
a) HDG - 90 deg		
Slave CT	______________	90 +/-1.0 deg
HDG CX	______________	90 +/-1.0 deg
b) HDG - 180 deg		
Salve CT	______________	180 +/-1.0 deg
HDG CX	______________	180 +/-1.0 deg
c) HDG - 270 deg.		
Slave CT	______________	270 +/-1.0 deg
HDG CX	______________	270 +/-1.0 deg
d) HDG - 0.0 deg		
Slave CT	______________	0.0 +/-1.0 deg
HDG CX	______________	0.0 +/-1. 0deg
41) CRS Resolver	______________	OK
42) Stator Output Voltage	______________	0.180 +/-0.012 VAC
43) CRS Resolver Accuracy		
CRS - 0.0 deg	______________	0.0 +/-1 deg
60 deg	______________	60 +/-1 deg
120 deg	______________	120 +/-1 deg
180 deg	______________	180 +/-1 deg
240 deg	______________	240 +/-1 deg
300 deg	______________	300 +/-1 deg
44) 15 volt unreg fully CCW		
PWR Flag	______________	IN VIEW
45) PWR Flag out of view		
JI-Pin v	______________	+10 +3/-4 vdc

46) PWR Flag in view		
JI-Pin v	______________	+4 +/-3vdc
47) PWR INVALID		
PWR Flag	______________	IN VIEW
48) Lighting	______________	OK
49) Lighting to I4v	______________	OK
50) Variable Lighting		
Intensity	______________	OK
51) Lighting to 28V	______________	OK
52) D-BAR Continuity	______________	OK
53) TO-FM Continuity	______________	OK
54) TO-FM Stops	______________	OK
Opposite polarity	______________	OK
55) D-BAR Interference	______________	OK
D-BAR Stops	______________	OK
Opposite polarity	______________	OK

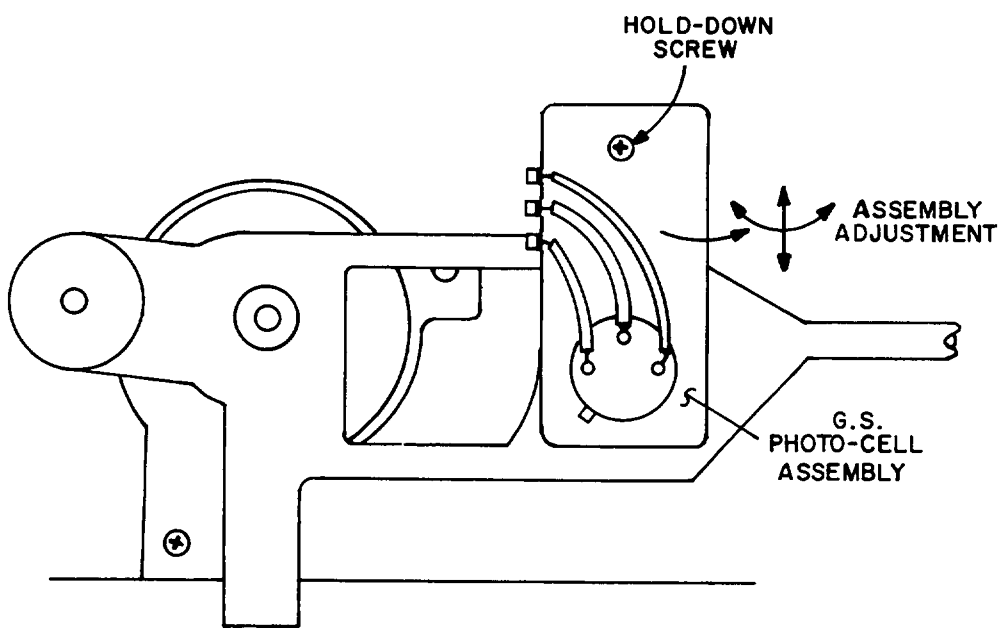

FIGURE 5-1 Glideslope Assembly Calibration

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5.3 OVERHAUL

5.3.1 VISUAL INSPECTION

This section contains instructions and information to assist in determining, by visual inspection, the condition of the units major assemblies and subassemblies. These inspection procedures will assist in finding defects resulting from wear, physical damage, deterioration, or other causes. To aid inspection, detailed procedures are arranged in alphabetical order.

A. Capacitors, Fixed

Inspect capacitors for case damage, body damage, and cracked, broken, or charred insulation. Check for loose, broken, or corroded terminal studs, lugs, or leads. Inspect for loose, broken, or improperly soldered connections. On chip caps, be especially alert for hairline cracks in the body and broken terminations.

B. Capacitors, Variable

Inspect trimmers for chipped and cracked bodies, damaged dielectrics, and damaged contacts.

C. Chassis

Inspect the chassis for loose or missing mounting hardware, deformation, dents, damaged fasteners, or damaged connectors. In addition, check for corrosion or damage to the finish that should be repaired.

D. Circuit Boards

Inspect for loose, broken, or corroded terminal connections; insufficient solder or improper bonding; fungus, mold, or other deposits; and damage such as cracks, burns, or charred traces.

E. Connectors

Inspect the connector bodies for broken parts; check the insulation for cracks, and check the contacts for damage, misalignment, corrosion, or bad plating. Check for broken, loose, or poorly soldered connections to terminals of the connectors. Inspect connector hoods and cable clamps for crimped wires.

F. Covers and Shields

Inspect covers and shields for punctures, deep dents, and badly worn surfaces. Also, check for damaged fastener devices, corrosion and damage to finish.

G. Flex Circuits

Inspect flex circuits for punctures, and badly worn surfaces. Check for broken traces, especially near the solder contact points.

H. Front Panel

Check that name, serial, and any plates or stickers are secure and hardware is tight. Check that the handle is functional, securely fastened, and handle casting is not damaged or bent.

I. Fuse

Inspect for blown fuse and check for loose solder joints.

J. Insulators

Inspect insulators for evidence of damage, such as broken or chipped edges, burned areas, and presence of foreign matter.

K. Jacks

Inspect all jacks for corrosion, rust, deformations, loose or broken parts, cracked insulation, bad contacts, or other irregularities.

L. Potentiometers

Inspect all potentiometers for evidence of damage or loose terminals, cracked insulation or other irregularities.

M. Resistors, Fixed

Inspect the fixed resistors for cracked, broken, blistered, or charred bodies and loose, broken, or improperly soldered connections. On chip resistors, be especially alert for hairline cracks in the body and broken terminations.

N. RF Coils

Inspect all RF coils for broken leads, loose mountings, and loose, improperly soldered, or broken terminal connections. Check for crushed, scratched, cut or charred windings. Inspect the windings, leads, terminals and connections for corrosion or physical damage. Check for physical damage to forms and tuning slug adjustment screws.

O. Terminal Connections Soldered

(1) Inspect for cold-soldered or resin joints. These joints present a porous or dull, rough appearance. Check for strength of bond using the points of a tool.

(2) Examine the terminals for excess solder, protrusions from the joint, pieces adhering to adjacent insulation, and particles lodged between joints, conductors, or other components.

(3) Inspect for insufficient solder and unsoldered strands of wire protruding from the conductor at the terminal. Check for insulation that is stripped back too far from the terminal.

(4) Inspect for corrosion at the terminal.

P. Transformers

(1) Inspect for signs of excessive heating, physical damage to the case, cracked or broken insulation, and other abnormal conditions.

(2) Inspect for corroded, poorly soldered, or loose connecting leads or terminals.

Q. Wiring/Coaxial Cable

Inspect wiring in chassis for breaks in insulation, conductor breaks, cut or broken lacing and improper dress in relation to adjacent wiring or chassis.

5.3.2 CLEANING

A. General

This section contains information to aid in the cleaning of the component parts and subassemblies of the unit.

WARNING:
GOGGLES ARE TO BE WORN WHEN USING PRESSURIZED AIR TO BLOW DUST AND DIRT FROM EQUIPMENT. ALL PERSONNEL SHOULD BE WARNED AWAY FROM THE IMMEDIATE AREA.

WARNING:
OPERATIONS INVOLVING THE USE OF A CLEANING SOLVENT SHOULD BE PERFORMED UNDER A VENTILATED HOOD. AVOID BREATHING SOLVENT VAPOR AND FUMES; AVOID CONTINUOUS CONTACT WITH THE SOLVENT. WEAR A SUITABLE MASK, GOGGLES, GLOVES, AND AN APRON WHEN NECESSARY. CHANGE CLOTHING UPON WHICH SOLVENTS HAVE BEEN SPILLED.

WARNING:
OBSERVE ALL FIRE PRECAUTIONS FOR FLAMMABLE MATERIALS. USE FLAMMABLE MATERIALS IN A HOOD PROVIDED WITH SPARK-PROOF ELECTRICAL EQUIPMENT AND AN EXHAUST FAN WITH SPARKPROOF BLADES.

B. Recommended Cleaning Agents

Table 5-1 lists the recommended cleaning agents to be used during overhaul of the unit.

NOTE:
EQUIVALENT SUBSTITUTES MAY BE USED FOR LISTED CLEANING AGENTS.

TYPE	USED TO CLEAN
Denatured Alcohol	Various, exterior and interior
DuPont Vertrel SMT	Various, interior
PolaClear Cleaner (Polaroid Corp.) or Texwipe TX129 (Texwipe Co.)	CRT display filter, LCD displays, and general purpose lens/glass cleaner.
KimWipes lint-free tissue (Kimberly Clark Corp.)	Various
Cloth, lint-free cotton	Various
Brush, flat with fiber bristles	Various
Brush, round with fiber bristles	Various
Dishwashing liquid (mild)	Nylon, Rubber Grommets

TABLE 5-1 RECOMMENDED CLEANING AGENTS

C. Recommended Cleaning Procedures

CAUTION:
DO NOT ALLOW SOLVENT TO RUN INTO SLEEVES OR CONDUIT THAT COVERS WIRES CONNECTED TO INSERT TERMINALS.

1. Exterior
   (a) Wipe dust cover and front panel with a lint-free cloth dampened with denatured alcohol.
   (b) For cleaning connectors, use the following procedure.
      (1) Wipe dust and dirt from bodies, shells, and cable clamps using a lint-free cloth moistened with denatured alcohol.
      (2) Wipe parts dry with a clean, dry lint-free cloth.
      (3) Remove dirt and lubricant from connector inserts, insulation, and terminals using a small soft bristled brush moistened with denatured alcohol.
      (4) Dry the inserts with an air jet.
   (c) Remove cover(s).
   (d) If necessary, open any blocked ventilation holes by first saturating the debris clogging the apertures with denatured alcohol and then blowing the loosened material out with an air stream.
2. Interior

   The following solvents are no longer recommended for benchtop or rework cleaning of printed circuit boards, modules, or sub-assemblies.

FREON TF, IMC	TRICHLOROETHANE
CARBON TETRACHLORIDE	DETERGENT (ALL™ AND EQUIVALENTS)
CHLOROFORM	METHYLENE CHLORIDE
TRICHLOROETHYLENE	GENESOLV 2004/2010
PROPYL ALCOHOL	METHYL ALCOHOL
ETHYL ALCOHOL	BUTYL ALCOHOL
XYLENE	PRELETE (CFC-113)

TABLE 5-2 UNSAFE CLEANING AGENTS

CAUTION:
DO NOT USE SOLVENT TO CLEAN PARTS COMPOSED OF OR CONTAINING NYLON OR RUBBER GROMMETS. CLEAN THESE ITEMS WITH MILD LIQUID DISHWASHING DETERGENT AND WATER. USE DETERGENT FOR THIS PURPOSE ONLY.

CAUTION:
DUPONT VERTREL SMT DOES HAVE GENERAL MATERIAL COMPATIBILITY PROBLEMS WITH POLYCARBONATE, POLYSTYRENE, AND RUBBER. IT IS RECOMMENDED THAT THESE MATERIALS BE CLEANED WITH DENATURED ALCOHOL.

CAUTION:
DO NOT ALLOW EXCESS CLEANING SOLVENT TO ACCUMULATE IN ANY OF THE ADJUSTMENT SCREW CREVICES AND THEREBY SOFTEN OR DISSOLVE THE ADJUSTMENT SCREW EPOXY SEALANT.

CAUTION:
AVOID AIR-BLASTING SMALL TUNING COILS AND OTHER DELICATE PARTS BY HOLDING THE AIR NOZZLE TOO CLOSE. USE BRUSHES CAREFULLY ON DELICATE PARTS.

CAUTION:
IMPROPER CLEANING CAN RESULT IN SURFACE LEAKAGE AND CONDUCTIVE PARTICULATES, SUCH AS SOLDER BALLS OR METALLIC CHIPS, WHICH CAN CAUSE ELECTRICAL SHORTS. SEVERE IONIC CONTAMINATION FROM HANDLING AND FROM ENVIRONMENTAL CONDITIONS CAN RESULT IN HIGH RESISTANCE OR OPEN CIRCUITS.

CAUTION:
ULTRASONIC CLEANING CAN DAMAGE CERTAIN PARTS AND SHOULD GENERALLY BE AVOIDED.

NOTE:
Solvents may be physically applied in several ways including agitation, spraying, brushing, and vapor degreasing. The cleaning solvents and methods used shall have no deleterious effect on the parts, connections, and materials being used. If sensitive components are being used, spray is recommended. Uniformity of solvent spray flow should be maximized and wait-time between soldering and cleaning should be minimized.

NOTE:
Clean each module subassembly. Then remove any foreign matter from the casting.

Remove each module subassembly. Then remove any foreign matter from the casting.

(a) Casting covers and shields should be cleaned as follows:
   (1) Remove surface grease with a lint-free cloth.
   (2) Blow dust from surfaces, holes, and recesses using an air stream.
   (3) If necessary, use a solvent, and scrub until clean, working over all surfaces and into all holes and recesses with a suitable non-metallic brush.
   (4) Position the part to dry so the solvent is not trapped in holes or recesses. Use an air stream to blow out any trapped solvent.
   (5) When thoroughly clean, touch up any minor damage to the finish.

(b) Assemblies containing resistors, capacitors, rf coils, inductors, transformers, and other wired parts should be cleaned as follows:
   (1) Remove dust and dirt from all surfaces, including all parts and wiring, using soft-bristled brushes in conjunction with air stream.
   (2) Any dirt that cannot be removed in this way should be removed with a brush (not synthetic) saturated with an approved solvent, such as mentioned above. Use of a clean, dry air stream (25 to 28 psi) is recommended to remove any excess solvent.
   (3) Remove flux residue, metallic chips, and/or solder balls with an approved solvent.

(c) Wired chassic devices containing terminal boards, resistor and capacitor assemblies, rf coils, switches, sockets, inductors, transformers, and other wired parts should be cleaned as follows:

NOTE:
When necessary to disturb the dress of wires and cables, note the positions before disturbing and restore them to proper dress after cleaning.

(1) Blow dust from surfaces, holes, and recesses using an air jet.
(2) Finish cleaning chassis by wiping finished surfaces with a lint-free cloth moistened with solvent.
(3) Dry with a clean, dry, lint-free cloth.
(4) When thoroughly clean, touch-up any minor damage to the finish.
(5) Protect the chassis from dust, moisture, and damage pending inspection.

(d) Ceramic and plastic parts should be cleaned as follows:

(1) Blow dust from surfaces, holes, and recesses using an air jet.
(2) Finish cleaning chassis by wiping finished surfaces with a lint-free cloth moistened with solvents.
(3) Dry with a clean, dry, lint-free cloth.

5.3.3 REPAIR

A. General

This section contains information required to perform limited repairs on the unit. The repair or replacement of damaged parts in airborne electronic equipment usually involves standard service techniques. In most cases, examination of drawings and equipment reveals several approaches to perform a repair. However, certain repairs demand following an exact repair sequence to ensure proper operation of the equipment. After correcting a malfunction in any section of the unit, it is recommended that a repetition of the functional test of the unit be performed.

B. Repair Precautions

1. Ensure that all ESDS and MOS handling precautions are followed.
2. Perform repairs and replace components with power disconnected from equipment.
3. Use a conductive table top for repairs and connect table to ground conductors of 60Hz and 400Hz power lines.
4. Replace connectors, coaxial cables, shield conductors, and twisted pairs only with identical items.
5. Reference “component side” of a printed circuit board in this manual means the side on which components are located; “solder side” refers to the other side. The standard references are as follows: nearside is the component side; farside is the solder side; on surface mount boards with components on both sides, the nearside is the side that has the J#### and P#### connector numbers.
6. When repairing circuits, carefully observe lead dress and component orientation. Keep leads as short as possible and observe correct repair techniques.

7. There are certain soldering considerations with surface mount components. The soldering iron tip should not touch the ceramic component body. The iron should be applied only to the termination-solder filet.
8. Observe cable routing throughout instrument assembly, prior to disassembly, to enable a proper reinstallation of cabling during reassembly procedures.

CAUTION

THIS EQUIPMENT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES. EQUIPMENT MODULES AND ESDS DEVICES MUST BE HANDLED IN ACCORDANCE WITH SPECIAL ESDS HANDLING PROCEDURES.

C. Electrostatic Sensitive Devices (ESDS) Protection

1. Always discharge static before handling devices by touching something that is grounded.
2. Use a wrist strap grounded through a 1MΩ resistor.
3. Do not slide anything on the bench. Pick it up and set it down instead.
4. Keep all parts in protective cartons until ready to insert into the board.
5. Never touch the device leads or the circuit paths during assembly.
6. Use a grounded tip, low wattage soldering station.
7. Keep the humidity in the work environment as high as feasibly possible.
8. Use grounded mats on the work station unless table tops are made of approved antistatic material.
9. Do not use synthetic carpet on the floor of the shop. If a shop is carpeted, ensure that a grounded mat is placed at each workstation.
10. Keep common plastics out of the work area.

D. MOS Device Protection

MOS (Metal Oxide Semiconductor) devices are used in this equipment. While the attributes of MOS type devices are many, characteristics make them susceptible to damage by electrostatic or high voltage charges. Therefore, special precautions must be taken during repair procedures to prevent damaging the device. The following precautions are recommended for MOS circuits, and are especially important in low humidity or dry conditions.

1. Store and transport all MOS devices in conductive material so that all exposed leads are shorted together. Do not insert MOS devices into conventional plastic “snow” or plastic trays used for storing and transporting standard semiconductor devices.

2. Ground working surfaces on workbench to protect the MOS devices.
3. Wear cotton gloves or a conductive wrist strap in series with a 200KΩ resistor connected to ground.
4. Do not wear nylon clothing while handling MOS devices.
5. Do not insert or remove MOS devices with power applied. Check all power supplies to be used for testing MOS devices. and be sure that there are no voltage transients present.
6. When straightening MOS leads, provide ground straps for the apparatus for the device.
7. Ground the soldering iron when soldering a device.
8. When possible, handle all MOS devices by package or case, and not by leads. Prior to touching the device, touch an electrical ground to displace any accumulated static charge. The package and substrate may be electrically common. If so, an electrical discharge to the case would cause the same damage as touching the leads.
9. Clamping or holding fixtures used during repair should be grounded, as should the circuit board, during repair.
10. Devices should be inserted into the printed circuit boards such that leads on the back side do not contact any material other than the printed circuit board (in particular, do not use any plastic foam as a backing).
11. Devices should be soldered as soon as possible after assembly. All soldering irons must be grounded.
12. Boards should not be handled in the area around devices, but rather by board edges.
13. Assembled boards must not be placed in conventional, home-type, plastic bags. Paper bags or antistatic bags should be used.
14. Before removing devices from conductive portion of the device carrier, make certain conductive portion of carrier is brought in contact with well grounded table top.

E. PC Board, Two-Lead Component Removal (Resistors, Capacitors, Diodes, etc.)

1. Heat one lead from component side of board until solder flows, and lift one lead from board; repeat for other lead and remove component (note orientation).
2. Melt solder in each hole, and using a desoldering tool, remove solder from each hole.
3. Dress and form leads of replacement component; insert leads into correct holes.
4. Insert replacement component observing correct orientation.

F. PC Board, Multi-Lead Component Removal (IC’s, etc.)

1. Remove component by clipping each lead along both sides. Clip off leads as close to component as possible. Discard component.
2. Heat hole from solder side and remove clipped lead from each hole.

3. Melt solder in each hole, and using a desoldering tool, remove solder from each hole.
4. Insert replacement component observing correct orientation.
5. Solder component in place from farside of board. Avoid solder runs. No solder is required on contacts where no traces exist.

G. Replacement of Power Transistors

1. Unsolder leads and remove attaching hardware. Remove transistor and hard-coat insulator.
2. Apply Thermal Joint Compound Type 120 (Wakefield Engineering, Inc.) to the mounting surface of the replacement transistor.
3. Reinstall the transistor insulator and the power transistor using hardware removed in step (1).
4. After installing the replacement transistor, but before making any electrical connections, measure the resistance between the case of the transistor and the chassis, to ensure that the insulation is effective. The resistance measured should be greater than 10MΩ.
5. Reconnect leads to transistor and solder in place.

H. Replacement of Printed Circuit Board Protective Coating

WARNING

CONFORMAL COATING CONTAINS TOXIC VAPORS! USE ONLY WITH ADEQUATE VENTILATION.

1. Clean repaired area of printed circuit board per instructions in the Cleaning section of this manual.
2. Apply Conformal Coating, Humiseal #1B-31 HYSOL PC20-35M-01 (Humiseal Division, Columbia Chase Corp., 24-60 Brooklyn Queens Expressway West, Woodside, N.Y., 11377) P/N 016-01040-0000.
3. Shake container well before using.
4. Spray or brush surfaces with smooth, even strikes. If spraying, hold nozzle 10-15 inches from work surface.
5. Cure time is ten minutes at room temperature.

I. Programmable Read Only Memory (PROM) Replacement

The read only memory packages are specially programmed devices to provide specific logic outputs required for operation in the unit. The manufacturer’s part (type) number is for the un-programmed device, and cannot be used. The Honeywell part number must be used to obtain the correctly programmed device. Refer to the “Illustrated Parts List” (IPL).

5.3.3.1 REPLACEMENT OF COMPONENTS

This section describes the procedure, along with any special techniques, for replacing damaged or defective components.

A. Connectors

When replacing a connector, refer to the appropriate PC board assembly drawing, and follow the notes, to ensure correct mounting and mating of each connector.

B. Crystal

The use of any crystal, other than a Honeywell crystal, is considered an unauthorized modification.

C. Diodes

Diodes used are silicon and germanium. Use long-nose pliers as a heat sink, under normal soldering conditions. Note the diode polarity before removal.

D. Integrated Circuits

Refer to the applicable reference for removal and replacement instructions.

E. Wiring/Coaxial Cable

When repairing a wire that has broken from its terminal, remove all old solder, and pieces of wire from the terminal, re-strip the wire to the necessary length, and resolder the wire to the terminal. Replace a damaged wire or coaxial cable with one of the same type, size and length.

5.3.4 DISASSEMBLY PROCEDURES

NOTE:

Instrument and gyro repair must be accomplished by a Honeywell approved Instrument service center, Warranty is valid only when the dust cover seal is intact.

The following instructions include the procedures that are necessary to remove and disassemble the subassemblies of the KI 525.

It is assumed that the dust cover has been removed and the unit has been tested according to the test procedures provided in paragraph 5.2 to locate the source of the malfunction. The unit should then be disassembled only to the station where the malfunction can be corrected by repair, cleaning, or adjustment. Do not disassemble any parts or wiring unnecessarily as repeated tear downs can be detrimental to the life of the unit.

The KI 525 is made up of eleven major subassemblies and a final assembly, The final assembly contains the necessary components and hardware required to bring the subassemblies together into a functional unit.

Disassembly instructions are provided to separate the subassembly from the basic unit, however, detailed breakdown of the components on each subassembly has not been included as this can be accomplished by referring to subassembly drawing (see Section VI). Reassembly can be accomplished by reversing the disassembly procedure. Special notes and adjustments are included in paragraph 5.3.3.7.

WARNING

REMOVE ALL POWER FROM THE UNIT BEFORE DISASSEMBLY OF ANY MODULE. BESIDES BEING DANGEROUS TO LIFE, VOLTAGE TRANSIENTS CAN CAUSE CONSIDERABLE DAMAGE TO THE EQUIPMENT.

CAUTION
EXERCISE EXTREME CARE WHEN DISCONNECTING AND RECONNECTING MULTIPLE PIN CONNECTORS, TO ENSURE THAT THE CONNECTORS ARE NOT DAMAGED BY MISALIGNMENT OF THE PINS.

CAUTION
THIS EQUIPMENT CONTAINS ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES. EQUIPMENT, MODULES, AND ESDS DEVICES MUST BE HANDLED IN ACCORDANCE WITH SPECIAL ESDS HANDLING PROCEDURES.

5.3.4.1 BEZEL REMOVAL

A. Loosen the two set screws in the "HDG" and "CRS" knobs and remove the knobs.
B. The bezel assembly is held to the front display assembly by four screws. Removal of these four screws allows the bezel assembly to slide forward off of the knob shafts. Exercise caution when handling the lighting components as these parts are easily scratched.

5.3.4.2 P.C. BOARD REMOVAL

A. Remove four screws that hold the P. C. board to the front display assembly.
B. Remove the two keying pins from the connector at the back of the P. C. board. Note the location of these two keying pins and replace them in their original location.
C. The board may now be rotated towards the left-hand side of the unit.
D. If further removal of the board is required, tag and unsolder all wires from the board.

5.3.4.3 REAR PLATE REMOVAL

A. Remove the two keying pins from both connectors that are fastened to the rear plates. Note the relative location of these four keying pins and replace them in their original location.
B. Remove two screws that fasten the rear plate to the glideslope plate.
C. Remove the one screw that holds the rear plate to the synchro gear plate.
D. Spring the glideslope arm over the pivot pin on the right-hand side of the rear plate. Exercise caution when removing the glideslope arm and bend the arm only the required amount to lift it off of the pivot pin.
E. The rear plate assembly may now be removed from the unit.

5.3.4.4 GLIDESLOPE PLATE REMOVAL

A. Remove the rear plate as outlined in Section 5.3.3.3.
B. Remove one screw and remove the photo detector housing from the glideslope plate.

C. Mark the top of the shaft and the hub of the glideslope arm to indicate relative rotational alignment of the two parts.

D. Loosen the two set screws in the hub of the glideslope arm and remove the glideslope arm from the unit. Exercise caution when removing the glideslope arm to prevent over bending of the part,

E. Remove the two screws between the synchro plate and the glideslope plate and remove the glideslope plate from the unit.

F. If complete freedom from the main unit is desired of the glideslope plate then tag and unsolder the seven wires between the glideslope plate and the P. C. board.

5.3.4.5 SYNCHRO PLATE REMOVAL

A. Remove the rear plate and glideslope plate as outlined in paragraphs 5.3.3.3 and 5.3.3.4.

B. Press the 029-00255-0000 36-tooth gear off the back of the drive shaft.

C. Remove the two screws that hold the P. C. board to the synchro plate.

D. Remove the four screws that hold the synchro plate to the front frame and remove the synchro plate from the unit.

5.3.4.6 FRONT FRAME AND YOKE REMOVAL

A. Remove the bezel and P. C. board assemblies as outlined in paragraphs 5.3.3.1 and 5.3.3.2.

B. Remove the four screws that hold the front frame to the synchro plate, spread the glideslope arms slightly, and then slide the front frame forward approximately 1/2 inch.

C. Press the 029-00255-0000 36-tooth gear off the back of the drive shaft.

D. While manually supporting the yoke assembly slide both the front frame and yoke assemblies forward until they are free of the main unit.

E. The yoke assembly is held captive in the front frame assembly by the course pointer and tail. The course pointer and tail are glued to the NAV mask. To separate the yoke assembly from the front frame, remove the course pointer and tail, then slide the yoke assembly back from the front frame.

5.3.4.7 SPECIAL REASSEMBLY INSTRUCTIONS

A. When reassemblying any subassembly, refer to the assembly drawing (Section VI), and adhere to all of the notes and instructions on that drawing.

B. In general there should be at least .015 inches clearance between moving components and other objects within the unit.

C. Make certain that the four brushes are properly aligned and making electrical contact with the four slip rings on the yoke assembly.

D. Any parts that are held together with adhesive must be cleaned prior to applying any adhesive.

E. When the yoke assembly is positioned, it must not be located such that it compresses the clutch wave washer between the heading select and heading gears.

F. The lighting components within the bezel should be handled by the edges of these parts only.

If cleaning is necessary, luke warm water and mild soap may be used. Rinse thoroughly and dry with a soft lint free cloth. Do not wipe any more than necessary as these parts are easily scratched.

G. After the P. C. board has been installed, check the shutter of both the course and heading select pickoffs to insure that they are riding in their proper cam locations.

H. Realign the resolver, synchros, and optical pickoffs per the instructions given in Section 5.2.

5.4 TROUBLESHOOTING

The troubleshooting diagram, refer to figure 5-2, is intended as a guide for the technician in isolating a malfunction of the unit. Before troubleshooting the unit, a thorough understanding of the Theory of Operation should be accomplished. The technique of fault finding through elimination should be used as a basis in locating the trouble area.

Before any troubleshooting procedures are applied, perform a bench check to determine if the unit is the source of the problem. If it is, determine in which assembly the problem lies. Once the problem section has been determined , consult the troubleshooting flowchart and schematics for information pertaining to repair.

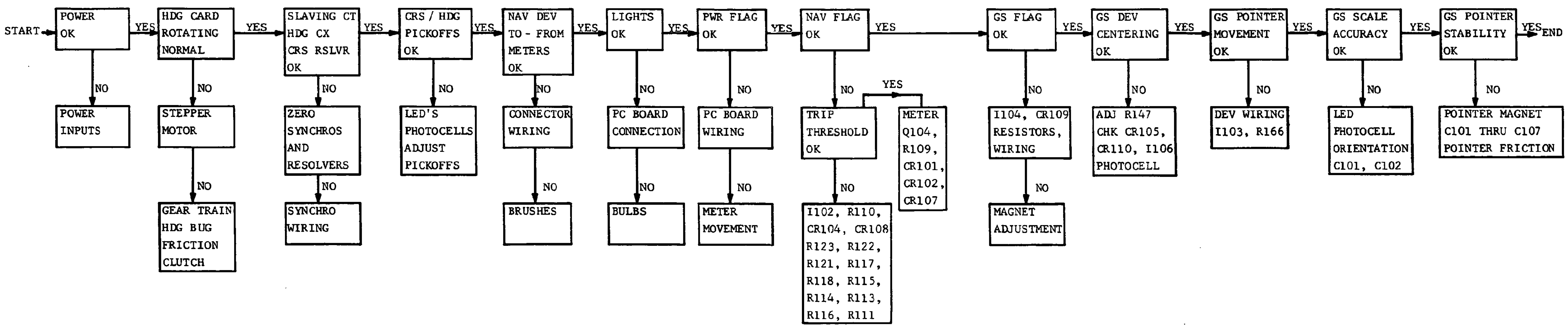

FIGURE 5-2 KI 525 TROUBLESHOOTING DIAGRAM

ILLUSTRATED PARTS LIST

6.1 General

The Illustrated Parts List (IPL) is a complete list of assemblies and parts required for the unit. The IPL also provides for the proper identification of replacement parts. Individual parts lists within this IPL are arranged in numerical sequence starting with the top assembly and continuing with the sub-assemblies. All mechanical parts will be separated from the electrical parts used on the sub-assembly. Each parts list is followed by a component location drawing.

Parts identified in this IPL by Honeywell part number meet design specifications for this equipment and are the recommended replacement parts. Warranty information concerning Honeywell replacement parts is contained in Service Memo #1, P/N 600-08001-00XX.

Some part numbers may not be currently available. Consult the current Honeywell catalog or contact a Honeywell representative for equipment availability.

6.2 Revision Service

The manual will be revised as necessary to reflect current information.

6.3 List of Abbreviations

Abbreviation	Name
B	Motor or Synchro
C	Capacitor
CJ	Circuit Jumper
CR	Diode
DS	Lamp
E	Voltage or Signal Connect Point
F	Fuse
FL	Filter
FT	Feedthru
I	Integrated Circuit
J	Jack or Fixed Connector
L	Inductor
M	Meter
P	Plug

Table 1
Abbreviations

Abbreviation	Name
Q	Transistor
R	Resistor
RT	Thermistor
S	Switch
T	Transformer
TP	Test Point
U	Component Network, Integrated Circuit, Circuit Assembly
V	Photocell/Vacuum Tube
W	Waveguide
Y	Crystal

Table 1 (Continued)
Abbreviations

6.4 Sample Parts List

BOM NUMBER/DESCRIPTION/REVISION

DESCRIPTION

ASSEMBLY VERSION

FINAL ASSEMBLY 071-01578-0000 REV AC

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
C2001	106-04224-0047		CAP CHIP .22UF X7R	EA	1.00
C2002	106-04224-0047		CAP CHIP .22UF X7R	EA	1.00
C2003	106-04224-0047		CAP CHIP .22UF X7R	EA	1.00
R2038	139-03241-0000		RES CH 3.24K EW 1%	EA	1.00
R2039	139-02430-0000		RES CH 243 EW 1%	EA	1.00
R2040	139-00750-0000		RES CH 75.0 EW 1%	EA	1.00
TP2001	008-00309-0000		TEST POINT SURF MN	EA	1.00
TP2002	008-00309-0000		TEST POINT SURF MN	EA	1.00
U2005	12051354-0001		PP-IC,UPD482234G5-	EA	1.00
U2006	12051354-0001		PP-IC,UPD482234G5-	EA	1.00
U2021	12061010-0001		SI-IC,MEMORY CNTLR	EA	1.00
U2022	12061014-0001		SI-IC,DSP.CONTROLL	EA	1.00
Y2001	04416054-0015		XTAL OSC,36.000MHZ	EA	1.00
Y2002	04416054-0014		XTAL OSC,20.000MHZ	EA	1.00
	002-09229-0000		GP BOARD	RF	.00
	009-09229-0000	1	GP BOARD	EA	1.00
	01243055-0001	2	INSULATOR,THERMAL	EA	3.00
	01250068-0001	3	SPACER, HEADER	EA	6.00
	016-01040-0000		COATING TYPE AR	AR	1.00
	016-01442-0000	4	E-6000 CLEAR SEALA	AR	1.00
	192-09229-0000		GP BOARD	RF	.00
	300-09229-0000		GP BOARD, FPD500	RF	.00
	34050-0084	6	SPACER,THD'D	EA	2.00
	46086-0007	5	SCREW,CAPTIVE,4-40	EA	3.00

UNIT OF MEASURE

REFEERENCE DESIGNATOR

QUANTITY

PART NUMBER

FIND NUMBER

The above is only a sample. The actual format and style may vary slightly. A 'Find Number' column, when shown, references selected items on the BOM's accompanying Assembly Drawing. This information does not apply to every BOM. Therefore, a lack of information in this column, or a lack of this column, should not be interpreted as an omission.

Figure 6-1
Sample Parts List

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6.5 KI 525 FINAL ASSEMBLY

066-03029-0000 Rev. 12
066-03029-0001 Rev. 12

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000	0001
	012-01005-0004		TAPE MYLAR 2.250 W	IN	7.20	7.20
	016-01005-0000		EPOXY KIT 3M 40CC	AR	.00	.00
	016-01008-0004		GLYPTAL 7526 BL	AR	.00	.00
	016-01095-0000		ADHESIVE #7085	AR	.00	.00
	025-00018-0000		WIRE 26 BLK	IN	3.60	3.60
	025-00018-0015		WIRE 26 BN/GN	IN	1.20	1.20
	025-00018-0016		WIRE 26 BN/BU	IN	3.60	3.60
	025-00018-0020		WIRE 26 RD/BK	IN	1.20	1.20
	025-00018-0021		WIRE 26 RD/BN	IN	3.60	3.60
	025-00018-0022		WIRE 26 RED	IN	3.60	3.60
	025-00018-0036		WIRE 26 OR/BU	IN	3.60	3.60
	025-00018-0079		WIRE 26 VI/WH	IN	4.80	4.80
	025-00018-0080		WIRE 26 GY/BK	IN	4.80	4.80
	025-00018-0081		WIRE 26 GY/BN	IN	4.80	4.80
	025-00018-0082		WIRE 26 GY/RD	IN	3.60	3.60
	025-00018-0098		WIRE 26 WH/GY	IN	3.60	3.60
	029-00257-0000		GEAR SPUR 72T/64DP	EA	.	1.00
	047-02795-0001		ENCLOSURE W/F	EA	1.00	1.00
	047-02802-0002		ARM, GLIDE SLOPE	EA	1.00	1.00
	047-02893-0001		GS POINTER W/FINIS	EA	2.00	2.00
	057-01483-0001		SERIAL NUMBER TAG	EA	1.00	1.00
	073-00070-0007		KNOB HDG	EA	1.00	1.00
	073-00070-0008		KNOB CRS	EA	1.00	1.00
	073-00493-0001		CLMP SYNC	EA	.	.00
	088-00355-0002		HOUSING PHTODET	EA	1.00	1.00
	089-05899-0003		SCR PHP 2-56X3/16	EA	4.00	4.00
	089-05899-0005		SCR PHP #2-56X5/16	EA	1.00	1.00
	089-05903-0005		SCR PHP 4-40X5/16	EA	8.00	8.00
	089-06022-0005		SCR SHC 2-56X5/16	EA	.	2.00
	089-06024-0004		SCR SHC 4-40X1/4	EA	1.00	1.00
	089-06081-0003		SCR PHP 4-40X3/16	EA	3.00	3.00
	089-06200-0006		SCR SET 2-56X3/16	EA	2.00	4.00
	089-06204-0004		SCR SET 4-40X1/8	EA	4.00	4.00
	090-00233-0000		PAD CONN SHORTING	EA	1.00	1.00
	134-05006-0000		RES LT SEN 7.5K	EA	1.00	1.00
	148-00029-0000		SYNCHRO XMTR	EA	.	1.00
	150-00003-0010		TUBING TFLN 24AWG	IN	12.00	12.00
	150-00018-0010		TUBING SHRINK WHT	IN	9.60	10.80
	200-00629-0000		PC BD ASSY	EA	1.00	1.00
	200-00631-0000		REAR GEAR PLT ASSY	EA	1.00	1.00
	200-00632-0000		FRONT DISPLAY ASSY	EA	1.00	1.00
	200-00633-0000		BEZEL ASSEMBLY	EA	1.00	1.00
	200-00643-0000		GS PLATE ASSY	EA	1.00	1.00

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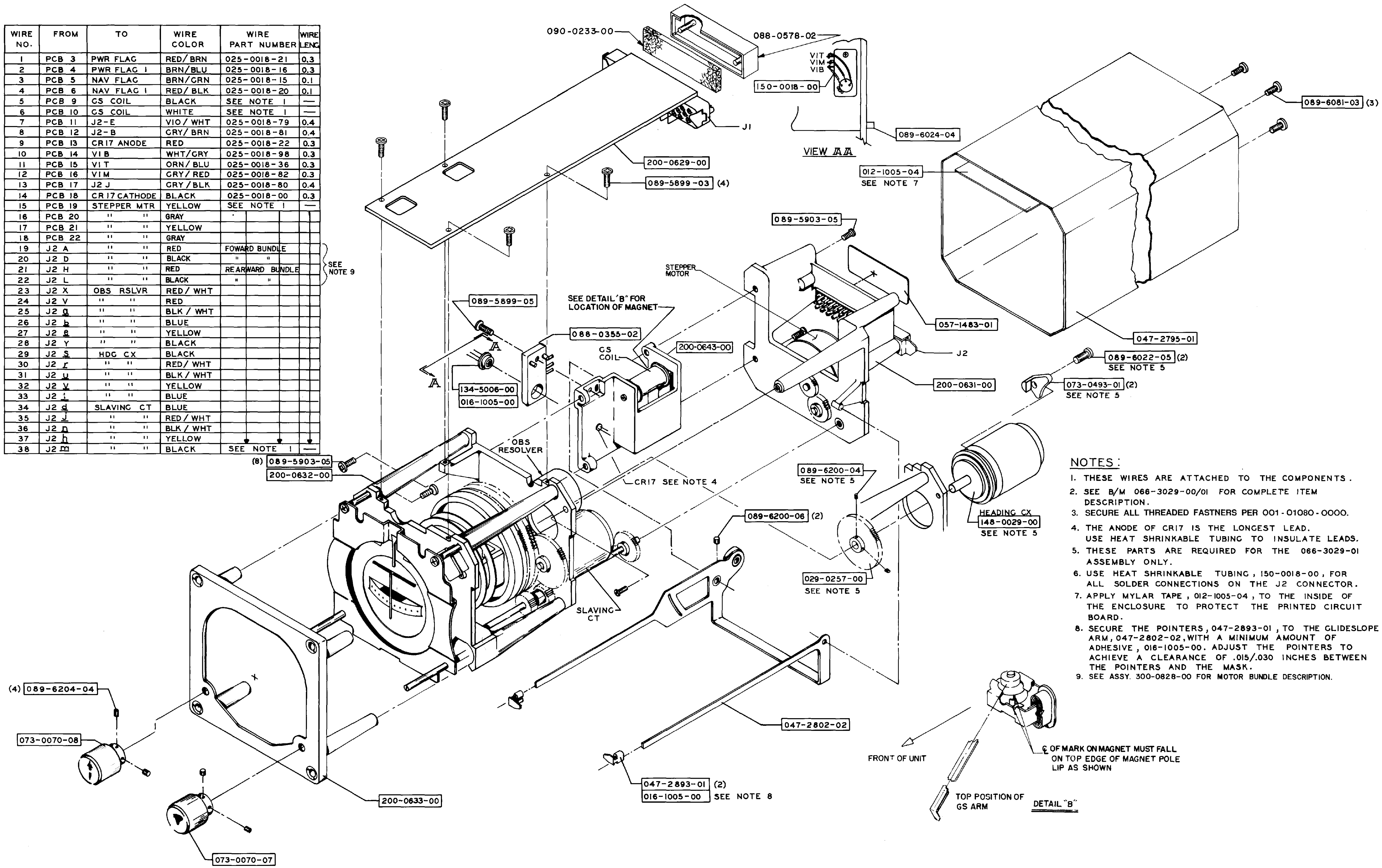
WIRE NO.	FROM	TO	WIRE COLOR	WIRE PART NUMBER	WIRE LENG.
1	PCB 3	PWR FLAG	RED/ BRN	025-0018-21	0.3
2	PCB 4	PWR FLAG 1	BRN/BLU	025-0018-16	0.3
3	PCB 5	NAV FLAG	BRN/GRN	025-0018-15	0.1
4	PCB 6	NAV FLAG 1	RED/ BLK	025-0018-20	0.1
5	PCB 9	GS COIL	BLACK	SEE NOTE 1	—
6	PCB 10	GS COIL	WHITE	SEE NOTE 1	—
7	PCB 11	J2-E	VIO/ WHT	025-0018-79	0.4
8	PCB 12	J2-B	GRY/ BRN	025-0018-81	0.4
9	PCB 13	CR17 ANODE	RED	025-0018-22	0.3
10	PCB 14	VI B	WHT/GRY	025-0018-98	0.3
11	PCB 15	VI T	ORN/ BLU	025-0018-36	0.3
12	PCB 16	VI M	GRY/ RED	025-0018-82	0.3
13	PCB 17	J2 J	GRY /BLK	025-0018-80	0.4
14	PCB 18	CR 17 CATHODE	BLACK	025-0018-00	0.3
15	PCB 19	STEPPER MTR	YELLOW	SEE NOTE 1	—
16	PCB 20	" "	GRAY		
17	PCB 21	" "	YELLOW		
18	PCB 22	" "	GRAY		
19	J2 A	" "	RED	FOWARD BUNDLE	
20	J2 D	" "	BLACK	" "	
21	J2 H	" "	RED	REARWARD BUNDLE	
22	J2 L	" "	BLACK	" "	
23	J2 X	OBS RSLVR	RED/ WHT		
24	J2 V	" "	RED		
25	J2 a	" "	BLK / WHT		
26	J2 b	" "	BLUE		
27	J2 e	" "	YELLOW		
28	J2 Y	" "	BLACK		
29	J2 s	HDG CX	BLACK		
30	J2 r	" "	RED/ WHT		
31	J2 u	" "	BLK / WHT		
32	J2 v	" "	YELLOW		
33	J2 i	" "	BLUE		
34	J2 d	SLAVING CT	BLUE		
35	J2 j	" "	RED / WHT		
36	J2 n	" "	BLK / WHT		
37	J2 h	" "	YELLOW		
38	J2 m	" "	BLACK	SEE NOTE 1	—

SEE NOTE 9

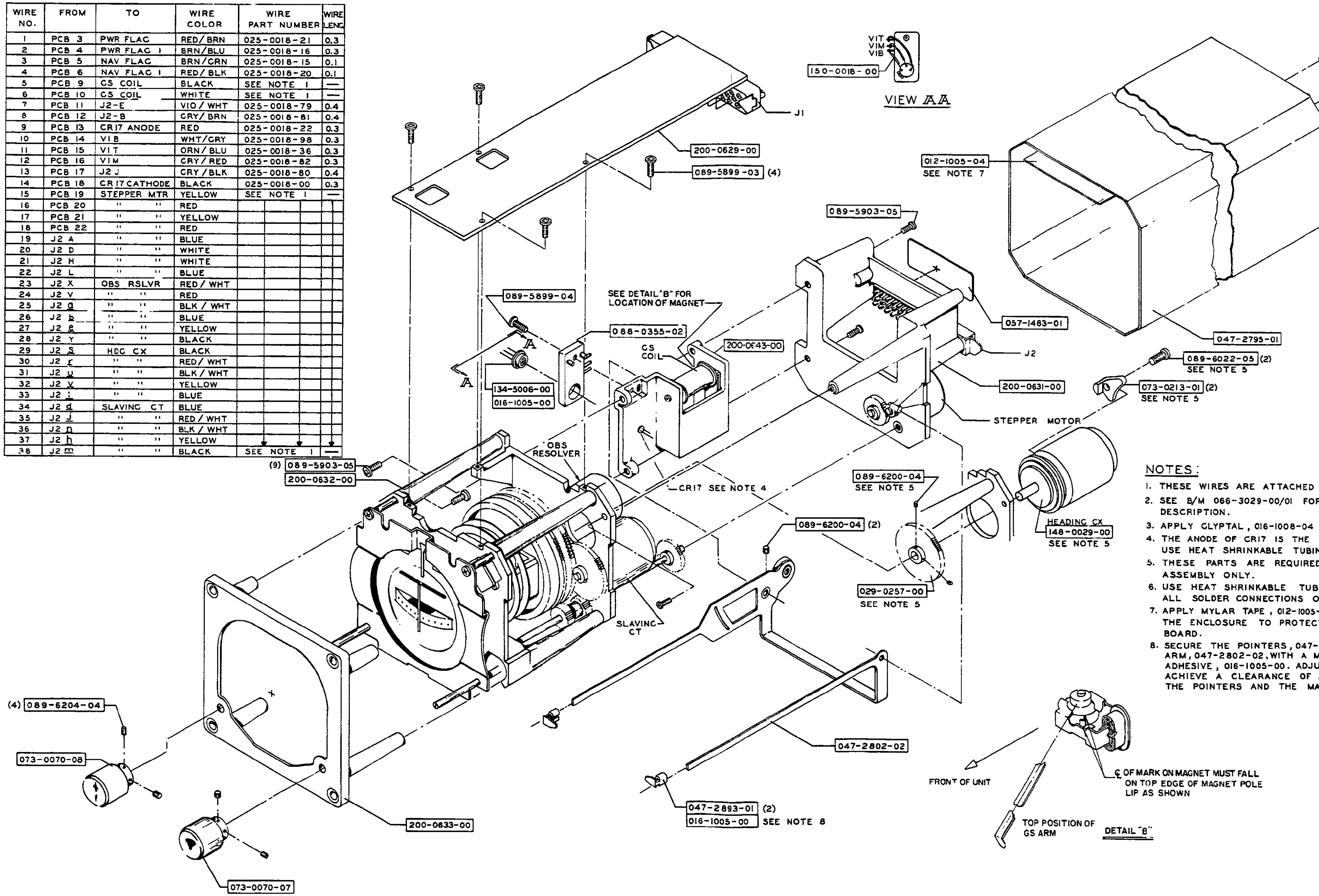


NOTES:

1. THESE WIRES ARE ATTACHED TO THE COMPONENTS.
2. SEE B/M 066-3029-00/01 FOR COMPLETE ITEM DESCRIPTION.
3. SECURE ALL THREADED FASTNERS PER 001-01080-0000.
4. THE ANODE OF CR17 IS THE LONGEST LEAD. USE HEAT SHRINKABLE TUBING TO INSULATE LEADS.
5. THESE PARTS ARE REQUIRED FOR THE 066-3029-01 ASSEMBLY ONLY.
6. USE HEAT SHRINKABLE TUBING, 150-0018-00, FOR ALL SOLDER CONNECTIONS ON THE J2 CONNECTOR.
7. APPLY MYLAR TAPE, 012-1005-04, TO THE INSIDE OF THE ENCLOSURE TO PROTECT THE PRINTED CIRCUIT BOARD.
8. SECURE THE POINTERS, 047-2893-01, TO THE GLIDESLOPE ARM, 047-2802-02, WITH A MINIMUM AMOUNT OF ADHESIVE, 016-1005-00. ADJUST THE POINTERS TO ACHIEVE A CLEARANCE OF .015/.030 INCHES BETWEEN THE POINTERS AND THE MASK.
9. SEE ASSY. 300-0828-00 FOR MOTOR BUNDLE DESCRIPTION.

FIGURE 6-2 KI 525 FINAL ASSEMBLY
(Dwg. 300-00831-0000/0001 R-12)

WIRE NO.	FROM	TO	WIRE COLOR	WIRE PART NUMBER	WIRE LENG
1	PCB 3	PWR FLAG	RED/BRN	025-0018-21	0.3
2	PCB 4	PWR FLAG I	BRN/BLU	025-0018-16	0.3
3	PCB 5	NAV FLAG	BRN/GRN	025-0018-15	0.1
4	PCB 6	NAV FLAG I	RED/BLK	025-0018-20	0.1
5	PCB 9	GS COIL	BLACK	SEE NOTE 1	—
6	PCB 10	GS COIL	WHITE	SEE NOTE 1	—
7	PCB 11	J2-E	VIO/WHT	025-0018-79	0.4
8	PCB 12	J2-B	GRY/BRN	025-0018-81	0.4
9	PCB 13	CR17 ANODE	RED	025-0018-22	0.3
10	PCB 14	VIB	WHT/GRY	025-0018-98	0.3
11	PCB 15	VIT	ORN/BLU	025-0018-36	0.3
12	PCB 16	VIM	GRY/RED	025-0018-82	0.3
13	PCB 17	J2 J	GRY/BLK	025-0018-80	0.4
14	PCB 18	CR17 CATHODE	BLACK	025-0018-00	0.3
15	PCB 19	STEPPER MTR	YELLOW	SEE NOTE 1	—
16	PCB 20	" "	RED		
17	PCB 21	" "	YELLOW		
18	PCB 22	" "	RED		
19	J2 A	" "	BLUE		
20	J2 D	" "	WHITE		
21	J2 H	" "	WHITE		
22	J2 L	" "	BLUE		
23	J2 X	OBS RSLVR	RED/WHT		
24	J2 V	" "	RED		
25	J2 a	" "	BLK/WHT		
26	J2 b	" "	BLUE		
27	J2 e	" "	YELLOW		
28	J2 Y	" "	BLACK		
29	J2 S	HDG CX	BLACK		
30	J2 r	" "	RED/WHT		
31	J2 u	" "	BLK/WHT		
32	J2 v	" "	YELLOW		
33	J2 i	" "	BLUE		
34	J2 d	SLAVING CT	BLUE		
35	J2 j	" "	RED/WHT		
36	J2 n	" "	BLK/WHT		
37	J2 h	" "	YELLOW		
38	J2 m	" "	BLACK	SEE NOTE 1	—



NOTES:

1. THESE WIRES ARE ATTACHED TO THE COMPONENTS.
2. SEE B/M 066-3029-00/01 FOR COMPLETE ITEM DESCRIPTION.
3. APPLY GLYPTAL, 016-1008-04, TO ALL SCREWS.
4. THE ANODE OF CR17 IS THE LONGEST LEAD. USE HEAT SHRINKABLE TUBING TO INSULATE LEADS.
5. THESE PARTS ARE REQUIRED FOR THE 066-3029-01 ASSEMBLY ONLY.
6. USE HEAT SHRINKABLE TUBING, 150-0018-00, FOR ALL SOLDER CONNECTIONS ON THE J2 CONNECTOR.
7. APPLY MYLAR TAPE, 012-1005-04, TO THE INSIDE OF THE ENCLOSURE TO PROTECT THE PRINTED CIRCUIT BOARD.
8. SECURE THE POINTERS, 047-2893-01, TO THE GLIDESLOPE ARM, 047-2802-02, WITH A MINIMUM AMOUNT OF ADHESIVE, 016-1005-00. ADJUST THE POINTERS TO ACHIEVE A CLEARANCE OF .015/.030 INCHES BETWEEN THE POINTERS AND THE MASK.

FIGURE 6-2A KI 525 FINAL ASSEMBLY
(Dwg. 300-00831-0000/0001 Old Revision)

6.6 KI 525 BEZEL ASSEMBLY

200-00633-0000 Rev. 12

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
REF1	300-00830-0000		BEZEL ASSEMBLY	RF	.00
	012-05028-0001		GLASS COVER	EA	1.00
	016-01008-0004		GLYPTAL 7526 BL	AR	.00
	016-01082-0000		DC RTV 3145	AR	.00
	047-02638-0001		CLAMP HLD DN	EA	2.00
	073-00370-0003		BEZEL	EA	1.00
	088-00356-0001		LIGHT WEDGE W/ C	EA	1.00
	089-05899-0003		SCR PHP 2-56X3/16	EA	2.00
	187-01095-0000		GASKET FRONT	EA	2.00

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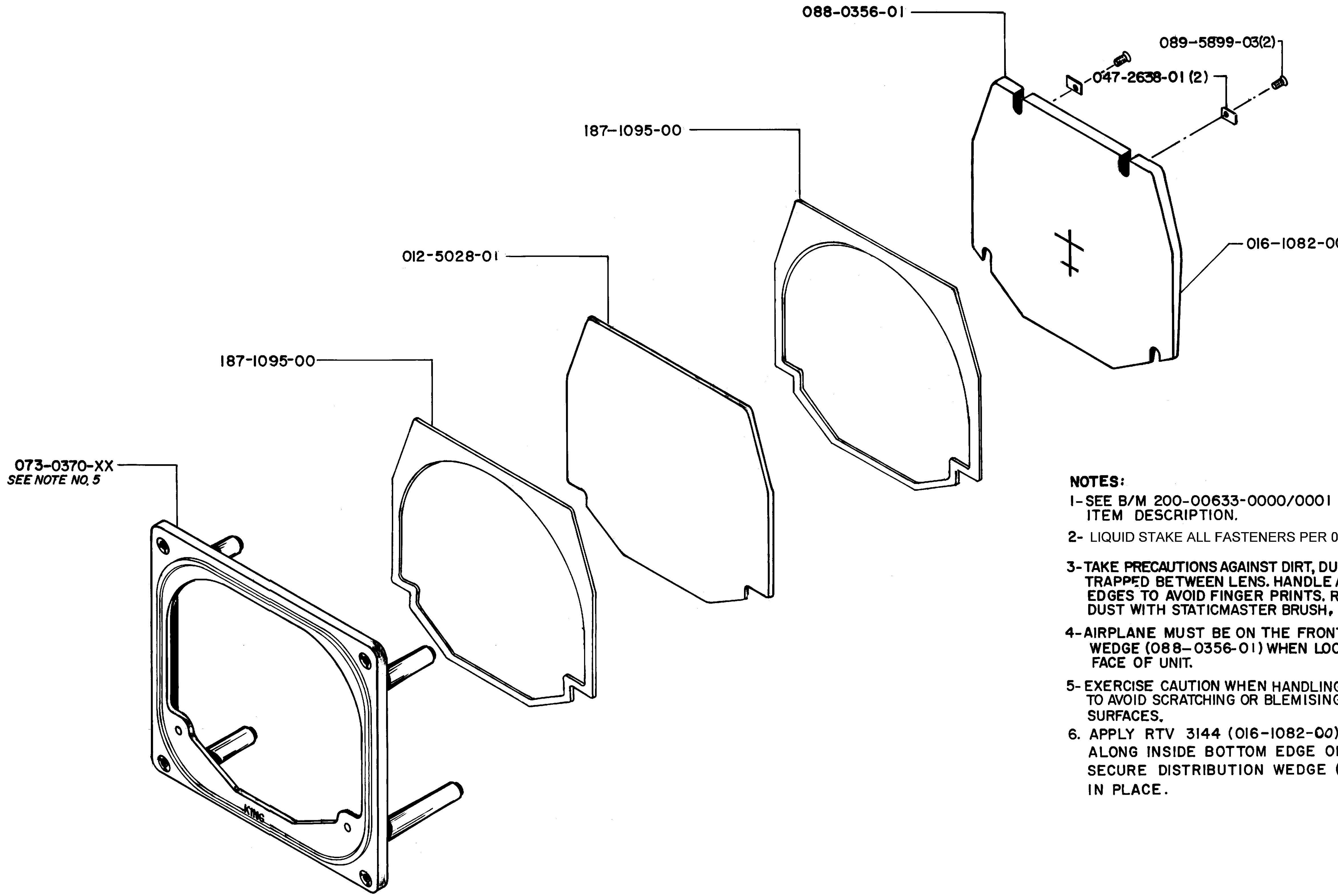


NOTES:

1- SEE B/M 200-00633-0000/0001 FOR COMPLETE ITEM DESCRIPTION.

2- LIQUID STAKE ALL FASTENERS PER 001-01080-0000.

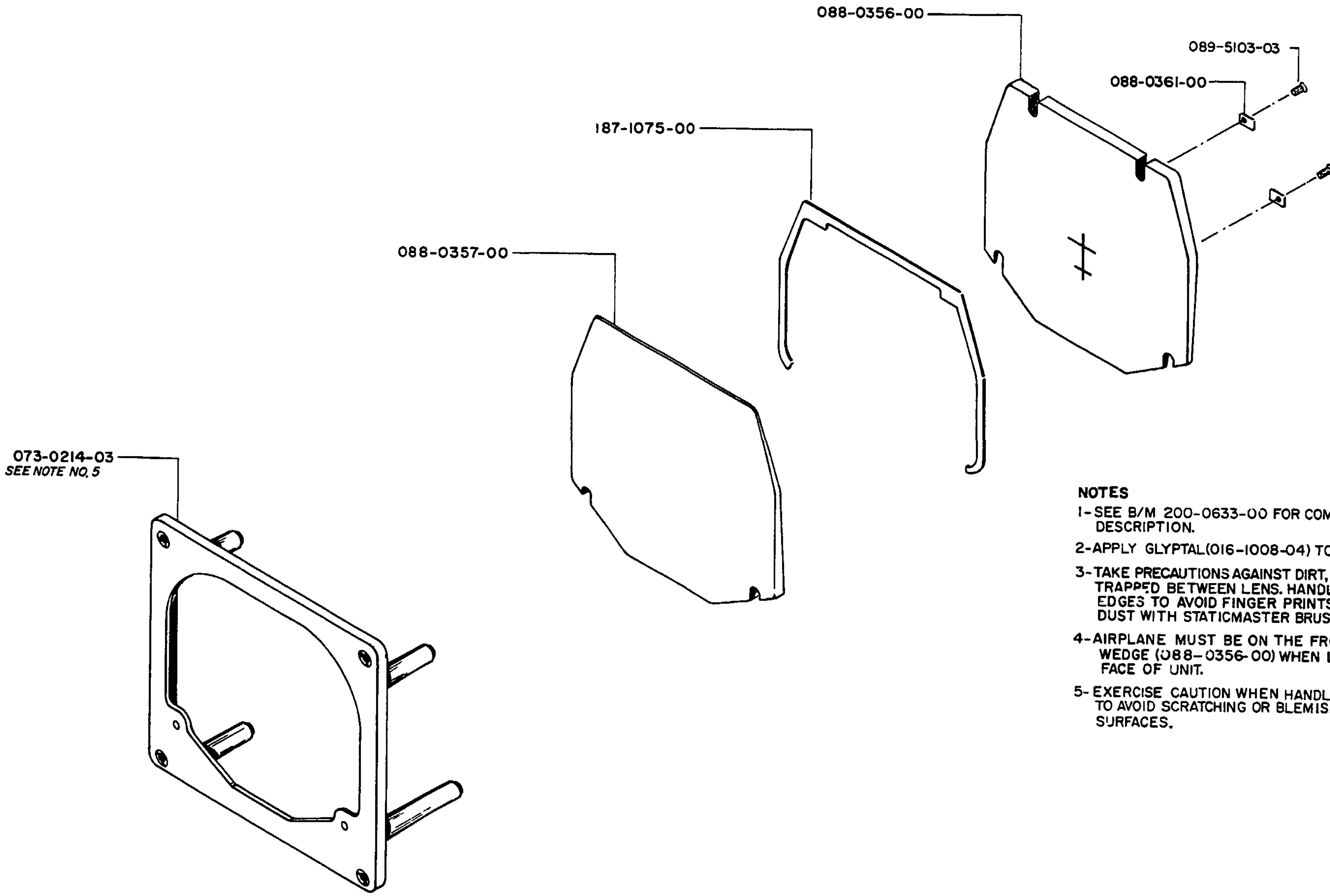
3- TAKE PRECAUTIONS AGAINST DIRT, DUST, ETC BEING TRAPPED BETWEEN LENS. HANDLE ALL PARTS BY EDGES TO AVOID FINGER PRINTS. REMOVE LINT & DUST WITH STATICMASTER BRUSH.

4- AIRPLANE MUST BE ON THE FRONT SIDE OF WEDGE (088-0356-01) WHEN LOOKING INTO FACE OF UNIT.

5- EXERCISE CAUTION WHEN HANDLING THE BEZEL TO AVOID SCRATCHING OR BLEMISING THE PAINTED SURFACES.

6. APPLY RTV 3144 (016-1082-00) AS REQUIRED ALONG INSIDE BOTTOM EDGE OF BEZEL TO SECURE DISTRIBUTION WEDGE (088-0356-01) IN PLACE.

FIGURE 6-3 KI 525 BEZEL ASSEMBLY
(Dwg. 300-00830-0000 R-AB)



NOTES

1- SEE B/M 200-0633-00 FOR COMPLETE ITEM DESCRIPTION.

2- APPLY GLYPTAL(016-1008-04) TO SCREWS.

3- TAKE PRECAUTIONS AGAINST DIRT, DUST, ETC BEING TRAPPED BETWEEN LENS. HANDLE ALL PARTS BY EDGES TO AVOID FINGER PRINTS. REMOVE LINT & DUST WITH STATICMASTER BRUSH.

4- AIRPLANE MUST BE ON THE FRONT SIDE OF WEDGE (088-0356-00) WHEN LOOKING INTO FACE OF UNIT.

5- EXERCISE CAUTION WHEN HANDLING THE BEZEL TO AVOID SCRATCHING OR BLEMISING THE PAINTED SURFACES.

FIGURE 6-3A KI 525 BEZEL ASSEMBLY
(Dwg. 300-00830-0000 Old Revision)

6.7 KI 525 FRONT DISPLAY ASSEMBLY

200-00632-0000 Rev. CA

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
REF1	300-00829-0000		FRONT DISPLAY ASSY	RF	.00
	016-01008-0004		GLYPTAL 7526 BL	AR	.00
	016-01013-0000		VAC GREASE DC 976	AR	.00
	016-01016-0000		MOLYKOTE G-N PASTE	AR	.00
	016-01039-0000		BLK BRSHG LCQR	AR	.00
	016-01122-0000		EPOXY DEVCON 14250	AR	.00
	029-00261-0000		GEAR SPUR 40T/64DP	EA	1.00
	029-00264-0001		GEAR FACE 64P	EA	1.00
	029-00265-0000		GEAR CRWN 64P	EA	1.00
	029-00291-0000		GEAR 20T/64DP	EA	1.00
	029-00292-0000		GEAR 18T/64DP	EA	1.00
	029-00435-0000		GEAR 36T	EA	1.00
	029-00435-0001		GEAR 36T	EA	2.00
	029-00444-0000		GEAR 24T	EA	1.00
	047-02749-0003		THRUST WSHR 1.685	EA	1.00
	047-02851-0000		SHIM WASHER .500	EA	4.00
	047-02851-0002		SHIM WASHER .450	AR	.00
	047-04390-0000		STOP YOKE	EA	1.00
	076-00681-0003		COLLAR, #4-40 W/FI	EA	2.00
	076-00684-0000		SHAFT HDG SELECT	EA	1.00
	076-00685-0000		SHAFT CRS SELECT	EA	1.00
	076-00686-0000		SHAFT DRIVE	EA	1.00
	088-00348-0002		MASK	EA	1.00
	088-00349-0001		POINTER COURSE	EA	1.00
	088-00350-0001		TAIL COURSE	EA	1.00
	088-00719-0000		SHAFT BUSHING 525A	EA	3.00
	089-05623-0003		SCR PHP 0-80X3/16	EA	4.00
	089-05853-0006		SCR SET 2-56X3/16	EA	2.00
	089-05857-0006		SCR SET 4-40X3/16	EA	4.00
	089-05903-0004		SCR PHP 4-40X1/4	EA	2.00
	089-05903-0005		SCR PHP 4-40X5/16	EA	4.00
	089-06022-0005		SCR SHC 2-56X5/16	EA	2.00
	089-06200-0004		SCR SET 2-56X1/8	EA	1.00
	089-06204-0010		SCR SET 6-32X5/16	EA	3.00
	089-06414-0005		SCR PHP 2-28X5/16	EA	4.00
	089-08012-0037		WSHR INTL LK #2	EA	2.00
	089-08054-0030		WSHR FLT STD .128	EA	10.00
	089-08077-0030		WASHER	AR	.00
	089-08162-0000		WSHR FLT RVT .068	AR	.00
	089-08204-0001		WSHR SPR .390	EA	2.00
	090-00019-0000		RING RTNR .125	EA	2.00
	090-00036-0001		RING RTNR .094	EA	1.00
	090-00188-0000		GRIP RING	EA	2.00
	200-00622-0000		FLAG MCHNSM ASSY	EA	1.00
	200-00622-0001		FLAG MCHNSM ASSY	EA	1.00
	200-00624-0000		DIFF CARRIER ASSY	EA	1.00
	200-00625-0000		YOKE ASSY	EA	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
	200-00626-0000		SYNC GEAR PLT ASSY	EA	1.00
	200-00627-0000		FRONT FRAME ASSY	EA	1.00

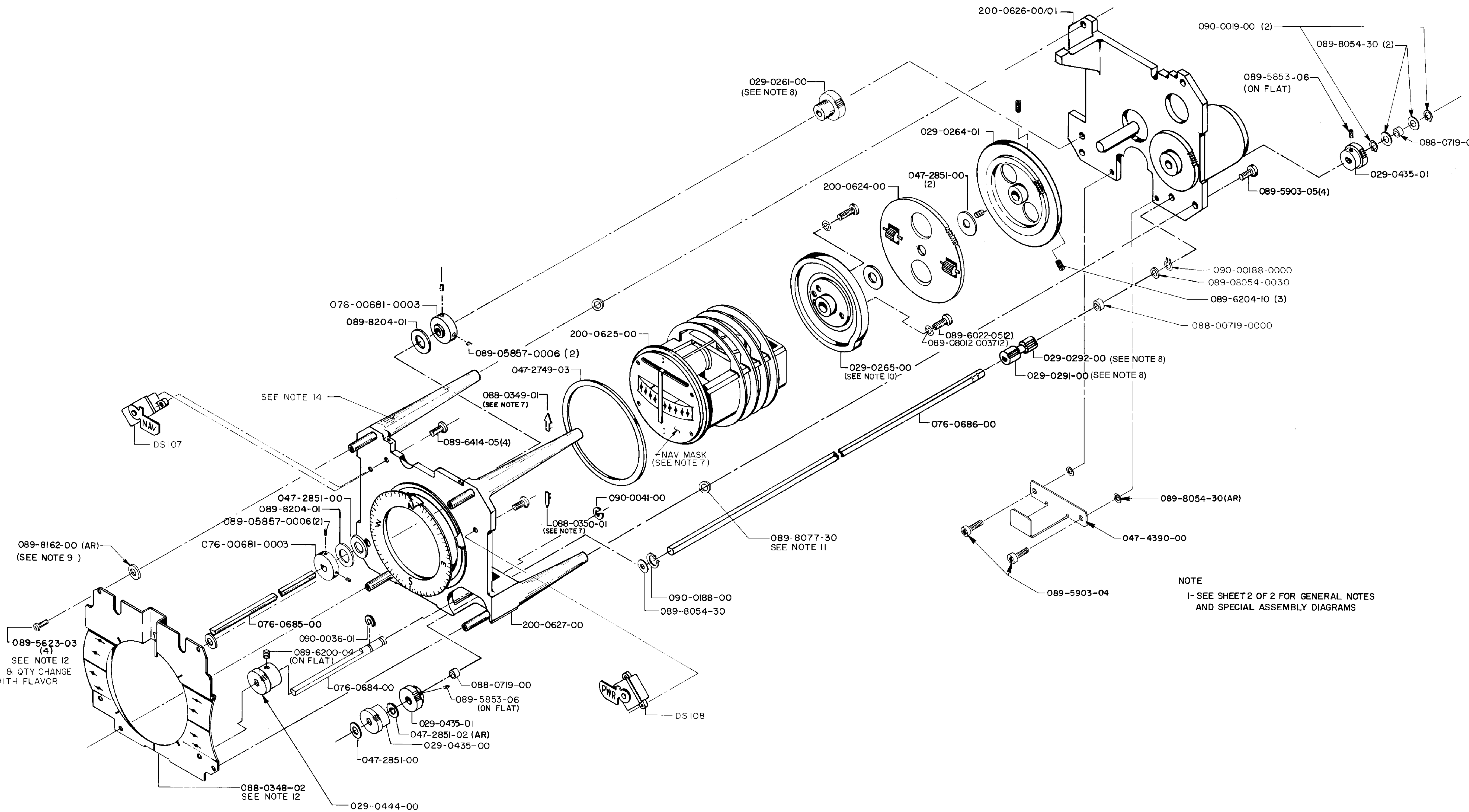
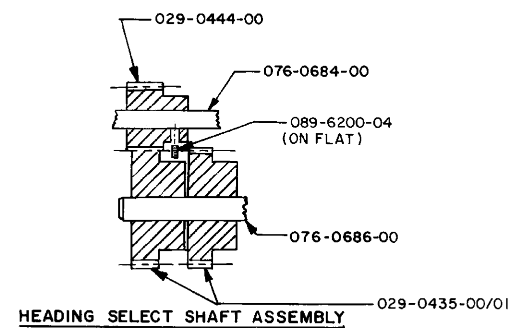
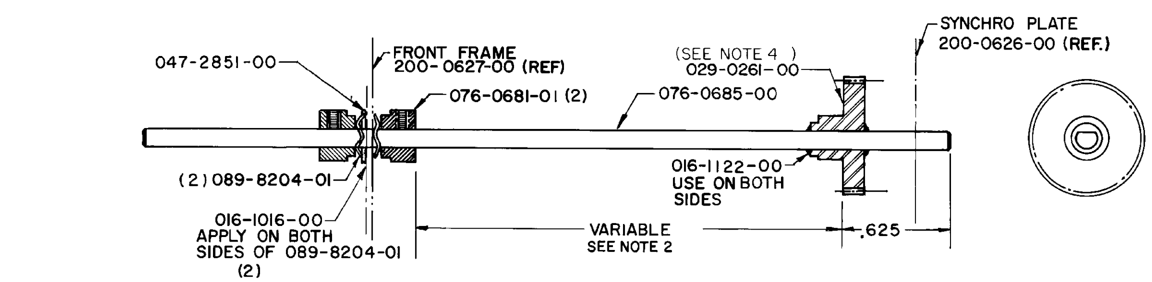


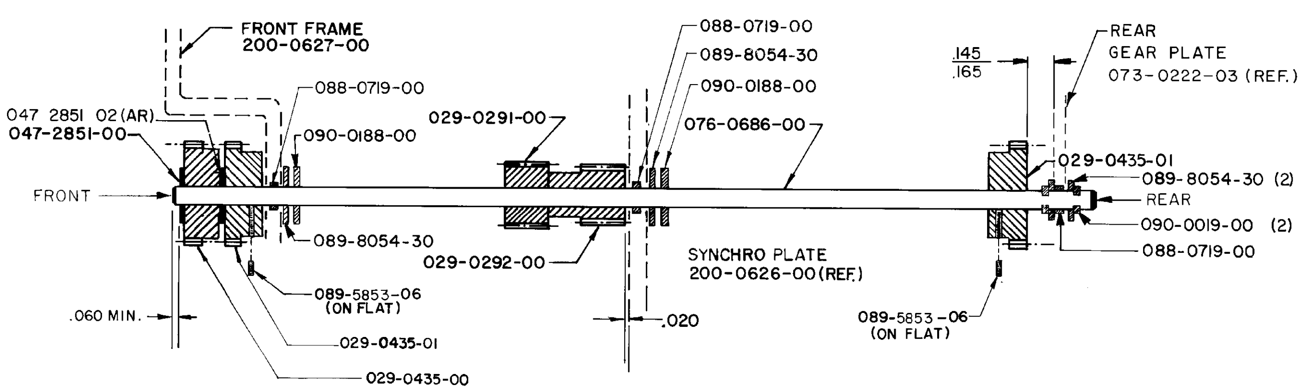
FIGURE 6-4 KI 525 FRONT DISPLAY ASSEMBLY
(Dwg. 300-00829-0000 R-CB, Sheet 1 of 2)



HEADING SELECT SHAFT ASSEMBLY
FIGURE 1

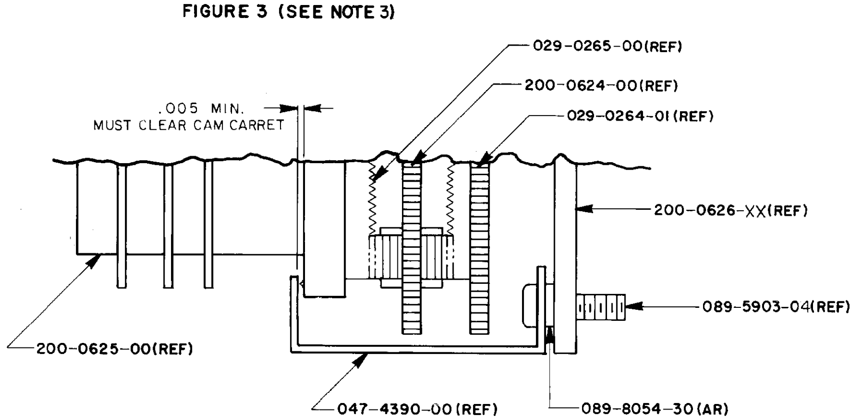


COURSE SELECT SHAFT ASSEMBLY
FIGURE 2 (SEE NOTE 2)



DRIVE SHAFT ASSEMBLY
FIGURE 3 (SEE NOTE 3)

YOKE STOP ASSEMBLY
FIGURE 4



NOTES:

1. FOR COMPLETE DESCRIPTION OF PARTS SEE B/M 200-0632-00,-01,-02,-03,-04
2. COURSE SELECT SHAFT (FIG. 2) MUST BE ASSEMBLED AS FOLLOWS:
   A. SLIDE GEAR (029-0261-00) ONTO SHAFT (076-0685-00) AND LOCATE AS SHOWN IN FIG. 2. APPLY ADHESIVE (016-1122-00) TO GEAR AND SHAFT
   B. AFTER ADHESIVE HAS CURED LOCATE COLLAR (076-0681-01) AND WAVY WASHER (089-8204-01) AS SHOWN. PLACE END OF SHAFT WITH COLLAR INTO FRONT FRAME ASSEMBLY (200-0627-00) FAR ENOUGH TO ALLOW GEAR END OF SHAFT TO BE INSERTED INTO SYNCHRO PLATE.
   C. WHEN GEAR IS PROPERLY POSITIONED SLIDE WAVY WASHER AND COLLAR SNUG AGAINST DISPLAY ASSEMBLY AND TIGHTEN SET SCREWS IN COLLAR. SHAFT SHOULD TURN WITH APPROX. 5 IN-OZ OF TORQUE.
3. DRIVE SHAFT (FIG. 3) MUST BE ASSEMBLED AS FOLLOWS:
   A. INSERT (088-00719-0000, 089-08054-0030, 090-00188-0000,029-00291-0000 & 029-00292-0000) FROM REAR OF SHAFT AND LOCATE AS IN FIGURE 3.
   B. INSERT REAR OF SHAFT THROUGH HOLE IN SYNCRO PLATE ASSY. INSERT (088-00719-0000, 089-08054-0030, 090-00188-0000, 029-00435-0001, 090-00019-0000 AND 089-08054-0030) FROM REAR OF SHAFT AND LOCATE AS IN FIGURE 3.
   C. INSERT REAR OF SHAFT THRU REAR GEAR PLATE ASSY. INSERT (088-00719-0000, 089-08054-0030 AND 090-00019-0000) FROM REAR OF SHAFT AND LOCATE AS IN FIGURE 3.
   D. INSERT FRONT OF SHAFT THRU HOLE IN FRONT FRAME ASSY. INSERT (029-00435-0001, 047-02851-0002, 029-00435-0000 & 047-02851-0000) FROM FRONT OF SHAFT WHILE CAREFULLY LOWERING FRONT FRAME ASSY INTO PLACE. USE QTY 1 OR MORE WASHERS (047-02851-0002) AS REQUIRED TO PROVIDE .001/.007 IN AXIAL PLAY BETWEEN GEARS (029-00291-0000) AND (029-00435-0001).
   E. SECURE GEARS (029-00291-0000 & 029-00292-0000) TO SHAFT WITH ADHESIVE (016-01122-0000).
4. CAUTION - NO ADHESIVE SHALL REMAIN ON TEETH OF GEARS.
5. SECURE ALL THREADED FASTENERS PER 001-01080-0000.
6. DURING ASSEMBLY EXTREME CARE SHALL BE TAKEN TO PREVENT SCRATCHING OR MARRING FINISH ON MASK (088-00348-00XX) AND AZIMUTH DIAL ON FRONT FRAME ASSEMBLY (200-00627-0000).
7. COURSE POINTER (088-00349-0001) AND TAIL (088-00350-0001) ARE NOT ATTACHED UNTIL YOKE ASSY (200-00625-0000) AND FRONT FRAME ASSEMBLY (200-00627-0000) ARE ASSEMBLED. ALLOW .010 MIN. CLEARANCE BETWEEN COMPASS CARD AND POINTERS. AFTER ASSEMBLY APPLY ADEQUATE AMOUNT OF ADHESIVE (016-01122-0000) TO REAR OF POINTER AND TAIL AND INSTALL ON NAV MASK (088-00347-0001). AFTER ADHESIVE HAS CURED, TOUCH UP ALL AREAS WHERE THE ADHESIVE IS VISIBLE WITH BLACK BRUSHING LACQUER (016-01039-0000).
8. WHEN SECURING GEARS TO SHAFTS, PARTS MUST BE CLEAN AND FREE OF GREASE BEFORE APPYING ADHESIVE.
9. USE WASHER (089-08162-0000) MAX. TWO PER ASSEMBLY AS SHOWN ONLY TO PREVENT BOWING OF MASK (088-00348-00XX).
10. APPLY LIGHT COAT OF GREASE (016-01013-0000) TO CAM SURFACE. WIPE OFF ALL EXCESS.
11. USE SHIMS 089-08077-0030 AS REQUIRED ON FRONT FRAME LEGS TO ACHIEVE EVEN GEAR MESH.
12. USE 088-00348-0010 (MODIFIED MARK), 2 EACH 089-05623-0003 AND 2 EACH 089-06155-0003 FOR 200-00632-0003 & -0004 ASSEMBLIES ONLY.

14. ASSEMBLY TO BE MARKED PER 001-01101-0000 IN APPROXIMATE AREA SHOWN.

FIGURE 6-4 KI 525 FRONT DISPLAY ASSEMBLY
(Dwg. 300-00829-0000 R-CB, Sheet 2 of 2)

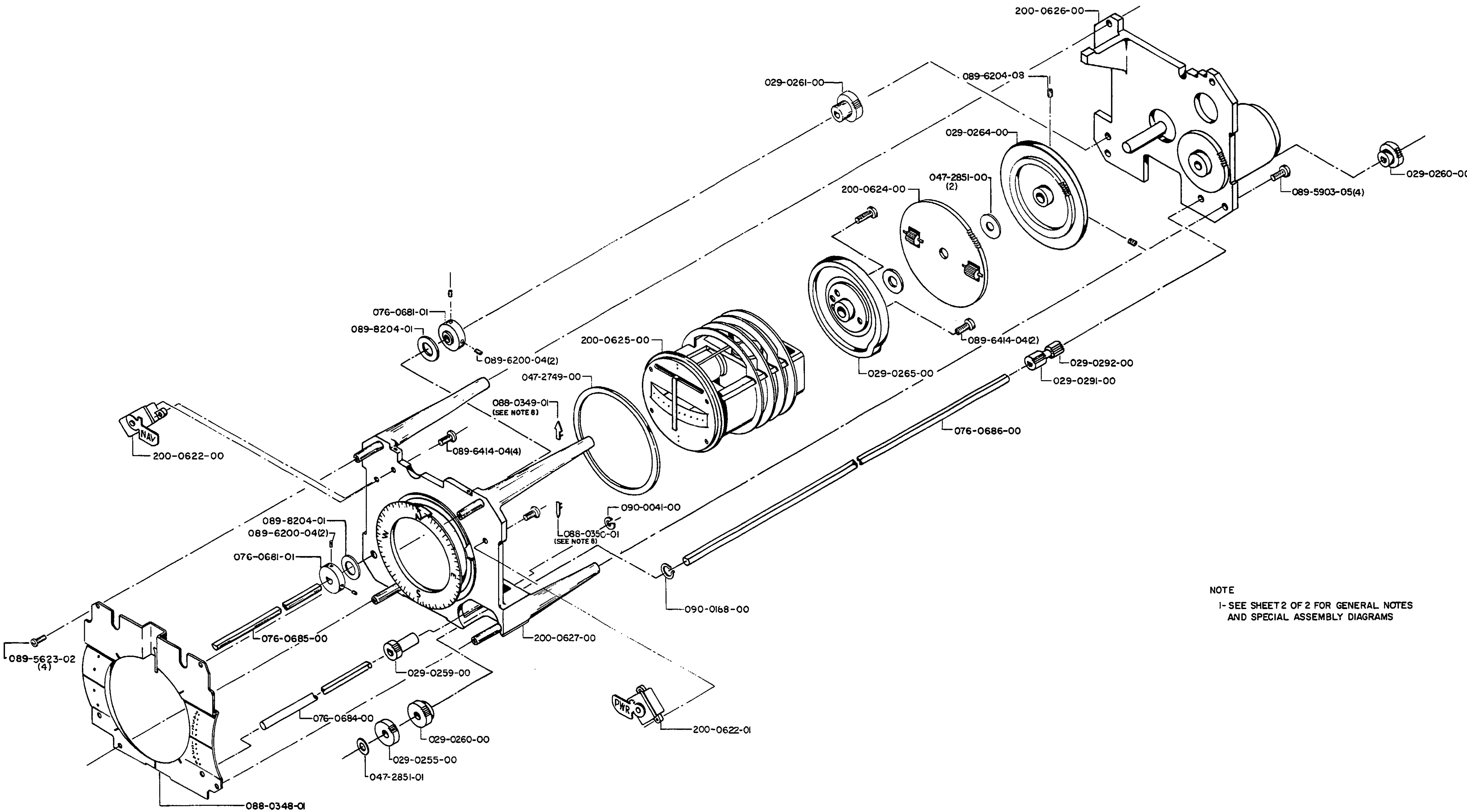
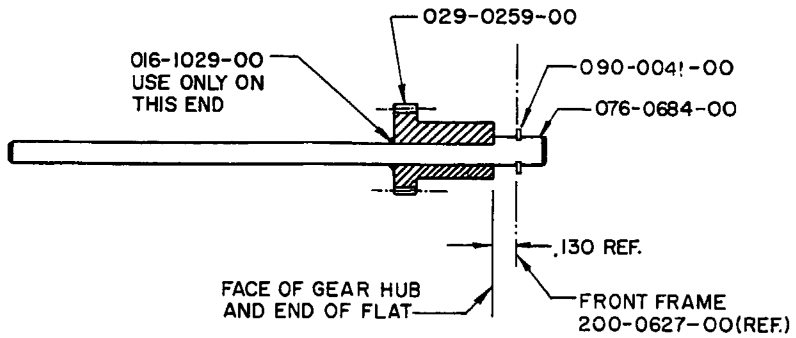
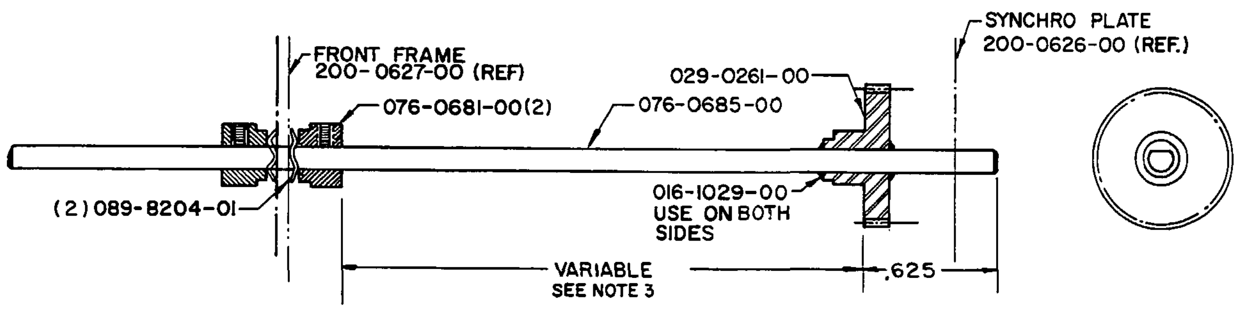


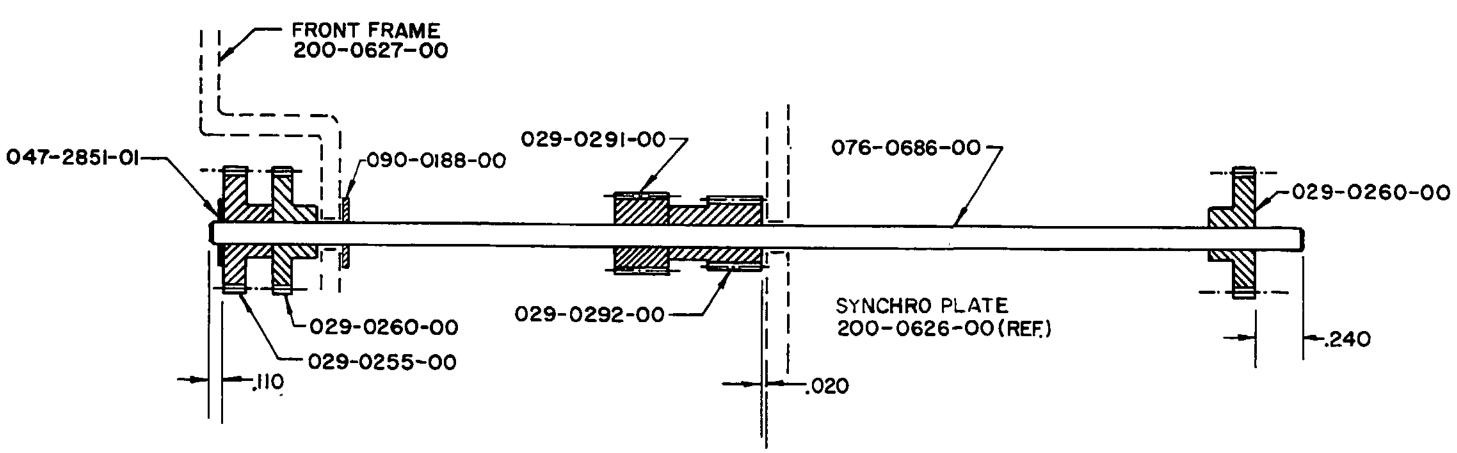
FIGURE 6-4A KI 525 FRONT DISPLAY ASSEMBLY
(Dwg. 300-00829-0000 Old Revision, Sheet 1 of 2)



HEADING SELECT SHAFT ASSEMBLY
FIGURE 1 (SEE NOTE 2)



COURSE SELECT SHAFT ASSEMBLY
FIGURE 2 (SEE NOTE 3)



DRIVE SHAFT ASSEMBLY
FIGURE 3 (SEE NOTE 4)

NOTES:

1 - FOR COMPLETE DESCRIPTION OF PARTS SEE B/M 200-0632-00

2 - HEADING SELECT SHAFT (FIG. 1) MUST BE ASSEMBELED AS FOLLOWED.
   A - SLIDE GEAR (029-0259-00) ON TO SHAFT (076-0684-00) AND LOCATE AS PER DRAWING. APPLY ADHESIVE (016-1029-00) TO GEAR AND SHAFT AS PER SPEC.
   B - AFTER ADHESIVE HAS CURED INSERT SHAFT AND GEAR INTO FRONT FRAME ASSY (200-0627-00) WITH GEAR TO REAR OF UNIT, ATTACH RETAINING RING (090-0041-00) TO GROOVE IN SHAFT.

3 - COURSE SELECT SHAFT (FIG. 2) MUST BE ASSEMBELED AS FOLLOWS.
   A - SLIDE GEAR (029-0261-00) ONTO SHAFT (076-0685-00) AND LOCATE AS SHOWN IN FIG. 2. APPLY ADHESIVE (016-1029-00) TO GEAR AND SHAFT AS PER SPEC.
   B - AFTER ADHESIVE HAS CURED LOCATE COLLAR (076-0681-01) AND WAVY WASHER (089-8204-01) AS SHOWN. PLACE END OF SHAFT WITH COLLAR INTO FRONT FRAME ASSEMBLY (200-0627-00) FAR ENOUGH TO ALLOW GEAR END OF SHAFT TO BE INSERTED INTO SYNCHRO PLATE.
   C - WHEN GEAR IS PROPERLY POSITIONED SLIDE WAVY WASHER AND COLLAR SNUG AGAINST DISPLAY ASSEMBLY AND TIGHTEN SET SCREWS IN COLLAR. SHAFT SHOULD TURN WITH APPROX. 5 IN-OZ OF TORQUE.

4 - DRIVE SHAFT (FIG. 3) MUST BE ASSEMBLED AS FOLLOWS.
   A - INSERT SHAFT THRU HOLE IN SYNCHRO PLATE ASSY. (200-0626-00) AND GEARS 029-0291-00 AND (029-0292-00), (NOTE-GEAR MUST BE ON FRONT SIDE OF PLATE).
   B - INSERT GEAR (029-0260-00 & 029-0255-00) AND WASHER (047-2851-01) INTO POCKET IN FRONT FRAME AND PRESS SHAFT (076-0686-00) THRU THEM AS SHOWN IN FIG. 3.
   C - PRESS GEAR (029-0260-00) ONTO SHAFT TO THE REAR OF THE SYNCHRO PLATE ASSEMBLY (200-0626-00). LOCATE AS SHOWN IN FIG. 3.

5 - CAUTION - NO ADHESIVE SHALL REMAIN ON TEETH OF GEARS.

6 - APPLY GLYPTAL (016-1008-04) TO ALL SCREWS.

7 - DURING ASSEMBLY EXTREME CARE SHALL BE TAKEN TO PREVENT SCRATCHING OR MARRING FINISH ON MASK (088-0348-01) AND AZIMUTH DIAL ON FRONT FRAME ASSEMBLY (200-0627-00).

8. - COURSE POINTER (088-0349-01) AND TAIL (088-0350-01) ARE NOT ATTACHED UNTIL YOKE ASSEMBLY (200-0625-00) AND FRONT FRAME ASSEMBLY (200-0627-00) ARE ASSEMBLED. AFTER ASSEMBLY APPLY ADEQUATE AMOUNT OF ADHESIVE (016-1029-00) TO REAR OF POINTER AND TAIL AND INSTALL ON NAV MASK (088-0347-01). AFTER ADHESIVE HAS CURED, TOUCH UP ALL AREAS WHERE THE ADHESIVE IS VISIBLE WITH BLACK BRUSHING LACQUER (016-1039-00). COURSE POINTER (088-0349-01) AND TAIL (088-0350-01) WILL BE SUPPLIED WITH ASS'Y 200-0625-00 BUT NOT INSTALLED UNTIL THIS LEVEL OF ASS'Y.

9. WHEN SECURING GEARS TO SHAFTS, CLEAN BOTH SURFACES WITH CHLORATHANE BEFORE APPLYING ADHESIVE.

FIGURE 6-4A KI 525 FRONT DISPLAY ASSEMBLY
(Dwg. 300-00829-0000 Old Revision, Sheet 2 of 2)

6.8 KI 525 FRONT FRAME ASSEMBLY

200-00627-0000 Rev. AA

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
REF100	300-00824-0000		ASSEMBLY, FRONT FR	RF	.00
	016-01103-0000		MOLYKOTE 33 MED DC	AR	.00
	047-02749-0001		THRUST WSHR 2.140	EA	2.00
	047-02749-0002		THRUST WSHR 1.970	EA	1.00
	047-02749-0004		THRUST WASHER 2.14	EA	1.00
	047-02807-0001		WAVY WASHER W/HT	EA	1.00
	073-00216-0003		FRAME FRONT	EA	1.00
	088-01069-0002		DIAL AZIMUTH W/SS	EA	1.00
	090-00210-0000		RTNG RING (SPECIAL	EA	1.00
	090-00227-0000		BALL STEEL	AR	.00
	090-00230-0000		BALL STEEL	AR	.00
	090-00339-0000		STEEL BALL	AR	.00
	091-00203-0002		SCR FHS 0-80X.125	EA	3.00
	200-00536-0000		HDG SELECT ASSY	EA	1.00

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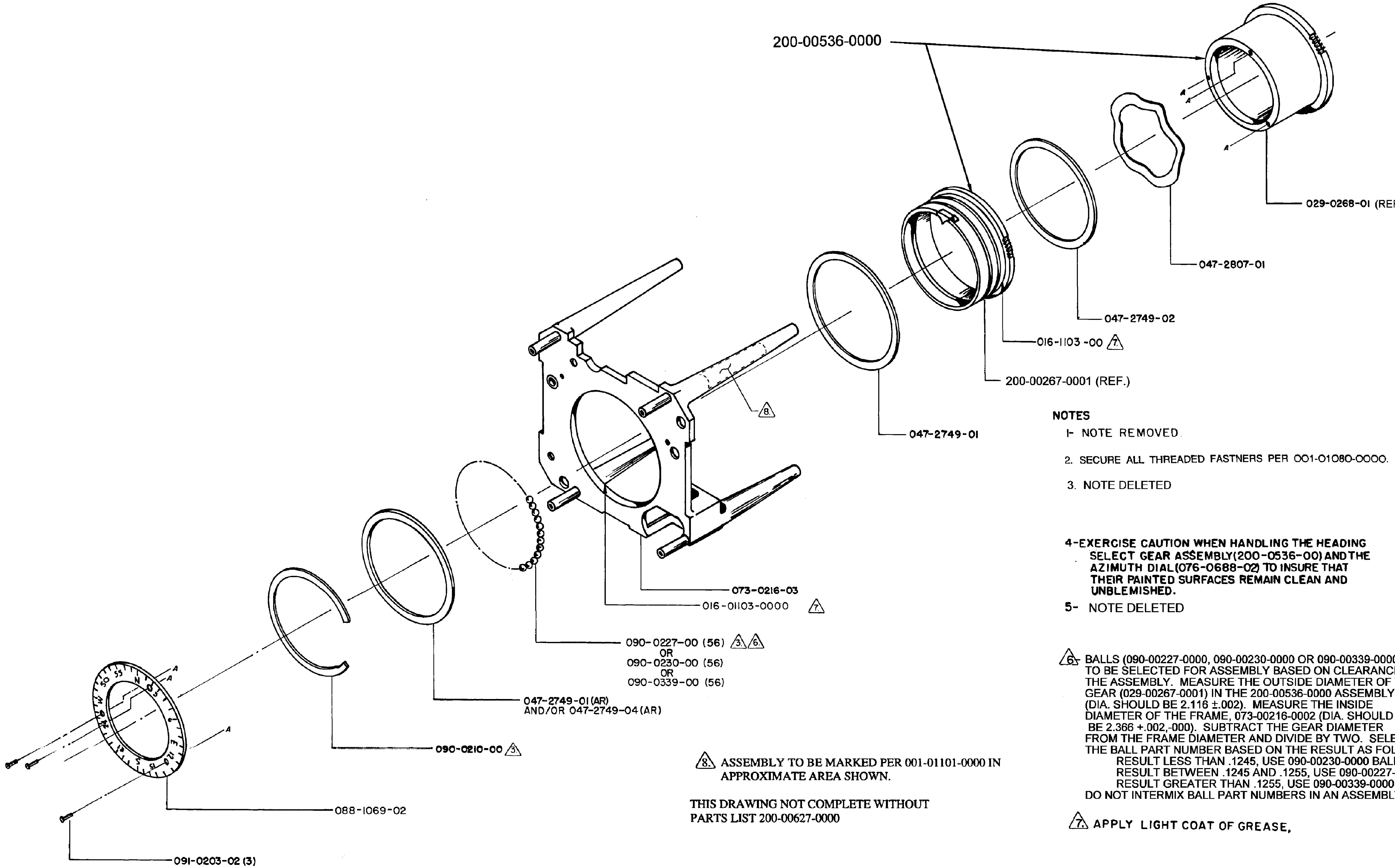

NOTES

1- NOTE REMOVED

2. SECURE ALL THREADED FASTNERS PER 001-01080-0000.

3. NOTE DELETED

4- EXERCISE CAUTION WHEN HANDLING THE HEADING SELECT GEAR ASSEMBLY(200-0536-00) AND THE AZIMUTH DIAL(076-0688-02) TO INSURE THAT THEIR PAINTED SURFACES REMAIN CLEAN AND UNBLEMISHED.

5- NOTE DELETED

6 BALLS (090-00227-0000, 090-00230-0000 OR 090-00339-0000) TO BE SELECTED FOR ASSEMBLY BASED ON CLEARANCE IN THE ASSEMBLY. MEASURE THE OUTSIDE DIAMETER OF THE GEAR (029-00267-0001) IN THE 200-00536-0000 ASSEMBLY (DIA. SHOULD BE 2.116 ±.002). MEASURE THE INSIDE DIAMETER OF THE FRAME, 073-00216-0002 (DIA. SHOULD BE 2.366 +.002,-000). SUBTRACT THE GEAR DIAMETER FROM THE FRAME DIAMETER AND DIVIDE BY TWO. SELECT THE BALL PART NUMBER BASED ON THE RESULT AS FOLLOWS:
RESULT LESS THAN .1245, USE 090-00230-0000 BALL
RESULT BETWEEN .1245 AND .1255, USE 090-00227-0000 BALL
RESULT GREATER THAN .1255, USE 090-00339-0000
DO NOT INTERMIX BALL PART NUMBERS IN AN ASSEMBLY.

7 APPLY LIGHT COAT OF GREASE.

8 ASSEMBLY TO BE MARKED PER 001-01101-0000 IN APPROXIMATE AREA SHOWN.

THIS DRAWING NOT COMPLETE WITHOUT PARTS LIST 200-00627-0000

FIGURE 6-5 KI 525 FRONT FRAME ASSEMBLY
(Dwg. 300-00824-0000 R-AB)

NOTES

1 - SEE B/M 200-0627-00 FOR COMPLETE DESCRIPTION OF PARTS.

2 - APPLY GLYPTAL (016-1008-04) TO ALL SCREWS.

3 - AFTER ASSEMBLY, THE (029-0268-01) GEAR SHOULD ROTATE WITH AN APPLIED TORQUE OF 1.3 OZ - INCHES MAXIMUM. THERE SHALL BE NO POSITION FROM WHICH THE GEAR WILL NOT BEGIN TO ROTATE WITH THIS APPLIED TORQUE.

4 - EXERCISE CAUTION WHEN HANDLING THE HEADING SELECT GEAR ASSEMBLY (200-0536-00) AND THE AZIMUTH DIAL (076-0688-01) TO INSURE THAT THEIR PAINTED SURFACES REMAIN CLEAN AND UNBLEMISHED.

5 - WITH THE 029-0268-01 GEAR HELD STATIONARY THE 200-0536-00 GEAR SHOULD ROTATE WITH AN APPLIED TORQUE OF 16 OZ - IN MINIMUM, 21 OZ - IN MAXIMUM.

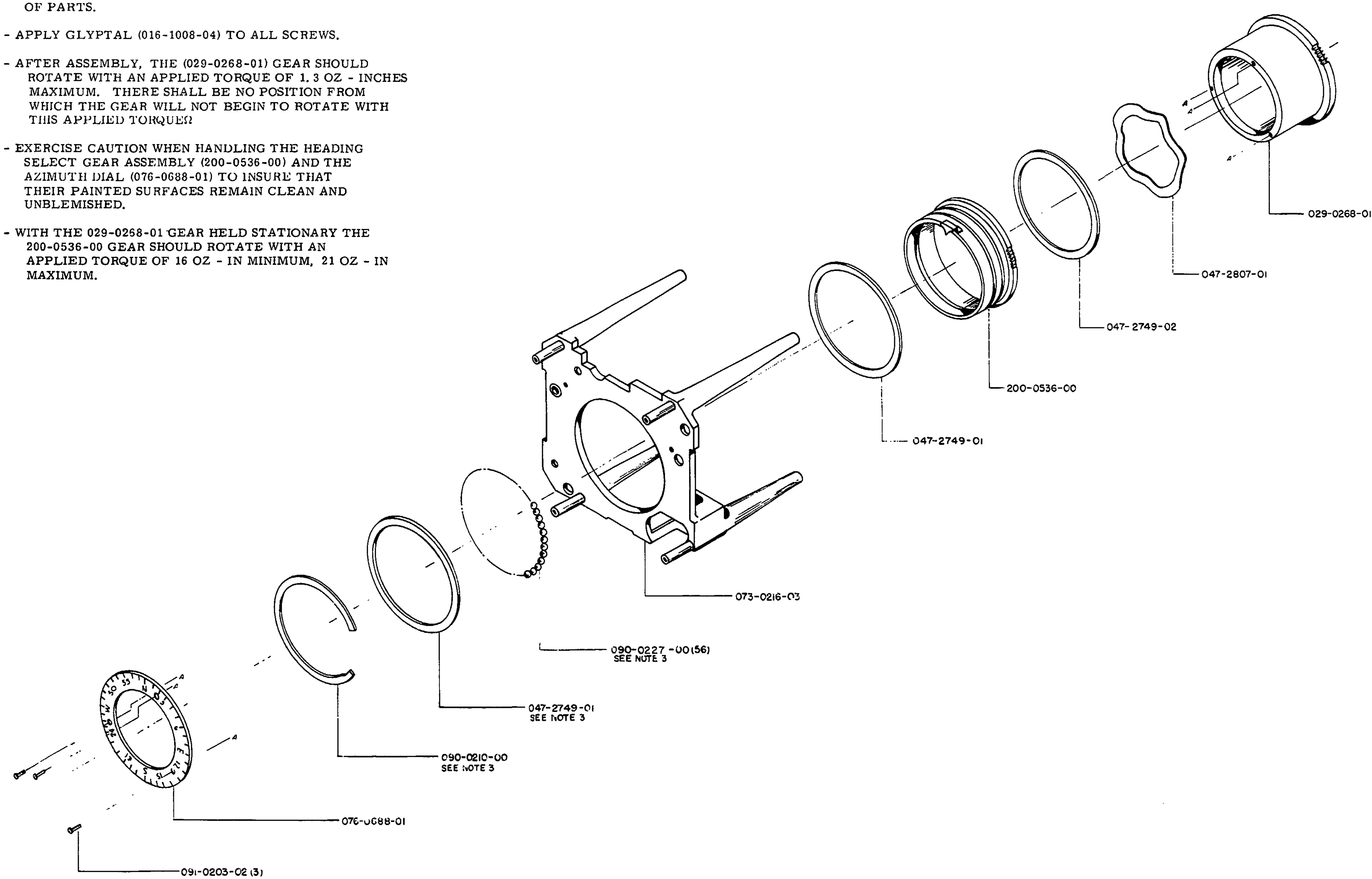

FIGURE 6-5A KI 525 FRONT FRAME ASSEMBLY
(Dwg. 300-00824-0000 Old Revision)

6.9 KI 525 HEADING SELECT GEAR ASSEMBLY

200-00536-0000 Rev. AA

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
REF100	300-00738-0000		ASSY, HEADING SELE	RF	.00
	047-02743-0001		HDG SLCT MRKR W/F	EA	1.00
	092-00034-0002		RVT OH 1/32X.062	EA	2.00
	200-09731-0000		KI 525A GEAR SET,	EA	1.00

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NOTES:

1-FOR COMPLETE DESCRIPTION OF ITEMS SEE B/M 200-0536-00

2-DURING AND AFTER ASSEMBLY CARE SHALL BE USED TO PREVENT SCRATCING OR MARRING FINISH OF POINTER.

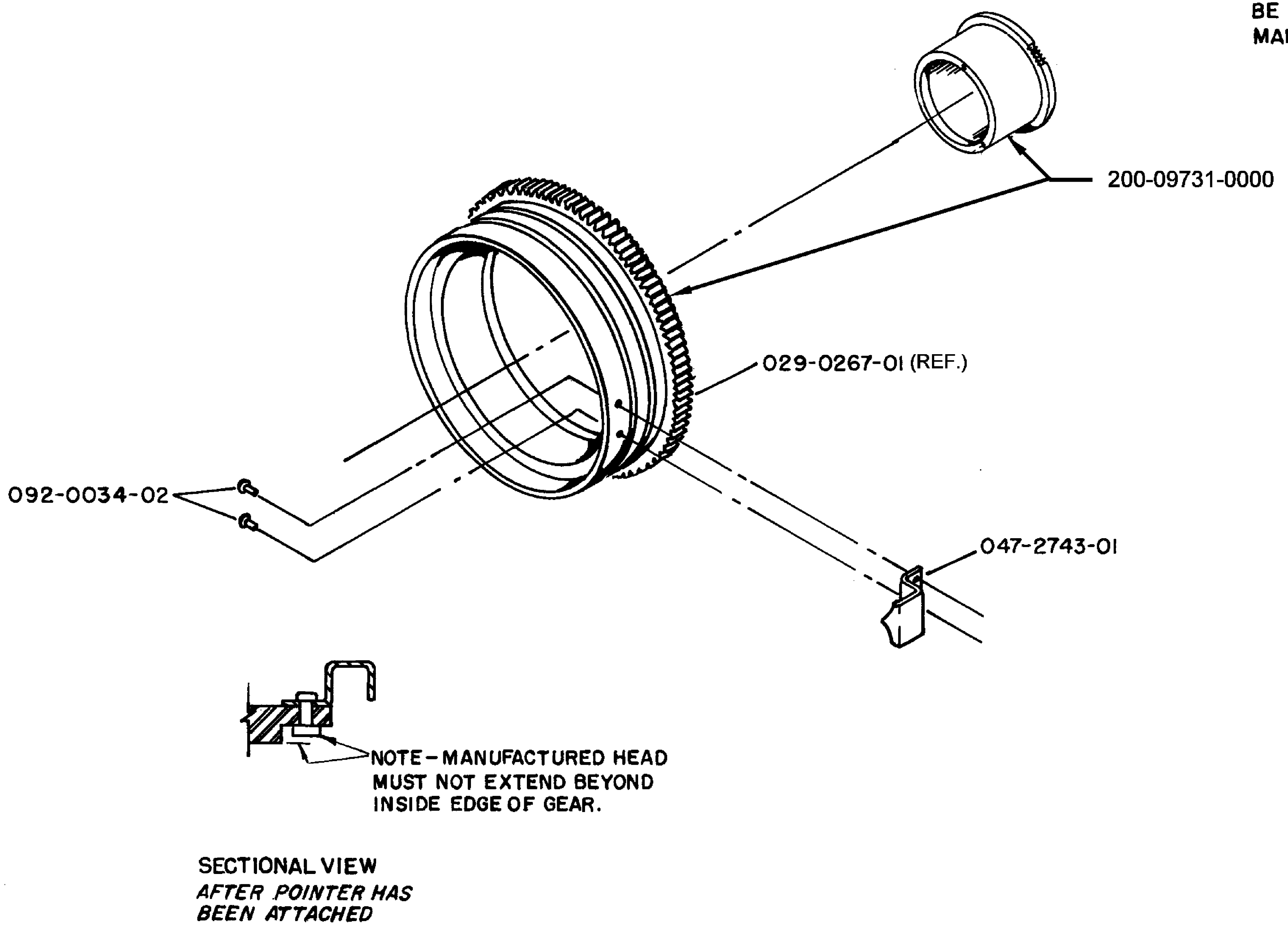

FIGURE 6-6 KI 525 HEADING SELECT GEAR ASSEMBLY
(Dwg. 300-00738-0000 R-AA)

NOTES:
1-FOR COMPLETE DESCRIPTION OF ITEMS SEE B/M 200-0536-00
2-DURING AND AFTER ASSEMBLY CARE SHALL BE USED TO PREVENT SCRATCING OR MARRING FINISH OF POINTER.

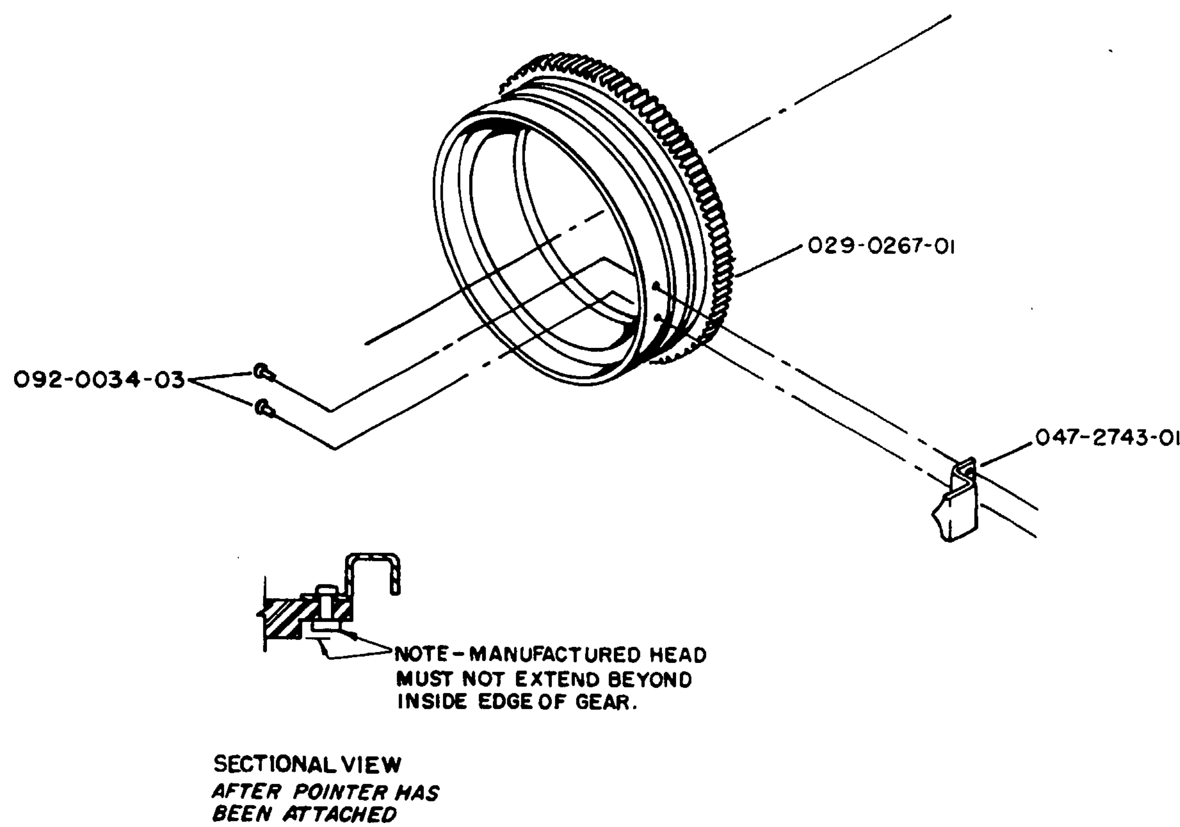

FIGURE 6-6A KI 525 HEADING SELECT GEAR ASSEMBLY
(Dwg. 300-00738-0000 Old Revision)

6.10 KI 525 HEADING GEAR SET ASSEMBLY

200-09731-0000 Rev. -

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
REF1	300-09731-0000		KI 525A GEAR SET,	RF	.00
	029-00267-0001		GEAR HDG SLCT 64P	EA	1.00
	029-00268-0001		GEAR HDG 64P	EA	1.00

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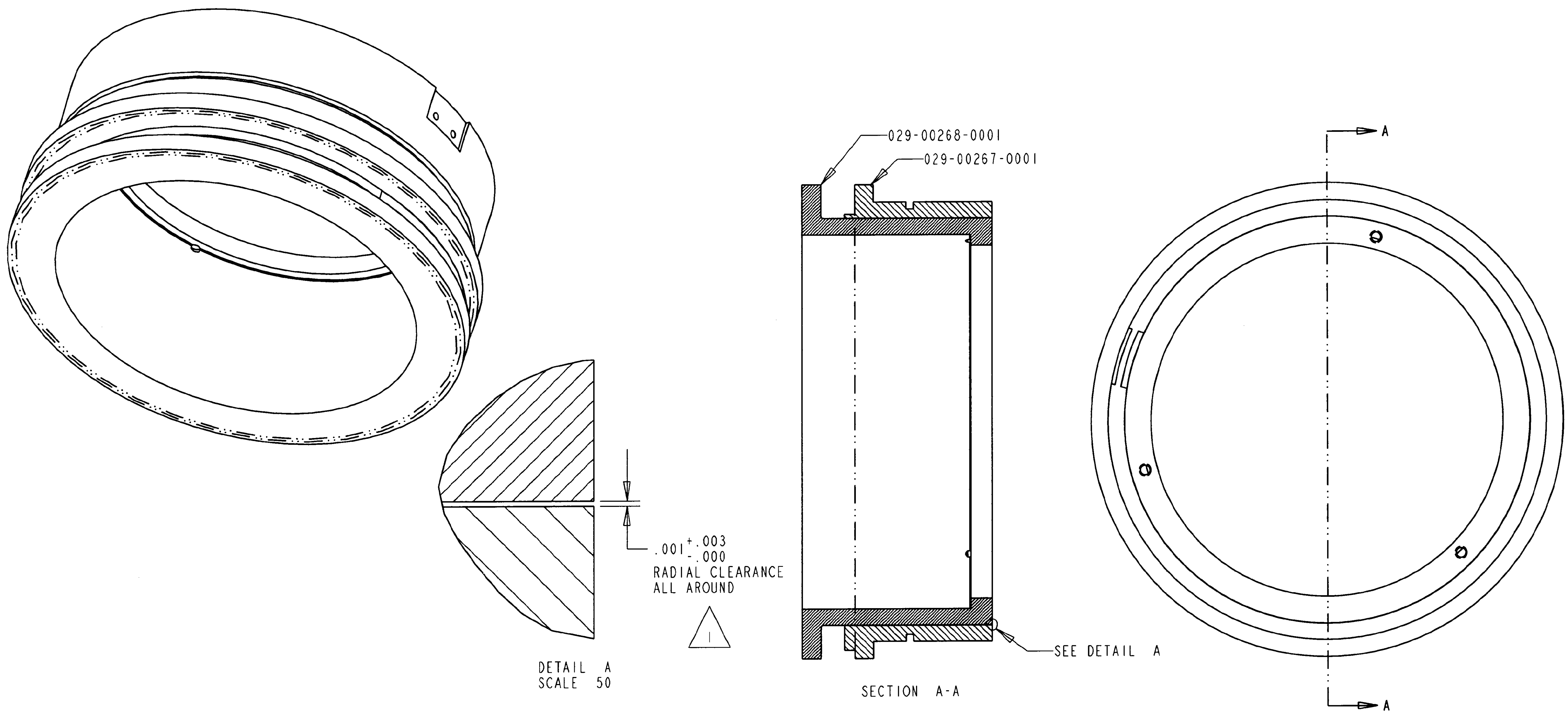

NOTES

1. THIS DRAWING DEFINES A MATCHED SET OF GEARS WITH A RADIAL CLEARANCE AS SHOWN. IN ADDITION TO THE RADIAL CLEARANCE, THE GEARS MUST TURN FREELY WHEN MATED AS SHOWN WITH NO TENDENCY TO BIND.
2. PROTECTIVE PACKAGING: INDIVIDUALLY PACKAGE ASSEMBLIES IN PLASTIC BAGS.

THIS DRAWING IS NOT COMPLETE WITHOUT PART LIST 200-09731-0000

FIGURE 6-7 KI 525 HEADING GEAR SET ASSEMBLY
(Dwg. 300-09731-0000 R-A)

6.11 KI 525 SYNCHRO PLATE ASSEMBLY

200-00626-0000 Rev. 5

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
B102	148-00028-0000		SYNCHRO VCTR RSLVR	EA	1.00
B104	148-00013-0000		SYNCHRO CONT XFMR	EA	1.00
REF100	300-00823-0000		SYNCHRO GEAR ASSY	RF	.00
	029-00257-0000		GEAR SPUR 72T/64DP	EA	1.00
	073-00213-0001		CLAMP SYNCHRO	EA	2.00
	073-00221-0003		GEAR PLATE SYNC	EA	1.00
	073-00493-0001		CLMP SYNC	EA	2.00
	089-06022-0005		SCR SHC 2-56X5/16	EA	4.00
	089-06200-0008		SCR SET 2-56X1/4	EA	2.00

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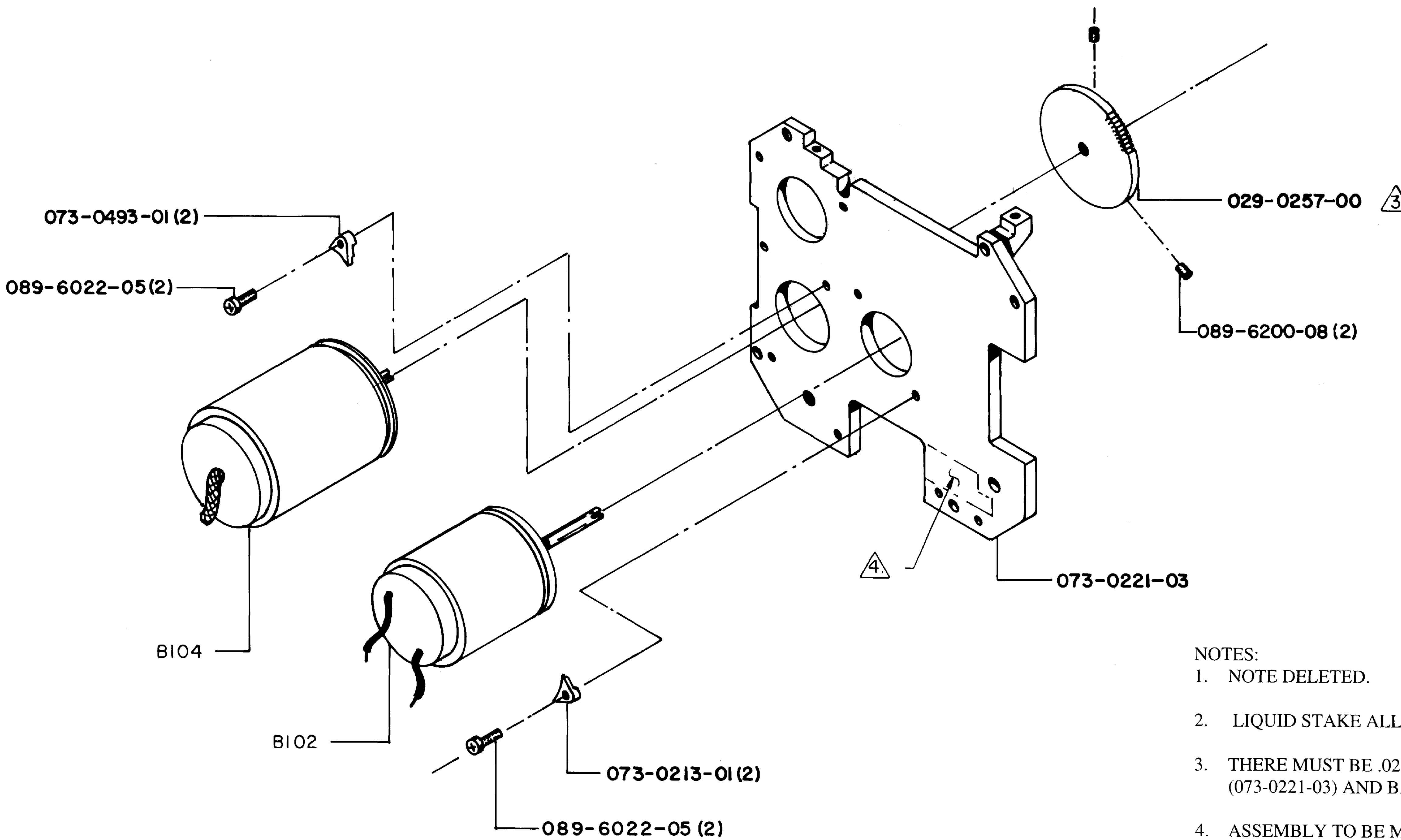
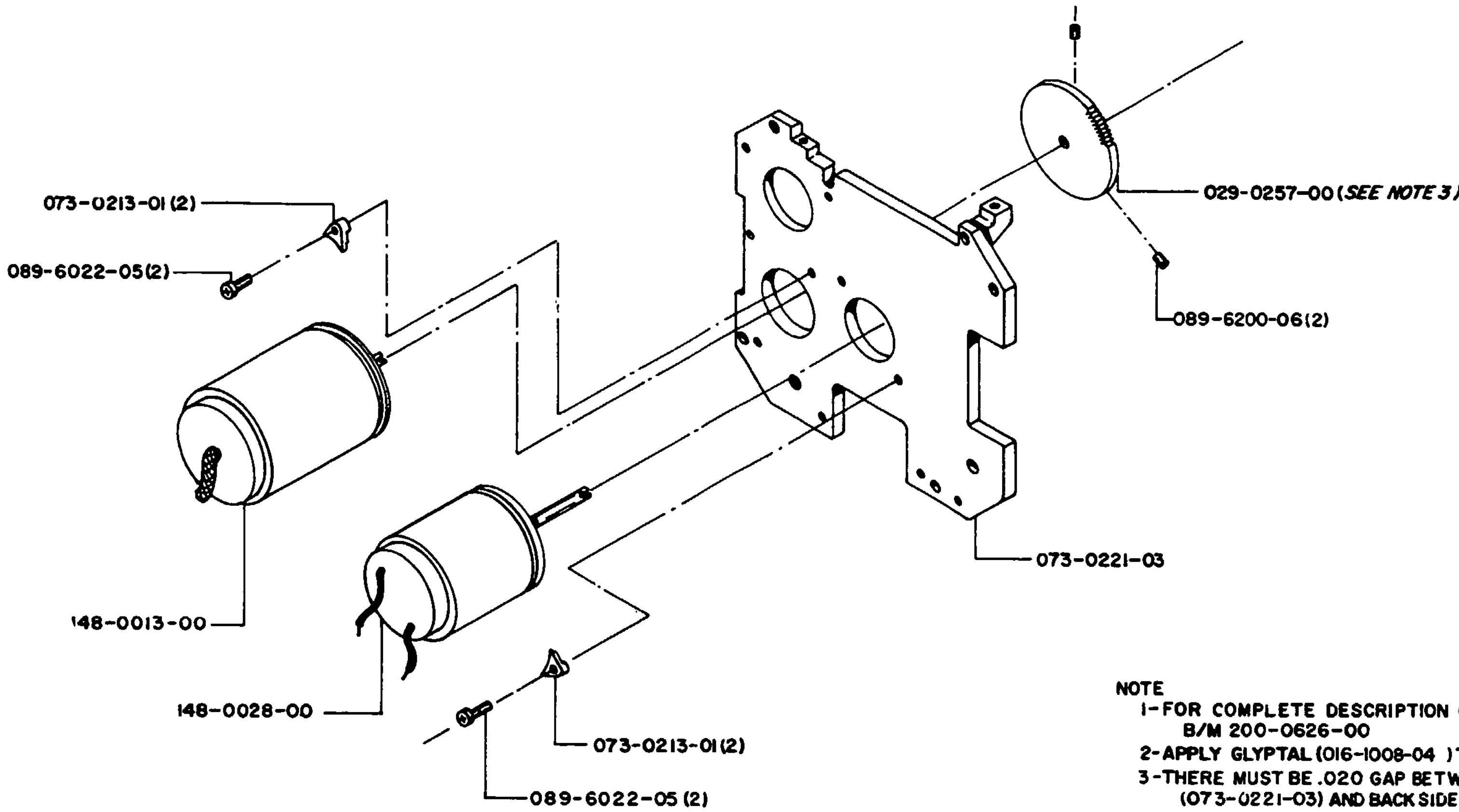


NOTES:
1. NOTE DELETED.
2. LIQUID STAKE ALL FASTENERS PER 001-01080-0000.
3. THERE MUST BE .020 GAP BETWEEN GEAR PLATE (073-0221-03) AND BACK SIDE OF GEAR (029-0257-00).
4. ASSEMBLY TO BE MARKED PER 001-01101-0000 IN APPROXIMATE AREA SHOWN.

THIS DRAWING NOT COMPLETE WITHOUT PARTS LIST 200-00626-0000 & -0001

FIGURE 6-8 KI 525 SYNCHRO PLATE ASSEMBLY
(Dwg. 300-00823-0000 R-AA)



NOTE
1-FOR COMPLETE DESCRIPTION OF PARTS SEE
B/M 200-0626-00
2-APPLY GLYPTAL (016-1008-04) TO ALL SCREWS.
3-THERE MUST BE .020 GAP BETWEEN GEAR PLATE
(073-0221-03) AND BACK SIDE OF GEAR (029-0237-00)

FIGURE 6-8A KI 525 SYNCHRO PLATE ASSEMBLY
(Dwg. 300-00823-0000 Old Revision)

6.12 KI 525 YOKE ASSEMBLY

200-00625-0000 Rev. AA

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
REF100	300-00822-0000		YOKE ASSEMBLY KI52	RF	.00
	023-00083-0000		MTR TO/FR FLAG	EA	1.00
	023-00084-0000		IND DEVIATION	EA	1.00
	047-02849-0001		CONTACT RING W/FIN	EA	4.00
	088-00346-0000		YOKE	EA	1.00
	088-00347-0002		MASK	EA	1.00
	088-00387-0000		GUARD	EA	2.00
	089-05899-0003		SCR PHP 2-56X3/16	EA	4.00
	089-07046-0004		SCR PHS 2-56X1/4	EA	4.00

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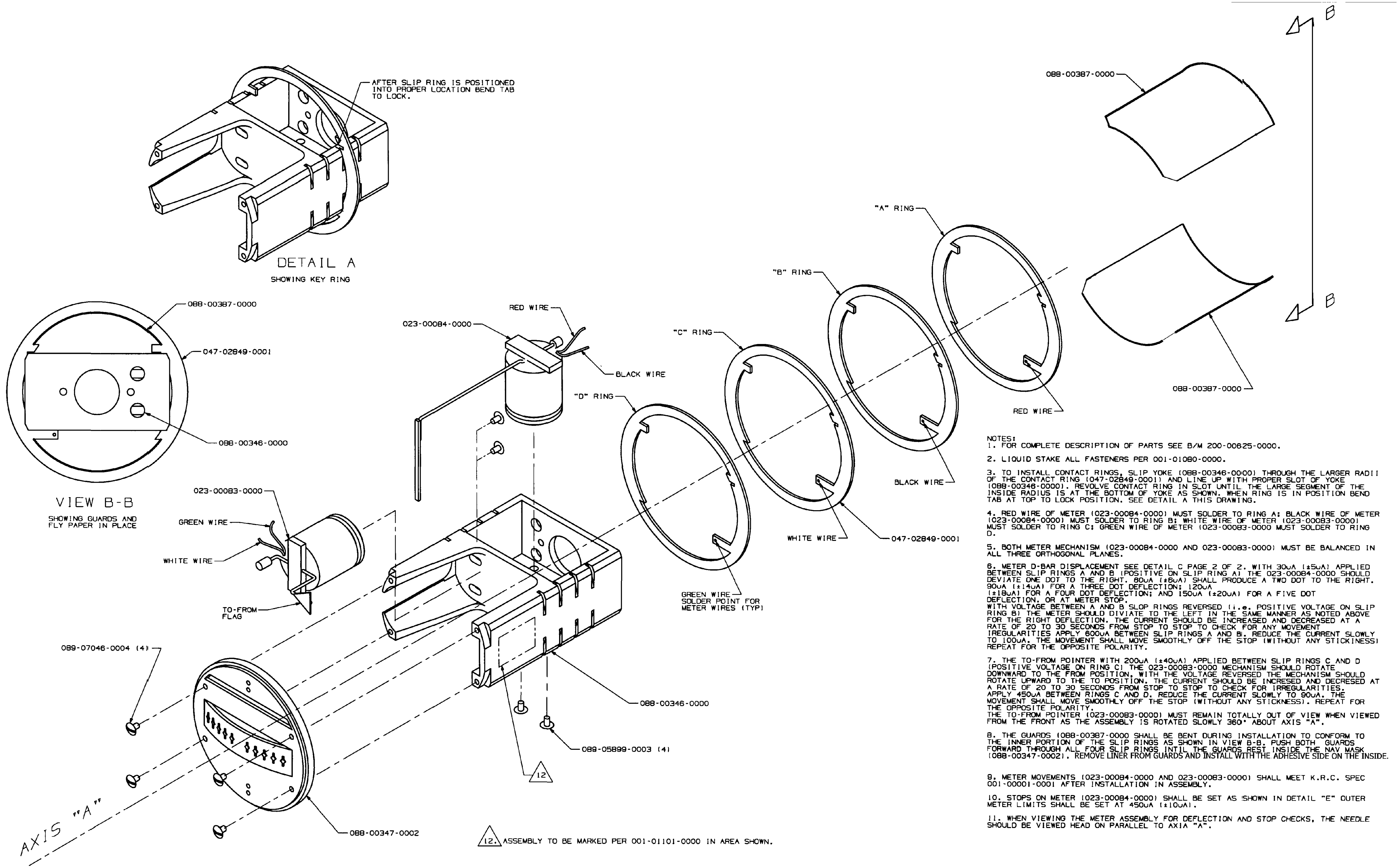

NOTES:

1. FOR COMPLETE DESCRIPTION OF PARTS SEE B/M 200-00625-0000.

2. LIQUID STAKE ALL FASTENERS PER 001-01080-0000.

3. TO INSTALL CONTACT RINGS, SLIP YOKE (088-00346-0000) THROUGH THE LARGER RADII OF THE CONTACT RING (047-02849-0001) AND LINE UP WITH PROPER SLOT OF YOKE (088-00346-0000). REVOLVE CONTACT RING IN SLOT UNTIL THE LARGE SEGMENT OF THE INSIDE RADIUS IS AT THE BOTTOM OF YOKE AS SHOWN. WHEN RING IS IN POSITION BEND TAB AT TOP TO LOCK POSITION. SEE DETAIL A THIS DRAWING.

4. RED WIRE OF METER (023-00084-0000) MUST SOLDER TO RING A; BLACK WIRE OF METER (023-00084-0000) MUST SOLDER TO RING B; WHITE WIRE OF METER (023-00083-0000) MUST SOLDER TO RING C; GREEN WIRE OF METER (023-00083-0000 MUST SOLDER TO RING D.

5. BOTH METER MECHANISM (023-00084-0000 AND 023-00083-0000) MUST BE BALANCED IN ALL THREE ORTHOGONAL PLANES.

6. METER D-BAR DISPLACEMENT SEE DETAIL C PAGE 2 OF 2. WITH 30uA (±5uA) APPLIED BETWEEN SLIP RINGS A AND B (POSITIVE ON SLIP RING A) THE 023-00084-0000 SHOULD DEVIATE ONE DOT TO THE RIGHT. 60uA (±6uA) SHALL PRODUCE A TWO DOT TO THE RIGHT. 90uA (±14uA) FOR A THREE DOT DEFLECTION; 120uA (±18uA) FOR A FOUR DOT DEFLECTION; AND 150uA (±20uA) FOR A FIVE DOT DEFLECTION. OR AT METER STOP.
WITH VOLTAGE BETWEEN A AND B SLOP RINGS REVERSED (i.e. POSITIVE VOLTAGE ON SLIP RING B) THE METER SHOULD DIVIATE TO THE LEFT IN THE SAME MANNER AS NOTED ABOVE FOR THE RIGHT DEFLECTION. THE CURRENT SHOULD BE INCREASED AND DECREASED AT A RATE OF 20 TO 30 SECONDS FROM STOP TO STOP TO CHECK FOR ANY MOVEMENT IREGULARITIES APPLY 600uA BETWEEN SLIP RINGS A AND B). REDUCE THE CURRENT SLOWLY TO 100uA. THE MOVEMENT SHALL MOVE SMOOTHLY OFF THE STOP (WITHOUT ANY STICKINESS) REPEAT FOR THE OPPOSITE POLARITY.

7. THE TO-FROM POINTER WITH 200uA (±40uA) APPLIED BETWEEN SLIP RINGS C AND D (POSITIVE VOLTAGE ON RING C) THE 023-00083-0000 MECHANISM SHOULD ROTATE DOWNWARD TO THE FROM POSITION, WITH THE VOLTAGE REVERSED THE MECHANISM SHOULD ROTATE UPWARD TO THE TO POSITION. THE CURRENT SHOULD BE INCRESED AND DECRESED AT A RATE OF 20 TO 30 SECONDS FROM STOP TO STOP TO CHECK FOR IRREGULARITIES. APPLY 450uA BETWEEN RINGS C AND D. REDUCE THE CURRENT SLOWLY TO 90uA. THE MOVEMENT SHALL MOVE SMOOTHLY OFF THE STOP (WITHOUT ANY STICKNESS). REPEAT FOR THE OPPOSITE POLARITY.
THE TO-FROM POINTER (023-00083-0000) MUST REMAIN TOTALLY OUT OF VIEW WHEN VIEWED FROM THE FRONT AS THE ASSEMBLY IS ROTATED SLOWLY 360° ABOUT AXIS "A".

8. THE GUARDS (088-00387-0000 SHALL BE BENT DURING INSTALLATION TO CONFORM TO THE INNER PORTION OF THE SLIP RINGS AS SHOWN IN VIEW B-B. PUSH BOTH GUARDS FORWARD THROUGH ALL FOUR SLIP RINGS INTIL THE GUARDS REST INSIDE THE NAV MASK (088-00347-0002). REMOVE LINER FROM GUARDS AND INSTALL WITH THE ADHESIVE SIDE ON THE INSIDE.

9. METER MOVEMENTS (023-00084-0000 AND 023-00083-0000) SHALL MEET K.R.C. SPEC 001-00001-0001 AFTER INSTALLATION IN ASSEMBLY.

10. STOPS ON METER (023-00084-0000) SHALL BE SET AS SHOWN IN DETAIL "E" OUTER METER LIMITS SHALL BE SET AT 450uA (±10uA).

11. WHEN VIEWING THE METER ASSEMBLY FOR DEFLECTION AND STOP CHECKS, THE NEEDLE SHOULD BE VIEWED HEAD ON PARALLEL TO AXIA "A".

FIGURE 6-9 KI 525 YOKE ASSEMBLY
(Dwg. 300-00822-0000 R-AB)

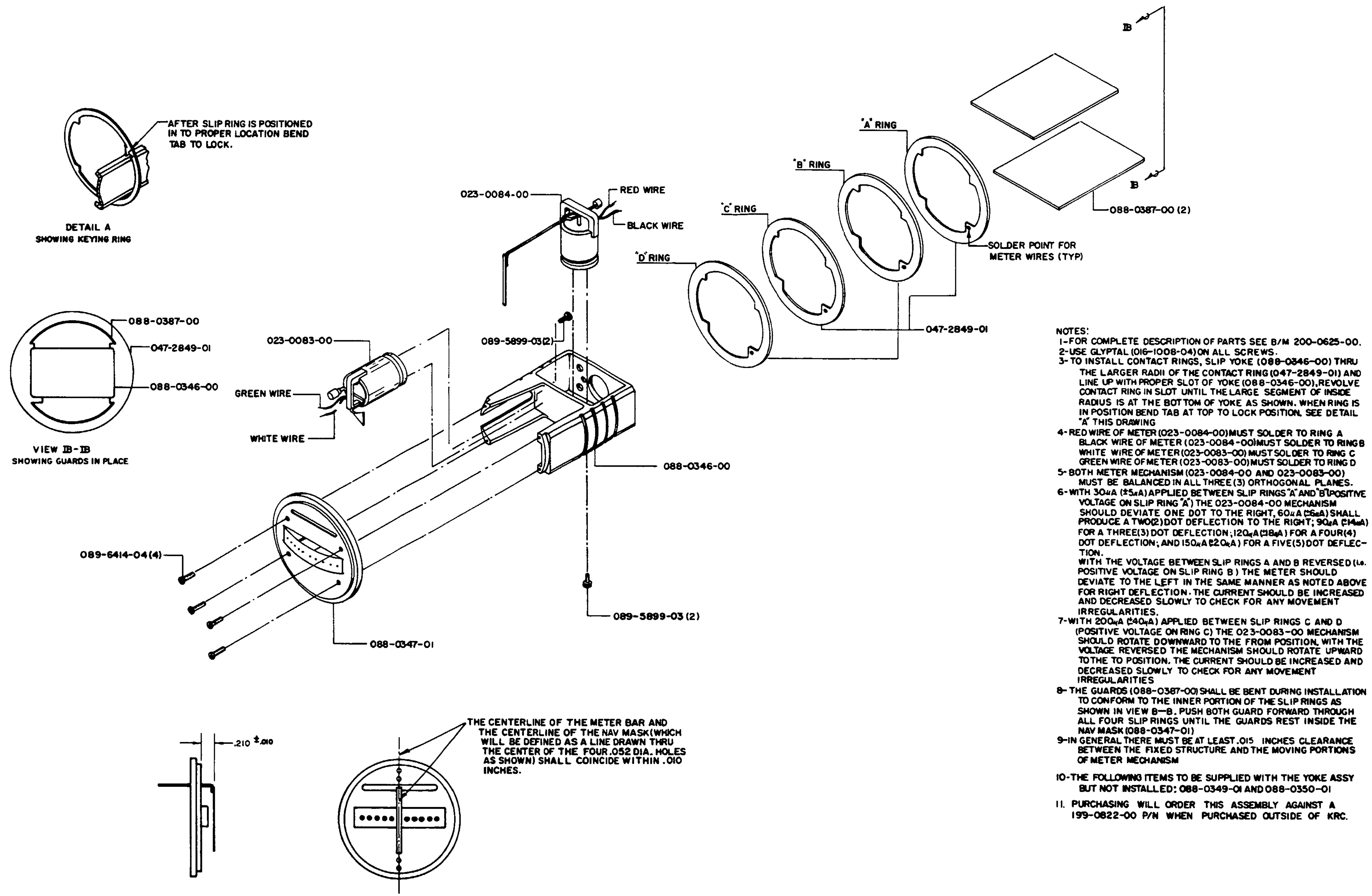

FIGURE 6-9A KI 525 YOKE ASSEMBLY
(Dwg. 300-00822-0000 Old Revision)

6.13 KI 525 DIFFERENTIAL CARRIER ASSEMBLY

200-00624-0000 Rev. 1

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
REF100	300-00821-0000		DIFF CARRIER ASSY	RF	.00
	029-00256-0000		GEAR SPUR 16T/64DP	EA	2.00
	029-00262-0001		GEAR SPUR 160T/64P	EA	1.00
	047-02850-0000		SHIM WASHER	EA	4.00
	076-00693-0000		PIN SPIDER GEAR	EA	2.00

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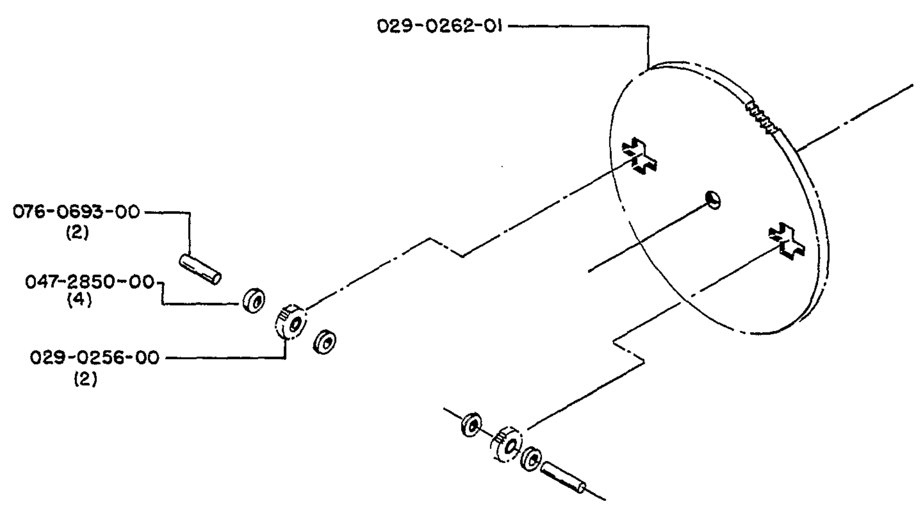

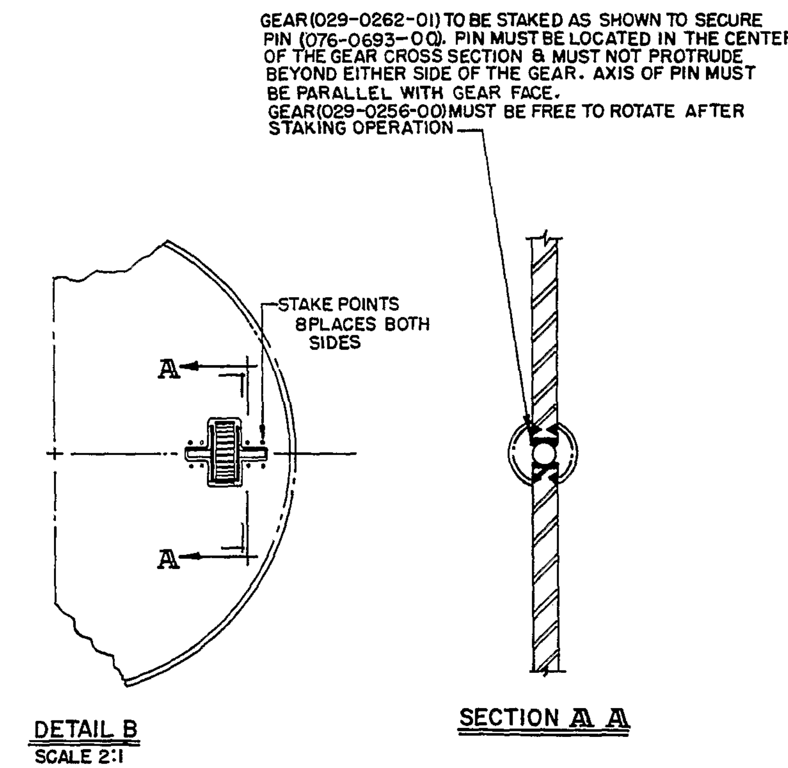

NOTE:
1- FOR COMPLETE DESCRIPTION OF ITEMS SEE B/M 200-0624-00

FIGURE 6-10 KI 525 DIFFERENTIAL CARRIER ASSEMBLY
(Dwg. 300-00821-0000 R-1)

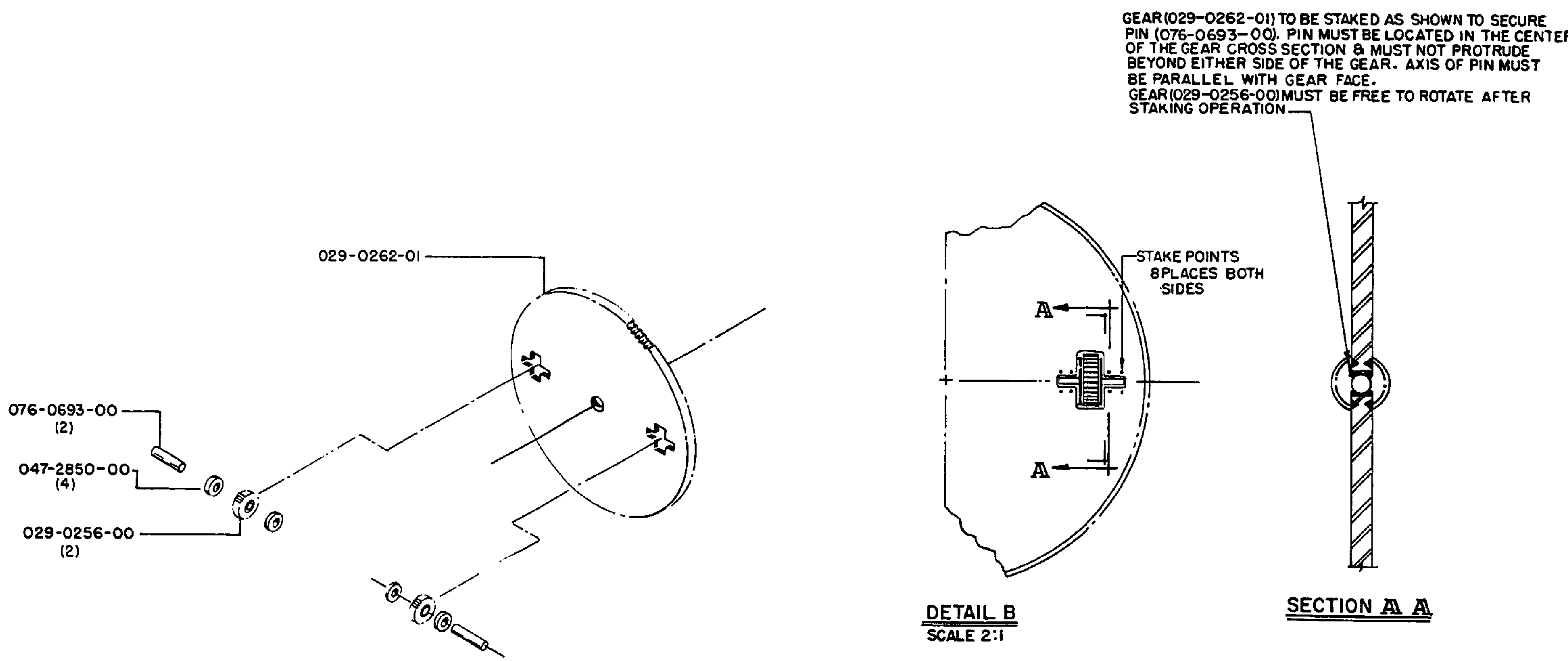

FIGURE 6-10A KI 525 DIFFERENTIAL CARRIER ASSEMBLY
(Dwg. 300-00821-0000 Old Revision)

6.14 KI 525 FLAG MECHANISM ASSEMBLY

200-00622-0000 Rev. AA
200-00622-0001 Rev. AA

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000	0001
REF100	300-00819-0000		FLAG MECHANISM AS	RF	.00	.
	016-01082-0000		DC RTV 3145	AR	1.00	1.00
	016-01114-0000		EPXY TRA-CAST 3103	AR	.00	.00
	019-02185-0001		COIL FLG MCH 1430T	EA	1.00	1.00
	047-02847-0006		POLE .430 W/F	EA	1.00	1.00
	047-02847-0007		POLE .523 W/F	EA	1.00	1.00
	047-02848-0001		SPACER POLE W/F	EA	2.00	2.00
	088-00344-0000		HSG FLAG	EA	1.00	1.00
	088-00345-0001		COVER FLAG	EA	1.00	1.00
	090-00186-0000		RETAINER RING	EA	1.00	1.00
	200-00642-0001		FLAG ASSY	EA	.	1.00
	200-00642-0003		FLAG ASSY	EA	1.00	.
	300-00819-0001		FLAG MECHANISM ASS	RF	.	.00

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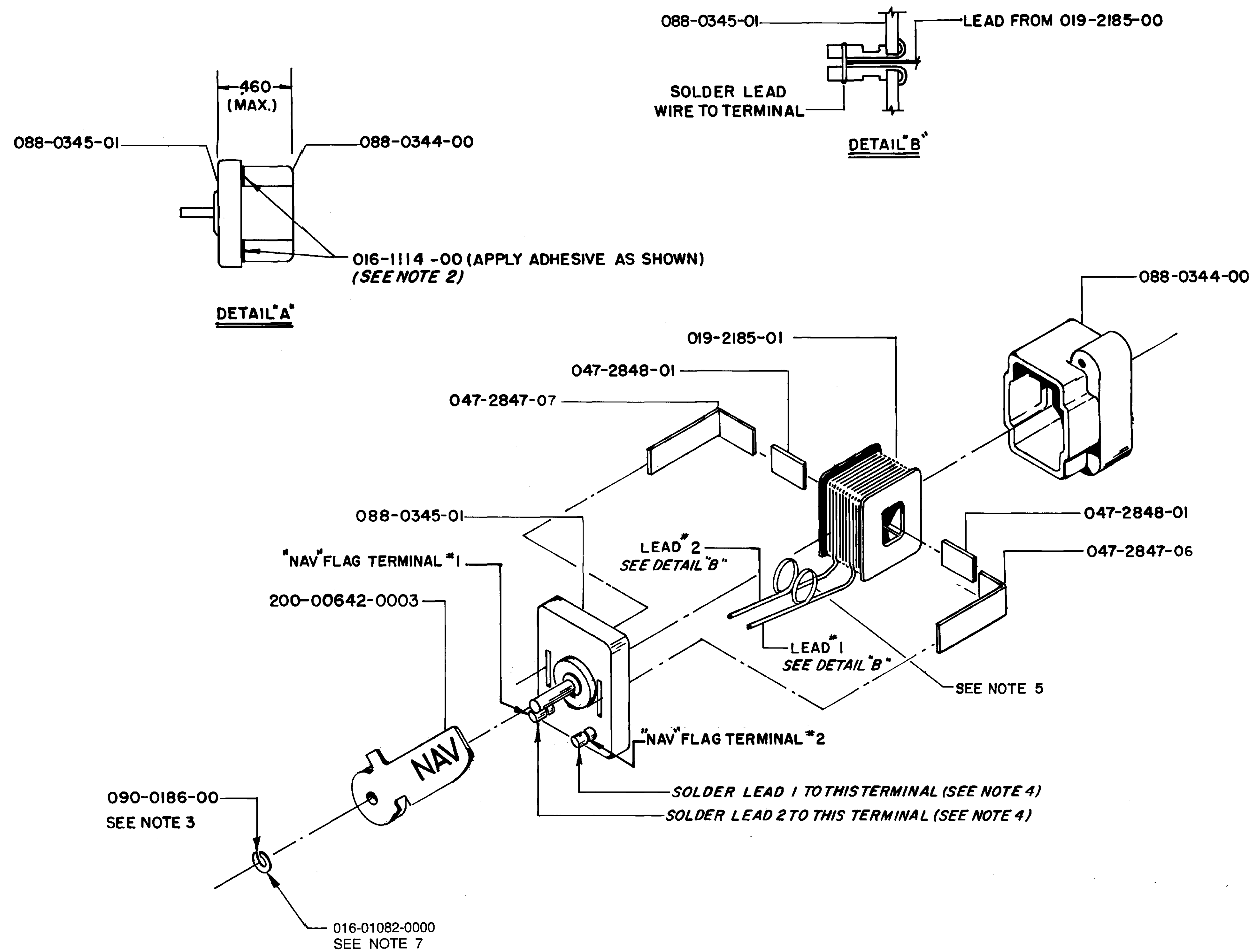
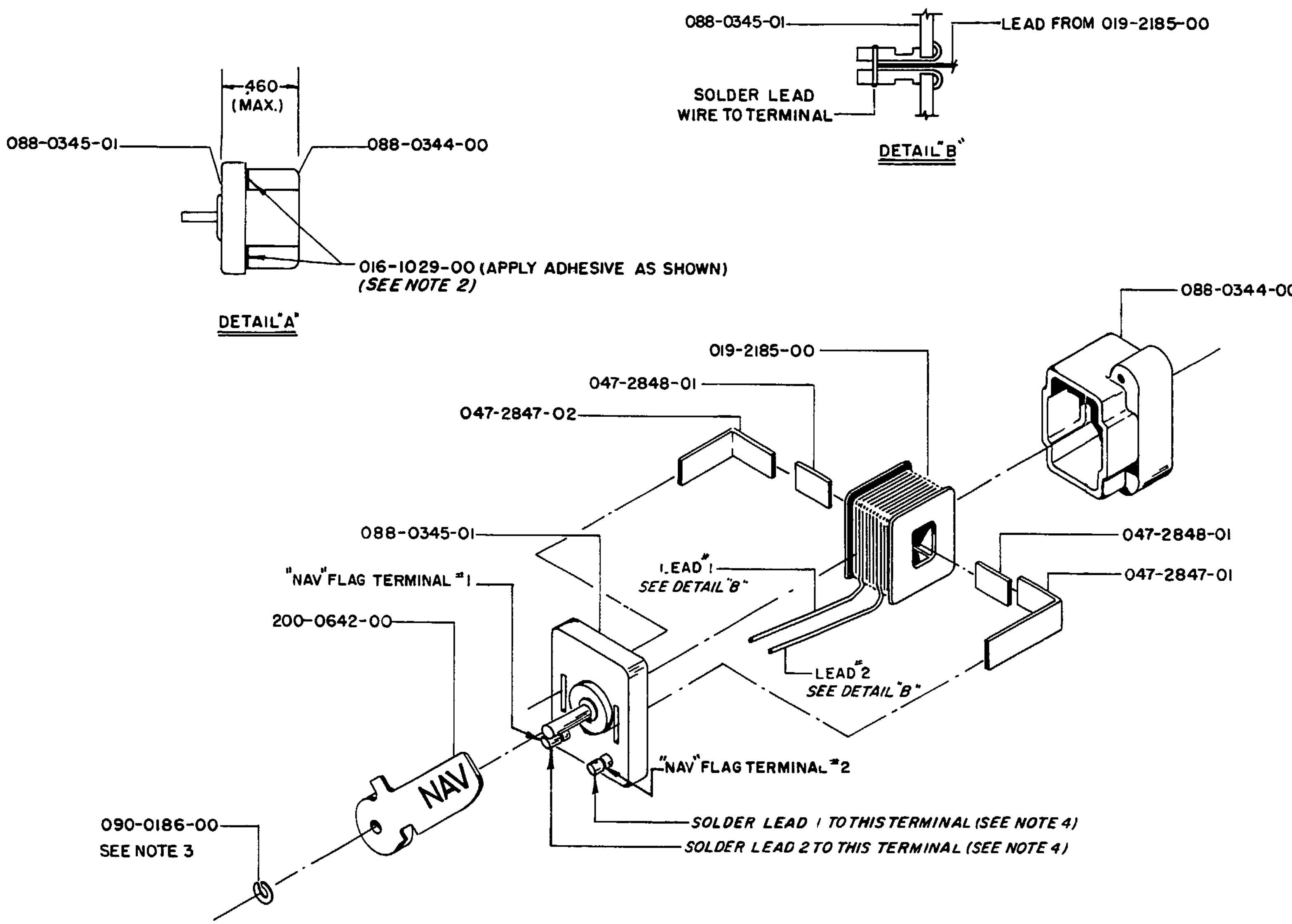


NOTES:

1 FOR COMPLETE ITEM DESCRIPTION SEE B/M 200-0622-00
2 APPLY ADHESIVE (016-1114-00) INSIDE HOUSING (088-0344-00) TO SECURE ALL PARTS & COVER (088-0345-01) TO HOUSING AS SHOWN IN DETAIL "A".
3 AFTER GRIP RING (090-0186-00) IS INSTALLED THE FLAG ASSEMBLY SHOULD HAVE .010/.020 INCHES AXIAL CLEARANCE BETWEEN THE COVER (088-0345-01) AND GRIP RING,
4 AFTER ASSEMBLY THE D.C. RESISTANCE BETWEEN THE TWO TERMINALS SHALL BE 124± 18 OHMS.
5. ADD A 3/8 INCH DIAMETER SERVICE LOOP TO THE LEADS COMING FROM THE COIL.
6. NOTE DELETED

7. APPLY RTV OVER END OF SHAFT AND ROUNDED END OF RETAINER RING. BE SURE RTV DOES NOT FLOW DOWN SHAFT.

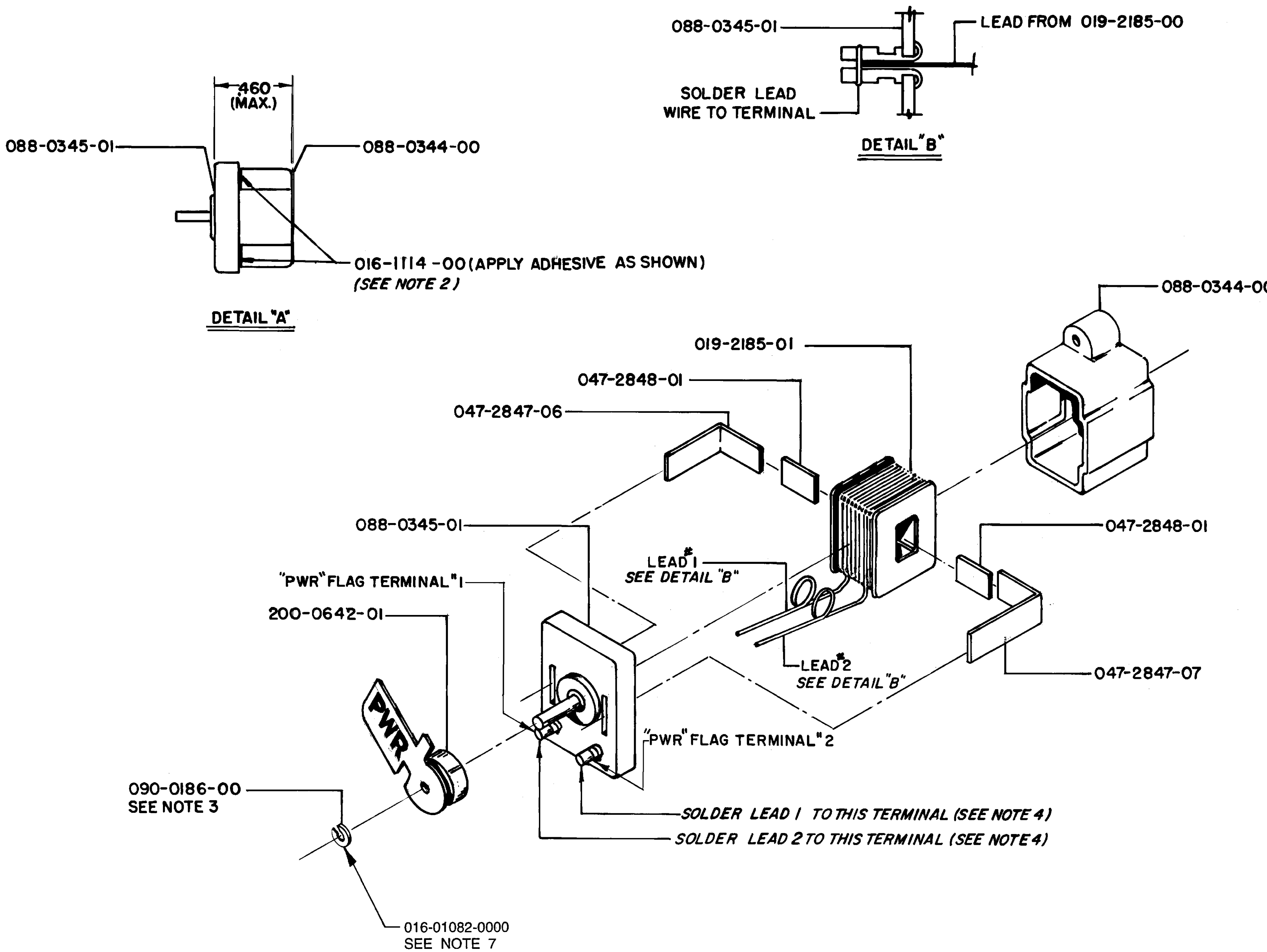
FIGURE 6-11 KI 525 FLAG MECHANISM ASSEMBLY
(Dwg. 300-00819-0000 R-AB)



NOTES:

1 FOR COMPLETE ITEM DESCRIPTION SEE B/M 200-0622-00
2 APPLY ADHESIVE (016-1029-00) TO AREA (4 PLACES AS SHOWN IN DETAIL "A" TO SECURE COVER (088-0345-01) TO HOUSING (P/N 088-0344-00)
3 AFTER GRIP RING (090-0186-00) IS INSTALLED THE FLAG ASSEMBLY SHOULD HAVE .010/.020 INCHES AXIAL CLEARANCE BETWEEN THE COVER (088-0345-01) AND GRIP RING,
4 AFTER ASSEMBLY THE D.C. RESISTANCE BETWEEN THE TWO TERMINALS SHALL BE 204 ± 5 Ω

FIGURE 6-11A KI 525 FLAG MECHANISM ASSEMBLY
(Dwg. 300-00819-0000 Old Revision)

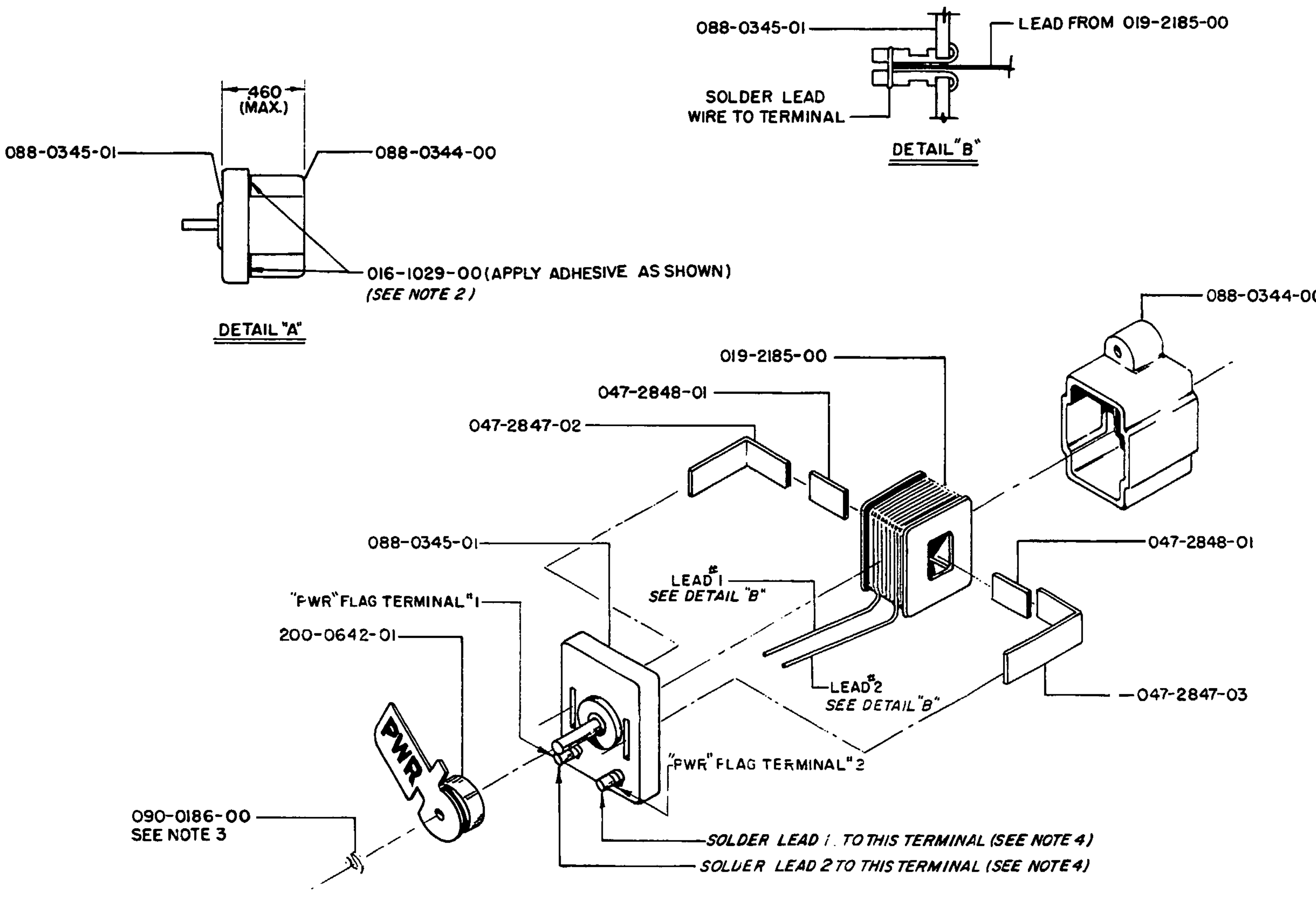


NOTES:

1 FOR COMPLETE ITEM DESCRIPTION SEE B/M 200-0622-01
2 APPLY ADHESIVE (016-1114-00) INSIDE HOUSING (088-0344-00) TO SECURE ALL PARTS & COVER (088-0345-01) TO HOUSING AS SHOWN IN DETAIL "A"
3 AFTER GRIP RING (090-0186-00) IS INSTALLED, THE FLAG ASSEMBLY SHOULD HAVE .010/.020 INCHES AXIAL CLEARANCE BETWEEN THE COVER (088-0345-01) AND GRIP RING.
4 AFTER ASSEMBLY THE D.C. RESISTANCE BETWEEN THE TWO TERMINALS SHALL BE 124 ± 18 OHMS
5 ADD A 3/8 INCH DIAMETER SERVICE LOOP TO THE LEADS COMING FROM THE COIL.
6 NOTE DELETED

7. APPLY RTV OVER END OF SHAFT AND ROUNDED END OF RETAINER RING. BE SURE RTV DOES NOT FLOW DOWN SHAFT.

FIGURE 6-12 KI 525 FLAG MECHANISM ASSEMBLY
(Dwg. 300-00819-0001 R-AB)



NOTES:

1 FOR COMPLETE ITEM DESCRIPTION SEE B/M 200-0622-01
2 APPLY ADHESIVE (016-1029-00) TO AREA (4 PLACES) AS SHOWN IN DETAIL A TO SECURE COVER (088-0345-01) TO HOUSING (088-0344-00)
3 AFTER GRIP RING (090-0186-00) IS INSTALLED, THE FLAG ASSEMBLY SHOULD HAVE .010/.020 INCHES AXIAL CLEARANCE BETWEEN THE COVER (088-0345-01) AND GRIP RING.
4 AFTER ASSEMBLY THE D.C. RESISTANCE BETWEEN THE TWO TERMINALS SHALL BE 204±5 Ω

FIGURE 6-12A KI 525 FLAG MECHANISM ASSEMBLY
(Dwg. 300-00819-0001 Old Revision)

6.15 KI 525 FLAG ASSEMBLY

200-00642-0001 Rev. AB
200-00642-0003 Rev. AA

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0001	0003
REF100	300-05545-0000		NAV FLAG ASSY	RF	.	.00
	013-00017-0000		MAGNET	EA	1.00	1.00
	016-01122-0000		EPOXY DEVCON 14250	AR	1.00	1.00
	047-02841-0002		FLAG PWR	EA	1.00	.
	047-10437-0003		FLAG	EA	.	1.00
	300-00838-0001		FLAG ASSY	RF	.00	.

200-00642-0000 Rev. AA
200-00642-0002 Rev. AA

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000	0002
	013-00017-0000		MAGNET	EA	1.00	1.00
	016-01122-0000		EPOXY DEVCON 14250	AR	1.00	1.00
	047-02841-0001		FLAG	EA	1.00	.
	047-02841-0003		FLAG	EA	.	1.00

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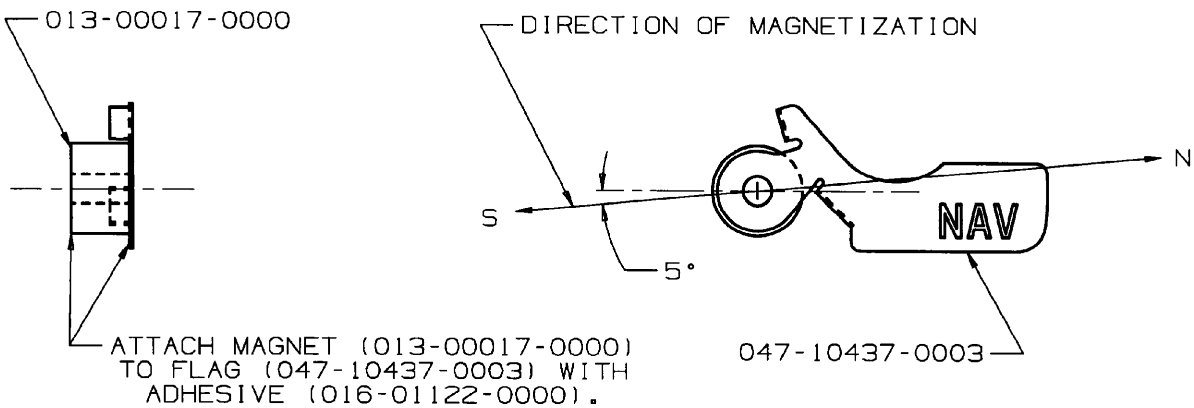

NOTES:

1. HOLES MUST BE CONCENTRIC.
2. NO ADHESIVE SHALL REMAIN IN BORE AFTER ASSEMBLY.

THIS DRAWING NOT COMPLETE WITHOUT PARTS LIST 200-00642-0003.

FIGURE 6-13 FLAG ASSEMBLY
(Dwg. 300-05545-0000 Rev. AA)

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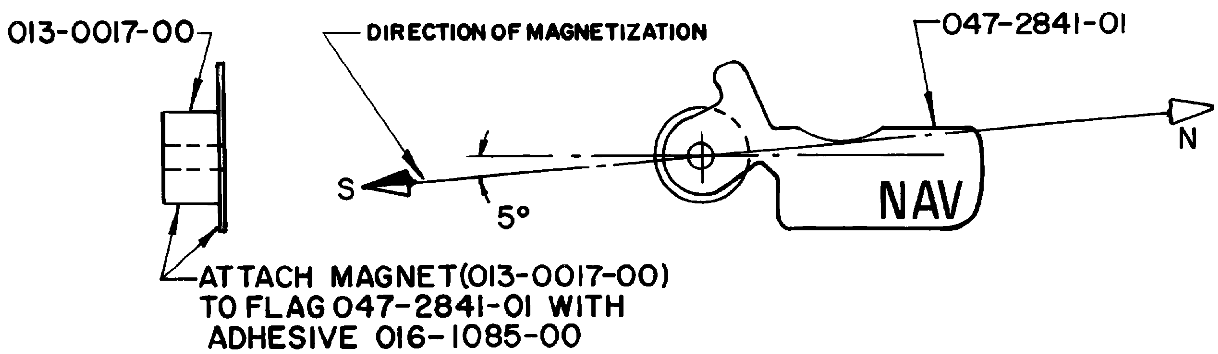

NOTES:

1-HOLES MUST BE CONCENTRIC
2-NO ADHESIVE SHALL REMAIN IN BORE AFTER ASSEMBLY
3-SEE B/M 200-0642-00 FOR COMPLETE PART DESCRIPTION.

FIGURE 6-14 FLAG ASSEMBLY
(Dwg. 300-00838-0000 Rev. 5)

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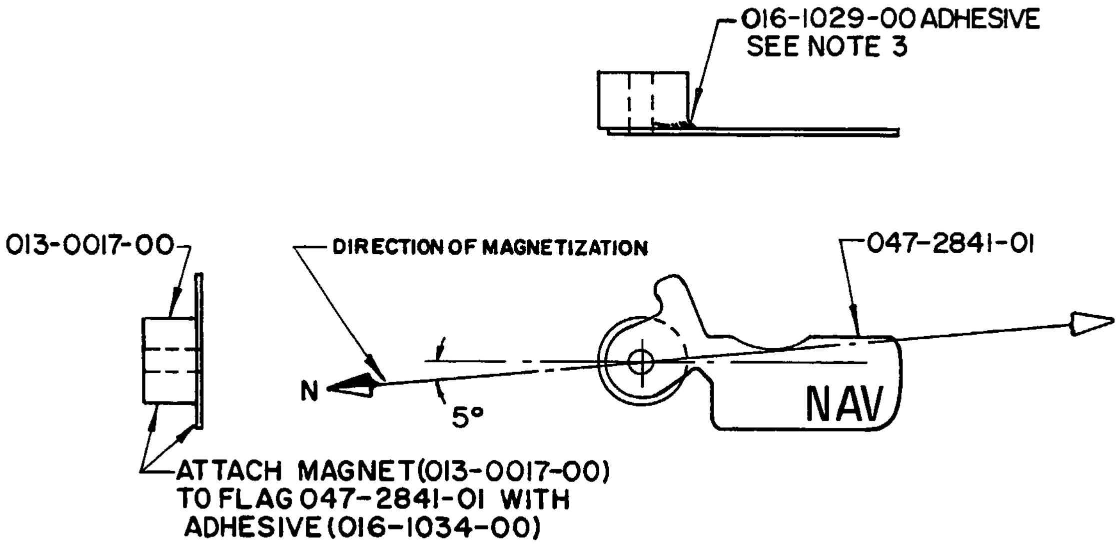

NOTES:

1-HOLES MUST BE CONCENTRIC
2-NO ADHESIVE SHALL REMAIN IN BORE AFTER ASSEMBLY
3-AFTER MAGNET AND FLAG ARE ASSEMBLED APPLY 016-1029-00 (EPOXY POTTING KIT 001 BA) TO REAR OF ASSEMBLY AS INDICATED ON DRAWING. CAUTION—*NO EPOXY SHALL APPEAR ON FRONT OF ASSEMBLY.*

FIGURE 6-14A FLAG ASSEMBLY
(Dwg. 300-00838-0000 Old Revision)

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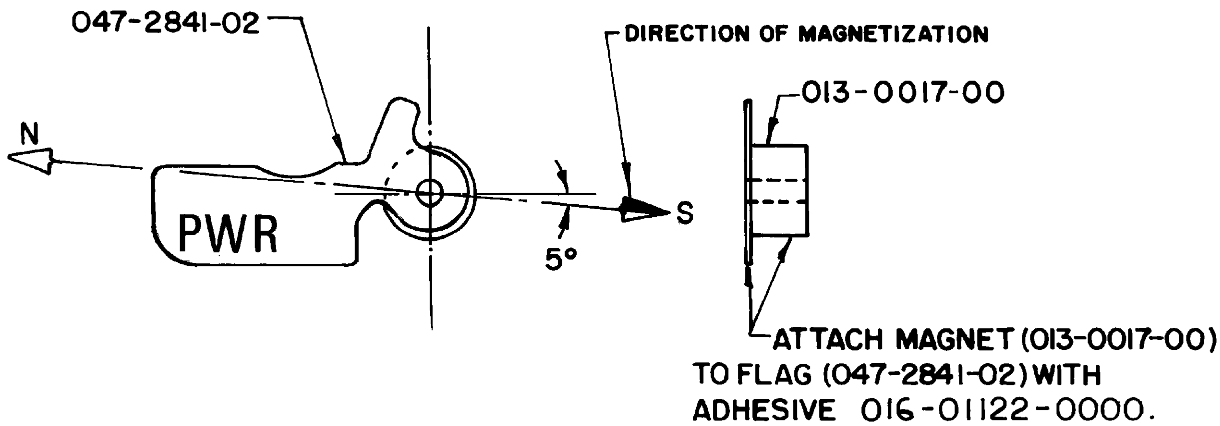

NOTES:

1-HOLES MUST BE CONCENTRIC

2-NO ADHESIVE SHALL REMAIN IN BORE
AFTER ASSEMBLY.

3-SEE B/M 200-0642-01 FOR COMPLETE PART
DESCRIPTION.

FIGURE 6-15 FLAG ASSEMBLY
(Dwg. 300-00838-0001 Rev. AA)

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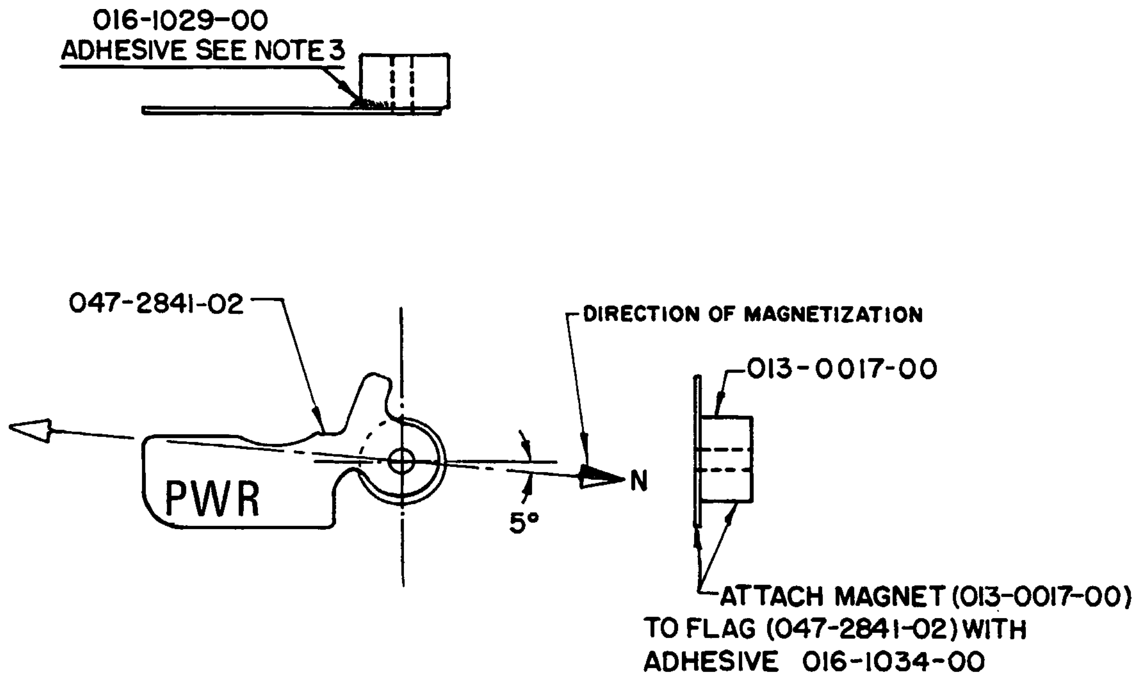

NOTES:

1-HOLES MUST BE CONCENTRIC

2-NO ADHESIVE SHALL REMAIN IN BORE AFTER ASSEMBLY.

3-AFTER MAGNET AND FLAG ARE ASSEMBLED APPLY 016-1029-00 (EPOXY POTTING KIT 001 BA) TO REAR OF ASSEMBLY AS INDICATED ON DRWG, CAUTION—*NO EPOXY SHALL APPEAR ON FRONT OF ASSEMBLY.*

FIGURE 6-15A FLAG ASSEMBLY
(Dwg. 300-00838-0001 Old Revision)

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6.16 KI 525 REAR PLATE ASSEMBLY

200-00631-0000 Rev. AB

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
B103	148-05035-0000		MOTOR STEPPER	EA	1.00
J102	030-02179-0000		CONN 41 PIN FEM	EA	1.00
REF100	300-00828-0000		ASSEMBLY, REAR GEA	RF	.00
	016-01007-0005		LOCTITE 222	AR	1.00
	016-01268-0000		LOCTITE 271	AR	1.00
	029-00352-0000		GEAR 12/35T	EA	2.00
	029-00404-0000		GEAR 14T	EA	1.00
	030-01007-0000		TAB LOCKING	EA	2.00
	047-04782-0002		PLATE W/F & PVT	EA	1.00
	073-00222-0003		GEAR PLATE REAR	EA	1.00
	076-00820-0001		SPACER - COVER	EA	1.00
	089-05903-0003		SCR PHP 4-40X3/16	EA	2.00
	089-06022-0004		SCR SHC 2-56X1/4	EA	2.00
	090-00186-0000		RETAINER RING	EA	2.00
	150-00018-0010		TUBING SHRINK WHT	IN	1.20

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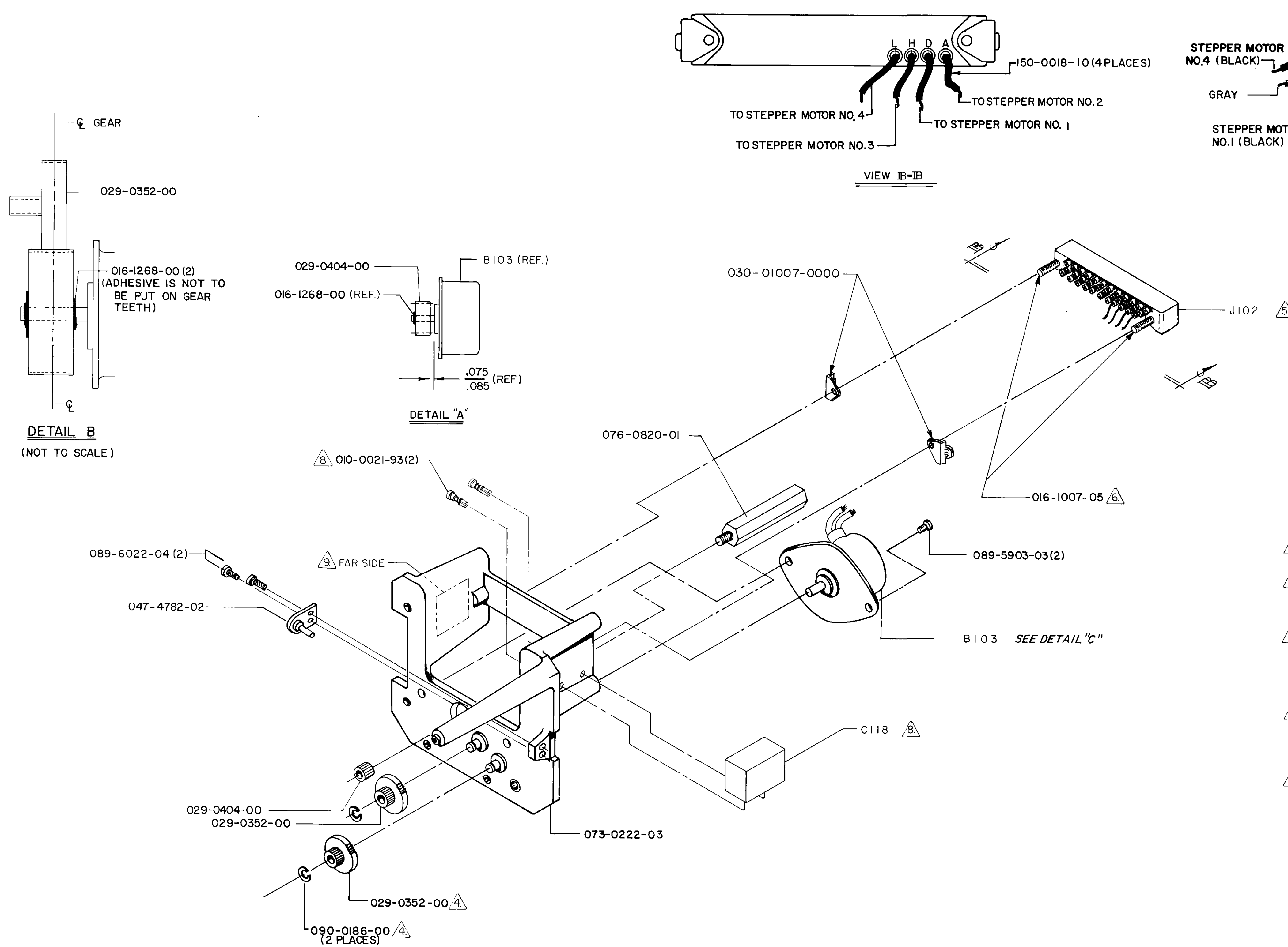

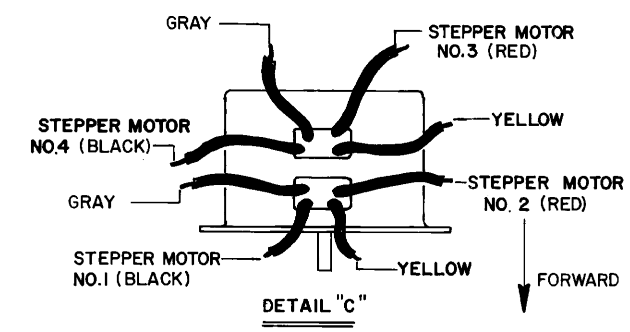

NOTES

1. NOTED REMOVED.
2. LIQUID STAKE ALL FASTENERS PER 001-01080-0000
3-ASSEMBLE GEAR 029-0404-00 ON TO MOTOR SHAFT AND SECURE WITH 016-1268-00 ANAEROBIC ADHESIVE. CAUTION–NO ADHESIVE SHALL REMAIN ON TEETH OF GEAR (SEE DETAIL A THIS DRAWING.)
4-AFTER GRIP RING (090-0186-00) HAS BEEN ASSEMBLED TO THE SHAFT, THE GEAR (029-0352-00) MUST HAVE .010/.020 INCHES AXIAL FREEDOM ALONG THE SHAFT.
5 REMOVE THE 2(TWO) HEX NUTS AND 2(TWO) LOCKWASHERS FROM THE KEYING PINS ON THE CONNECTOR J102 BEFORE THREADING THE KEYING PINS INTO THE REAR GEAR PLATE(073-0222-03). USE CARE TO INSURE THAT THE LOCATION OF THE TWO KEYING PINS IN THE CONNECTOR ARE NOT INTERCHANGED.
6- APPLY LIQUID STAKING COMPOUND TO CONNECTOR SCREWS BEFORE ASSEMBLING TO REAR GEAR PLATE.
7-WHEN ASSEMBLING THE 14 TOOTH GEAR (029-0404-00) ON TO THE MOTOR SHAFT, THE ℄ OF THE GEAR SHOULD CORRESPOND WITH THE ℄ OF THE 12/35 TOOTH GEAR (029-0352-00) AS SHOW IN DETAIL B.

8 FOR 200-0631-01 ONLY:
INSTALL TERMINALS (010-0021-93) AND SECURE TO CASTING WITH ADHESIVE (016-1140-00). SOLDER CAPACITOR (C118) TO TERMINALS AND SECURE TO CASTING WITH ADHESIVE (016-1140-00).

9 ASSEMBLY TO BE MARKED PER 001-01101-0000 IN APPROXIMATE AREA SHOWN.

THIS DRAWING NOT COMPLETE WITHOUT PARTS LIST 200-00631-0000 & -0001

FIGURE 6-16 KI 525 REAR PLATE ASSEMBLY
(Dwg. 300-00828-0000 R-AB

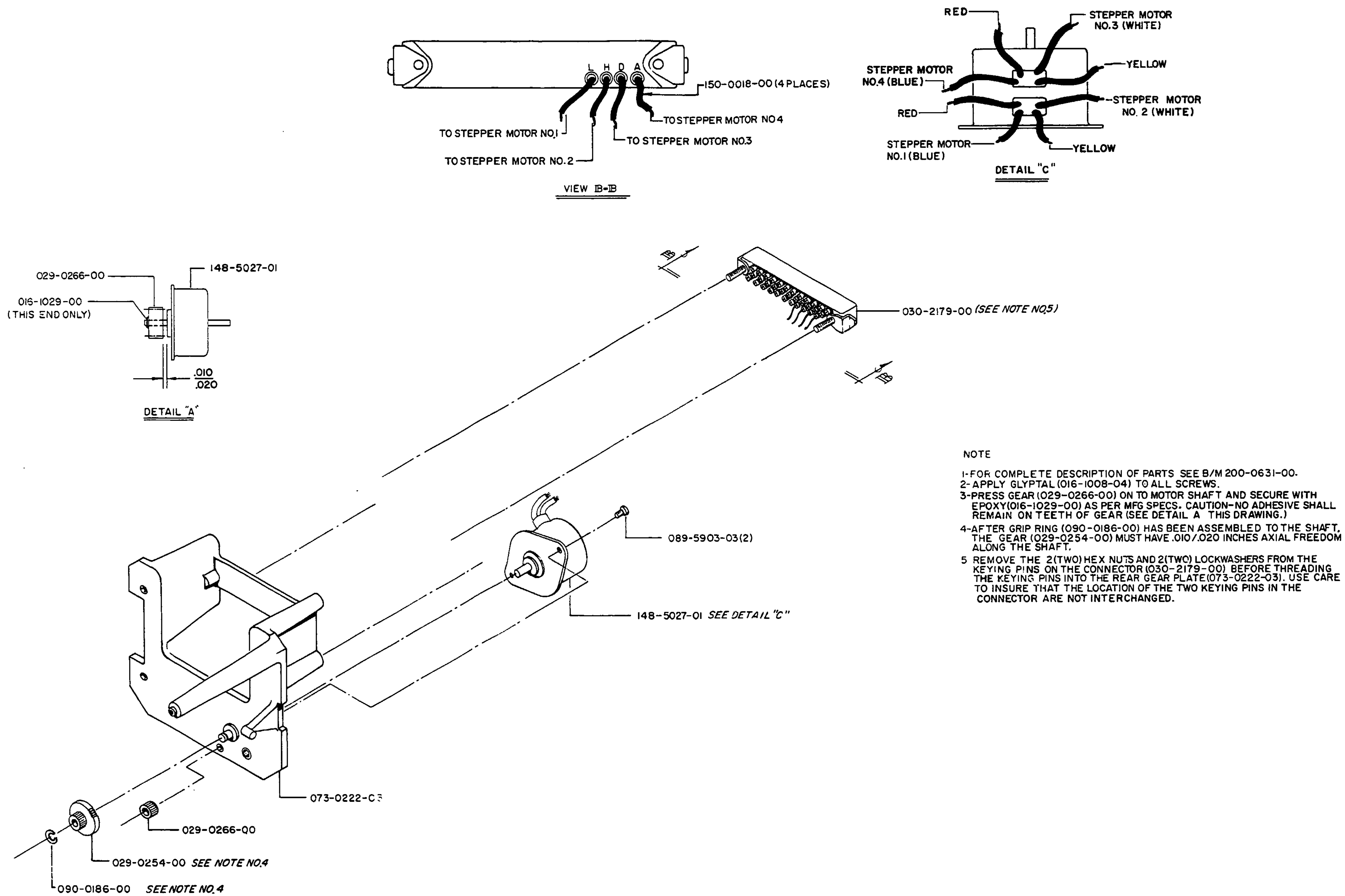

FIGURE 6-16A KI 525 REAR PLATE ASSEMBLY
(Dwg. 300-00828-0000 Old Revision)

6.17 KI 525 P.C. BOARD ASSEMBLY

200-00629-0000 Rev. 18

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
C101	111-00001-0026		CAP CR .33UF 50V	EA	1.00
C104	111-00001-0030		CAP CR .68UF 50V	EA	1.00
C105	111-00001-0028		CAP CR .47UF 50V	EA	1.00
C108	096-01030-0005		CAP TN 10UF 10%20V	EA	1.00
C109	096-01030-0005		CAP TN 10UF 10%20V	EA	1.00
C110	096-01074-0002		CAPACITOR	EA	1.00
C115	111-00001-0000		CAP CR .01UF 50V	EA	1.00
C116	111-00001-0030		CAP CR .68UF 50V	EA	1.00
C117	111-00001-0030		CAP CR .68UF 50V	EA	1.00
C119	111-00001-0006		CAP CR .47UF 50V	EA	1.00
C120	111-02821-0051		CAP MC 820PF100V10	EA	1.00
C121	113-03121-0000		CAP DC 120PF 500V	EA	1.00
C122	113-03121-0000		CAP DC 120PF 500V	EA	1.00
C123	113-03121-0000		CAP DC 120PF 500V	EA	1.00
C124	111-00001-0012		CAP CR .047UF 50V	EA	1.00
C125	111-00001-0012		CAP CR .047UF 50V	EA	1.00
CJ101	026-00018-0001		WIRE CKTJMPR 24AWG	EA	1.00
CJ102	026-00018-0001		WIRE CKTJMPR 24AWG	EA	1.00
CJ105	026-00018-0001		WIRE CKTJMPR 24AWG	EA	1.00
CJ106	026-00018-0001		WIRE CKTJMPR 24AWG	EA	1.00
CR101	007-06023-0000		DIO G 1N277	EA	1.00
CR102	007-06023-0000		DIO G 1N277	EA	1.00
CR103	007-06029-0000		DIO S 1N457A	EA	1.00
CR104	007-05045-0009		DIO Z 1/4M5.1AZ5	EA	1.00
CR105	007-05044-0012		DIO Z 1N5530B 10V	EA	1.00
CR106	007-06029-0000		DIO S 1N457A	EA	1.00
CR107	007-06085-0000		DIO HC 1N5711	EA	1.00
CR108	007-05045-0009		DIO Z 1/4M5.1AZ5	EA	1.00
CR109	007-06029-0000		DIO S 1N457A	EA	1.00
CR110	007-05044-0012		DIO Z 1N5530B 10V	EA	1.00
CR111	007-07004-0001		SOLID STATE LAMP	EA	1.00
CR114	007-05051-0007		DIO Z 1N825A	EA	1.00
CR115	007-07004-0000		DIO L 5082-4480	EA	1.00
CR116	007-06029-0000		DIO S 1N457A	EA	1.00
CR119	007-05011-0017		DIO Z 11V 1W 5%	EA	1.00
CR120	007-06029-0000		DIO S 1N457A	EA	1.00
CR121	007-06029-0000		DIO S 1N457A	EA	1.00
CR122	007-06029-0000		DIO S 1N457A	EA	1.00
CR123	007-06029-0000		DIO S 1N457A	EA	1.00
CR124	007-06029-0000		DIO S 1N457A	EA	1.00
CR125	007-06029-0000		DIO S 1N457A	EA	1.00
CR126	007-06029-0000		DIO S 1N457A	EA	1.00
CR127	007-05044-0009		DIO Z 1N5527B	EA	1.00
CR128	007-05044-0009		DIO Z 1N5527B	EA	1.00
CR129	007-06029-0000		DIO S 1N457A	EA	1.00
CR130	007-06029-0000		DIO S 1N457A	EA	1.00
DS101	037-00028-0006		LMP 5640 T1-1/4 14	EA	1.00
DS102	037-00028-0006		LMP 5640 T1-1/4 14	EA	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
I101	120-03053-0010		IC LM2904 SO PKG	EA	1.00
I102	120-03053-0010		IC LM2904 SO PKG	EA	1.00
I103	120-03052-0007		IC LM224D	EA	1.00
I105	120-03052-0007		IC LM224D	EA	1.00
J101	030-02152-0000		CONN 24P MALE	EA	1.00
Q104	007-00026-0003		XSTR S NPN 2N3416	EA	1.00
Q109	007-00038-0000		XSTR S NPN 2N3053	EA	1.00
R104	131-00391-0023		RES CF 390 QW 5%	EA	1.00
R105	131-00391-0023		RES CF 390 QW 5%	EA	1.00
R106	131-00273-0013		RES CF 27K EW 5%	EA	1.00
R107	131-00393-0013		RES CF 39K EW 5%	EA	1.00
R108	131-00222-0013		RES CF 2.2K EW 5%	EA	1.00
R109	132-00107-0059		RES WW 130 3.25W5%	EA	1.00
R110	131-00102-0033		RES CF 1K HW 5%	EA	1.00
R111	136-01003-0062		RES PF 100K EW 1%	EA	1.00
R112	136-01052-0062		RES PF 10.5K EW 1%	EA	.10
R112	136-01072-0062		RES PF 10.7K EW 1%	EA	.10
R112	136-01102-0062		RES PF 11K EW 1%	EA	.10
R112	136-01132-0062		RES PF 11.3K EW 1%	EA	.10
R112	136-01152-0062		RES PF 11.5K EW 1%	EA	.10
R112	136-01182-0062		RES PF 11.8K EW 1%	EA	.10
R112	136-01212-0062		RES PF 12.1K EW 1%	EA	.10
R113	136-02211-0062		RES PF 2.21K EW 1%	EA	1.00
R114	131-00242-0033		RES CF 2.4K HW 5%	EA	1.00
R115	131-00102-0013		RES CF 1K EW 5%	EA	1.00
R116	131-00364-0013		RES CF 360K EW 5%	EA	1.00
R117	136-01003-0062		RES PF 100K EW 1%	EA	1.00
R118	136-01003-0062		RES PF 100K EW 1%	EA	1.00
R119	131-00181-0023		RES CF 180 QW 5%	EA	1.00
R120	131-00181-0023		RES CF 180 QW 5%	EA	1.00
R121	136-02492-0062		RES PF 24.9K EW 1%	EA	1.00
R122	136-02492-0062		RES PF 24.9K EW 1%	EA	1.00
R123	136-01001-0062		RES PF 1K EW 1%	EA	1.00
R124	136-02003-0062		RES PF 200K EW 1%	EA	1.00
R125	136-05111-0062		RES PF 5.11K EW 1%	EA	1.00
R126	136-01101-0062		RES PF 1.10K EW 1%	EA	1.00
R127	136-05111-0062		RES PF 5.11K EW 1%	EA	1.00
R128	136-02003-0062		RES PF 200K EW 1%	EA	1.00
R129	136-05112-0062		RES PF 51.1K EW 1%	EA	1.00
R130	136-04752-0062		RES PF 47.5K EW 1%	EA	1.00
R131	131-00204-0013		RES CF 200K EW 5%	EA	1.00
R133	131-00181-0023		RES CF 180 QW 5%	EA	1.00
R134	131-00333-0013		RES CF 33K EW 5%	EA	1.00
R135	136-02001-0062		RES PF 2K EW 1%	EA	1.00
R136	136-02001-0062		RES PF 2K EW 1%	EA	1.00
R137	136-03013-0062		RES PF 301K EW 1%	EA	1.00
R138	136-05111-0062		RES PF 5.11K EW 1%	EA	1.00
R139	136-01101-0062		RES PF 1.10K EW 1%	EA	1.00
R140	136-05111-0062		RES PF 5.11K EW 1%	EA	1.00
R141	136-03013-0062		RES PF 301K EW 1%	EA	1.00
R142	131-00623-0013		RES CF 62K EW 5%	EA	1.00
R143	131-00113-0013		RES CF 11K EW 5%	EA	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
R144	131-00153-0013		RES CF 15K EW 5%	EA	1.00
R145	136-02553-0062		RES PF 255K EW 1%	EA	1.00
R146	136-01333-0062		RES PF 133K EW 1%	EA	1.00
R146	136-01373-0072		RES PF 137K QW 1%	EA	1.00
R147	133-00100-0074		RES VA 200K QW 10%	EA	1.00
R148	136-02553-0062		RES PF 255K EW 1%	EA	1.00
R149	131-00911-0013		RES CF 910 EW 5%	EA	1.00
R150	131-00114-0013		RES CF 110K EW 5%	EA	1.00
R151	131-00513-0013		RES CF 51K EW 5%	EA	1.00
R153	131-00222-0023		RES CF 2.2K QW 5%	EA	1.00
R154	132-00105-0053		RES WW 91 1.5W 5%	EA	1.00
R160	131-00364-0013		RES CF 360K EW 5%	EA	1.00
R161	131-00132-0013		RES CF 1.3K EW 5%	EA	1.00
R162	131-00753-0013		RES CF 75K EW 5%	EA	1.00
R164	131-00513-0013		RES CF 51K EW 5%	EA	1.00
R165	131-00104-0013		RES CF 100K EW 5%	EA	1.00
R166	131-00683-0013		RES CF 68K EW 5%	EA	1.00
R167	136-07502-0062		RES PF 75.0K EW 1%	EA	1.00
R168	131-00513-0013		RES CF 51K EW 5%	EA	1.00
R169	133-00100-0075		RES VA 250K QW 10%	EA	1.00
R170	133-00100-0076		RES VA 500K QW 10%	EA	1.00
R171	132-00105-0053		RES WW 91 1.5W 5%	EA	1.00
R172	132-00106-0076		RES WW 500 2.25W5%	EA	1.00
R173	133-00100-0072		RES VA 50K QW 10%	EA	1.00
R174	131-00184-0013		RES CF 180K EW 5%	EA	1.00
R175	136-06042-0062		RES PF 60.4K EW 1%	EA	1.00
R176	136-02743-0062		RES PF 274K EW 1%	EA	1.00
R177	136-01003-0062		RES PF 100K EW 1%	EA	.01
R177	136-01023-0062		RES PF 102K EW 1%	EA	.01
R177	136-01053-0062		RES PF 105K EW 1%	EA	.01
R177	136-01073-0062		RES PF 107K EW 1%	EA	.01
R177	136-01103-0062		RES PF 110K EW 1%	EA	.01
R177	136-01133-0062		RES PF 113K EW 1%	EA	.01
R177	136-01153-0062		RES PF 115K EW 1%	EA	.01
R177	136-01183-0062		RES PF 118K EW 1%	EA	.01
R177	136-01213-0062		RES PF 121K EW 1%	EA	.01
R177	136-01243-0062		RES PF 124K EW 1%	EA	.01
R177	136-01273-0062		RES PF 127K EW 1%	EA	.01
R177	136-01303-0062		RES PF 130K EW 1%	EA	.01
R177	136-01333-0062		RES PF 133K EW 1%	EA	.01
R177	136-01373-0062		RES PF 137K EW 1%	EA	.01
R177	136-01403-0062		RES PF 140K EW 1%	EA	.90
R177	136-01433-0062		RES PF 143K EW 1%	EA	.01
R177	136-01473-0062		RES PF 147K EW 1%	EA	.01
R177	136-01503-0062		RES PF 150K EW 1%	EA	.01
R177	136-01583-0062		RES PF 158K1/8W1%	EA	.01
R177	136-01623-0062		RES PF 162K EW 1%	EA	.01
R177	136-01653-0062		RES PF 165K EW 1%	EA	.01
R177	136-01693-0062		RES PF 169K EW 1%	EA	.01
R177	136-01743-0062		RES PF 174K EW 1%	EA	.01
R177	136-01783-0062		RES PF 178K EW 1%	EA	.01
R177	136-01823-0062		RES PF 182K EW 1%	EA	.01

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
R177	136-01873-0062		RES PF 187K EW 1%	EA	.01
R177	136-01913-0062		RES PF 191K EW 1%	EA	.01
R177	136-01963-0062		RES PF 196K EW 1%	EA	.01
R177	136-02003-0062		RES PF 200K EW 1%	EA	.01
R177	136-02053-0062		RES PF 205K EW 1%	EA	.01
R177	136-02103-0062		RES PF 210K EW 1%	EA	.01
R178	136-04873-0062		RES PF 487K EW 1%	EA	1.00
R179	136-07502-0062		RES PF 75.0K EW 1%	EA	1.00
R180	136-01433-0062		RES PF 143K EW 1%	EA	1.00
R181	136-04873-0062		RES PF 487K EW 1%	EA	1.00
R182	136-01003-0062		RES PF 100K EW 1%	EA	.01
R182	136-01023-0062		RES PF 102K EW 1%	EA	.01
R182	136-01053-0062		RES PF 105K EW 1%	EA	.01
R182	136-01073-0062		RES PF 107K EW 1%	EA	.01
R182	136-01103-0062		RES PF 110K EW 1%	EA	.01
R182	136-01133-0062		RES PF 113K EW 1%	EA	.01
R182	136-01153-0062		RES PF 115K EW 1%	EA	.01
R182	136-01183-0062		RES PF 118K EW 1%	EA	.01
R182	136-01213-0062		RES PF 121K EW 1%	EA	.01
R182	136-01243-0062		RES PF 124K EW 1%	EA	.01
R182	136-01273-0062		RES PF 127K EW 1%	EA	.01
R182	136-01303-0062		RES PF 130K EW 1%	EA	.01
R182	136-01333-0062		RES PF 133K EW 1%	EA	.01
R182	136-01373-0062		RES PF 137K EW 1%	EA	.01
R182	136-01403-0062		RES PF 140K EW 1%	EA	.90
R182	136-01433-0062		RES PF 143K EW 1%	EA	.01
R182	136-01473-0062		RES PF 147K EW 1%	EA	.01
R182	136-01503-0062		RES PF 150K EW 1%	EA	.01
R182	136-01583-0062		RES PF 158K1/8W1%	EA	.01
R182	136-01623-0062		RES PF 162K EW 1%	EA	.01
R182	136-01653-0062		RES PF 165K EW 1%	EA	.01
R182	136-01693-0062		RES PF 169K EW 1%	EA	.01
R182	136-01743-0062		RES PF 174K EW 1%	EA	.01
R182	136-01783-0062		RES PF 178K EW 1%	EA	.01
R182	136-01823-0062		RES PF 182K EW 1%	EA	.01
R182	136-01873-0062		RES PF 187K EW 1%	EA	.01
R182	136-01913-0062		RES PF 191K EW 1%	EA	.01
R182	136-01963-0062		RES PF 196K EW 1%	EA	.01
R182	136-02003-0062		RES PF 200K EW 1%	EA	.01
R182	136-02053-0062		RES PF 205K EW 1%	EA	.01
R182	136-02103-0062		RES PF 210K EW 1%	EA	.01
R183	136-02743-0062		RES PF 274K EW 1%	EA	1.00
R184	131-00513-0013		RES CF 51K EW 5%	EA	1.00
R185	134-01055-0000		PTC THERMISTOR	EA	1.00
R186	134-01055-0000		PTC THERMISTOR	EA	1.00
R187	131-00153-0013		RES CF 15K EW 5%	EA	1.00
R188	131-00394-0013		RES CF 390K EW 5%	EA	1.00
R189	136-05112-0062		RES PF 51.1K EW 1%	EA	1.00
R190	136-01433-0062		RES PF 143K EW 1%	EA	1.00
R191	136-05112-0062		RES PF 51.1K EW 1%	EA	1.00
R192	131-00394-0013		RES CF 390K EW 5%	EA	1.00
R193	136-06042-0062		RES PF 60.4K EW 1%	EA	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
R194	133-00100-0076		RES VA 500K QW 10%	EA	1.00
R195	133-00100-0076		RES VA 500K QW 10%	EA	1.00
R196	133-00100-0076		RES VA 500K QW 10%	EA	1.00
R197	133-00100-0076		RES VA 500K QW 10%	EA	1.00
R198	131-00301-0023		RES CF 300 QW 5%	EA	1.00
R199	131-00301-0023		RES CF 300 QW 5%	EA	1.00
V101	134-05006-0002		PHOTOCELL	EA	1.00
V102	134-05006-0002		PHOTOCELL	EA	1.00
	009-05660-0060		PC BOARD	EA	1.00
	016-01008-0004		GLYPTAL 7526 BL	AR	1.00
	016-01040-0000		COATING TYPE AR	AR	.00
	016-01122-0000		EPOXY DEVCON 14250	AR	.00
	047-02800-0002		SHUTTER W/F	EA	2.00
	047-02844-0001		SLIP RING BRSH W/F	EA	4.00
	088-00336-0008		FLTR LAMP WHT/BLU	EA	2.00
	088-00337-0001		HSG PICK OFF	EA	2.00
	089-02326-0000		NUT TWIN 2-56	EA	2.00
	089-05899-0004		SCR PHP 2-56X1/4	EA	8.00
	089-08012-0037		WSHR INTL LK #2	EA	8.00
	091-00210-0000		INSUL XSTR	EA	1.00
	092-05015-0006		EYE FUNN .030X.088	EA	4.00
	150-00003-0010		TUBING TFLN 24AWG	IN	1.20
	150-00005-0010		TUBING TFLN 20AWG	IN	2.00
	300-00826-0000		PCB ASSY	RF	.00

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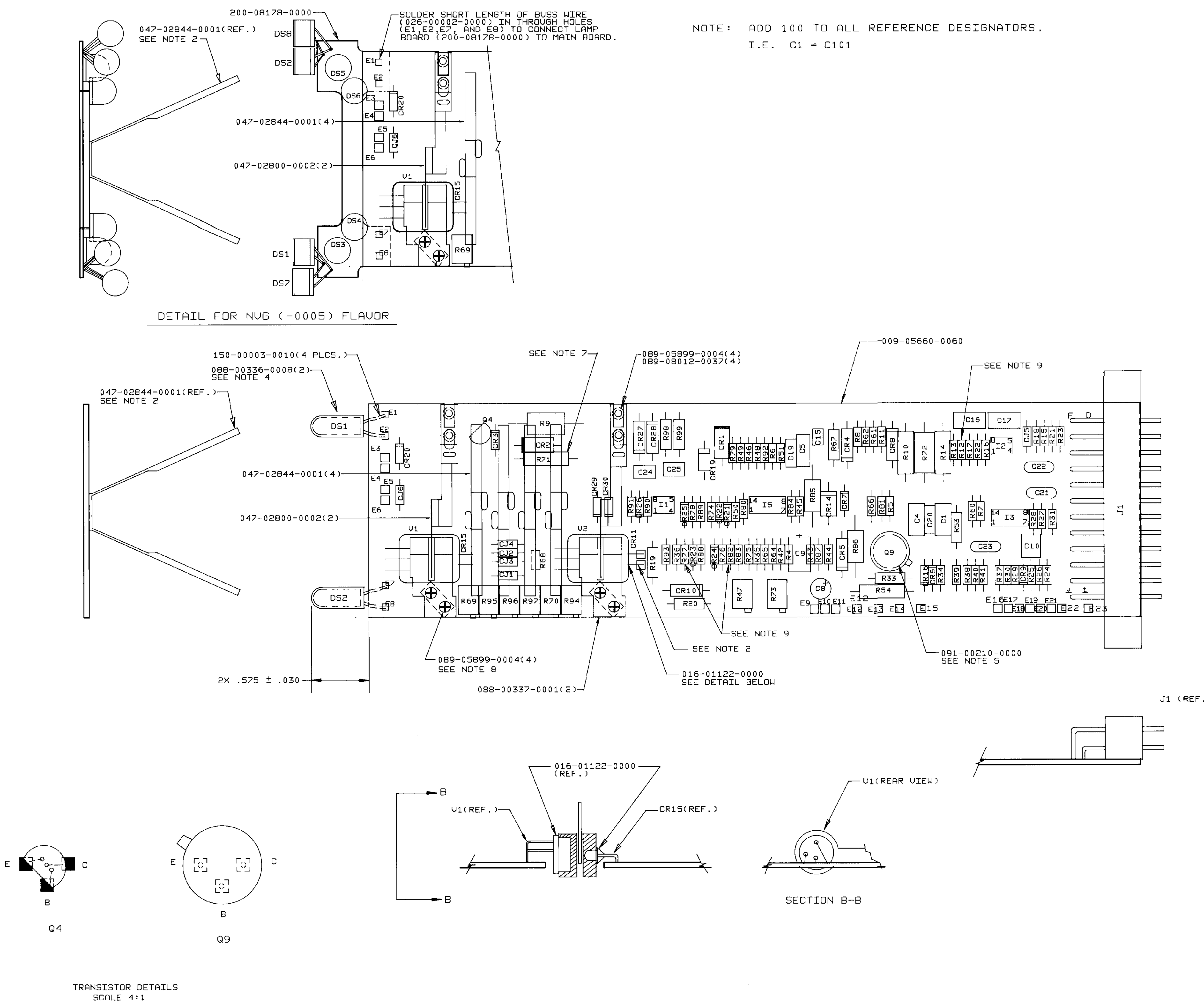
NOTE: ADD 100 TO ALL REFERENCE DESIGNATORS.
I.E. C1 = C101



NOTES:

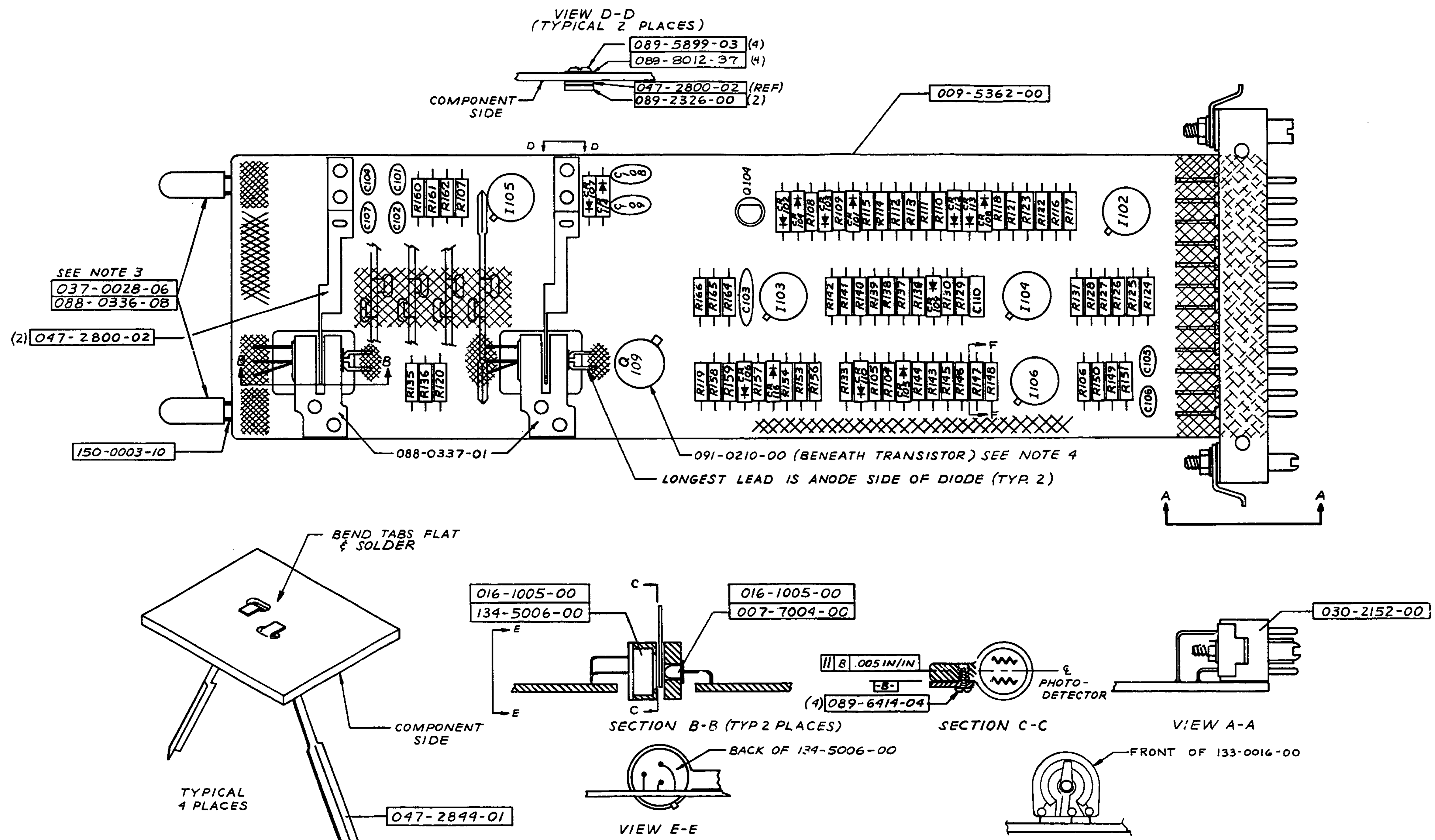
1. PRIOR TO POST COATING BOTH SIDES OF P.C. BOARD WITH KPN 016-01040-0000, MASK OFF THE FOLLOWING; ALL MOUNTING AREAS, ALL "E" NUMBERS, DS1, DS2, J1, CR11, CR15, V1, V2, 088-00337-0001, 047-02844-0001, 047-02800-0002, R69, R70.
2. TO ATTACH 047-02844-0001 TO P.C. BOARD, PUSH TABS THROUGH SLOTS. BEND TABS FLUSH TO BOARD AND SOLDER IN PLACE.
3. THE LONGEST LEAD OF CR11 AND CR15 IS THE ANODE.
4. TRIM FILTER (088-00336-0008) TO LENGTH OF LAMPS (DS1 AND DS2).
5. THE MAXIMUM HEIGHT OF Q9 IS .300" ABOVE BOARD.
6. C16 AND C17 MUST HAVE ONE OR BOTH LEADS LIFTED WHILE SELECTING R12. (R12 IS SELECTED TO MEET THE REQUIREMENTS OF MPS 004-00131-0000 STEPS 6.3.3 THRU 6.3.7).
7. MOUNT R71 .125±.025" OFF BOARD.
8. SECURE ALL THREADED FASTENERS PER 001-01080-0000. ALSO APPLY LOCKING COMPOUND BETWEEN EACH HOUSING (088-00337-0001) AND P.C. BOARD. USE MINIMAL TORQUE TO TIGHTEN SCREWS TO AVOID DEFORMING HOUSINGS.
9. INSTALL R77, R82, AND R12 ON SOLDER SIDE OF P.C. BOARD.

REWORK NOTES:

A. ON BACK OF P.C. BOARD, CONNECT J1 PIN K TO E23.

REF. B/M: 200-00629-0000

FIGURE 6-17 KI 525 P.C. BOARD ASSEMBLY
(Dwg. 300-00826-0000 R-12)



NOTES :
1) FOR COMPLETE ITEM DESCRIPTION SEE B/M 200-0629-00 .
2) AFTER ASSEMBLY APPLY URETHANE CLEAR COAT TO ALL SURFACES OF BOARD EXCEPT CROSS-HATCHED AREAS (CROSS-HATCHING PERTAINS TO BOTH SIDES OF BOARD), CONNECTOR CONTACT PINS ; THE PAINTED PORTIONS OF THE TWO SHUTTERS, 047-2800-02 ; THE LIGHT SENSITIVE SURFACES OF THE LIGHT EMITTING DIODES, 007-7004-00 ; AND THE PHOTORESISTORS 134-5006-00 ; THE FOUR SLIP RING BRUSHES, 047-2844-01 ; AND THE TWO LAMPS, 037-0028-06.
3) TRIM FILTER, 088-0336-07, TO LENGTH OF LAMP, 037-0028-06.
4) THE TOP OF THE TRANSISTOR MUST NOT BE HIGHER THAN .300 INCHES ABOVE THE BOARD SURFACE.

FIGURE 6-17A KI 525 P.C. BOARD ASSEMBLY
(Dwg. 300-00826-0000 R-4)

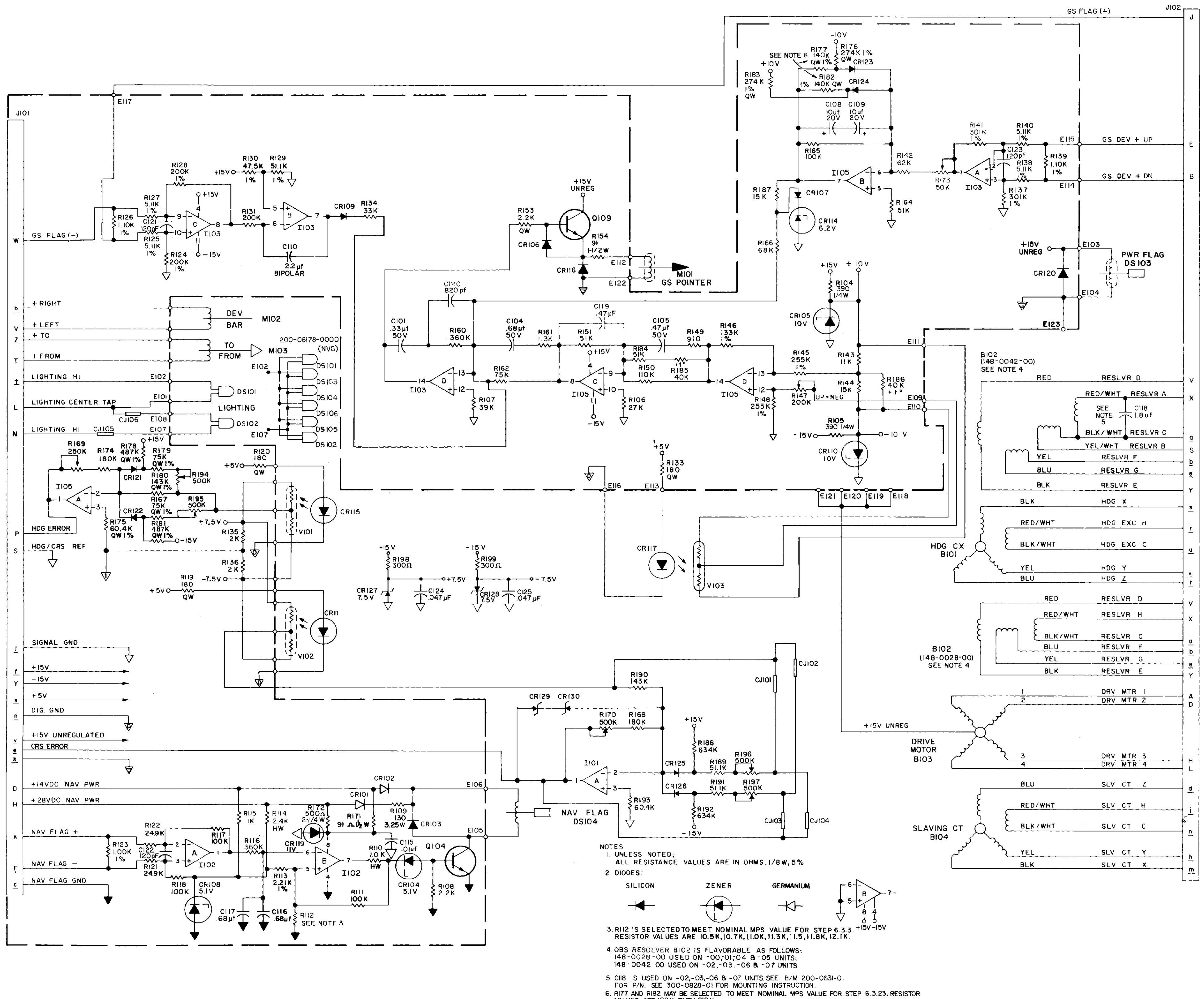


FIGURE 6-18 KI 525 P.C. BOARD SCHEMATIC
(Dwg. 002-00306-0000 R-9)

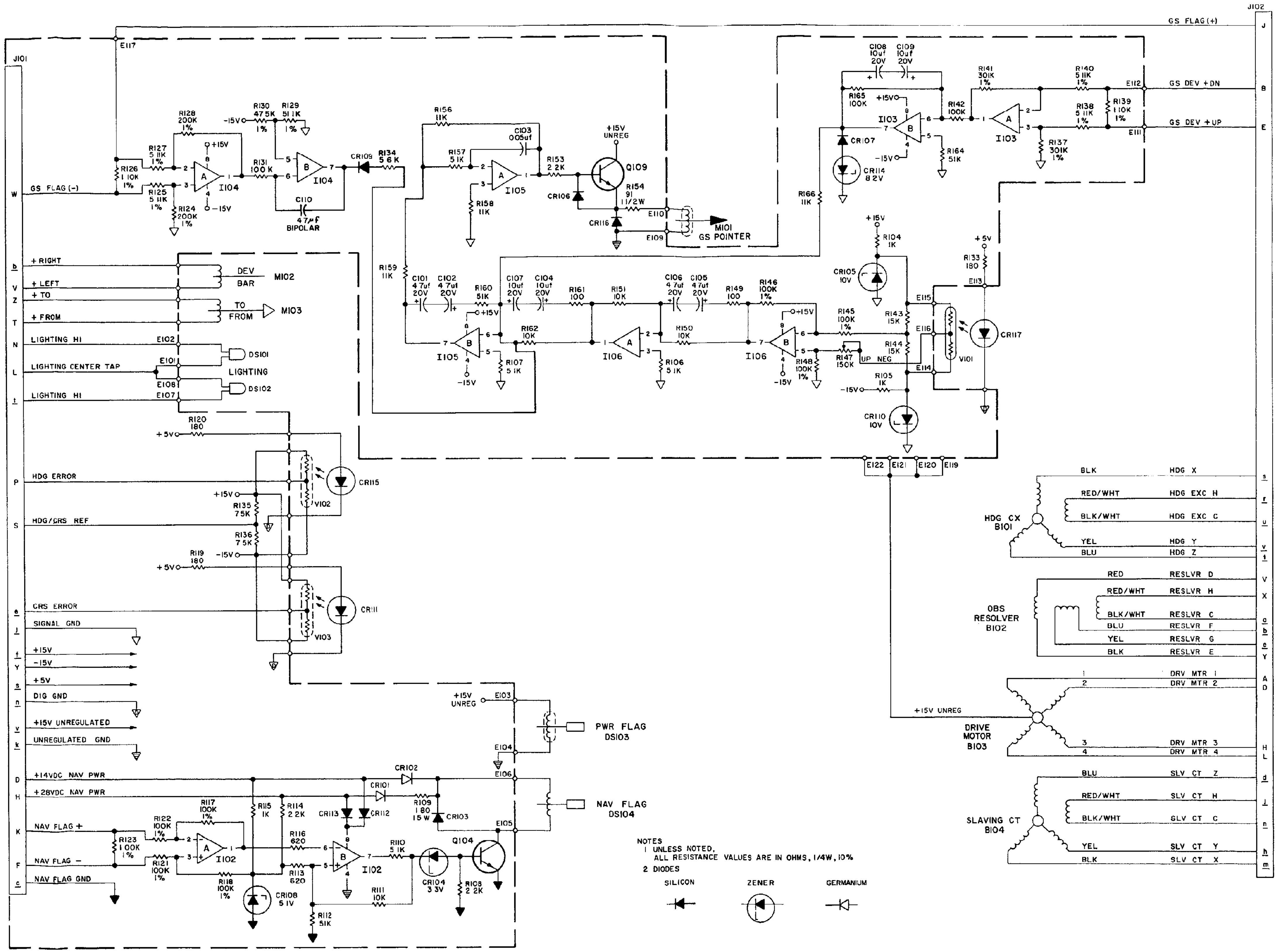


FIGURE 6-18A KI 525 P.C. BOARD SCHEMATIC
(Dwg. 002-00306-0000 R-6)

6.18 KI 525 GLIDESLOPE PLATE ASSEMBLY

200-00643-0000 Rev. AA

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	0000
CR117	007-07004-0000		DIO L 5082-4480	EA	1.00
REF100	300-00839-0000		GLIDESLOPE PLATE	RF	.00
	013-00018-0000		MAGNET	EA	1.00
	016-01013-0000		VAC GREASE DC 976	AR	.00
	016-01122-0000		EPOXY DEVCON 14250	AR	1.00
	019-02184-0000		COIL 125T	EA	1.00
	047-04621-0003		POLE MGNT	EA	1.00
	047-04621-0005		POLE MGNT	EA	1.00
	073-00217-0002		PLATE GS	EA	1.00
	073-00941-0001		GS SUPPORT W/FIN	EA	1.00
	076-00694-0001		SHAFT MAGNET W/F	EA	1.00
	089-05107-0004		SCR, MACH, 2-56, F	EA	4.00
	089-08054-0030		WSHR FLT STD .128	AR	.00
	089-08170-0030		WSHR FLT STD .128	AR	.00
	090-00019-0000		RING RTNR .125	EA	1.00
	147-05006-0008		BEARING BALL	EA	2.00
	150-00018-0010		TUBING SHRINK WHT	IN	12.00

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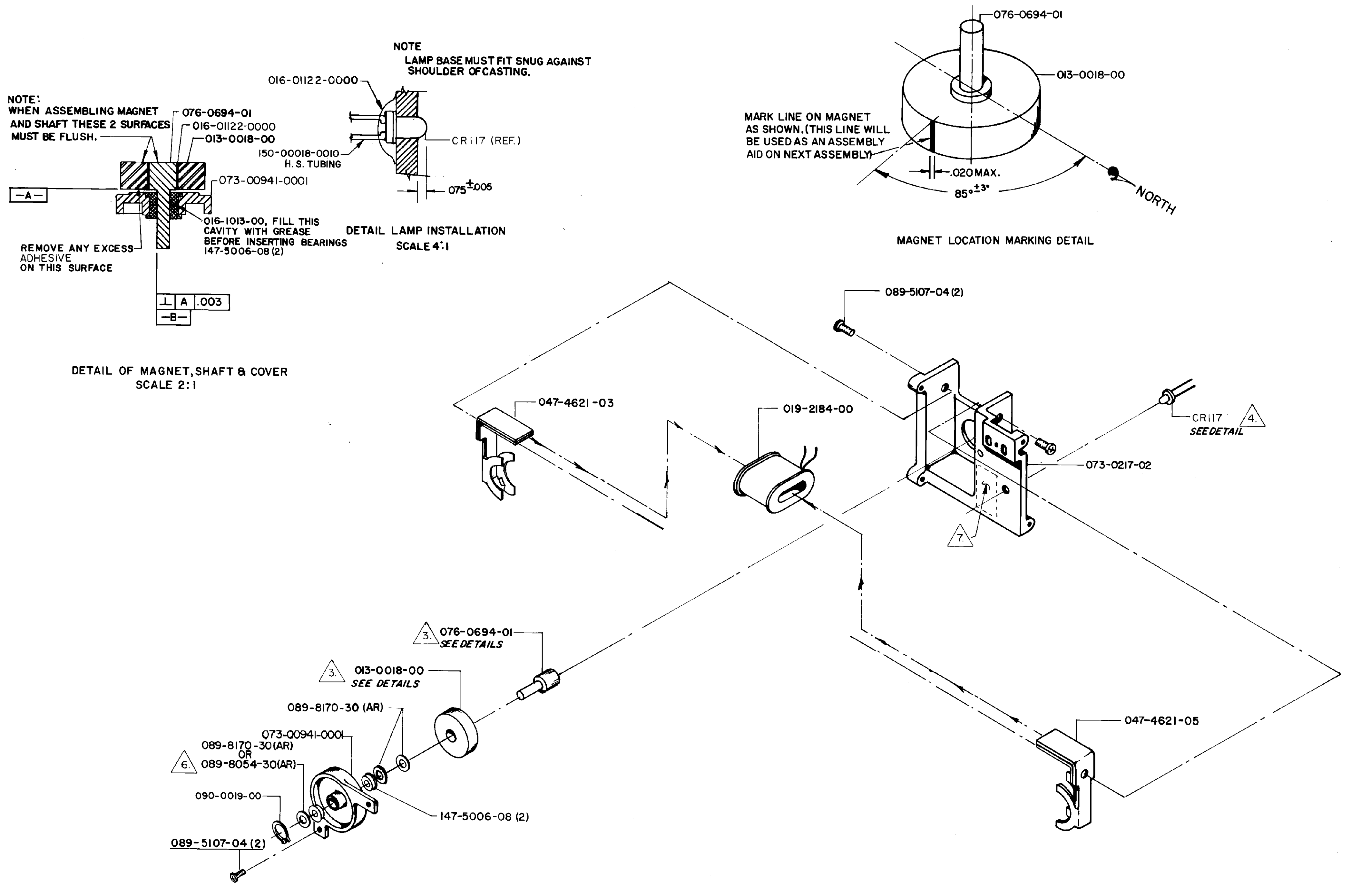

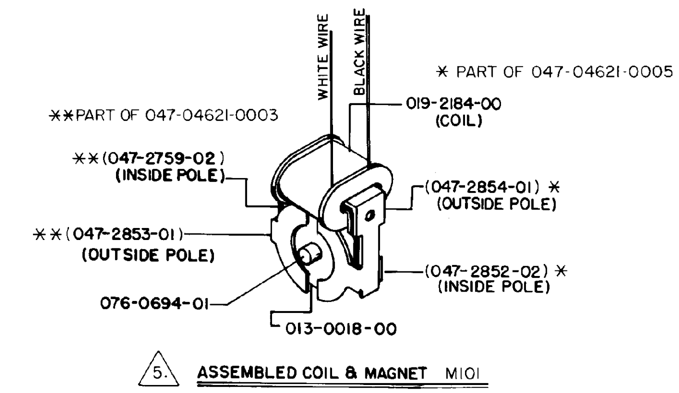

NOTES:
1. NOTE DELETED
2 LIQUID STAKE ALL FASTENERS PER 001-01080-0000.
3. BEFORE INSERTING MAGNET SHAFT (076-0694-01) INTO MAGNET (013-0018-00) APPLY ADHESIVE 016-01122-0000 AS PER SPEC. SEE DETAIL THIS DRAWING.
4. APPLY ADHESIVE 016-01122-0000 TO LAMP (007-7004-00) BASE AND PRESS INTO RECESS ON GLIDE SLOPE PLATE (073-0217-02). BASE FLANGE OF LAMP MUST FIT SNUG AGAINST SHOULDER IN RECESS, SEE DETAIL THIS DRAWING.
5. AFTER THE ASSEMBLED COIL AND MAGNET HAVE BEEN INSTALLED IN THE GLIDESLOPE PLATE (073-0217-02) THE MAGNET SHAFT MUST BE FREE TO ROTATE IN THE SUPPORT (073-00941-0001). THERE MUST BE NO EVIDENCE OF THE MAGNET RUBBING AGAINST ANY OF THE MAGNET POLES WHEN THE MAGNET SHAFT IS ROTATED.
6. THE AXIAL END-PLAY SHALL BE .004 TO .008 INCH. USE SPACER WASHERS 089-8054-30 AND 089-8170-30, AS REQUIRED, TO ADJUST.
7. ASSEMBLY TO BE MARKED PER 001-01101-0000 IN APPROXIMATE AREA SHOWN.

THIS DRAWING NOT COMPLETE WITHOUT PARTS LIST 200-00643-0000

FIGURE 6-19 KI 525 GLIDE SLOPE PLATE ASSEMBLY
(Dwg. 300-00839-0000 R-16)

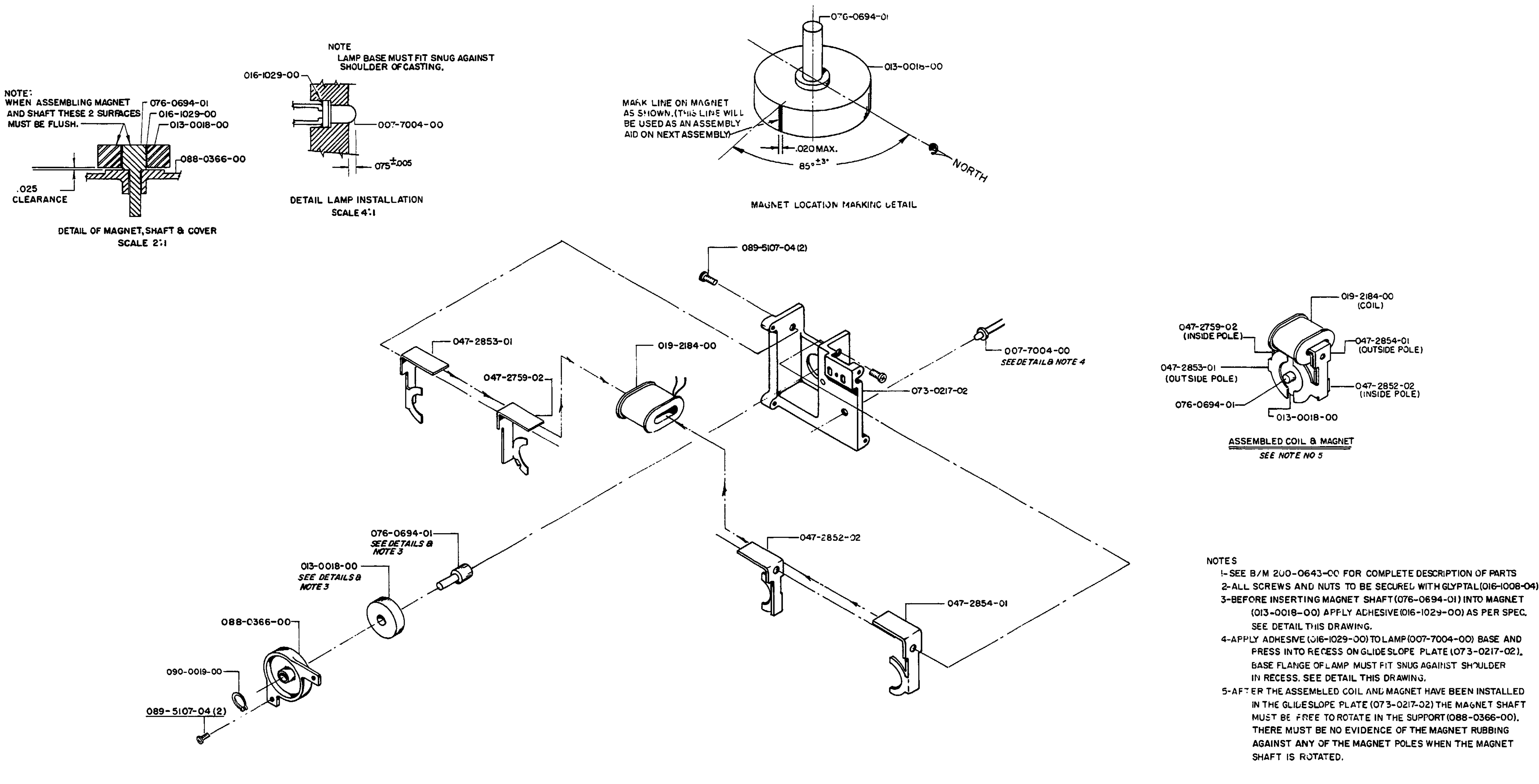

FIGURE 6-19A KI 525 GLIDE SLOPE PLATE ASSEMBLY
(Dwg. 300-00839-0000 Old Revision)