

FAA APPROVED PER STC SA1785CE-D

KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM

FOR

SOCATA TB 10 AND TB 20

TB 10 S/N'S: 275 AND ABOVE
TB 20 S/N'S: ALL

INSTALLATION MANUAL

006-0294-00

REV. 7: OCTOBER 26, 1990

BENDIX/KING

PATENT PENDING

NOTICE

Instrument and gyro repair must be accomplished by a King approved INSTRUMENT SERVICE CENTER. Warranty is valid only when the dust cover seal is intact.

This document originated in the Avionics Certification Center.
Any change in this document must originate in and be approved by the Avionics Certification Center.
Material Review Board action is NOT authorized K-1900

FAA APPROVED INSTALLATION MANUAL
FOR
SOCATA MODELS TB 10 AND TB 20
WITH
KING KAP 100, KAP 150 AND KFC 150 AUTOMATIC FLIGHT CONTROL SYSTEM
LOG OF REVISIONS

Rev. No.	Page Number(s)	Description	Date Of Revision	Approved By*
1	MDL, Cover page various	Updated MDL. Added Model TB 10 airplane to STC. Added sonalert installation for KAP 100 Systems without manual electric trim. Added new models KG 258 and KI 256 Vertical Gyros. Changed text to clarify installation. Revised interconnects.	8/23/85	<i>Stephen Cole</i> Coordinator DAS4CE
2	MDL, Cover 6-1, 6-2, 6-3	Changed roll servo hanger from 047-7295-01 to 047-8302-02.	4/4/86	<i>Stephen Cole</i> Coordinator DAS4CE
3	MDL, Cover 1-5, 3-2, 4-2 Section 7 Section 8	Updated MDL. Changed computer adapter module dash numbers. Changed control wheel and column modification illustration. Changed pitch trim servo illustration to include tubular braces. Changed pitch servo installation to include spacer (KPN 088-1864-00).	8/15/86	<i>Stephen Cole</i> Coordinator DAS4CE
4	MDL, Cover Various	Updated MDL. Added 28VDC Trim Servo and Systems. Added serial number restriction for TB10 of S/N 275 and after.	3/29/88	<i>Stephen Cole</i> Coordinator DAS4CE
5	MDL, Cover 10-9, 10-10	Updated MDL. Corrected 28 volt wiring for pitch and roll servos.	8/8/88	<i>Stephen Cole</i> Coordinator DAS4CE
6	MDL, Cover A-1, 1-3, 1-5, 1-7, 1-9, 10-2, 10-9, 10-10, 11-2, 11-12, 11-1	Revised dash number of KG 258 attitude horizon indicator. Revised electrical interconnects and checkout procedures to accommodate change of dash number.	10/27/89	<i>Chris Dempsey</i> COORDINATOR DAS4CE

*For Authorized FAA Representative

BENDIX/KING

FAA APPROVED INSTALLATION MANUAL

FOR

SOCATA MODELS TB 10 AND TB 20

WITH

KING KAP 100, KAP 150 AND KFC 150 AUTOMATIC FLIGHT CONTROL SYSTEM

LOG OF REVISIONS (CONT'D)

Rev. No.	Page Number(s)	Description	Date Of Revision	Approved By
7	Cover, MDL, 9-1	Corrected MDL. Removed Pilot's Guide from Documentation Installation.	10/26/90	<i>Chris Dunki</i> DAS4CE COORDINATOR APPROVED DATE: 11-89

United States of America
Department of Transportation — Federal Aviation Administration
Supplemental Type Certificate

Number SA1785CE-D

This certificate, issued to King Radio Corporation
400 N. Rogers Rd.
Olathe, KS 66062

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 21.29 of the Federal Aviation & 23 Regulations.

Original Product — Type Certificate Number: A51EU
Make: SOCATA
Model: TB 10, TB 20

Description of Type Design Change: Install KAP 100 single axis, KAP 150 two axis, or KFC 150 two axis Flight Control System with optional KAS 297B Vertical Speed and Altitude Selector. See Continuation Sheet for Data Required.

Limitations and Conditions: This approval in the Model TB 10 is limited to airplane serial numbers 275 and after. This approval should not be extended to other specific airplanes of this model on which other previously approved modifications are incorporated, unless it is determined that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of that airplane.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: 8-13-84

Date issued:

Date of issuance: 11-9-84

Date amended: 3-19-86, 5-6-88



By direction of the Administrator
Ralph V. Cole
(Signature)

Ralph V. Cole
Coordinator, DAS4CE
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

United States of America
Department of Transportation—Federal Aviation Administration
Supplemental Type Certificate
(Continuation Sheet)

Number SA1785CE-D

REQUIRED DATA:

SOCATA Model TB 10

KAP 100 Single Axis Flight Control System

1. Master Drawing List 155-9309-00 Rev. 4, dated 3-14-86.
2. Airplane Flight Manual Supplement 006-0435-00, Rev. 2, dated 3-19-86.

KAP 150 and KFC 150 Two Axis Flight Control System

1. Master Drawing List 155-9309-00 Rev. 4, dated 3-14-86.
2. Airplane Flight Manual Supplement 006-0435-01 Rev. 3, dated 3-19-86.

Optional KAS 297B Vertical Speed and Altitude Selector

1. Master Drawing List 155-9309-00 Rev. 4, dated 3-14-86.
2. Airplane Flight Manual Supplement 006-0435-02 Rev. 1, dated 3-19-86.

SOCATA Model TB 20

KAP 100 Single Axis Flight Control System

1. Master Drawing List 155-9309-00, dated 8-2-84.
2. Airplane Flight Manual Supplement 006-0435-00 dated 11-9-84.

KAP 150 and KFC 150 Two Axis Flight Control System

1. Master Drawing List 155-9309-00, dated 8-2-84.
2. Airplane Flight Manual Supplement 006-0435-01, dated 11-9-84.

Optional KAS 297B Vertical Speed and Altitude Selector

1. Master Drawing List 155-9309-00, dated 8-2-84.
2. Airplane Flight Manual Supplement 006-0435-02 dated 11-9-84.

Later FAA approved revisions to above listed data are incorporated without further revision to the Supplemental Type Certificate.

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-2

TABLE OF CONTENTS

<u>Section</u>	<u>Description</u>	<u>Page</u>
	Log of Revisions	I
	STC Certificate	
	Master Drawing List	
	System Ordering Instructions	A-1
	System Descriptions for SOCATA TB 10	A-3
	System Descriptions for SOCATA TB 20	A-4
1.0	Introduction	1-1
2.0	Indicator Installation	2-1
3.0	Computer/Controller Installation	3-1
4.0	Switch and Circuit Breaker Installation	4-1
5.0	Slip Clutch Values and Capstan Direction	5-1
6.0	Roll Servo and Alerting Installation	6-1
7.0	Pitch Trim Servo Installation	7-1
8.0	Pitch Servo Installation	8-1
9.0	Documentation Installation	9-1
10.0	Electrical Interconnect and Power Distribution Diagrams	10-1
11.0	Ground Checks and Flight Adjustments	11-1
12.0	Appendix	12-1



BENDIX/KING

MASTER DRAWING LIST FOR
 KAP 100, KAP 150 AND KFC 150 INSTALLATION
 IN
 SOCATA MODELS TB 10 AND TB 20

This Master Drawing List is approved for the KAP 100, KAP 150, KFC 150 Systems in the following airplanes:

- 1) SOCATA MODEL TB 10 S/N: 275 and after
- 2) SOCATA MODEL TB 20 S/N: All

DOCUMENT NUMBER: 155-9309-00

DATE: 8/2/84

REV.	C.O. NO.	DATE	BY
1	ENGR.	12/14/84	IR
2	ENGR.	3/13/85	IR
3	ENGR.	8/23/85	IR
4	ENGR.	3/14/86	IR
5	ENGR.	4/4/86	IR
6	ENGR.	8/15/86	IR
7	ENGR.	3/29/88	CO
8	ENGR.	8/88/88	CO
9	ENGR.	10/27/89	LB
10	ENGR.	10/26/90	LB

BENDIX/KING

DOCUMENTS REQUIRED FOR INSTALLER TO INSTALL
KAP 100, KAP 150 AND KFC 150 SYSTEMS

<u>ITEM</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>REV</u>	<u>DATE</u>
1.	006-0294-00	Installation Manual	7	10/26/90
2.	006-0435-00	Flight Manual Supplement	3	
3.	006-0435-01	Flight Manual Supplement	5	
4.	006-0435-02	Flight Manual Supplement	2	

DRAWINGS WHICH DEFINE THE DESIGN
BUT ARE NOT NECESSARY FOR THE INSTALLATION

5.	047-5658-00/01	Pitch Link	1	8/2/84
6.	047-7273-00/03	Switch Mtg Plate	3	8/86
7.	047-7274-00/02	Switch Mtg Brkt	0	8/2/84
8.	047-7281-00/01	Servo Gusset	1	1/85
9.	047-7282-00/02	Pitch Brkt.	2	3/85
10.	047-7283-00/01	Pitch Lever	1	3/86
11.	047-7284-00/01	Trim Servo Brkt	1	3/85
12.	047-7285-00/01	Trim Angle-Top	0	8/2/84
13.	047-7286-00/01	Trim Angle-Bottom	0	8/2/84
14.	047-7287-00/01	Pitch Angle-Top	0	8/2/84
15.	047-7288-00/01	Pitch Angle-Bottom	2	11/85
16.	047-7292-00/01	Control Rod Clamp	0	8/2/84
17.	047-7293-00/01	Roll Servo Clip	0	8/2/84
18.	047-7294-00/01	Roll Servo Support	0	8/2/84
19.	047-7538-00	Rods	2	4/87
20.	047-7539-00	Bulkhead Clips	2	4/87
21.	047-8302-00/02	Roll Servo Hanger	0	4/4/86
22.	047-8303-00/01	Angle	0	4/4/86
23.	057-1906-00	Decal	0	4/30/76
24.	057-2869-00/03	Decals, Cockpit	0	8/2/84
25.	057-3362-00	AP Disc Decal	1	3/14/86
26.	076-1625-00/01	Disconnect Switch Bezel	1	9/84
27.	076-1652-00/01	Switch Mtg Shaft	2	8/86
28.	076-1655-00/01	Servo Standoff	0	8/2/84
29.	076-1656-00/01	Bellcrank Spacer	0	8/2/84
30.	076-1657-00/01	Spacer	0	8/2/84
31.	088-1516-00/01	Switch Cap Base	1	5/85
32.	088-1517-00/02	Switch Cap Cover	1	5/85
33.	088-1864-00	Nylon Roller	2	6/88
34.	088-2165-01	CWS Switch Plug	1	3/14/86
35.	088-2166-01	Trim Switch Plug	1	3/14/86
36.	090-0547-00	Turnbarrel M-UNF	0	8/2/84
37.	090-0548-00	Turnbarrel M-UNF	0	8/2/84
38.	147-0059-00	Bushing, Pitch Link	0	8/11/80
39.	300-3498-00	Trim Cable Splice	0	8/2/84
40.	300-3499-00	Pitch Bridle Cable	0	8/2/84
41.	300-3500-00	Roll Bridle Cable	0	8/2/84
42.	300-3501-00	Switch Brkt Assy	2	1/86
43.	159-8010-00	(Reference) Master Report List DAS4CE-54	0	8/2/84

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00

SYSTEM ORDERING INSTRUCTIONS

The KAP 100 System is a single roll axis autopilot without flight director. The KAP 100 System may be equipped with optional manual electric pitch trim control and/or with KCS 55A Slaved Compass System or the KG 107 non-slaved DG.

The KAP 100 System is a two axis autopilot (roll and pitch axis) with electric pitch trim control and without flight director. The KAP 150 may be equipped with the optional KCS 55A or the KG 107 non-slaved DG.

The KFC 150 System is a two axis autopilot (roll and pitch axis) with electric pitch trim control and flight director. The KCS 55A Slaved Compass System is standard with the KFC 150 System, but it is not a part of the STC.

There are various systems for each airplane. Each system includes the necessary equipment (computers, indicators, controllers, etc.), as well as the basic installation kit (mounting brackets, control cables, switches, hardware, etc.) used for the installation.

CAA APPROVED AIRPLANES

When ordering a KAP 100 System for a CAA approved airplane one of the following KG 258 attitude horizon indicators must be ordered. The KG 258 for the FAA approved airplane will need to be deleted from the KAP 100 System part number. MAKE THIS REQUEST WHEN ORDERING THE SYSTEM.

0 Degree panel KG 258 060-0020-09 CAA installations
8 Degree panel KG 258 060-0020-10 CAA installations

When ordering a KAP 150 System for a CAA approved airplane one of the following KG 258 attitude horizon indicators must be ordered. The KG 258 for FAA approved airplane will need to be deleted from the KAP 150 System part number. MAKE THIS REQUEST WHEN ORDERING THE SYSTEM.

0 Degree panel KG 258 060-0020-07 CAA installations
8 Degree panel KG 258 060-0020-08 CAA installations

Systems have been configured for installation in the field, therefore no additional field installation kit is required as this is included in the System number.

TRANSFERABLE AUTOPILOT (NAV 1/NAV 2 SWITCHING)

For Systems with the KCS 55A Compass System, if it is to be installed so that the autopilot can be transferred from NAV 1 to NAV 2, be sure the compass system is ordered with the optional bootstrap heading output transmitter. A NAV 2 omni bearing indicator will require a course datum synchro. The appropriate King indicators for this type of installation are the KI 202, KI 203, KI 204, and KI 206. When ordering one of these indicators, you must specify course datum synchro required. Please note this option increases the price of these indicators. NAV switching is an option and is not included in the basic systems. Should this option be desired, the following items should be ordered from King Radio. A KA 118-00 or -01, and autopilot switch kit 050-1592-02, or -03. KA 118-00 has an internal oscillator and the KA 118-01 does not have the internal oscillator. The KA 118 with internal oscillator can be used to excite the KI 525A bootstrap heading transmitter which drives the NAV 2 course datum for the autopilot. When the installation does not have a 400 Hz source, the KA 118 with internal oscillator can be used for the above purpose. The KA 118 internal oscillator will provide just enough power to excite the signal KI 525A bootstrap heading transmitter. When the installation does have a 400Hz source, a KA 118 without oscillator can be used. The 050-1592-02 is for 14V airplanes and the 050-1592-03 is for 28V airplanes.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-3

For systems with the KG 107 Directional Gyro only the 050-1592-02 or -03 is required.

	WITH KG 107	WITH KCS 55A
SWITCH KIT 14V	050-1592-02	050-1592-02 KA 118-00 or -01
SWITCH KIT 28V	050-1592-03	050-1592-03 KA 118-00 or -01

ALTITUDE PRESELECT/ALERTING, VERTICAL SPEED SELECT SYSTEM

The Altitude Preselect/Alerting and vertical speed system allows the pilot to select, arm, and upon approaching the preset altitude, capture and automatically engage altitude hold. The system also provides an altitude alert function and vertical speed preselect and hold. The airplane must be equipped with a KAP 150 or KFC 150 Flight Control System. The system in the airplane must include a KC 191 or KC 192 Flight Computer KPN:

KC 191 065-0054-02 14V
065-0054-03 28V

KC 192 065-0042-02 14V
065-0042-03 28V

The Altitude/VS Preselect is not available for the KAP 100 System.

A KEA 130A encoding altimeter is required for automatic barometric correction and is included in the 150AZALT-XX system.

Also, when used with the KT 76/A or KT 78/A transponder isolation diodes are required for proper operation.

SPECIAL PARTS

The airplane wiring harness is not provided nor is it available from King Radio. You must fabricate or obtain your airplane wiring harness from someone other than King Radio. Mating connectors are supplied as part of the airplane installation kit. Circuit breakers are not provided for any system.

A Marker Beacon Receiver is listed as required equipment. It is not required for KAP 100 Systems, but is required for all KAP/KFC 150 Systems.

TEST SET

The KTS 158 test set is required for all KAP 100/KAP 150 Autopilot and KFC 150 Flight Director/Autopilot installations. The test set is designed for maintenance of the KAP 100/KAP 150/KFC 150 Systems, and will perform both the ramp check function as well as the bench unit repair function. The installation and checkout of these Systems can not be satisfactorily completed without a KTS 158.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-3

AIRPLANE: SOCATA TB 10

STC NUMBER: SA1785CE-D

LIMITATIONS: 1) 14 Volt DC Electrical Systems Only
2) S/N: 275 and after

		HEADING SYSTEM		
		KG 107 DIR. GYRO	KCS 55A W/O BOOTSTRAP	KCS 55A W/BOOTSTRAP
ROLL AXIS AUTOPILOT	*KAP 100	100ATB10-04	100ATB10-05	100ATB10-06
	*KAP 100 W/MAN ELEC TRIM	100ATB10-07	100ATB10-08	100ATB10-09
TWO AXIS AUTOPILOT	*KAP 150	150ATB10-02	150ATB10-03	150ATB10-04
TWO AXIS AP/FD	KFC 150	NOT AVAIL	150ATB10-51	150ATB10-52

*For CAA (United Kingdom) approved installations, see KAP 100/150, KFC 150 Ordering instructions.

SPECIAL PARTS REQUIRED:

1. Cooling fan: KA 33 or equivalent
2. Marker Beacon Receiver: KMA 24, KR 21 or equivalent
3. Radio Master Switch: 050-2024-00 or equivalent

— OPTIONS —

ALTITUDE/VERTICAL SPEED SELECT SYSTEM: 150AZALT-17 (Not available with KAP 100)
(KAS 297B/KEA 130A)

KA 185 REMOTE MODE ANNUNCIATOR: KA 185-00 use with KFC 150 System
KA 185-02 use with KAP 150 System
(Not available with KAP 100)

NAV 1/NAV 2 SWITCHING: See KAP 100/150. KFC 150 ordering instructions

PUBLICATIONS:

- 006-0294-00 Installation manual
- 006-0435-00 FMS KAP 100
- 006-0435-01 FMS KAP/KFC 150
- 006-0435-02 FMS KAS 297B
- 006-8377-00 Pilot Guide

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-3

AIRPLANE: SOCATA TB 20

STC NUMBER: SA1785CE-D

LIMITATIONS: 1) 14 Volt DC Electrical Systems Only
 2) S/N: ALL

		HEADING SYSTEM		
		KG 107 DIR. GYRO	KCS 55A W/O BOOTSTRAP	KCS 55A W/BOOTSTRAP
ROLL AXIS AUTOPILOT	*KAP 100	100ATB20-04	100ATB20-05	100ATB20-06
	*KAP 100 W/MAN ELEC TRIM	100ATB20-07	100ATB20-08	100ATB20-09
TWO AXIS AUTOPILOT	*KAP 150	150ATB20-02	150ATB20-03	150ATB20-04
TWO AXIS AP/FD	KFC 150	NOT AVAIL	150ATB20-51	150ATB20-52

*For CAA (United Kingdom) approved installations, see KAP 100/150, KFC 150 Ordering instructions.

SPECIAL PARTS REQUIRED:

1. Cooling fan: KA 33 or equivalent
2. Marker Beacon Receiver: KMA 24, KR 21 or equivalent
3. Radio Master Switch: 050-2024-00 or equivalent

— OPTIONS —

ALTITUDE/VERTICAL SPEED SELECT SYSTEM: 150AZALT-17 (Not available with KAP 100)
 (KAS 297B/KEA 130A)

KA 185 REMOTE MODE ANNUNCIATOR: KA 185-00 use with KFC 150 System
 KA 185-02 use with KAP 150 System
 (Not available with KAP 100)

NAV 1/NAV 2 SWITCHING: See KAP 100/150, KFC 150 ordering instructions

PUBLICATIONS:

- 006-0294-00 Installation manual
- 006-0435-00 FMS KAP 100
- 006-0435-01 FMS KAP/KFC 150
- 006-0435-02 FMS KAS 297B
- 006-8377-00 Pilot Guide

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-3

AIRPLANE: SOCATA TB 10

STC NUMBER: SA1785CE-D

LIMITATIONS: 1) 28 Volt DC Electrical Systems Only
2) S/N: 275 and after

		HEADING SYSTEM		
		KG 107 DIR. GYRO	KCS 55A W/O BOOTSTRAP	KCS 55A W/BOOTSTRAP
ROLL AXIS AUTOPILOT	*KAP 100	100ATB10-10	100ATB10-11	100ATB10-12
	*KAP 100 W/MAN ELEC TRIM	100ATB10-13	100ATB10-14	100ATB10-15
TWO AXIS AUTOPILOT	*KAP 150	150ATB10-05	150ATB10-06	150ATB10-07
TWO AXIS AP/FD	KFC 150	NOT AVAIL	150ATB10-53	150ATB10-54

*For CAA (United Kingdom) approved installations, see KAP 100/150, KFC 150 Ordering instructions.

SPECIAL PARTS REQUIRED:

1. Cooling fan: KA 33 or equivalent
2. Marker Beacon Receiver: KMA 24, KR 21 or equivalent
3. Radio Master Switch: 050-2024-01 or equivalent

— OPTIONS —

ALTITUDE/VERTICAL SPEED SELECT SYSTEM: 150AZALT-31 (Not available with KAP 100)
(KAS 297B/KEA 130A)

KA 185 REMOTE MODE ANNUNCIATOR: KA 185-01 use with KFC 150 System
KA 185-03 use with KAP 150 System
(Not available with KAP 100)

* NAV 1/NAV 2 SWITCHING: See KAP 100/150, KFC 150 ordering instructions

PUBLICATIONS:

006-0294-00 Installation manual
006-0435-00 FMS KAP 100
006-0435-01 FMS KAP/KFC 150
006-0435-02 FMS KAS 297B
006-8377-00 Pilot Guide

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-3

AIRPLANE: SOCATA TB 20

STC NUMBER: SA1785CE-D

LIMITATIONS: 1) 28 Volt DC Electrical Systems Only
 2) S/N: ALL

		HEADING SYSTEM		
		KG 107 DIR. GYRO	KCS 55A W/O BOOTSTRAP	KCS 55A W/BOOTSTRAP
ROLL AXIS AUTOPILOT	*KAP 100	100ATB20-10	100ATB20-11	100ATB20-12
	*KAP 100 W/MAN ELEC TRIM	100ATB20-13	100ATB20-14	100ATB20-15
TWO AXIS AUTOPILOT	*KAP 150	150ATB20-05	150ATB20-06	150ATB20-07
TWO AXIS AP/FD	KFC 150	NOT AVAIL	150ATB20-53	150ATB20-54

*For CAA (United Kingdom) approved installations, see KAP 100/150, KFC 150 Ordering instructions.

SPECIAL PARTS REQUIRED:

1. Cooling fan: KA 33 or equivalent
2. Marker Beacon Receiver: KMA 24, KR 21 or equivalent
3. Radio Master Switch: 050-2024-01 or equivalent

— OPTIONS —

ALTITUDE/VERTICAL SPEED SELECT SYSTEM: 150AZALT-31 (Not available with KAP 100)
 (KAS 297B/KEA 130A)

KA 185 REMOTE MODE ANNUNCIATOR: KA 185-01 use with KFC 150 System
 KA 185-03 use with KAP 150 System
 (Not available with KAP 100)

NAV 1/NAV 2 SWITCHING: See KAP 100/150, KFC 150 ordering instructions

PUBLICATIONS:

- 006-0294-00 Installation manual
- 006-0435-00 FMS KAP 100
- 006-0435-01 FMS KAP/KFC 150
- 006-0435-02 FMS KAS 297B
- 006-8377-00 Pilot Guide

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-4

1.0

INTRODUCTION

WARNING

READ THE INSTALLATION MANUAL BEFORE BEGINNING THE INSTALLATION OF THE SYSTEM. AIRPLANE WIRING HARNESS AND CIRCUIT BREAKERS ARE NOT PROVIDED FOR ANY SYSTEM.

If a KCS 55A Compass System is to be installed, refer to the KCS 55A Installation Manual, (KPN 006-0111-XX) for installation instructions of the system components.

The numbers on the photographs indicate the item number on the appropriate parts list. These same numbers are also called out in the corresponding section of text.

Exercise extreme care when unpacking each unit. Make a visual inspection of each unit for evidence of damage incurred during shipment. If a claim for damage is to be made, save the shipping container to substantiate the claim. When all equipment is removed, place in the shipping container all packing materials for use in unit storage or reshipment.

The only tools required are those common tools normally used by an airplane mechanic, with the exception of the item listed below, which must be ordered separately from King Radio Corporation.

KTS 158 Autopilot Tester, KPN 071-5068-00

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-4

1.1 This STC is approved for the following configurations in the SOCATA TB 10 with 14 volt DC Electrical Systems and for S/N's 275 and after.

<u>SYSTEM NUMBER</u>	<u>DESCRIPTION</u>
100ATB10-04:	KAP 100 - Roll Axis Autopilot with Non Slave DG.
100ATB10-05:	KAP 100 - Roll Axis Autopilot with KCS 55A Compass System w/o Bootstrap.
100ATB10-06:	KAP 100 - Roll Axis Autopilot with KCS 55A Compass System w/Bootstrap.
100ATB10-07:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with Non-Slave DG.
100ATB10-08:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
100ATB10-09:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
150ATB10-02:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with Non-Slave DG.
150ATB10-03:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
150ATB10-04:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
150ATB10-51:	KFC 150 - Roll and Pitch Axis Autopilot/Flight Director with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
150ATB10-52:	KFC 150 - Roll and Pitch Axis Autopilot/Flight Director with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
<u>OPTIONS</u> 150AZALT-17:	Altitude Preselect/VS Hold - provides preselection of an altitude with automatic autopilot altitude hold engagement once that altitude is reached. Provides vertical speed hold function as well. Also provides audible and visual altitude alerting. (For use with KAP 150 or KFC 150 systems only.
KA 0185-00:	KFC 150 Remote Mode Annunciator - provides pilot line-of-sight annunciation of autopilot operational modes.
KA 0185-02:	KAP 150 Remote Mode Annunciator - provides pilot line-of-sight annunciation of autopilot operational modes.
None:	Transferable Autopilot - allows switching of autopilot from Nav 1 to Nav 2. (Not available as a system - requires specific equipment).

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00

1.2 The system numbers described in 1.1 consist of the following:

		MODEL SOCATA TB 10, 14 Volt										
		100ATB10-XX					150ATB10-XX					
PART NUMBER	UNIT/DESCRIPTION	-04	-05	-06	-07	-08	-09	-02	-03	-04	-51	-52
060-0020-02	KG 258 Att. Horizon Ind.	-	-	-	-	-	-	1	1	1	-	-
060-0020-04	KG 258 Att. Horizon Ind.	1	1	1	1	1	1	-	-	-	-	-
060-0017-01	KI 256 Flight Dir. Ind.	-	-	-	-	-	-	-	-	-	1	1
050-1518-00	KI 25X Instal Kit	1	1	1	1	1	1	1	1	1	1	1
060-0022-00	KG 107 Directional Gyro Ind	1	-	-	1	-	-	1	-	-	-	-
050-1866-00	KG 107 Instal Kit	1	-	-	1	-	-	1	-	-	-	-
065-0055-02	KC 190 Computer/Controller	1	1	1	1	1	1	-	-	-	-	-
065-0054-02	KC 191 Computer/Controller	-	-	-	-	-	-	1	1	1	-	-
065-0042-02	KC 192 Computer/Controller	-	-	-	-	-	-	-	-	-	1	1
050-1636-00	KC 19X Instal Kit	1	1	1	1	1	1	1	1	1	1	1
065-5025-88	KC 19X Adapter Module	-	-	-	-	-	-	1	1	1	1	1
065-5025-89	KC 19X Adapter Module	-	-	-	1	1	1	-	-	-	-	-
065-5025-90	KC 19X Adapter Module	1	1	1	-	-	-	-	-	-	-	-
065-5045-00	KC 19X Adapter Module	-	-	-	-	-	-	-	-	-	1	1
065-5045-01	KC 19X Adapter Module	-	-	-	-	-	-	-	1	1	-	-
065-5045-02	KC 19X Adapter Module	-	-	-	-	-	-	1	-	-	-	-
065-5045-03	KC 19X Adapter Module	-	1	1	-	-	-	-	-	-	-	-
065-5045-04	KC 19X Adapter Module	1	-	-	-	-	-	-	-	-	-	-
065-5045-05	KC 19X Adapter Module	-	-	-	-	1	1	-	-	-	-	-
065-5045-06	KC 19X Adapter Module	-	-	-	1	-	-	-	-	-	-	-
065-0050-12	KS 177 Pitch Servo	-	-	-	-	-	-	1	1	1	1	1
065-0051-06	KS 178 Roll Servo	1	1	1	1	1	1	1	1	1	1	1
065-0052-13	KS 179 Pitch Trim Servo	-	-	-	1	1	1	1	1	1	1	1
050-1817-00	KS 17X Instal Kit	1	1	1	2	2	2	3	3	3	3	3
050-2295-00	Documentation Kit KK1180	1	1	1	1	1	1	1	1	1	1	1
050-2296-00	Cockpit Kit KK1181	-	-	-	1	1	1	1	1	1	1	1
050-2296-01	Cockpit Kit KK1181	1	1	1	1	1	1	1	1	1	1	1
050-2296-02	Cockpit Kit KK1181	1	1	1	-	-	-	-	-	-	-	-
050-2282-00	Pneumatic Kit KK1175	-	-	-	-	-	-	1	1	1	1	1
050-2297-00	Roll Kit KK1182	1	1	1	1	1	1	1	1	1	1	1
050-2298-00	Trim Kit KK1183	-	-	-	1	1	1	1	1	1	1	1
050-2299-00	Pitch Kit KK1184	-	-	-	-	-	-	1	1	1	1	1
KCS0055A-02	KCS 55A Comp Sys w/o Bstrp	-	1	-	-	1	-	-	1	-	1	-
KCS0055A-03	KCS 55A Comp Sys w/ Bstrp	-	-	1	-	-	1	-	-	1	-	1

OPTIONS

150AZALT-XX		-17
006-0294-00	Installation Manual	1
006-0435-02	Flight Manual Supplement	1
065-0065-00	KAS 297B Alt. Sel.	1
050-2131-00	KAS 297B Installation Kit	1
066-3064-05	KEA 130A Altimeter	1
050-2175-00	KEA 130A Installation Kit	1
050-1839-01	Installation Kit	1
071-1097-14	Light Tray, 14V	1

KA0185-XX		-00	-02
065-0058-00	KA 185 Annunciator	1	-
065-0058-02	KA 185 Annunciator	-	1
050-2025-00	KA 185 Instal Kit	1	1

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-4

1.3 This STC is approved for the following configurations in the SOCATA TB 20 with 14 volt DC Electrical Systems.

<u>SYSTEM NUMBER</u>	<u>DESCRIPTION</u>
100ATB20-04:	KAP 100 - Roll Axis Autopilot with Non Slave DG.
100ATB20-05:	KAP 100 - Roll Axis Autopilot with KCS 55A Compass System w/o Bootstrap.
100ATB20-06:	KAP 100 - Roll Axis Autopilot with KCS 55A Compass System w/Bootstrap.
100ATB20-07:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with Non-Slave DG.
100ATB20-08:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
100ATB20-09:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
150ATB20-02:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with Non-Slave DG.
150ATB20-03:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
150ATB20-04:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
150ATB20-51:	KFC 150 - Roll and Pitch Axis Autopilot/Flight Director with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
150ATB20-52:	KFC 150 - Roll and Pitch Axis Autopilot/Flight Director with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
<u>OPTIONS</u> 150AZALT-17:	Altitude Preselect/VS Hold - provides preselection of an altitude with automatic autopilot altitude hold engagement once that altitude is reached. Provides vertical speed hold function as well. Also provides audible and visual altitude alerting. (For use with KAP 150 or KFC 150 systems only.
KA 0185-00:	KFC 150 Remote Mode Annunciator - provides pilot line-of-sight annunciation of autopilot operational modes.
KA 0185-02:	KAP 150 Remote Mode Annunciator - provides pilot line-of-sight annunciation of autopilot operational modes.
None:	Transferable Autopilot - allows switching of autopilot from Nav 1 to Nav 2. (Not available as a system - requires specific equipment).

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00

1.4 The system numbers described in 1.3 consist of the following:

		MODEL SOCATA TB 20, 14 Volt										
		100ATB20-XX					150ATB20-XX					
PART NUMBER	UNIT/DESCRIPTION	-04	-05	-06	-07	-08	-09	-02	-03	-04	-51	-52
060-0020-02	KG 258 Att. Horizon Ind.	-	-	-	-	-	-	1	1	1	-	-
060-0020-04	KG 258 Att. Horizon Ind.	1	1	1	1	1	1	-	-	-	-	-
060-0017-01	KI 256 Flight Dir. Ind.	-	-	-	-	-	-	-	-	-	1	1
050-1518-00	KI 25X Instal Kit	1	1	1	1	1	1	1	1	1	1	1
060-0022-00	KG 107 Directional Gyro Ind	1	-	-	1	-	-	1	-	-	-	-
050-1866-00	KG 107 Instal Kit	1	-	-	1	-	-	1	-	-	-	-
065-0055-02	KC 190 Computer/Controller	1	1	1	1	1	1	-	-	-	-	-
065-0054-02	KC 191 Computer/Controller	-	-	-	-	-	-	1	1	1	-	-
065-0042-02	KC 192 Computer/Controller	-	-	-	-	-	-	-	-	-	1	1
050-1636-00	KC 19X Instal Kit	1	1	1	1	1	1	1	1	1	1	1
065-5025-82	KC 19X Adapter Module	-	-	-	-	-	-	1	-	1	1	1
065-5025-83	KC 19X Adapter Module	-	-	-	1	1	1	-	-	-	-	-
065-5025-84	KC 19X Adapter Module	1	1	1	-	-	-	-	-	-	-	-
065-5028-83	KC 19X Adapter Module	-	-	-	-	-	-	-	-	-	1	1
065-5028-84	KC 19X Adapter Module	-	-	-	-	-	-	-	1	1	-	-
065-5028-85	KC 19X Adapter Module	-	-	-	-	-	-	1	-	-	-	-
065-5028-86	KC 19X Adapter Module	-	1	1	-	-	-	-	-	-	-	-
065-5028-87	KC 19X Adapter Module	1	-	-	-	-	-	-	-	-	-	-
065-5028-88	KC 19X Adapter Module	-	-	-	-	1	1	-	-	-	-	-
065-5028-89	KC 19X Adapter Module	-	-	-	1	-	-	-	-	-	-	-
065-0050-12	KS 177 Pitch Servo	-	-	-	-	-	-	1	1	1	1	1
065-0051-06	KS 178 Roll Servo	1	1	1	1	1	1	1	1	1	1	1
065-0052-13	KS 179 Pitch Trim Servo	-	-	-	1	1	1	1	1	1	1	1
050-1817-00	KS 17X Instal Kit	1	1	1	2	2	2	3	3	3	3	3
050-2295-00	Documentation Kit KK1180	1	1	1	1	1	1	1	1	1	1	1
050-2296-00	Cockpit Kit KK1181	-	-	-	1	1	1	1	1	1	1	1
050-2296-01	Cockpit Kit KK1181	1	1	1	1	1	1	1	1	1	1	1
050-2282-00	Pneumatic Kit KK1175	-	-	-	-	-	-	1	1	1	1	1
050-2297-00	Roll Kit KK1182	1	1	1	1	1	1	1	1	1	1	1
050-2298-00	Trim Kit KK1183	-	-	-	1	1	1	1	1	1	1	1
050-2299-00	Pitch Kit KK1184	-	-	-	-	-	-	1	1	1	1	1
KCS0055A-02	KCS 55A Comp Sys w/o Bstrp	-	1	-	-	1	-	-	1	-	1	-
KCS0055A-03	KCS 55A Comp Sys w/ Bstrp	-	-	1	-	-	1	-	-	1	-	1

OPTIONS

150AZALT-XX		-17
006-0294-00	Installation Manual	1
006-0435-02	Flight Manual Supplement	1
065-0065-00	KAS 297B Alt. Sel.	1
050-2131-00	KAS 297B Installation Kit	1
066-3064-05	KEA 130A Altimeter	1
050-2175-00	KEA 130A Installation Kit	1
050-1839-01	Installation Kit	1
071-1097-14	Light Tray, 14V	1

KA0185-XX		-00	-02
065-0058-00	KA 185 Annunciator	1	-
065-0058-02	KA 185 Annunciator	-	1
050-2025-00	KA 185 Instal Kit	1	1

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-4

1.5 This STC is approved for the following configurations in the SOCATA TB 10 with 28 volt DC Electrical Systems and S/N's 275 and after.

<u>SYSTEM NUMBER</u>	<u>DESCRIPTION</u>
100ATB10-10:	KAP 100 - Roll Axis Autopilot with Non Slave DG.
100ATB10-11:	KAP 100 - Roll Axis Autopilot with KCS 55A Compass System w/o Bootstrap.
100ATB10-12:	KAP 100 - Roll Axis Autopilot with KCS 55A Compass System w/Bootstrap.
100ATB10-13:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with Non-Slave DG.
100ATB10-14:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
100ATB10-15:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
150ATB10-05:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with Non-Slave DG.
150ATB10-06:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
150ATB10-07:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
150ATB10-53:	KFC 150 - Roll and Pitch Axis Autopilot/Flight Director with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
150ATB10-54:	KFC 150 - Roll and Pitch Axis Autopilot/Flight Director with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
<u>OPTIONS</u> 150AZALT-31:	Altitude Preselect/VS Hold - provides preselection of an altitude with automatic autopilot altitude hold engagement once that altitude is reached. Provides vertical speed hold function as well. Also provides audible and visual altitude alerting. (For use with KAP 150 or KFC 150 systems only).
KA 0185-01:	KFC 150 Remote Mode Annunciator - provides pilot line-of-sight annunciation of autopilot operational modes.
KA 0185-03:	KAP 150 Remote Mode Annunciator - provides pilot line-of-sight annunciation of autopilot operational modes.
None:	Transferable Autopilot - allows switching of autopilot from Nav 1 to Nav 2. (Not available as a system - requires specific equipment).

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00

1.6 The system numbers described in 1.5 consist of the following:

		MODEL SOCATA TB 10, 28 Volt										
		100ATB10-XX					150ATB10-XX					
PART NUMBER	UNIT/DESCRIPTION	-10	-11	-12	-13	-14	-15	-05	-06	-07	-53	-54
060-0020-02	KG 258 Att. Horizon Ind.	-	-	-	-	-	-	1	1	1	-	-
060-0020-04	KG 258 Att. Horizon Ind.	1	1	1	1	1	1	-	-	-	-	-
060-0017-01	KI 256 Flight Dir. Ind.	-	-	-	-	-	-	-	-	-	1	1
050-1518-00	KI 25X Instal Kit	1	1	1	1	1	1	1	1	1	1	1
060-0022-00	KG 107 Directional Gyro Ind	1	-	-	1	-	-	1	-	-	-	-
050-1866-00	KG 107 Instal Kit	1	-	-	1	-	-	1	-	-	-	-
065-0055-03	KC 190 Computer/Controller	1	1	1	1	1	1	-	-	-	-	-
065-0054-03	KC 191 Computer/Controller	-	-	-	-	-	-	1	1	1	-	-
065-0042-03	KC 192 Computer/Controller	-	-	-	-	-	-	-	-	-	1	1
050-1636-00	KC 19X Instal Kit	1	1	1	1	1	1	1	1	1	1	1
065-5029-07	KC 19X Adapter Module	-	-	-	-	-	-	1	1	1	1	1
065-5029-08	KC 19X Adapter Module	-	-	-	1	1	1	-	-	-	-	-
065-5025-90	KC 19X Adapter Module	1	1	1	-	-	-	-	-	-	-	-
065-5045-00	KC 19X Adapter Module	-	-	-	-	-	-	-	-	-	1	1
065-5045-01	KC 19X Adapter Module	-	-	-	-	-	-	-	1	1	-	-
065-5045-02	KC 19X Adapter Module	-	-	-	-	-	-	1	-	-	-	-
065-5045-03	KC 19X Adapter Module	-	1	1	-	-	-	-	-	-	-	-
065-5045-04	KC 19X Adapter Module	1	-	-	-	-	-	-	-	-	-	-
065-5045-05	KC 19X Adapter Module	-	-	-	-	1	1	-	-	-	-	-
065-5045-06	KC 19X Adapter Module	-	-	-	1	-	-	-	-	-	-	-
065-0050-12	KS 177 Pitch Servo	-	-	-	-	-	-	1	1	1	1	1
065-0051-06	KS 178 Roll Servo	1	1	1	1	1	1	1	1	1	1	1
065-0052-16	KS 179 Pitch Trim Servo	-	-	-	1	1	1	1	1	1	1	1
050-1817-00	KS 17X Instal Kit	1	1	1	2	2	2	3	3	3	3	3
050-2295-00	Documentation Kit KK1180	1	1	1	1	1	1	1	1	1	1	1
050-2296-00	Cockpit Kit KK1181	-	-	-	1	1	1	1	1	1	1	1
050-2296-01	Cockpit Kit KK1181	1	1	1	1	1	1	1	1	1	1	1
050-2296-02	Cockpit Kit KK1181	1	1	1	-	-	-	-	-	-	-	-
050-2282-00	Pneumatic Kit KK1175	-	-	-	-	-	-	1	1	1	1	1
050-2297-00	Roll Kit KK1182	1	1	1	1	1	1	1	1	1	1	1
050-2298-00	Trim Kit KK1183	-	-	-	1	1	1	1	1	1	1	1
050-2299-00	Pitch Kit KK1184	-	-	-	-	-	-	1	1	1	1	1
KCS0055A-00	KCS 55A Comp Sys w/o Bstrp	-	1	-	-	1	-	-	1	-	1	-
KCS0055A-01	KCS 55A Comp Sys w/ Bstrp	-	-	1	-	-	1	-	-	1	-	1

OPTIONS

150AZALT-XX		-31
006-0294-00	Installation Manual	1
006-0435-02	Flight Manual Supplement	1
065-0065-00	KAS 297B Alt. Sel.	1
050-2131-00	KAS 297B Installation Kit	1
066-3064-05	KEA 130A Altimeter	1
050-2175-00	KEA 130A Installation Kit	1
050-1839-01	Installation Kit	1
071-1097-28	Light Tray, 28V	1

KA0185-XX		-01	-03
065-0058-01	KA 185 Annunciator	1	-
065-0058-03	KA 185 Annunciator	-	1
050-2025-00	KA 185 Instal Kit	1	1

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-4

1.7 This STC is approved for the following configurations in the SOCATA TB 20 with 28 volt DC Electrical Systems.

<u>SYSTEM NUMBER</u>	<u>DESCRIPTION</u>
100ATB20-10:	KAP 100 - Roll Axis Autopilot with Non Slave DG.
100ATB20-11:	KAP 100 - Roll Axis Autopilot with KCS 55A Compass System w/o Bootstrap.
100ATB20-12:	KAP 100 - Roll Axis Autopilot with KCS 55A Compass System w/Bootstrap.
100ATB20-13:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with Non-Slave DG.
100ATB20-14:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
100ATB20-15:	KAP 100 - Roll Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
150ATB20-05:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with Non-Slave DG.
150ATB20-06:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
150ATB20-07:	KAP 150 - Roll and Pitch Axis Autopilot with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
150ATB20-53:	KFC 150 - Roll and Pitch Axis Autopilot/Flight Director with Electric Pitch Trim Control with KCS 55A Compass System w/o Bootstrap.
150ATB20-54:	KFC 150 - Roll and Pitch Axis Autopilot/Flight Director with Electric Pitch Trim Control with KCS 55A Compass System w/Bootstrap.
<u>OPTIONS</u> 150AZALT-31:	Altitude Preselect/VS Hold - provides preselection of an altitude with automatic autopilot altitude hold engagement once that altitude is reached. Provides vertical speed hold function as well. Also provides audible and visual altitude alerting. (For use with KAP 150 or KFC 150 systems only.
KA 0185-01:	KFC 150 Remote Mode Annunciator - provides pilot line-of-sight annunciation of autopilot operational modes.
KA 0185-03:	KAP 150 Remote Mode Annunciator - provides pilot line-of-sight annunciation of autopilot operational modes.
None:	Transferable Autopilot - allows switching of autopilot from Nav 1 to Nav 2. (Not available as a system - requires specific equipment).

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00

1.8 The system numbers described in 1.7 consist of the following:

		MODEL SOCATA TB 20, 28 Volt										
		100ATB20-XX					150ATB20-XX					
PART NUMBER	UNIT/DESCRIPTION	-10	-11	-12	-13	-14	-15	-05	-06	-07	-53	-54
060-0020-02	KG 258 Att. Horizon Ind.	-	-	-	-	-	-	1	1	1	-	-
060-0020-04	KG 258 Att. Horizon Ind.	1	1	1	1	1	1	-	-	-	-	-
060-0017-01	KI 256 Flight Dir. Ind.	-	-	-	-	-	-	-	-	-	1	1
050-1518-00	KI 25X Instal Kit	1	1	1	1	1	1	1	1	1	1	1
060-0022-00	KG 107 Directional Gyro Ind	1	-	-	1	-	-	1	-	1	-	-
050-1866-00	KG 107 Instal Kit	1	-	-	1	-	-	1	-	-	-	-
065-0055-03	KC 190 Computer/Controller	1	1	1	1	1	1	-	-	-	-	-
065-0054-03	KC 191 Computer/Controller	-	-	-	-	-	-	1	1	1	-	-
065-0042-03	KC 192 Computer/Controller	-	-	-	-	-	-	-	-	-	1	1
050-1636-00	KC 19X Instal Kit	1	1	1	1	1	1	1	1	1	1	1
065-5029-05	KC 19X Adapter Module	-	-	-	-	-	-	1	1	1	1	1
065-5029-06	KC 19X Adapter Module	-	-	-	1	1	1	-	-	-	-	-
065-5025-84	KC 19X Adapter Module	1	1	1	-	-	-	-	-	-	-	-
065-5028-83	KC 19X Adapter Module	-	-	-	-	-	-	-	-	-	1	1
065-5028-84	KC 19X Adapter Module	-	-	-	-	-	-	-	1	1	-	-
065-5028-85	KC 19X Adapter Module	-	-	-	-	-	-	1	-	-	-	-
065-5028-86	KC 19X Adapter Module	-	1	1	-	-	-	-	-	-	-	-
065-5028-87	KC 19X Adapter Module	1	-	-	-	-	-	-	-	-	-	-
065-5028-88	KC 19X Adapter Module	-	-	-	-	1	1	-	-	-	-	-
065-5028-89	KC 19X Adapter Module	-	-	-	1	-	-	-	-	-	-	-
065-0050-12	KS 177 Pitch Servo	-	-	-	-	-	-	1	1	1	1	1
065-0051-06	KS 178 Roll Servo	1	1	1	1	1	1	1	1	1	1	1
065-0052-16	KS 179 Pitch Trim Servo	-	-	-	1	1	1	1	1	1	1	1
050-1817-00	KS 17X Instal Kit	1	1	1	2	2	2	3	3	3	3	3
050-2295-00	Documentation Kit KK1180	1	1	1	1	1	1	1	1	1	1	1
050-2296-00	Cockpit Kit KK1181	-	-	-	1	1	1	1	1	1	1	1
050-2296-01	Cockpit Kit KK1181	1	1	1	1	1	1	1	1	1	1	1
050-2282-00	Pneumatic Kit KK1175	-	-	-	-	-	-	1	1	1	1	1
050-2297-00	Roll Kit KK1182	1	1	1	1	1	1	1	1	1	1	1
050-2298-00	Trim Kit KK1183	-	-	-	1	1	1	1	1	1	1	1
050-2299-00	Pitch Kit KK1184	-	-	-	-	-	-	1	1	1	1	1
KCS0055A-00	KCS 55A Comp Sys w/o Bstrp	-	1	-	-	1	-	-	1	-	1	-
KCS0055A-01	KCS 55A Comp Sys w/ Bstrp	-	-	1	-	-	1	-	-	1	-	1

OPTIONS

150AZALT-XX		-31
006-0294-00	Installation Manual	1
006-0435-02	Flight Manual Supplement	1
065-0065-00	KAS 297B Alt. Sel.	1
050-2131-00	KAS 297B Installation Kit	1
066-3064-05	KEA 130A Altimeter	1
050-2175-00	KEA 130A Installation Kit	1
050-1839-01	Installation Kit	1
071-1097-28	Light Tray, 28V	1

KA0185-XX		-01	-03
065-0058-01	KA 185 Annunciator	1	-
065-0058-03	KA 185 Annunciator	-	1
050-2025-00	KA 185 Instal Kit	1	1

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-4

1.9

EQUIPMENT LOCATIONS FOR SOCATA TB 10 and TB 20

- | | |
|------------------------|-----------------|
| [1] KI 256 OR KG 258 | [6] KS 179 TRIM |
| [2] KC 190, 191 OR 192 | [7] KA 185 |
| [3] KG 107 | [8] KAS 297B |
| [4] KS 177 PITCH | [9] KEA 130 |
| [5] KS 178 ROLL | |

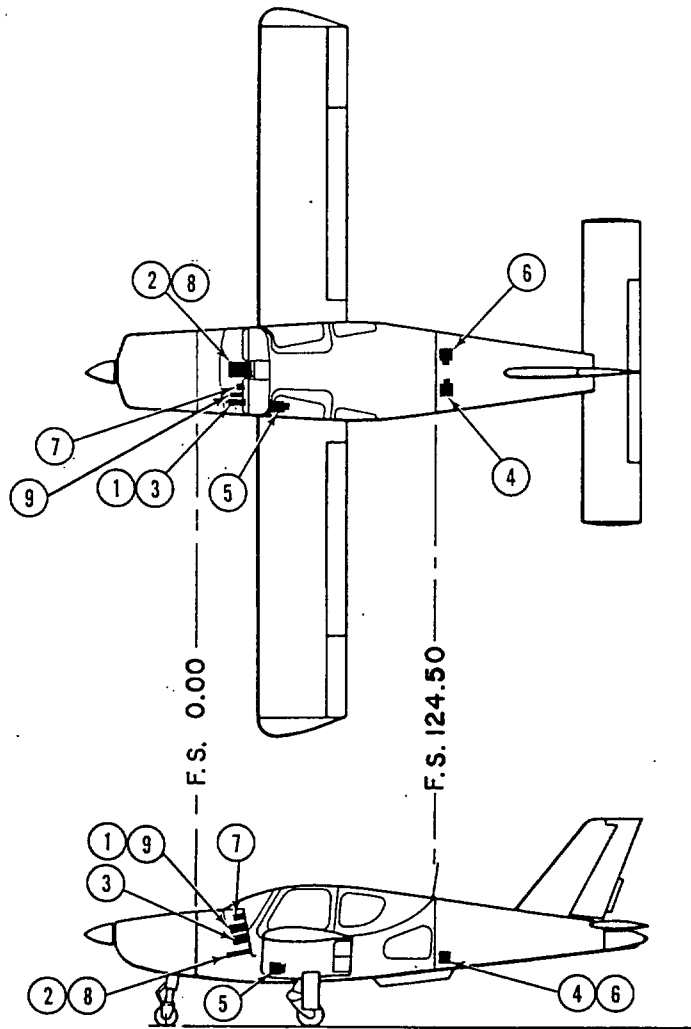


FIGURE 1-A EQUIPMENT LOCATIONS

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-4

• 1.10

The following weights, arms and moments are listed with all components applicable to this STC. The weight and balance data for the specific installation should be derived by only those components which were installed for the specific autopilot configuration.

<u>ITEM</u>	<u>WEIGHT (POUNDS)</u>	<u>ARM (INCHES)</u>	<u>MOMENT</u>
KC 190 Computer Controller	1.90	20.60	39.14
KC 191 Computer Controller	2.30	20.30	46.69
KC 192 Computer Controller	2.50	20.40	51.00
KA 185 Annunciator	0.60	24.45	14.67
KAS 297B Selector	1.10	21.70	23.87
KEA 130 Altimeter	1.90	22.70	43.13
KI 256 Flight Director	3.30	20.50	67.65
KG 258 Attitude Horizon	3.10	20.50	63.55
KG 107 Directional Gyro	2.70	20.50	55.35
KS 177 Pitch Servo	3.32	129.10	428.61
KS 178 Roll Servo	3.23	45.00	145.35
KS 179 Pitch Trim Servo	3.40	129.10	438.94
Pitch & Pitch Trim Mtg. Bracketry	2.71	129.00	349.59
Roll Servo Bracket	0.56	44.00	24.64

1.11

The following current drains are listed with all components applicable to this STC. The electrical load analysis for the specific installation should be derived by only those components which were installed for the specific autopilot configuration.

<u>ITEM</u>	<u>CURRENT DRAIN (AMPS)</u>	
	<u>14 VDC</u>	<u>28 VDC</u>
KC 190 Computer Controller	1.30	0.60
KC 191 Computer Controller	1.80	0.90
KC 192 Computer Controller	1.80	0.90
KEA 130A Altimeter	0.24	0.12
KAS 297B Selector	0.40	0.20
KA 185 Annunciator	1.20	0.60
KI 256 Flight Director	0.70	0.70
KG 258 Attitude Horizon	0.16	0.08
KG 107 Directional Gyro	0.20	0.10
KS 177 Pitch Servo	2.00	1.50
KS 178 Roll Servo	2.00	1.50
KS 179 Pitch Trim Servo	2.00	1.50

If a KCS 55A Slaved Compass System is installed, refer to the KCS 55A Installation Manual for current drains of system components.



KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-5

2.0 INDICATOR INSTALLATION

This section applies to the installation of the KI 256, KG 258, KG 107, optional KA 185, and optional KAS 297B units.

The KI 256/KG 258 Unit Installation Kit 050-1518-00 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
1	030-2002-00	Connector	PMA	1
2	030-1010-00	Connector Hood	PMA	1
3	030-1008-00	Lever/Pivot Assembly	PMA	1
4	047-3937-01	Nut Plate	PMA	1
5	089-5115-12	Screw FH #6-32 x 3/4	PMA	4

The KG 107 Unit Installation Kit 050-1866-00 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
6	030-2016-00	Conn 7 Pin	PMA	1
7	047-3937-01	KI 525A nut plate	PMA	1
8	089-5115-12	Screw FH #6-32 x 3/4	PMA	4

2.1 INDICATOR LOCATION

- A. The KG 258 Attitude Horizon Indicator is to be installed for the KAP 100 and KAP 150 Systems and the KI 256 Flight Director Indicator is to be installed for the KFC 150 Systems.
- B. The KG 107 Non-Slave DG Indicator is to be installed for the KAP 100 and KAP 150 Systems when the KCS 55A Slave Compass System is not installed.
- C. The KG 258 or KI 256 and the KG 107 are mounted on the instrument panel, directly above the pilot's control wheel. The KG 258 or KI 256 occupies the upper position and the KG 107 or KI 525A occupies the lower position. The optional KA 185 is mounted directly above the right hand row of instruments. (See Figure 2-A).

2.2 KG 258 OR KI 256 INSTALLATION

- A. The KG 258 or KI 256 is mounted in the upper indicator cutout of the panel from the front, and is secured from the back per Figure 12-B with the Nut Plate (047-3937-01) (Item 4) and four #6-32 Screws (089-5115-12) (Item 5) that are provided. (Modify panel cutout as necessary per Figure 12-B).

NOTE

BE SURE TO READ SECTION 11.0, GROUND CHECKS, BEFORE INSTALLING THE KI 256 OR KG 258 IN THE AIRPLANE.

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-5

2.2 (Cont'd)

- B. Using the connector (030-2002-00) (Item 1), hood (030-1010-00) (Item 2), and lever/pivot assembly (030-1008-00) (Item 3) provided, connect the wiring to the unit as shown in Section 10 of this manual.
- C. The KI 256 or KG 258 is plumbed in the same manner as any air driven gyro. The ports for vacuum are located on the rear of the unit. The inlet port is clearly marked as such. Use the existing plumbing and hardware to connect the pneumatic gauge lines to the proper fittings. Figure 2-B is used to plumb the gyro to the airplane's existing vacuum or pressure system.
- D. A proper air filtration system is required for the KI 256 and KG 258. Most airplanes being manufactured are equipped with a central filtering system of 0.3 microns capacity. If the airplane is not so equipped, the installing agency must put a filter in to guarantee proper operation of the KI 256 and KG 258.

NOTE

FAA REGULATIONS (REF. FAR 23.1331) REQUIRES THAT A VACUUM/PRESSURE INDICATOR BE INSTALLED TO MONITOR THE AMOUNT OF VACUUM OR PRESSURE SUPPLIED TO THE KI 256 OR KG 258, IF ONE IS NOT ALREADY IN THE AIRPLANE.

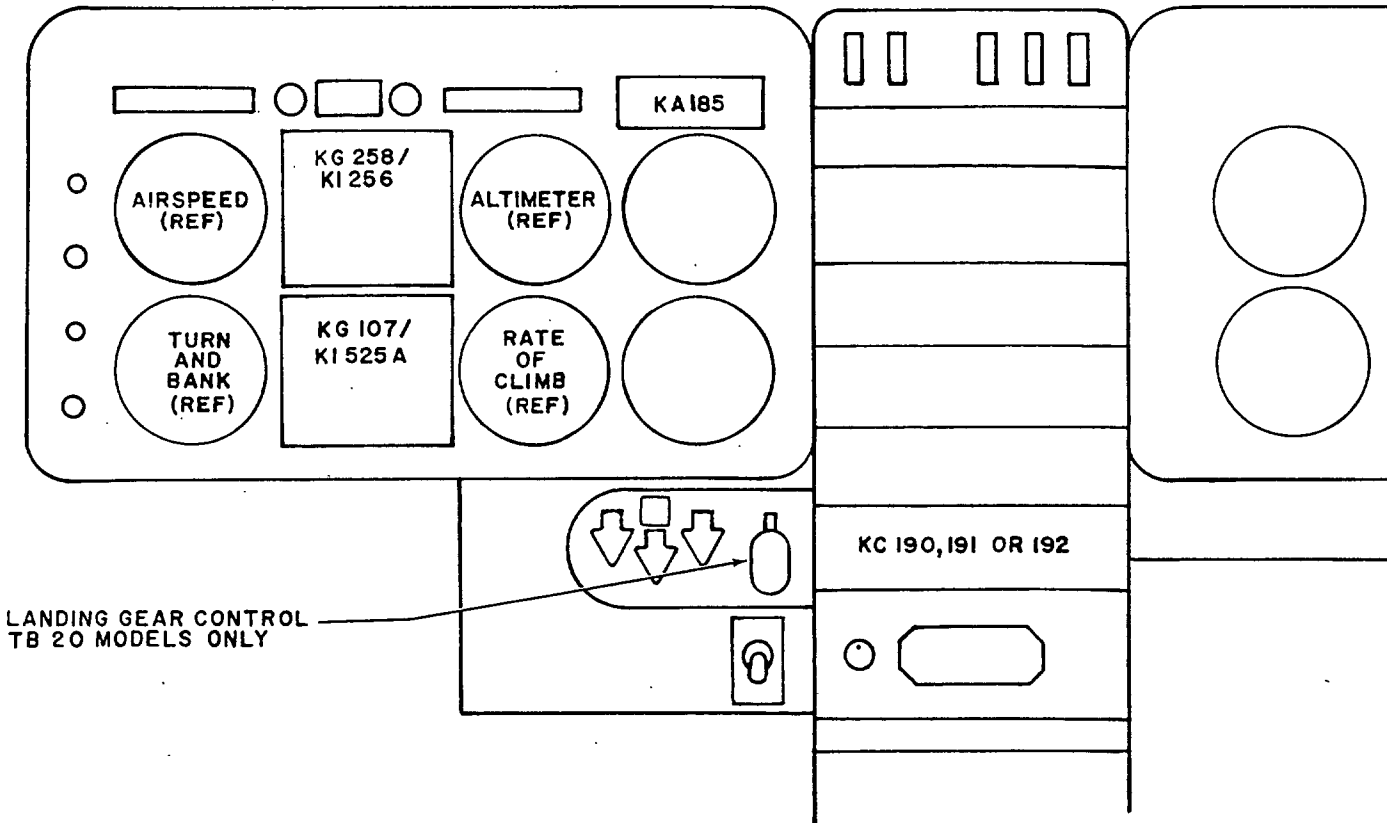


FIGURE 2-A INSTRUMENT PANEL LAYOUT

. KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-5

• 2.3 KG 107 INSTALLATION

- A. The KG 107 is mounted in the lower indicator cutout of the panel from the front and is secured from the back per Figure 12-A with the Nut Plate (047-3937-01) (Item 7) and four #6-32 Screws (089-5115-12) (Item 8) that are provided. (Modify cutout as necessary per Figure 12-A).
- B. Using the connector (030-2016-00) (Item 6) provided, connect the wiring to the unit as shown in Section 10 of this manual.
- C. The KG 107 is plumbed in the same manner as any air driven DG. The ports for vacuum are located on the rear of the unit. The inlet port is clearly marked as such. Use the existing plumbing and hardware to connect the pneumatic gauge lines to the proper fittings. Figure 2-B is used to plumb the gyro to the airplane's existing vacuum system.
- D. A proper air filtration system is required for the KG 107. Most airplanes being manufactured are equipped with a central filtering system of 0.3 microns capacity. If the airplane is not so equipped, the installing agency must put a filter in to guarantee proper operation of the KG 107.

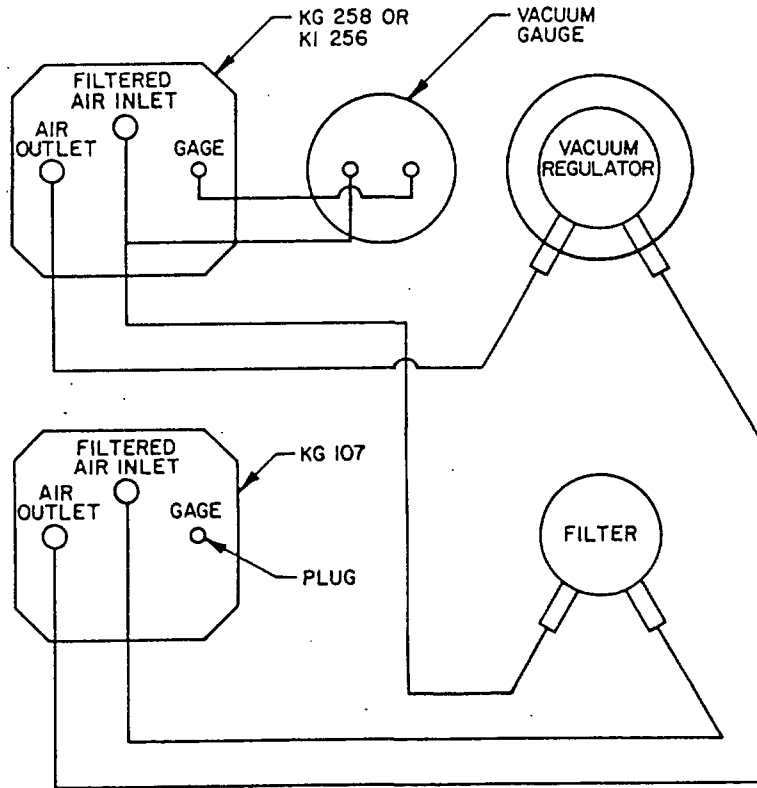


FIGURE 2-B KG 107, KG 258, KI 256 PNEUMATIC PLUMBING

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-5

2.4 OPTIONAL KA 185 UNIT INSTALLATION (KAP 150 & KFC 150 Only)

The KA 185 Unit Installation Kit 050-2025-00 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
9	030-0107-00	Connector	PMA	1
10	047-4886-00	Attaching Ring	PMA	1
11	088-0450-00	Connector Hood	PMA	1
12	089-5111-08	Screw 4-40 x 1/2	PMA	2
13	089-6123-07	Screw 4-40 x 7/16	PMA	2

- A. The KA 185 is mounted in the pilot's instrument panel above the right hand row of instruments. (Cut out panel per Figure 12-K). See Figure 2-A.
- B. Secure the KA 185 to the instrument panel using the attaching ring (047-4886-00) (Item 10) and two screws (089-5111-08) (Item 12).
- C. Using the connector (030-0107-00) (Item 9), Hood (088-0450-00) (Item 11) and two screws (089-6123-07) (Item 13) connect the wiring per Section 10 of this manual.

2.5 OPTIONAL KAS 297B INSTALLATION

The KAS 297B Unit Installation Kit 050-2131-00 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
14	030-2349-16	Connector	PMA	1
15	030-2451-13	Connector Hood	PMA	1
16	071-4029-01	Instrument Clamp	PMA	1
17	089-5115-12	Screw 6-32 X 3/4	PMA	4
18	089-6085-12	Screw 6-32 x 3/4	PMA	4

The KEA 130A Unit Installation Kit 050-2175-00 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
19	030-1025-00	Screw Lock Assy	PMA	2
20	030-1065-00	Connector Hood	PMA	1
21	030-2347-01	Connector, 15 Pin	PMA	1
22	030-2528-00	Connector, 3 Pin	PMA	1
23	089-5115-16	Screw 6-32 x 1	PMA	3
24	089-6085-16	Screw 6-32 x 1	PMA	3

The Installation Kit 050-1839-01 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
25	038-0008-01	Sonalert	PMA	1
26	057-2764-00	Breaker Decal	PMA	1
27	057-2358-00	Decal, Alt. Select	PMA	1

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-5

2.5 (Cont'd)

CAUTION

THE KAS 297B ALTITUDE SELECTOR CAN ONLY BE INSTALLED WITH EITHER A KAP 150 SYSTEM OR A KFC 150 SYSTEM. THE KAS 297B IS NOT A STAND ALONE SYSTEM.

- A. The KEA 130A Encoding Altimeter is located in the normal altimeter opening of the pilot's instrument panel. (Directly to the right of the KG 258/KI 256 unit and above the vertical speed indicator). The KAS 297B Altitude Selector should be located at the bottom of the radio panel so it can be easily seen and reached by the pilot.
- B. Install the KEA 130A Encoding Altimeter in the pilot's instrument panel. Using the connector (030-2347-01) (Item 21), the hood (030-1065-00) (Item 20), the connector (030-2528-00) (Item 22) and the lock assemblies (030-1025-00) (Item 19) connect the wiring per Section 10 of this manual. Apply the breaker decal (057-2764-00) (Item 26) to identify the one amp pullable circuit breaker installed for the KEA 130A.

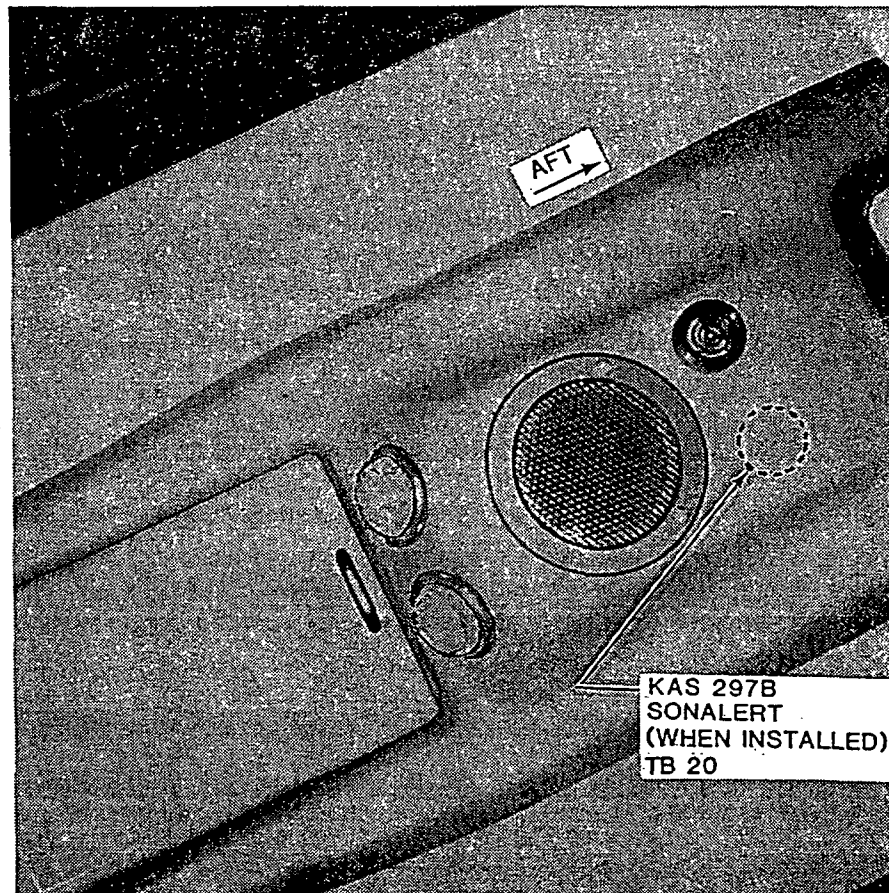


FIGURE 2-C ALT SELECT SONALERT INSTALLATION

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-5

2.5 (Cont'd)

- C. Cut the proper opening in the pilot's instrument panel for installation of the KAS 297B. See Section 12 of this manual for unit dimensions. Install the KAS 297B unit in the pilot's instrument panel.
- D. Using the connector (030-2349-16) (Item 14), hood (030-2451-13) (Item 15), and instrument clamp (071-4029-00) (Item 16) connect the KAS 297B to the wiring harness per Section 10 of this manual.

NOTE

AT THE INSTALLER'S DISCRETION, POWER FOR THE KAS 297B MAY BE PROVIDED THRU A SEPARATE ONE AMP PULLABLE CIRCUIT BREAKER. AN "ALT SELECT" DECAL (057-2358-00) (ITEM 27) IS INCLUDED IN THE INSTALLATION KIT. APPLY THE DECAL TO IDENTIFY THE OPTIONAL CIRCUIT BREAKER.

- E. As shown in Figure 2-C, the sonalert (038-0008-01) (Item 25) can be installed in the copilot's side of the overhead console. Secure the sonalert using the sonalert attaching ring. When the audio alerting from the KAS 297B unit is connected to the airplane's audio amplifier system the KAS 297B Sonalert can be omitted. Connect the wiring per Section 10 of this manual.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-6

3.0 COMPUTER/CONTROLLER INSTALLATION

This section applies to the installation of the KC 190/191/192 units.

The KC 190/191/192 Unit Installation Kit 050-1636-00 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
1	030-1094-68	Conn w/Polarizer	PMA	1
2	030-1094-69	Conn w/Polarizer	PMA	1
3	030-1107-80	Terminal	PMA	1
4	089-2353-01	Nut clip 6-32	PMA	4
5	089-5903-08	Scr PHP 4-40 x 1/2	PMA	4
6	089-6012-08	Scr FHP 6-32 x 1/2	PMA	4
7	090-0253-01	Clamp	PMA	1
8	150-0038-00	Hose	PMA	2 ft.

The Pneumatic Installation Kit 050-2282-00 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
9	089-6426-04	Bolt	AN4-7A	1
10	090-0234-00	Tee Fitting	PMA	2
11	090-0235-00	Corbin Clamp	PMA	6
12	090-0235-01	Corbin Clamp	PMA	1
13	090-0236-01	Hose	MIL-H-5593B	1 ft.
14	090-0236-02	Hose	MIL-H-5593B	5 ft.
15	090-0240-01	Hose Coupling	AN773-3D	1
16	090-0240-02	Hose Coupling	AN773-4D	1
17	090-0253-00	Hose Clamp	PMA	1
18	090-0417-00	Union	AN919-2D	1

3.1 ADAPTER MODULE INSTALLATION

The KC 190/191/192 requires adapter module installation to tailor the unit for the type system as well as the type airplane.

THE ADAPTER MODULES ARE 40 PIN I.C. TYPE UNITS AND EXTREME CARE MUST BE TAKEN NOT TO DAMAGE THE UNIT DURING THE INSTALLATION OF THESE COMPONENTS.

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-6

3.1 (Cont'd)

The following two pages list the tables of adapter modules approved for the SOCATA TB 10 and TB 20 airplanes. Insure the adapter modules are the correct ones for the system installation being made. Verify the voltage of the airplane in which the system is being installed.

SYSTEMS WITH KG 107 DIRECTIONAL GYRO:

SOCATA TB 10 14 Volt DC	KAP 100	KAP 100 w/Elec. Trim	KAP 150
Top Adapter	065-5045-04	065-5045-06	065-5045-02
Bottom Adapter	065-5025-90	065-5025-89	065-5025-88

SOCATA TB 20 14 Volt DC	KAP 100	KAP 100 w/Elec. Trim	KAP 150
Top Adapter	065-5028-87	065-5028-89	065-5028-85
Bottom Adapter	065-5025-84	065-5025-83	065-5025-82

SYSTEM WITH KCS 55A COMPASS SYSTEM:

SOCATA TB 10 14 Volt DC	KAP 100	KAP 100 w/Elec. Trim	KAP 150	KFC 150
Top Adapter	065-5045-03	065-5045-05	065-5045-01	065-5045-00
Bottom Adapter	065-5025-90	065-5025-89	065-5025-88	065-5025-88

SOCATA TB 20 14 Volt DC	KAP 100	KAP 100 w/Elec. Trim	KAP 150	KFC 150
Top Adapter	065-5028-86	065-5028-88	065-5028-84	065-5028-83
Bottom Adapter	065-5025-84	065-5025-83	065-5025-82	065-5025-82

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-6

3.1 (Cont'd)

SYSTEMS WITH KG 107 DIRECTIONAL GYRO:

SOCATA TB 10 28 Volt DC	KAP 100	KAP 100 w/Elec. Trim	KAP 150
Top Adapter Bottom Adapter	065-5045-04 065-5025-90	065-5045-06 065-5029-08	065-5045-02 065-5029-07

SOCATA TB 20 28 Volt DC	KAP 100	KAP 100 w/Elec. Trim	KAP 150
Top Adapter Bottom Adapter	065-5028-87 065-5025-84	065-5028-89 065-5029-06	065-5028-85 065-5029-05

SYSTEM WITH KCS 55A COMPASS SYSTEM:

SOCATA TB 10 28 Volt DC	KAP 100	KAP 100 w/Elec. Trim	KAP 150	KFC 150
Top Adapter Bottom Adapter	065-5045-03 065-5025-90	065-5045-05 065-5029-08	065-5045-01 065-5029-07	065-5045-00 065-5029-07

SOCATA TB 20 28 Volt DC	KAP 100	KAP 100 w/Elec. Trim	KAP 150	KFC 150
Top Adapter Bottom Adapter	065-5028-86 065-5025-84	065-5028-88 065-5029-06	065-5028-84 065-5029-05	065-5028-83 065-5029-05

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-6

3.1 (Cont'd)

After assuring the correct adapters are available, open the KC 190/191/192 Computer by removing the four screws holding the TOP Cover to the unit. Remove the cover which will expose the Top PC Board in place. Remove the five screws which secure the top PC board. (NOTE: The Top PC Board is hinged to the chassis of the computer. DO NOT REMOVE the two screws holding the board to the plastic hinges.) (See Figure 3-A)

Fold the top board open and with the unit firmly supported, install the appropriate adapter module as follows:

Take the top (RED) adapter and install it in the TOP PC BOARD, as indicated in Figure 3-A, with the "PIN 1" aligned with the RED DOT on the PC board. Use care in installing the adapter to not bend any of the pins.

Take the bottom (BLUE) adapter and install it in the BOTTOM PC BOARD, as indicated in Figure 3-A, using the same procedure as for the top board.

If the adapters have to be removed from the unit for any reason, use the IC Extractor tool (088-1094-00) to prevent damaging the adapters. This tool is supplied with the KTS 158 Test Set.

After insuring the adapters are properly installed and seated, carefully fold the top board back in place and secure with the five screws which were removed. Reinstall the top cover using the four screws which were removed and the KC 190/191/192 is ready for installation in the panel.

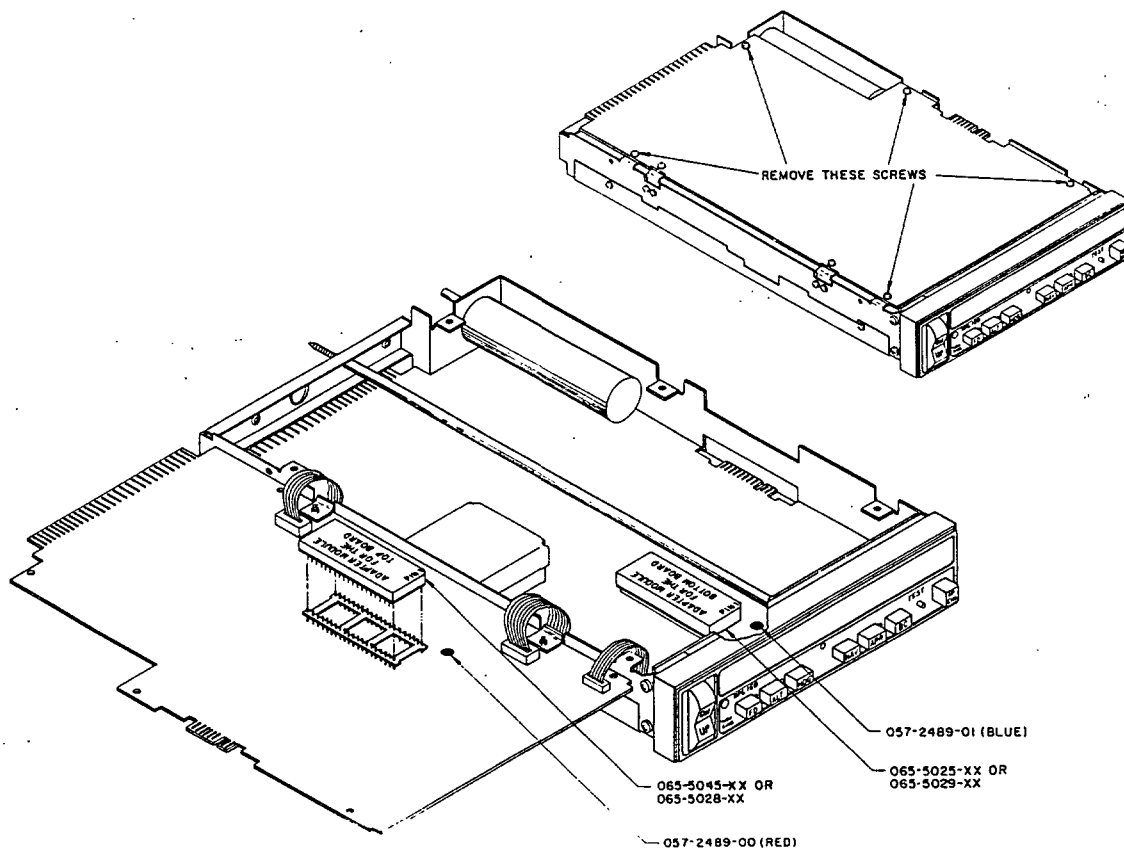


FIGURE 3-A KC 190/191/192 WITH TOP COVER REMOVED
AND TOP PC BOARD FOLDED OPEN

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-6

• 3.2

KC 190/KC 191/KC 192 INSTALLATION

- A. The KC 190 Computer Controller is to be installed for the KAP 100 Systems, the KC 191 for the KAP 150 Systems, and the KC 192 for the KFC 150 Systems.
- B. The KC 190, KC 191 or KC 192 is to be mounted at the bottom of the radio stack as shown in Figure 3-B. The mounting of the unit is similar to the mounting of any panel mounted radio.
- C. Using the appropriate size terminals (030-1107-80) (Item 3), wire per Section 10 and insert terminals into connectors (030-1094-68) (Item 1) and (030-1094-69) (Item 2). Attach the wired connectors to the inside of the rear of the mounting rack (047-5114-03) (supplied with unit) using four #4 screws (089-5903-08) (Item 5).
- D. Using four #6 screws (089-6012-08) (Item 6) and four nut clips (089-2353-01) (Item 4) attach the wired mounting rack to the radio stack structure, and insert the KC 190, KC 191 or KC 192.

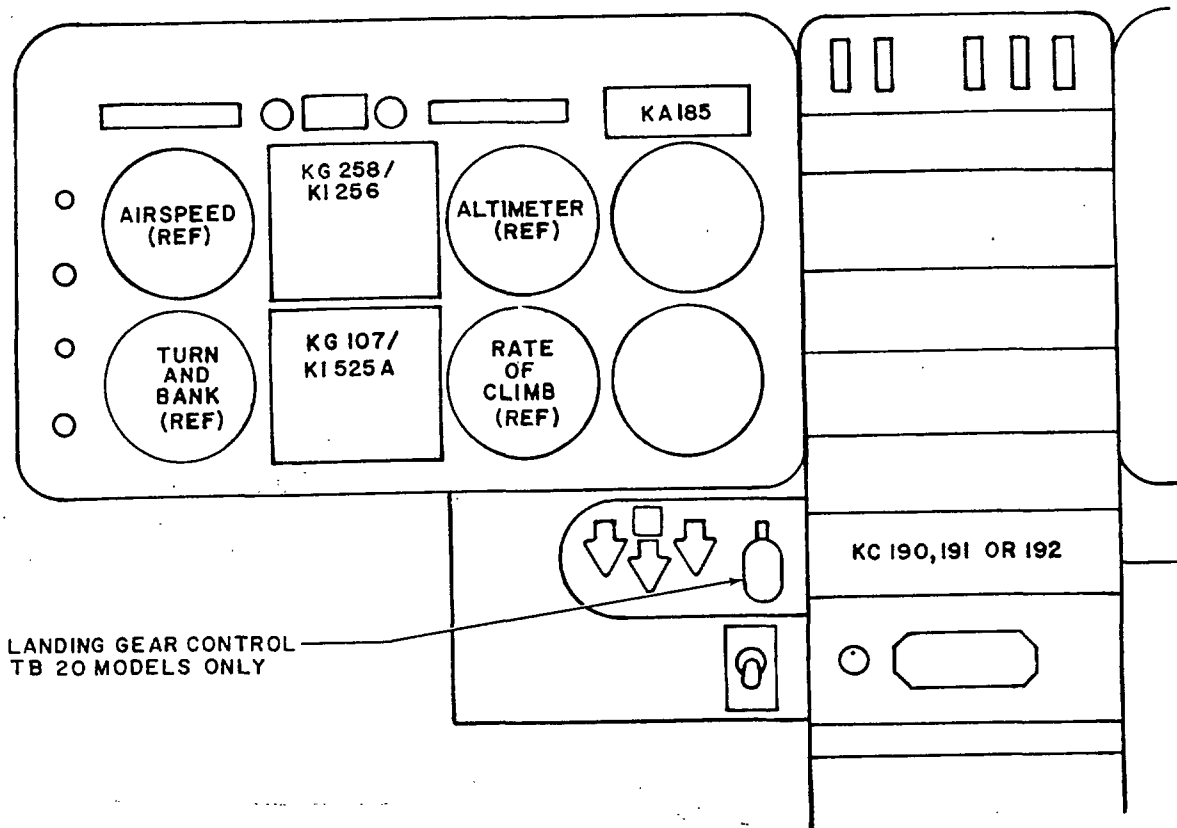


FIGURE 3-B KC 190/191/192 PANEL LOCATION

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-6

3.3 PNEUMATIC INSTALLATION

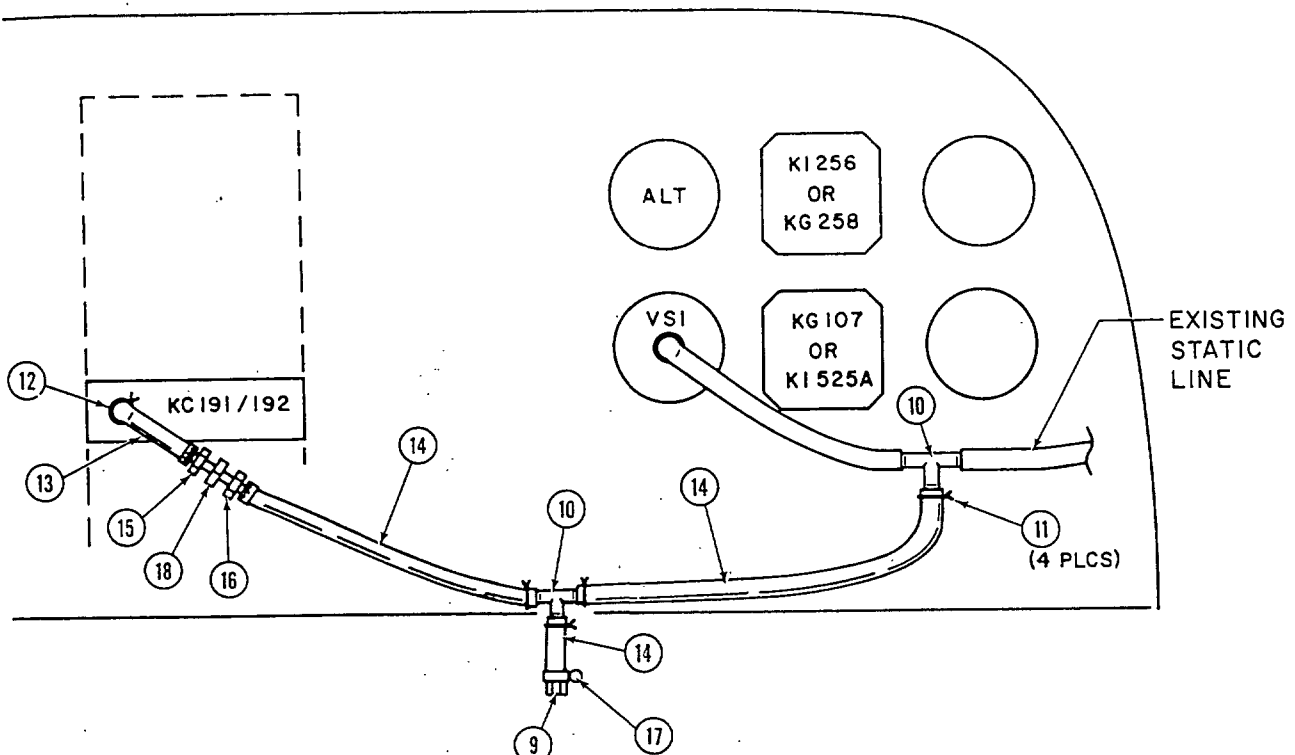
- A. After the KC 191 or KC 192 has been installed in the panel, connect the pneumatic line as shown in Figure 3-C. (The KC 190 does not require the pneumatic line connection.)

NOTE

FAA REGULATIONS (REF. 91.170) REQUIRE THAT ANY LEAKAGE TEST PREVIOUSLY CONDUCTED ON THE PITOT-STATIC SYSTEM MUST BE RECONDUCTED OR AN APPROPRIATE ENTRY MADE IN THE AIRCRAFT LOG BOOK THAT CLEARLY STATES THAT THE PREVIOUS LEAKAGE TESTS ARE NO LONGER VALID.

NOTE

THE KC 190, KC 191 AND KC 192 REQUIRE FORCED AIR COOLING FOR PROPER OPERATION. A COOLING FAN MUST BE INSTALLED WITH ONE AIR DUCT RUNNING TO THE LARGER PORT ON THE REAR OF THE KC 190, KC 191 OR KC 192 MOUNTING RACK. A HOSE (150-0038-00) (ITEM 8) AND CLAMP (090-0253-01) (ITEM 7) ARE SUPPLIED WITH THE KC 19X INSTALLATION KIT FOR THE PURPOSE OF CONNECTING THE FORCED AIR COOLING.



NOTE 1:
 POSITIVE MOISTURE DRAINAGE MUST BE PROVIDED FOR THE KC 191/192 UNIT.

SEE NOTE 1

VIEW LOOKING AFT

FIGURE 3-C KC 191/192 PNEUMATIC PLUMBING

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-7

4.0 SWITCH AND CIRCUIT BREAKER INSTALLATION

The Cockpit Installation Kit 050-2296-00 for use with all systems utilizing electric pitch trim control consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
1	031-0514-00	CWS/Mike Switch	PMA	2
3	047-7273-03	Sw Mtg Plate	PMA	1
4	057-2869-00	Decal MIC	PMA	1
5	088-1516-01	Switch Cap Base	PMA	1
6	088-1517-01	Switch Cap Cover	PMA	1
7	089-5111-12	Screw F.H.P. 4-40 x 3/4	PMA	2
8	089-6344-03	Screw P.H.P. 4-40 x 3/16	PMA	1
9	200-3501-00	Switch Brkt Assy	PMA	1
10	057-2869-01	Decal AP DISC	PMA	1
11	057-2869-02	Decal CWS	PMA	1

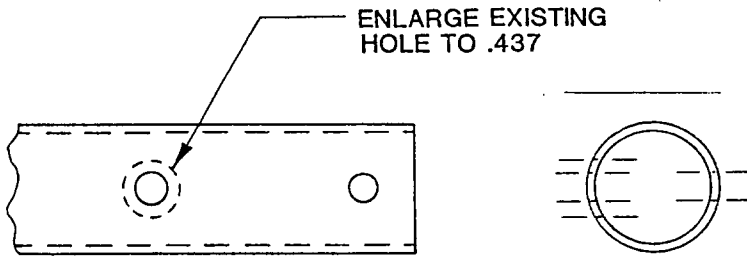
The Cockpit Installation Kit 050-2296-01 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
12	031-0270-00	Autopilot Master Switch	PMA	1
13	057-2869-03	Decal AUTOPILOT	PMA	1
14	057-1906-00	Autopilot Master Decal	PMA	1

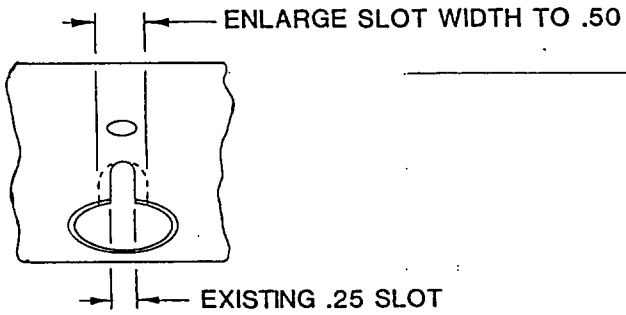
The Cockpit Installation Kit 050-2296-02 for use with TB 10 KAP 100 systems not utilizing electric pitch trim control consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
15	031-0428-00	AP Disc Switch	PMA	1
16	031-0514-00	Mic Switch	PMA	1
17	047-7273-03	Mounting Plate	PMA	1
18	047-7274-02	Switch Bracket	PMA	1
19	057-2869-00	Mic Decal	PMA	1
20	057-3362-00	AP Disc Decal	PMA	1
21	076-1625-01	Switch Bezel	PMA	1
22	088-1516-01	Switch Base	PMA	1
23	088-1517-01	Switch Cap Cover	PMA	1
24	088-2165-01	CWS Cover	PMA	1
25	088-2166-01	Trim Cover	PMA	1
26	089-2136-00	Lock Nut 2-56	PMA	2
27	089-5111-12	Screw 4-40 x 3/4	PMA	2
28	089-6159-06	Screw 2-56	PMA	2
29	089-6344-03	Screw 4-40 x 3/16	PMA	1
30	089-8227-10	Washer	AN960-416L	1

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-7



VIEW LOOKING UP AT FORWARD END OF CONTROL COLUMN



VIEW A-A

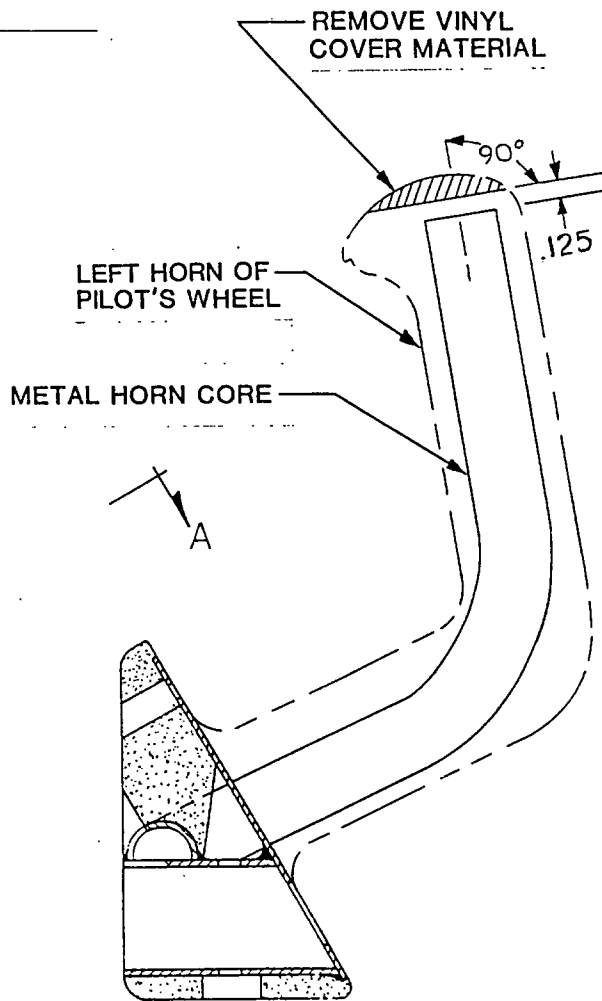
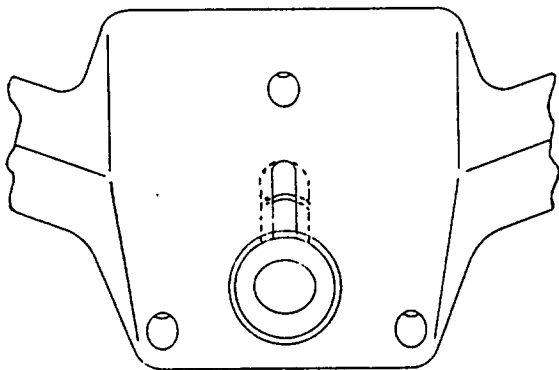


FIGURE 4-A CONTROL WHEEL AND COLUMN MODIFICATION

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-7

4.1 CONTROL WHEEL SWITCHING INSTALLATION FOR ALL SYSTEMS UTILIZING ELECTRIC PITCH TRIM CONTROL. MODELS TB 10 AND TB 20

- A. For KAP 100 Systems with optional Electric Pitch Trim Control, KAP 150 Systems and KFC 150 Systems, install the switching as described in the following text:
- B. Remove and discard the existing mike switch and plug from the left horn of the pilots control wheel. Retain the existing map light switch on the right horn. Remove the control wheel and column from the airplane and modify as shown in Figure 4-A.
- C. Slide the Switch Cap Base (088-1516-01) (Item 5) down over the left horn of the control wheel as shown in Figure 4-B. NOTE: THE COUNTERSUNK HOLES MUST FACE DOWNWARD. Push the shaft of the Switch Mounting Plate (047-7273-03) (Item 3) down into the hole in the left horn until the bottom of the plate is flush with the top of the horn. (The shaft is a tight fit and may have to be rotated side to side slightly in order to effect the fit - the shaft should pop into place as it seats on the horn.)
- D. Feed the free end of the wires of the Switch Bracket Assembly (200-3501-00) (Item 9) down thru the hollow shaft of the switch mounting plate previously installed, through the control wheel horn and out the slot in the back of the wheel which was previously modified. Form the wires into a tight half-loop off the back of the switches so they double back under the A/P disconnect switch before entering the hollow shaft of the switch mounting plate. (See Figure 4-B). The four unattached wires should be routed down through the large hole at the back of the switch mounting plate. When properly routed the wires should not interfere with the switch bracket assembly as it seats down flat on top of the switch mounting Plate. (Pull the free end of the wires through from the back of the wheel to reduce the amount of excess wire in the switch cap. In some cases it may be necessary to fan the wires out as they exit the hollow shaft to insure non-interference with the switches).
- E. After properly routing all wires, secure the switch bracket assembly to the switch mounting plate with one pan head Screw (089-6344-03) (Item 8) through the back hole in the right hand gusset of the switch bracket assembly as shown in Figure 4-B. Make sure that the swage nuts in the switch bracket assembly are aligned over the two small holes in the switch mounting plate.
- F. Route the unattached yellow pair of wires forward from the large hole in the back of the switch mounting plate below the plate and down into the center opening of the switch cap base which was previously slipped onto the left horn of the control wheel. Route this pair of wires from the opening back through the rear switch hole in the base. In a similar manner, route the unattached red pair of wires forward through the forward switch hole. (See Figure 4-B). Raise the switch cap base up the horn to seat against the bottom of the switch mounting plate. (Care should be exercised to eliminate pinching of the unattached wires between the base and plate). Rotate the switch mounting plate as necessary to effect proper alignment with the switch cap base and fasten the switch bracket assembly, switch mounting plate and switch cap base together using two flat head Screws (089-5111-12) (Item 7) from below as shown in Figure 4-B.
- G. Wire one Switch (031-0514-00) (Item 1) for mike key to the yellow pair of wires exiting the switch cap base from the back switch hole and the other switch for CWS to the red pair of wires from the front switch hole as shown in Section 10. Secure each switch in its hole with a small amount of suitable adhesive (RTV).

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-7

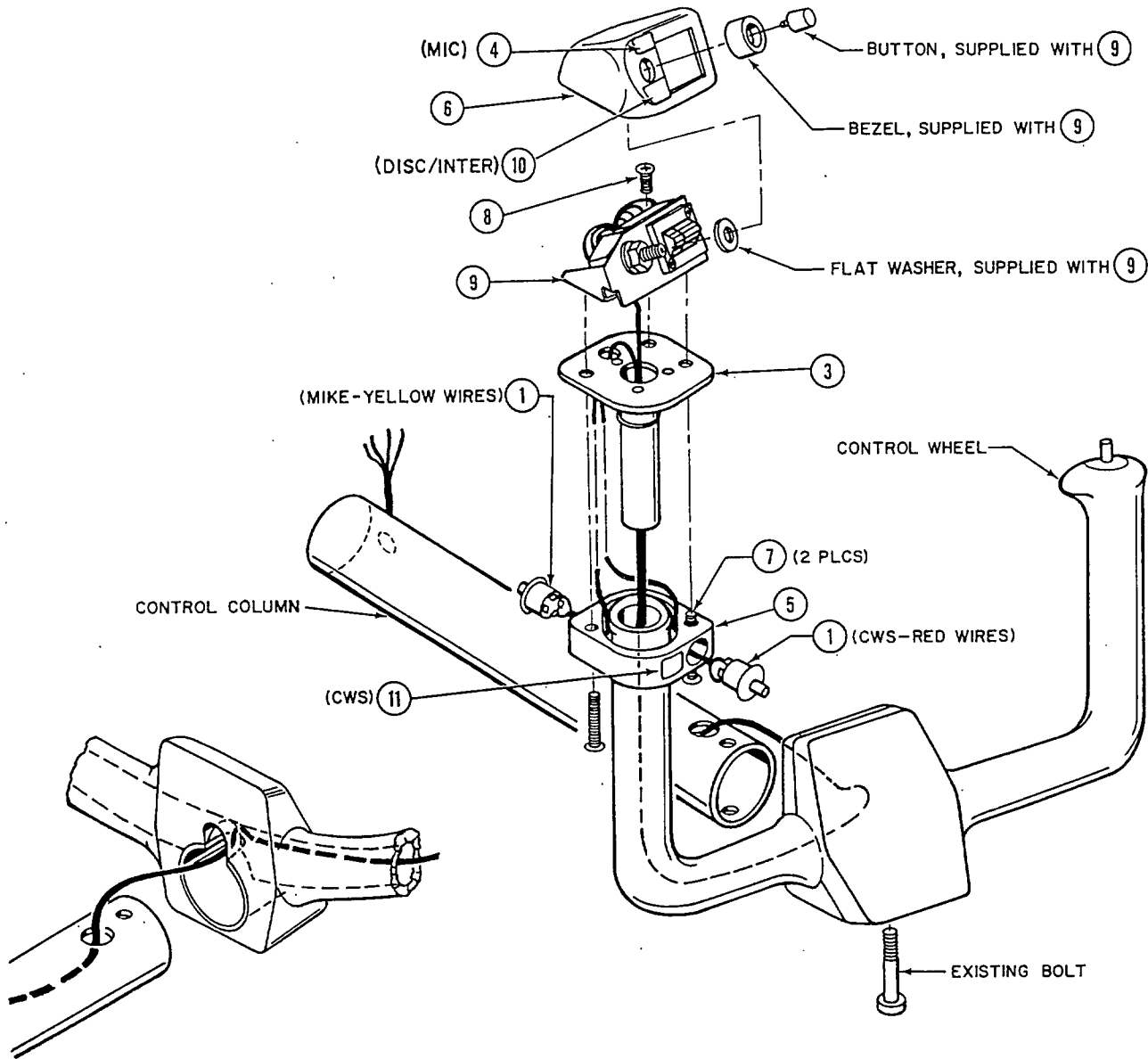


FIGURE 4-B SWITCH INSTALLATION
 WITH ELECTRIC PITCH TRIM TB 10 AND TB 20

4.1 (Cont'd)

- H. Apply the CWS decal (057-2869-02) (Item 11) to the switch cap base and the A/P Disc decal (057-2869-01) (Item 10) and MIC decal (057-2869-00) (Item 4) to the switch cap cover (088-1517-01) (Item 6) as shown in Figure 4-B.
- I. Unscrew the red button and bezel from the A/P DISC switch and install the switch cap cover over the shaft of the switch. Seat the cover on the switch mounting plate and replace the bezel and button to secure the cover.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-7

4.2 CONTROL WHEEL SWITCHING INSTALLATION FOR KAP 100 SYSTEMS NOT UTILIZING ELECTRIC PITCH TRIM CONTROL. MODEL TB 10 ONLY.

- A. For TB 10 Airplanes with KAP 100 Systems and no Electric Pitch Trim Control install the switching as described in the following text:
- B. Remove and discard the existing mike switch and plug from the left horn of the pilots control wheel. Retain the existing map light switch on the right horn. Remove the control wheel and column from the airplane and modify as shown in Figure 4-A.
- C. Slide the Switch Cap Base (088-1516-01) (Item 22) down over the left horn of the control wheel as shown in Figure 4-C. NOTE: THE COUNTERSUNK HOLES MUST FACE DOWNWARD. Push the shaft of the Switch Mounting Plate (047-7273-03) (Item 17) down into the hole in the left horn until the bottom of the plate is flush with the top of the horn. (The shaft is a tight fit and may have to be rotated side to side slightly in order to effect the fit - the shaft should pop into place as it seats on the horn.)
- D. Assemble the switch cap items as shown in Figure 4-C and 4-D. Wire the AP disconnect switch as shown in Section 10. Feed the wires down through the hollow shaft of the switch mounting plate previously installed, through the control wheel horn and out the slot in the back of the wheel which was previously modified. Form the wires into a tight half-loop off the back of the switch so they double back under the A/P disconnect switch before entering the hollow shaft of the switch mounting plate. (See Figure 4-C). The wires should be routed down through the large hole at the back of the switch mounting plate. When properly routed the wires should not interfere with the switch bracket assembly as it seats down flat on top of the switch mounting plate. (Pull the free end of the wires through from the back of the wheel to reduce the amount of excess wire in the switch cap. In some cases it may be necessary to fan the wires out as they exit the hollow shaft to insure non-interference with the switch).

NOTE

AFTER WIRING ALL SWITCHES SEAL ALL WIRE TO SWITCH CONNECTIONS USING AN APPROPRIATE SEALING (RTV) COMPOUND.

- E. After properly routing all wires, secure the switch bracket assembly to the switch mounting plate with one pan head Screw (089-6344-03) (Item 29) through the back hole in the right hand gusset of the switch bracket assembly as shown in Figure 4-C. Make sure that the swage nuts in the switch bracket assembly are aligned over the two small holes in the switch mounting plate.
- F. Route the unattached yellow pair of wires forward from the large hole in the back of the switch mounting plate below the plate and down into the center opening of the switch cap base which was previously slipped onto the left horn of the control wheel. Route this pair of wires from the opening back through the rear switch hole in the base. (See Figure 4-C). Raise the switch cap base up the horn to seat against the bottom of the switch mounting plate. (Care should be exercised to eliminate pinching of the unattached wires between the base and plate). Rotate the switch mounting plate as necessary to effect proper alignment with the switch cap base and fasten the switch bracket assembly, switch mounting plate and switch cap base together using two flat head Screws (089-5111-12) (Item 27) from below as shown in Figure 4-C.

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-7

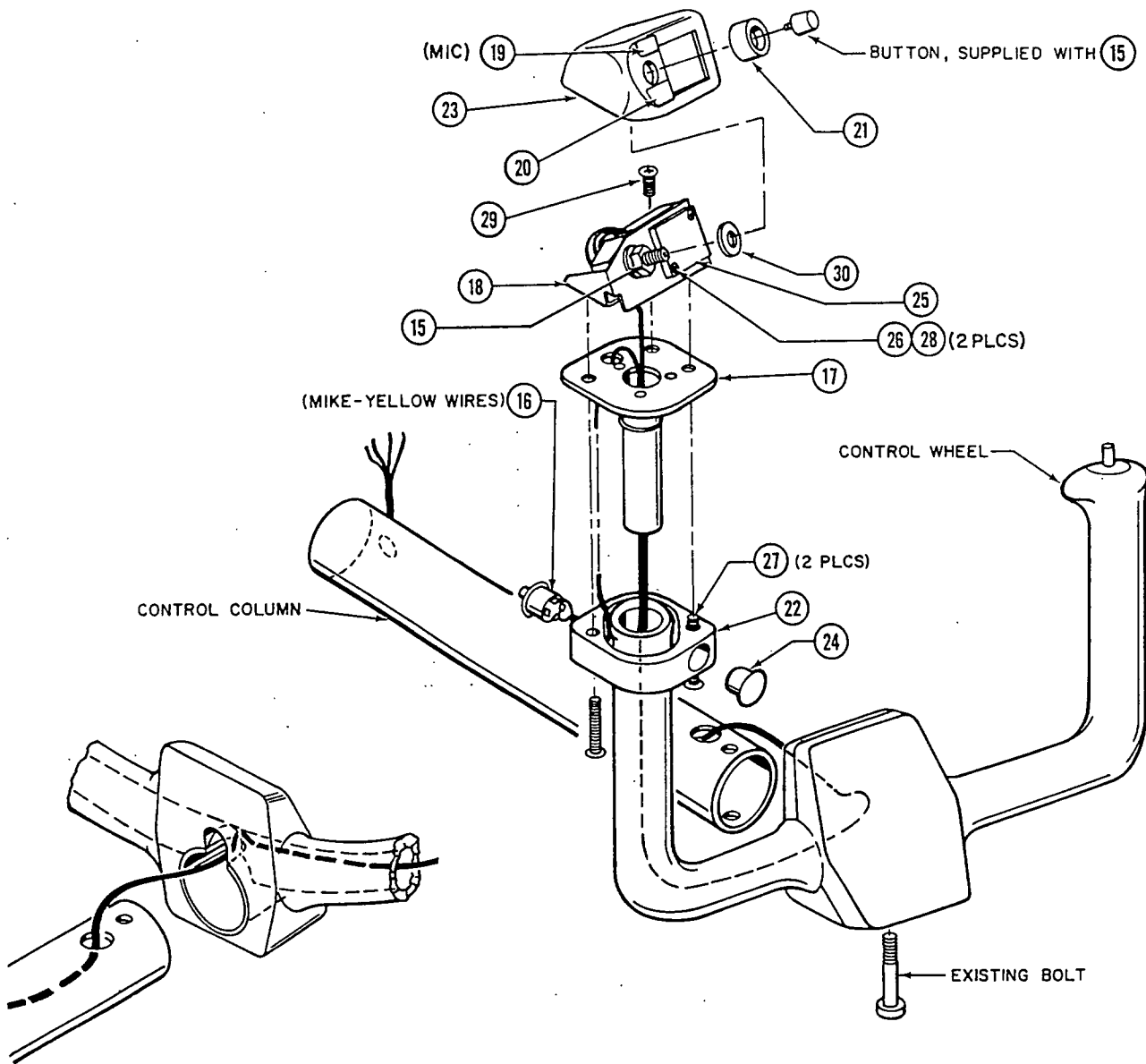


FIGURE 4-C SWITCH INSTALLATION
 WITHOUT ELECTRIC PITCH TRIM TB 10 ONLY

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-7

4.2 (Cont'd)

- G. Wire one Switch (031-0514-00) (Item 16) for mike key to the yellow pair of wires exiting the switch cap base from the back switch hole. Insert the hole plug (088-2165-01) (Item 24) in the front hole of the switch cap base. Apply a small amount of suitable adhesive to both the mike key switch and hole plug to insure these items do not come loose.
- H. Apply the A/P Disc decal (057-3362-00) (Item 20) and MIC decal (057-2869-00) (Item 19) to the switch cap as shown in Figure 4-C.
- I. Unscrew the red button and bezel from the A/P DISC switch and install the switch cap cover over the shaft of the switch. Seat the cover on the switch mounting plate and replace the bezel and button to secure the cover.

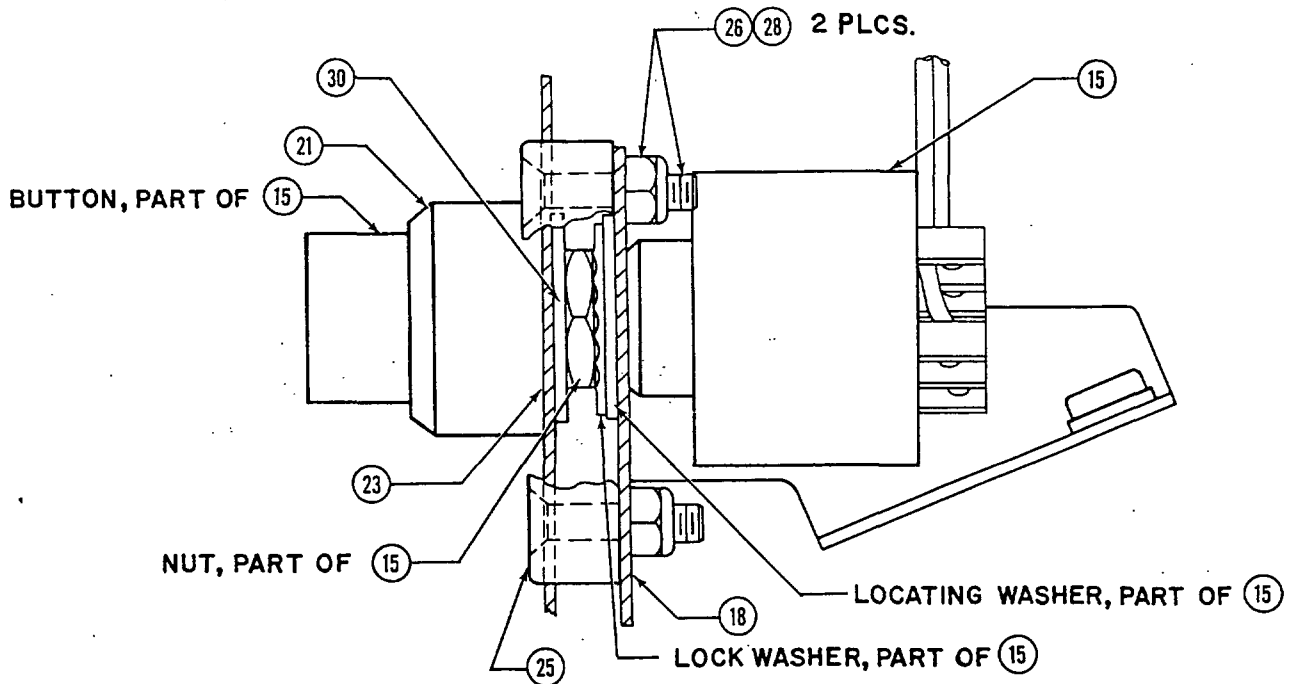


FIGURE 4-D AP DISCONNECT SWITCH INSTALLATION
WITHOUT ELECTRIC PITCH TRIM TB 10 ONLY

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-7

4.3 CIRCUIT BREAKER INSTALLATION (TB 10)

- A. For KAP 100 Systems not equipped with the optional Electric Pitch Trim Control install only one 5 amp pullable circuit breaker in the location labeled A/P as shown in Figure 4-C.
- B. For KAP 100 Systems that are equipped with the optional Electric Pitch Trim Control, KAP 150 Systems and KFC 150 Systems there are two pullable circuit breakers installed; one 5 amp pullable breaker in the location labeled TRIM and one 10 amp pullable breaker in the location labeled A/P as shown in Figure 4-C. Wire all circuit breakers per Section 10.

4.4 CIRCUIT BREAKER INSTALLATION (TB 20)

- A. For KAP 100 Systems not equipped with the optional Electric Pitch Trim Control install only one 5 amp pullable circuit breaker in the location shown in Figure 4-C. Use the autopilot decal (057-2869-03) (Item 13) to mark the circuit breaker as shown.
- B. For KAP 100 Systems that are equipped with the optional Electric Pitch Trim Control, KAP 150 Systems and KFC 150 Systems there are two pullable circuit breakers installed; one 5 amp pullable breaker in the location labeled TRIM or PITCH TRIM and one 10 amp pullable breaker in the location shown in Figure 4-C. Wire all circuit breakers per Section 10. Use AUTOPILOT decal (057-2869-03) (Item 13) to mark the autopilot circuit breaker as shown.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-7

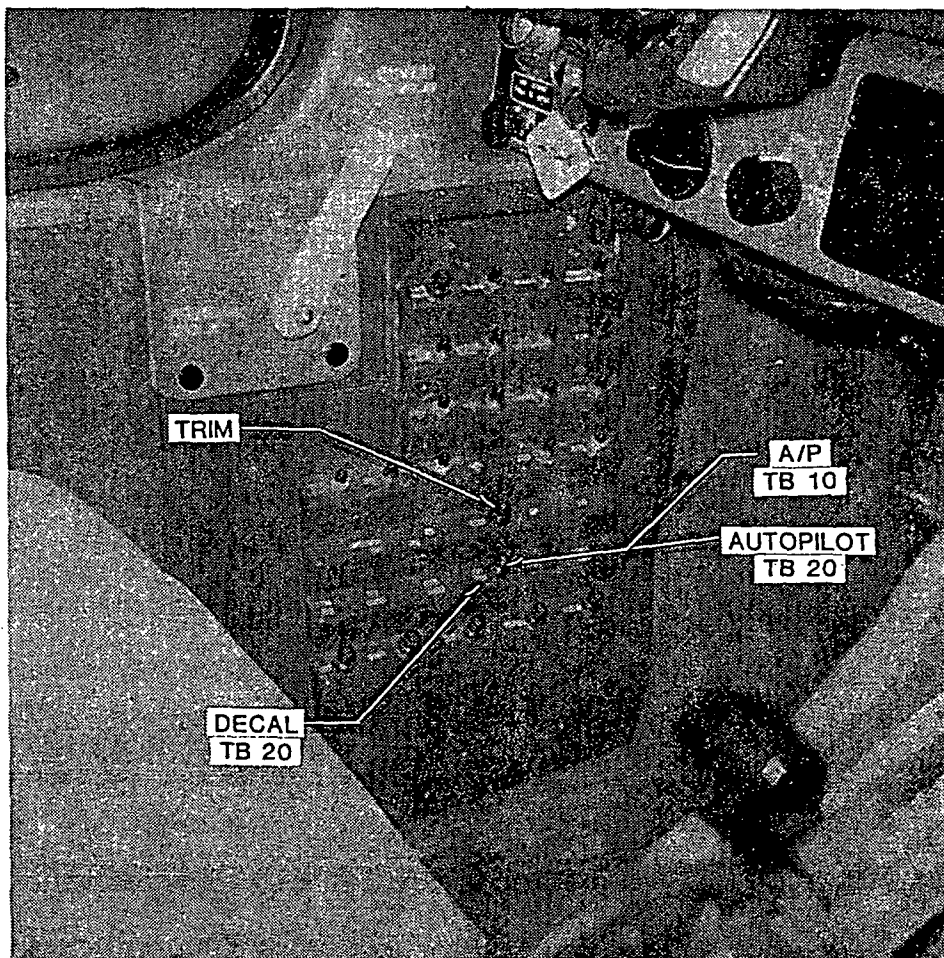


FIGURE 4-E TB 10 AND TB 20 CIRCUIT BREAKER LOCATION

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-7

4.5 AUTOPILOT MASTER OR RADIO MASTER INSTALLATION (TB 10 and TB 20)

- A. At the installers discretion an autopilot master switch or radio master switch must be installed. When the autopilot master switch is to be installed use Kit 050-2296-01 and identify the switch as the autopilot master. When the radio master switch is to be installed Kit 050-2024-00 can be used (see Page A-3 or A-4) or the installer can furnish the equivalent. The radio master switch must be marked, radio master. See Figure 10-F or 10-G.
- B. In both cases the switch is installed in the instrument panel area to the right of the pilot's control column. Locate the switch below the gear control knob in TB 20 airplanes. TB 10 airplanes do not have a gear control knob but locate the switch in the same area the instrument panel. See Section 10 for electrical interconnects.

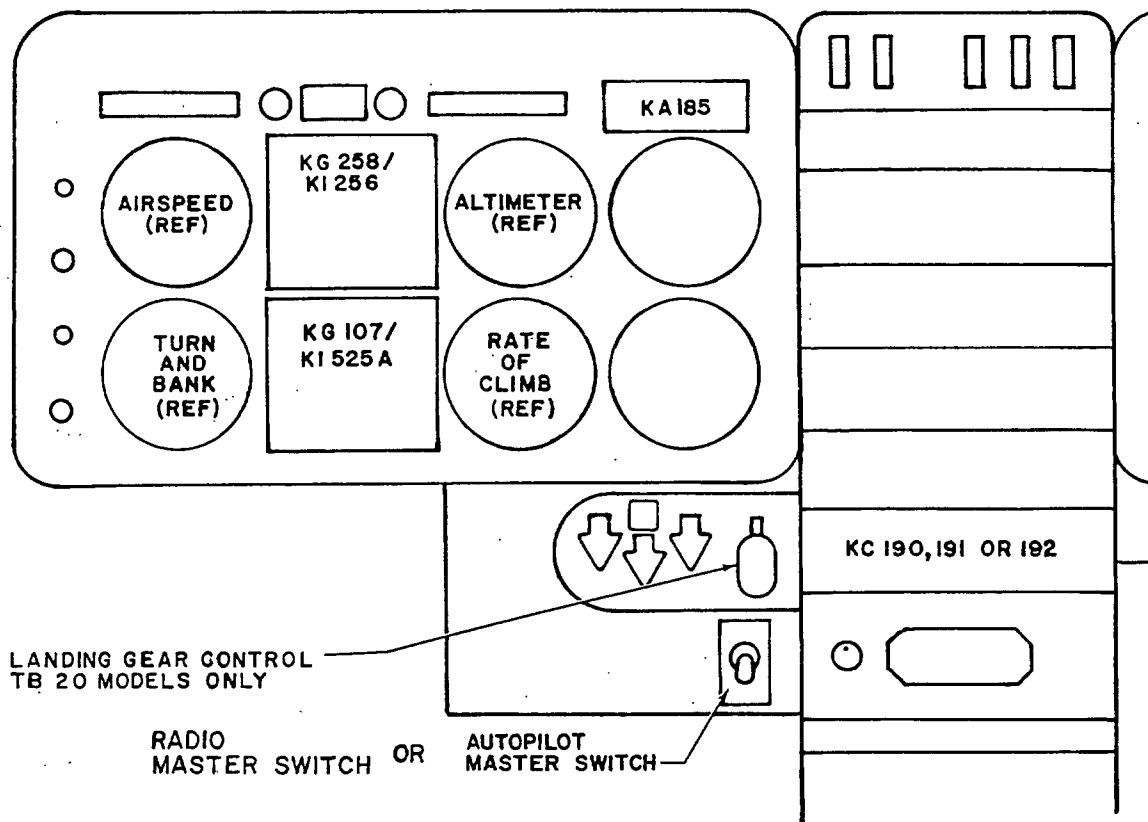


FIGURE 4-F TB 10 AND TB 20 AVIONICS MASTER OR RADIO MASTER LOCATION

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-8

5.0

SLIP CLUTCH VALUES AND CAPSTAN DIRECTION

- A. Servo slip clutch torque settings are adjustable and must be set to the appropriate value shown in Figure 5-A prior to servo installation. The fixtures and tools required to perform the clutch adjustments are supplied with the KTS 158 Autopilot Tester (071-5064-00).
- B. Remove the cable guards from the servo and attach it to the Test Stand (047-4238-01) as shown in Figure 5-B. Place the appropriate Adapter (071-1260-04, 071-6021-03 or 071-6066-02) over the capstan and secure by inserting the Adapter Pin(s) (071-6021-02 or 071-6065-00). (See Figure 5-B.)
- C. Insert a torque wrench (Snap-on TEP-6FUA or equivalent) into the slot on the top of the Test Stand and attach the socket end to the Adapter. Apply power to the servo by joining the servo connector to the test set connector.

AIRCRAFT MODEL NO.	SERIAL NO.	PITCH SERVO PART NO.	ACFT. NOSE UP CAPSTAN DIRECTION	PITCH SLIP CLUTCH TORQUE (IN/LB)	ROLL SERVO PART NO.	ACFT. ROLL RT. CAPSTAN DIRECTION	ROLL SLIP CLUTCH TORQUE (IN/LB)	PITCH TRIM SERVO PART NO.	ACFT. NOSE UP CAPSTAN DIRECTION	TRIM SLIP CLUTCH TORQUE (IN/LB)
SOCATA TB-10	ALL 14VDC	065-0050-12	CW	24±2	065-0051-06	CCW	24±2	065-0052-13	CW	30±3
SOCATA TB-10	ALL 28VDC	065-0050-12	CW	24±2	065-0051-06	CCW	24±2	065-0052-16	CW	30±3
SOCATA TB-20	ALL 14VDC	065-0050-12	CW	30±3	065-0051-06	CCW	30±3	065-0052-13	CW	30±3
SOCATA TB-20	ALL 28VDC	065-0050-12	CW	30±3	065-0051-06	CCW	30±3	065-0052-16	CW	30±3

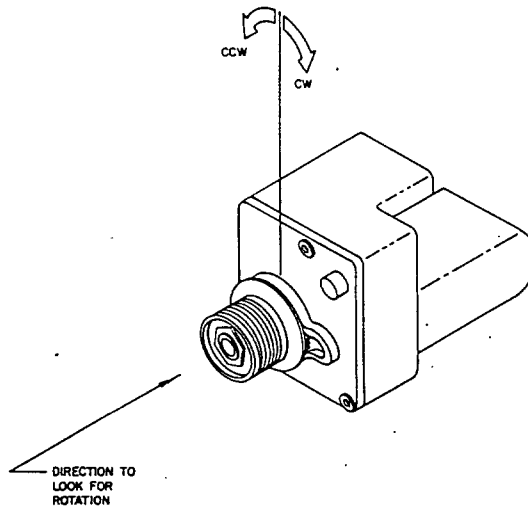


FIGURE 5-A SLIP CLUTCH VALUES & CAPSTAN DIRECTION

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-8

5.0 (Cont'd)

- D. Using the appropriate switch on the Test Set, turn the servo motor on in the CW direction and record the torque reading on the wrench. Repeat this step in the CCW direction.

NOTE

THE DESIRED TORQUE READING IS THE AVERAGE OF THE MAXIMUM AND MINIMUM READINGS OBTAINED FROM THE CW AND CCW ROTATIONS.

THIS TEST SHOULD BE REPEATED THREE (3) TIMES IN EACH DIRECTION AND THEN THE AVERAGE OF THE SIX (6) READINGS IS USED TO DETERMINE THE TRUE TORQUE READING.

- E. If the level measured falls below the desired value, rotate the clutch adjust nut clockwise. If the level measured falls above the desired value, rotate the clutch adjust nut counterclockwise. After an adjustment, repeat the torque test.
- F. After wiring has been completed and the servos installed, verify the direction of rotation of the servo capstans as shown in Figure 5-A.

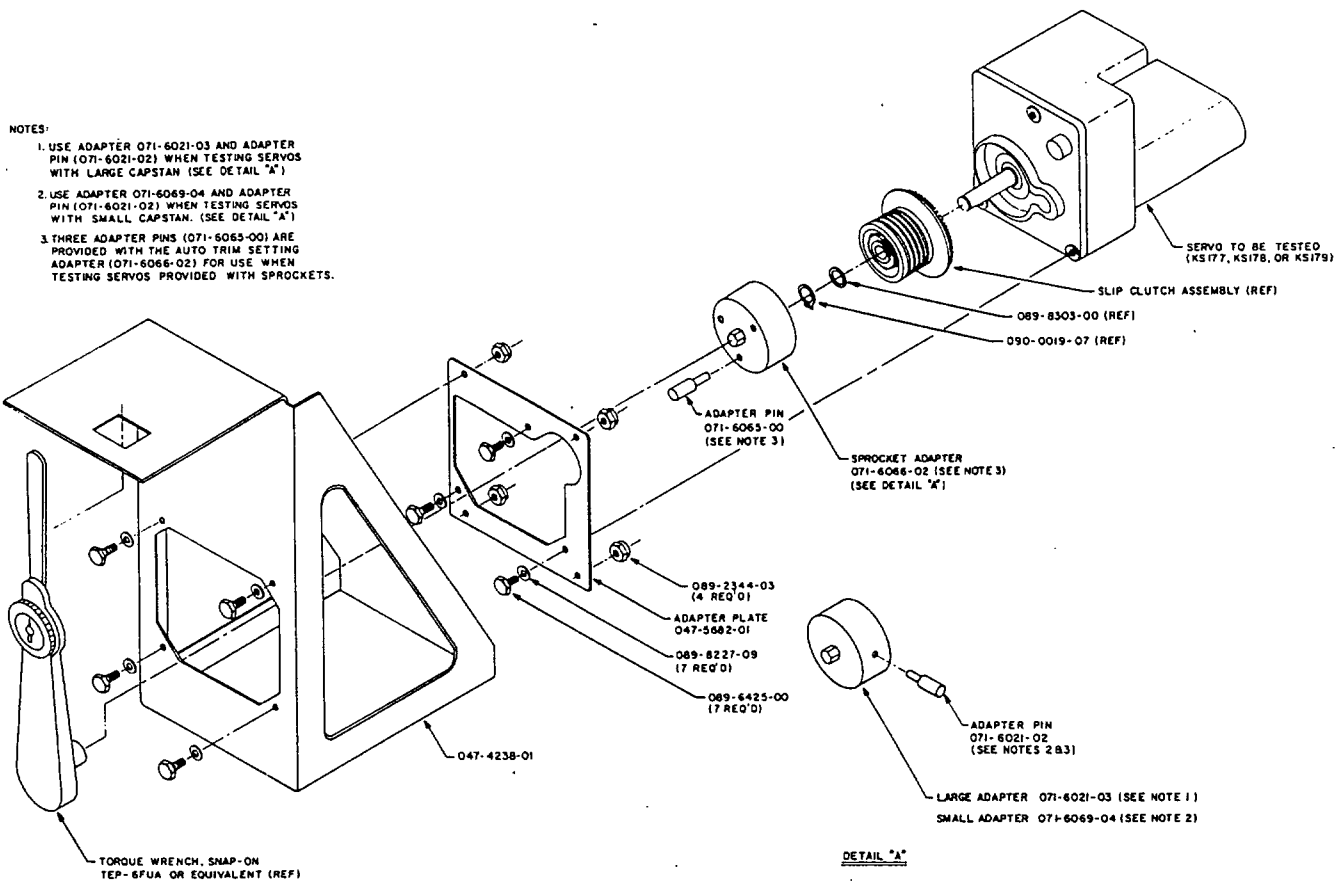


FIGURE 5-B SERVO SLIP CLUTCH ADJUSTMENT

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-9

6.0

ROLL SERVO AND ALERTING INSTALLATION

This section applies to the installation of the KS 178 Unit and autopilot sonalart.

The KS 178 Unit Installation Kit 050-1817-00 consists of the following:

ITEM	KING PART NO.	DESCRIPTION	SPEC	QTY
1	030-1008-00	Lvr/Pvt Ass'y	PMA	2
2	030-1009-00	Hood Conn	PMA	1
3	030-2000-00	Conn 14 Pin FFM	PMA	1
4	089-5393-06	Bolt	PMA	3
5	089-8227-09	Washer	PMA	3

The Roll Installation Kit 050-2297-00 consists of the following:

ITEM	KING PART NO.	DESCRIPTION	SPEC	QTY
6	047-5658-00	Pitch Link	PMA	2
7	047-7292-01	Control Rod Clamp	PMA	4
8	047-7293-01	Roll Servo Clip	PMA	1
9	047-7294-01	Roll Servo Support	PMA	1
10	047-8302-02	Roll Servo Hanger	PMA	1
11	057-2869-03	Decal	PMA	1
12	076-1657-01	Spacer	PMA	4
13	089-2334-02	Nut, Castellated 10-32	AN320C3	4
14	089-2344-02	Nut, ESNA 8-32	MS20365-832	8
15	089-2344-03	Nut, ESNA 10-32	MS20365-1032	2
16	089-6419-02	Bolt, Clevis 10-32	AN23-10	2
17	089-6421-04	Screw, P.H.P. 8-32	MS27039-832	8
18	089-6425-04	Bolt, 10-32	AN3-7A	2
19	089-7040-06	Bolt, Drilled Shank 10-32	AN3-11	2
20	089-8227-07	Washer	AN960-8	16
21	089-8227-09	Washer	AN960-10	12
22	090-0217-00	Locking Clip	MS21256-1	2
23	090-0324-01	Cotter Pin	MS24665-132	4
24	092-5029-07	Rivet, Flat Head	MS20426 AD4-4	2
25	092-5034-33	Rivet, Universal	MS204070-3-4	14
26	092-5034-34	Rivet, Universal	MS204070-3-5	2
27	147-0059-00	Bushing, Pitch Link	PMA	2
28	200-3500-00	Roll Bridle Cable	PMA	1
29	038-0008-00	Sonalart	PMA	1
30	089-8227-08	Washer	AN960-10L	2

- A. The KS 178 Roll Servo is to be installed for KAP 100 Systems, KAP 150 Systems, and KFC 150 Systems. The Roll Servo and associated bracketry are located just ahead of the main spar below the pilot's floorboard. Adjust the slip clutch of the capstan to the value shown in Section 5.0 (Page 5-1). See Figure 5-B for adjustment procedure of the clutch.
- B. Remove the belly cover forward of the main landing gear and the first inspection cover outboard on the left wing for access to both ends of the left aileron pushrod. Remove the existing cotter pin, castellated nut, spacer and bolt holding the inboard end of the left aileron pushrod to the center aileron lever. Place two Control Rod Clamps (047-7292-01) (Item 7) one on either side, on the flat part of the pushrod as shown in Figure 6-A. Leaving the spacer out, replace the previously removed hardware through the pushrod, aileron lever and both clamps.
- C. On the side towards the lever, place one Spacer (076-1657-01) (Item 12) against the pushrod and between the wings of the clamp. Secure in place using one Bolt (089-6425-04) (Item 18), two Washers (089-8227-09) (Item 21) and one Nut (089-2344-03) (Item 15).

6.0 (Cont'd)

- D. Place another Spacer (076-1657-01) (Item 12) between the wings of the clamp on the opposite side and slide a Bolt (089-7040-06) (Item 19) with Washer (089-8227-09) (Item 21) through the Spacer and both Clamps from the aft side. Install a Pitch Link Bushing (147-0059-00) (Item 27) in the large hole of one Pitch Link (047-5658-00) (Item 6) and slide the bushing on the forward end of the previously installed bolt. Secure the clamps, spacer and link in place with another Washer (089-8227-09) (Item 21), one Castellated Nut (089-2334-02) (Item 13) and one Cotter Pin (090-0324-01) (Item 23). If necessary install an extra washer (089-8227-09) (Item 21) under the castle nut to allow proper cotter pin installation. NOTE: BEFORE TORQUING NUTS DOWN TIGHT, PUSH THE SPACER ON THE SIDE WITH THE LINK UP AGAINST THE PUSHROD.

- E. Repeat the above procedure to install another control rod clamp and pitch link on the outboard end of the aileron pushrod. (The pitch link and bushing should be located on the bottom side of the clamp for the outboard installation.)

- F. Install the KS 178 Roll Servo in the Roll Servo Hanger (047-8302-02) (Item 10) as shown in Figure 6-B. Clamp the hanger/servo assembly, the Roll Servo Clip (047-7293-01) (Item 8) and the Roll Servo Support (047-7294-01) (Item 9) together and in place in the airplane as shown in Figure 6-B. With the turnbuckle inboard, wrap the Roll Bridle Cable (200-3500-00) (Item 28) around the servo capstan as shown in Figure 6-C and attach the ends to the previously installed Pitch Links as shown in Figure 6-A using one Clevis Bolt (089-6419-02) (Item 16), two Washers (089-8227-09) (Item 21) and one Castellated Nut (089-2334-02) (Item 13) with Cotter Pin (090-0324-01) (Item 23) at each end.

- G. Move the servo/bracketry assembly fore or aft as necessary to insure cable to capstan groove misalignment no greater than 3°. When proper alignment is achieved, match drill fourteen .098 dia. holes through the roll servo support and pilot's floorboard using the existing pilot holes in the support as a guide. Fasten the support to the floorboard using fourteen Rivets (092-5034-33) (Item 25). Drill one .098 dia. hole through the support and the flange holding the floorboard at each end and fasten using two Rivets (092-5034-34) (Item 26).

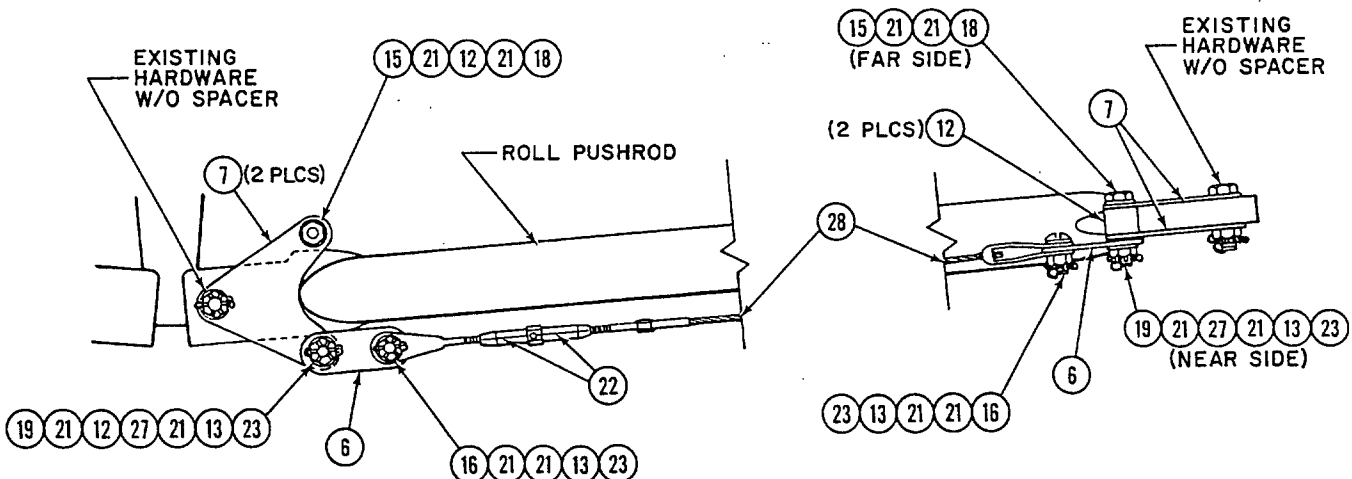


FIGURE 6-A CONTROL ROD CLAMP INSTALLATION

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM001-9

6.0 (Cont'd)

- H. Match drill three .171 dia. holes through the vertical flange of the roll servo support and the inboard flange of the Roll Servo Hanger as shown in Figure 6-B. Fasten the Hanger to the Support with three Screws (089-6421-04) (Item 17), six Washers (089-8227-07) (Item 20) and three Nuts (089-2344-02) (Item 14).

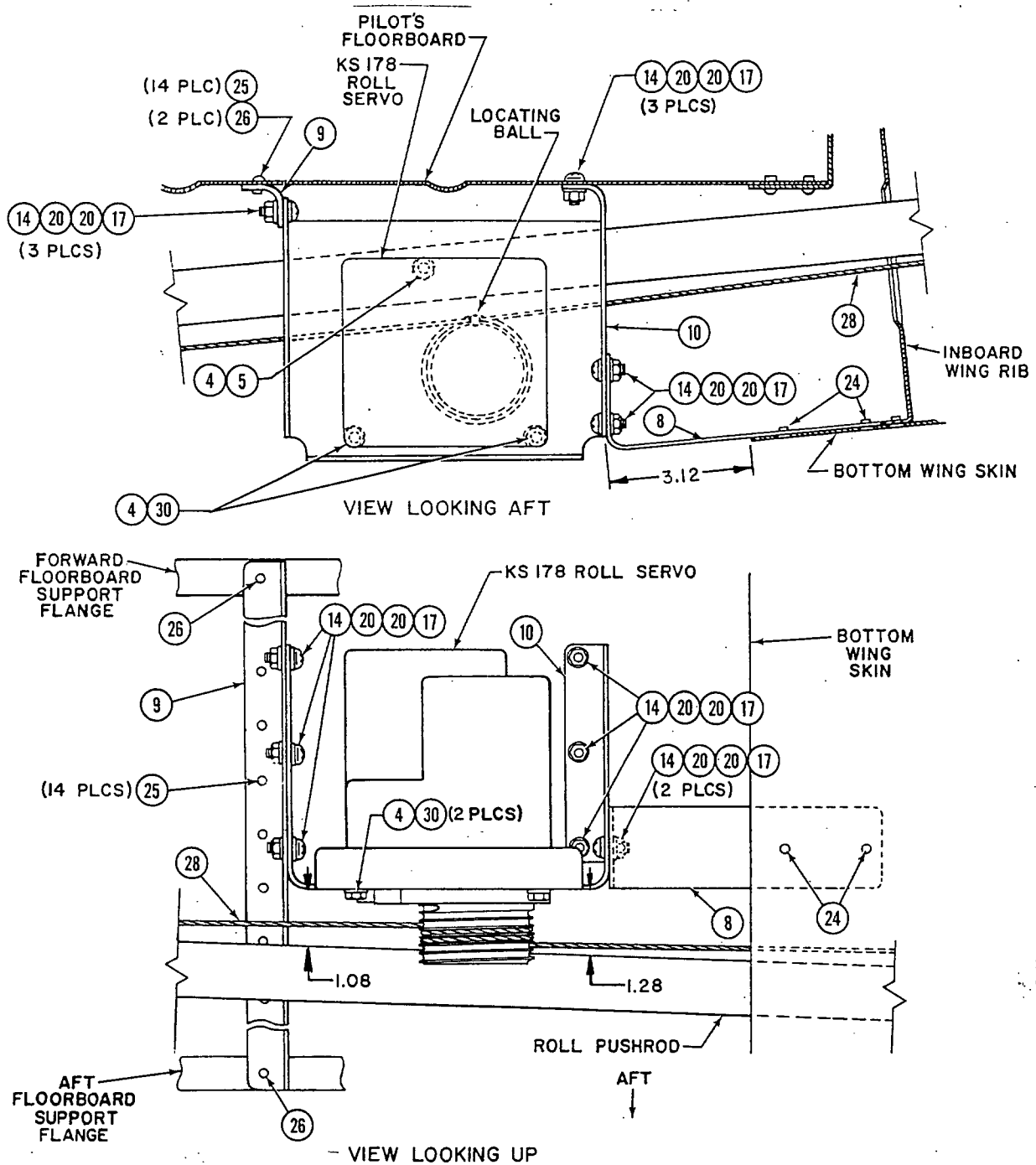


FIGURE 6-B ROLL SERVO INSTALLATION

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-9

6.0 (Cont'd)

- I. Remove the servo and bridle cable to provide clearance and match drill three .171 dia. holes through the outboard flange of the Hanger and the pilot's floorboard as shown in Figure 6-B. Fasten with three Screws (089-6421-04) (Item 16) with heads up, six Washers (089-8227-07) (Item 20) and three Nuts (089-2344-02) (Item 14).
- J. Match drill two .171 dia. holes through the vertical outboard flange of the Hanger and the short vertical flange of the roll servo clip using the pilot holes in the clip as a guide. Fasten with two Screws (089-6421-04) (Item 17), four Washers (089-8227-07) (Item 20) and two Nuts (089-2344-02) (Item 14). Match drill two .136 dia. holes through the long horizontal flange of the roll servo clip and the bottom wing skin using the pilot holes in the clip as a guide. Countersink the holes from below 100° x .235 dia. and fasten with two Flat Head Rivets (092-5029-07) (Item 24).
- K. Reinstall the KS 178 Roll Servo and roll bridle cable as before. Reinstall the cable guards on the roll servo as shown in Figure 6-C. With the ailerons in the neutral position, adjust the roll bridle cable tension to 20 ± 5 lbs. using the turnbuckle. After tensioning install the Locking Clips (090-0217-00) (Item 22) on the turnbuckle. Run the ailerons to the stops in both directions to verify that there is no interference between cables and that the cable runs freely in the proper capstan grooves.
- L. Using the Connector (030-2000-00) (Item 3), Hood (030-1009-00) (Item 2) and Lever and Pivot Assembly (030-1008-00) (Item 1), connect the wiring to the servo as shown in Section 10 of this manual.

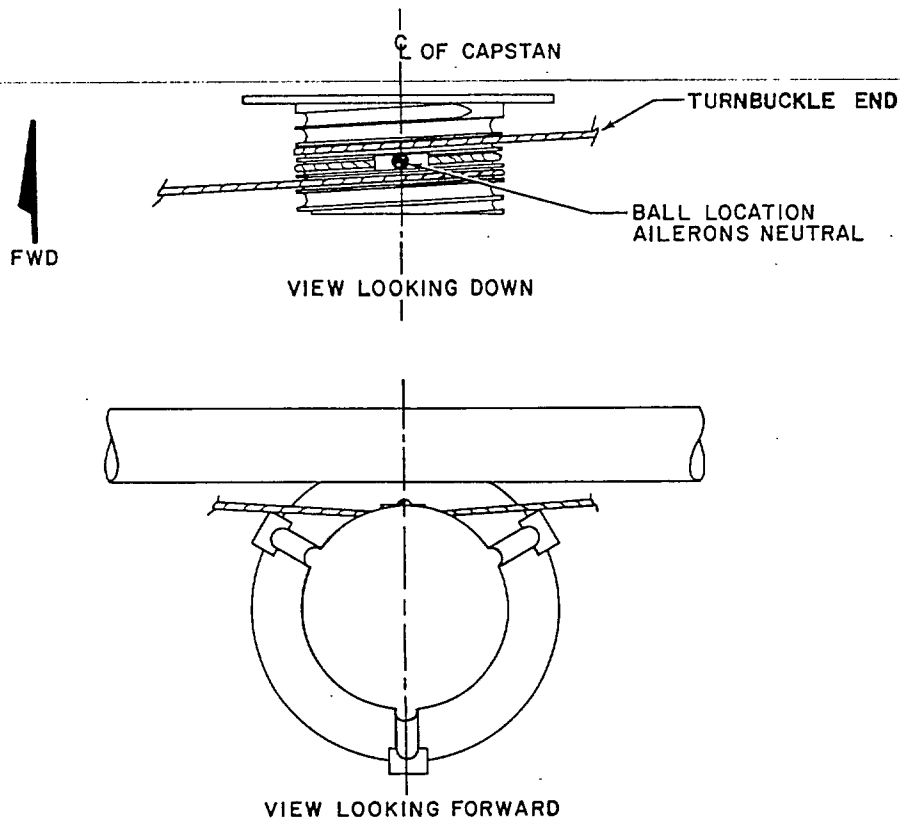


FIGURE 6-C ROLL CAPSTAN WRAP

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-9

6.1 AUTOPILOT ALERTER INSTALLATION TB 10 AND TB 20

- A. An audible alerter (Sonalert) must be installed for all KAP 100, KAP 150 and KFC 150 systems.
- B. Install the Sonalert (038-0008-00) (Item 29) in the overhead speaker area. Cut a 1.125 in. dia. hole in the overhead speaker area and mount the Sonalert through the hole from behind. Secure with the threaded retaining collar on the front of the Sonalert and wire per Section 10.

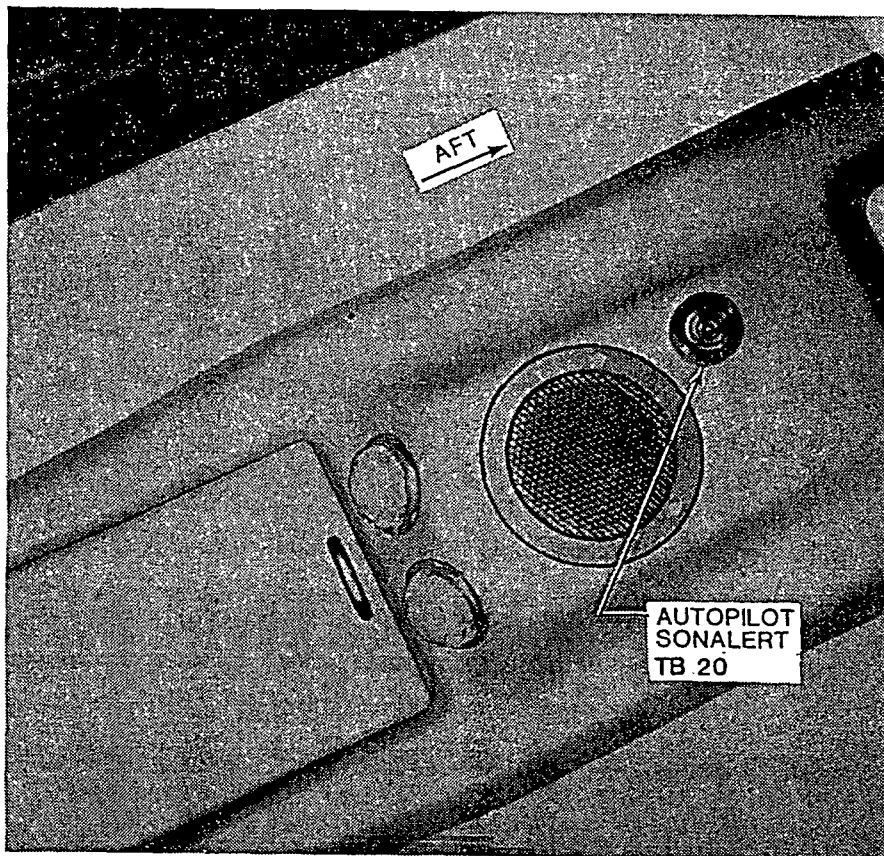


FIGURE 6-D TB 20 SONALERT INSTALLATION



KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-10

7.0

PITCH TRIM SERVO INSTALLATION

This section applies to the installation of the KS 179 unit.

The KS 179 Unit Installation Kit 050-1817-00 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
1	030-1008-00	Lvr/Pvt Ass'y	PMA	2
2	030-1009-00	Hood, Conn	PMA	1
3	030-2000-00	Conn, 14 Pin FFM	PMA	1
4	089-5393-06	Bolt	PMA	3
5	089-8227-09	Washer	PMA	3

The Trim Installation Kit 050-2298-00 consists of the following:

<u>ITEM</u>	<u>KING PART NO.</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>QTY</u>
6	047-7281-01	Servo Gusset	PMA	1
7	047-7282-02	Pitch Bracket	PMA	1
8	047-7284-01	Trim Servo Bracket	PMA	1
9	047-7285-01	Top Trim Angle	PMA	1
10	047-7286-01	Bottom Trim Angle	PMA	1
11	047-7287-01	Top Pitch Angle	PMA	1
12	047-7288-01	Bottom Pitch Angle	PMA	1
13	089-2344-01	Nut	AN365-632	9
14	089-2344-03	Nut	AN365-1032	22
15	089-6425-01	Bolt	AN3-4A	22
16	089-6542-03	Screw	MS35206-229	9
17	089-8227-05	Washer	AN960-6	18
18	089-8227-09	Washer	AN960-10	44
19	090-0547-00	Turnbarrel	PMA	1
20	090-0548-00	Turnbarrel	PMA	1
21	092-5034-01	Rivet	MS204070-4-4	26
22	092-5075-01	Rivet	CR3243-4-2	4
23	200-3498-00	Trim Cable Splice	PMA	1
24	047-7538-00	Brace	PMA	2
	or S.O.C.A.T.A. P/N TB20-78-942-100			
25	047-7539-00	Bulkhead Clip	PMA	2
	or S.O.C.A.T.A. P/N TB20-78-942-101			

A. The KS 179 Pitch Trim Servo is to be installed for KAP 100 Systems with the optional electric pitch trim control, KAP 150 Systems, and KFC 150 Systems. The KS 179 Pitch Trim Servo is NOT installed for KAP 100 Systems without the optional electric pitch trim control. The Pitch Trim Servo and associated bracketry are located just aft of the baggage compartment at Sta. 129.10. Adjust the slip clutch of the capstan to the value shown in Section 5.0 (Page 5-1). See Figure 5-B for adjustment procedure of the clutch. See Figure 7-A.

B. Attach the KS 179 Pitch Trim Servo to the Trim Servo Bracket (047-7284-01) (Item 8) using three Bolts (089-5393-06) (Item 4) and three Washers (089-8227-09) (Item 5). Place the pitch trim servo and bracket assembly in the airplane aft of the bulkhead at the back of the baggage compartment. The bracket flange containing the six pilot holes will be against the aft side of the bulkhead, the bottom of the servo bracket will rest on the airplane belly skin and the KS 179 Idler pulley groove furthest from the servo face will align under the co-pilot side airplane pitch trim cable. Move the pitch trim servo bracket as needed to achieve a perpendicular alignment with the floor of the baggage compartment and left or right to achieve best payoff angle of the airplane pitch trim cable.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-10

7.0 (Cont'd)

NOTE

DURING CABLE ALIGNMENT PAY CLOSE ATTENTION TO THE PAYOFF ANGLE OF THE AIRPLANE PITCH TRIM CABLES AS THEY PASS UNDER THE EXISTING AIRPLANE IDLER PULLEYS ATTACHED TO THE AFT SIDE OF THE BAGGAGE BULKHEAD.

- C. Carefully mark the bracket position and remove the KS 179 Unit from the trim servo bracket. Using the two bottom pilot holes in the forward flange of the trim servo bracket drill two .144 diameter holes through the trim servo bracket flange and the bulkhead at the aft end of the baggage compartment. Install two Cherry-max Rivets (092-5075-01) (Item 22). Using the remaining four pilot holes in the forward flange of the trim servo bracket drill four .129 diameter holes through the trim servo bracket flange and the bulkhead at the aft end of the baggage compartment. Install four Rivets (092-5034-01) (Item 21).
- D. Place the Bottom Trim Angle (047-7286-01) (Item 10) in the airplane with the flange containing the six pilot holes on the airplane belly skin and the other flange against the pilot side of the trim servo bracket. Butt the forward end of bottom trim angle against the aft side of the baggage bulkhead. Using the six-pilot holes in the bottom flange of the bottom trim angle drill six .129 diameter holes through the bottom trim angle and the airplane belly skin. Install six Rivets (092-5034-01) (Item 21). Using the three pilot holes in the bottom of trim servo bracket drill three .203 diameter holes through the trim servo bracket and bottom trim angle. Install three Bolts (089-6425-01) (Item 15), six Washers (089-8227-09) (Item 18) and three Nuts (089-2344-03) (Item 14).
- E. The Pitch Servo Bracket (047-7282-02) (Item 7) is installed for all systems to insure adequate strength of the servo installation. Place the pitch servo bracket in the airplane between the pitch and yaw (rudder) control tubes. The flange containing the six pilot holes will be against the aft side of the bulkhead at the aft end of the baggage compartment and the bottom of the pitch servo bracket will rest on the airplane belly skin. Adjust the pitch servo bracket to achieve perpendicular alignment with the floor of the baggage compartment and move the pitch servo bracket left or right to center it exactly between the pitch and yaw (rudder) control tubes.
- F. Using the two bottom pilot holes in the forward flange of the pitch servo bracket drill two .144 diameter holes through the pitch servo bracket and the bulkhead at the aft end of the baggage compartment. (Install two Cherry-max Rivets (092-5075-01) (Item 22). Using the remaining four pilot holes in the forward flange of the pitch servo bracket drill four .129 diameter holes through the pitch servo bracket flange and the bulkhead at the aft end of the baggage compartment. Install four rivets (092-5034-01) (Item 21).
- G. Place the bottom pitch Angle (047-7288-01) (Item 12) in the airplane with the flange containing the six pilot holes on the airplane belly skin and the other flange against the co-pilot side of the pitch servo bracket. Adjust the bottom pitch angle so the two half circle notches in the vertical flange center on and clear the two bottom .75 diameter holes in the pitch servo bracket. Using the six pilot holes in the bottom flange of the bottom pitch angle drill six .129 diameter holes through the bottom pitch angle and airplane belly skin. Install six Rivets (092-5034-01) (Item 21). Using the three pilot holes in the bottom of the pitch servo bracket drill three .203 diameter holes through the pitch servo bracket and bottom pitch angle. Install three Bolts (089-8227-09) (Item 18) and three Nuts (089-2344-03) (Item 14).

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-10

7.0 (Cont'd)

- H. Place the Servo Gusset (047-7281-01) (Item 6) on top of the pitch trim and pitch servo brackets. The flanges will point up, the rectangular opening will roughly center between the pitch trim and pitch servo brackets and the flange containing the nine pilot holes will be forward against the aft side of the bulkhead at the aft end of the baggage compartment. Adjust the servo gusset left or right so the two openings in the forward flange center on the pop fastener holes in the baggage bulkhead. Clamp the servo gusset in place.
- I. Using the nine pilot holes in the forward flange of the servo gusset drill nine .156 diameter holes through the servo gusset flange and baggage bulkhead. Install nine Screws (089-6542-03) (Item 16), eighteen Washers (089-8227-05) (Item 17) and nine Nuts (089-2344-01) (Item 13).
- J. Place the top Trim Angle (047-7285-01) (Item 9) under the servo gusset so the flange containing three pilot holes is against the servo gusset and the other flange is against the co-pilot side of the trim servo bracket. Using the three pilot holes in the top trim angle and the three pilot holes in the top of trim servo bracket drill six .203 diameter holes through the top trim angle, servo gusset and trim servo bracket. Install six Bolts (089-6425-01) (Item 15), twelve Washers (089-8227-09) (Item 18) and six Nuts (089-2344-03).
- K. Place the top Pitch Angle (047-7287-01) (Item 11) under the servo gusset so the flange containing three pilot holes is against the servo gusset and the other flange is against the pilot side of the pitch servo bracket. Using the three pilot holes in the top pitch angle and the three pilot holes in the top of the pitch servo bracket drill six .203 diameter holes through the top pitch angle, servo gusset and pitch servo bracket. Install six Bolts (089-6425-01) (Item 15), twelve Washers (089-8227-09) (Item 18) and six Nuts (089-2344-03).
- L. Attach the bulkhead clips (047-7539-00 or S.O.C.A.T.A. P/N TB20-78-942-101) (Item 25) to the braces (047-7538-00 or S.O.C.A.T.A. P/N TB20-78-942-100) (Item 24) using two bolts (089-6425-01) (Item 15), four washers (089-8227-09) (Item 18) and two nuts (089-2344-03) (Item 14). See Figure 7-A. Place the braces with bulkheads clips attached in the airplane with the flanges of the bulkhead clips on the rivet line of the first bulkhead aft of the baggage compartment. The ends of the braces with the .13 diameter pilot holes will be under the servo gusset installed in paragraph H. The braces should be parallel with the fore to aft axis of the airplane. The forward end of the pilot side brace should be approximately .75 inch inboard from the pilot side end of the servo gusset and the forward end of copilot side brace should be approximately .75 inch inboard from the copilot side end of the servo gusset.
- M. Drill three equally spaced .126 diameter holes through each bulkhead clip, airplane bulkhead and airplane skin. Install six rivets (092-5034-01) (Item 21). Using the pilot hole in the forward end of each brace drill one .203 diameter hole through the braces and servo gusset. Install two bolts (089-6425-01) (Item 15), four washers (089-8227-09) (Item 18) and two nuts (089-2344-03) (Item 14).
- N. Reinstall the KS 179 pitch trim servo in the trim servo bracket. Block the airplane pitch trim cables to prevent unspooling at the aft drum and the pilot's trim wheel. Unwire and remove the existing turnbarrel from the co-pilot side airplane pitch trim cable. Install the trim cable splice (200-3498-00) (Item 23) using two Turnbarrels (090-0547-00) (Item 19) and (090-0548-00) (Item 20). Wrap the KS 179 pitch trim servo capstan and idler pulley as shown in Figure 7-C.

CAUTION

THE EXISTING PITCH TRIM CABLE TERMINALS ARE METRIC THREADED. THE NEW TRIM CABLE SPLICE HAS NATIONAL FINE THREADS ON THE TERMINALS. THE TWO NEW TURNBARRELS ARE THREADED METRIC ON THE LARGE ENDS AND NATIONAL FINE ON THE SMALL ENDS, THE MACHINED BAND INDICATES LEFT HAND THREADS ON BOTH TURNBARRELS. INSURE CORRECT INSTALLATION OR THREAD DAMAGE WILL OCCUR.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-10

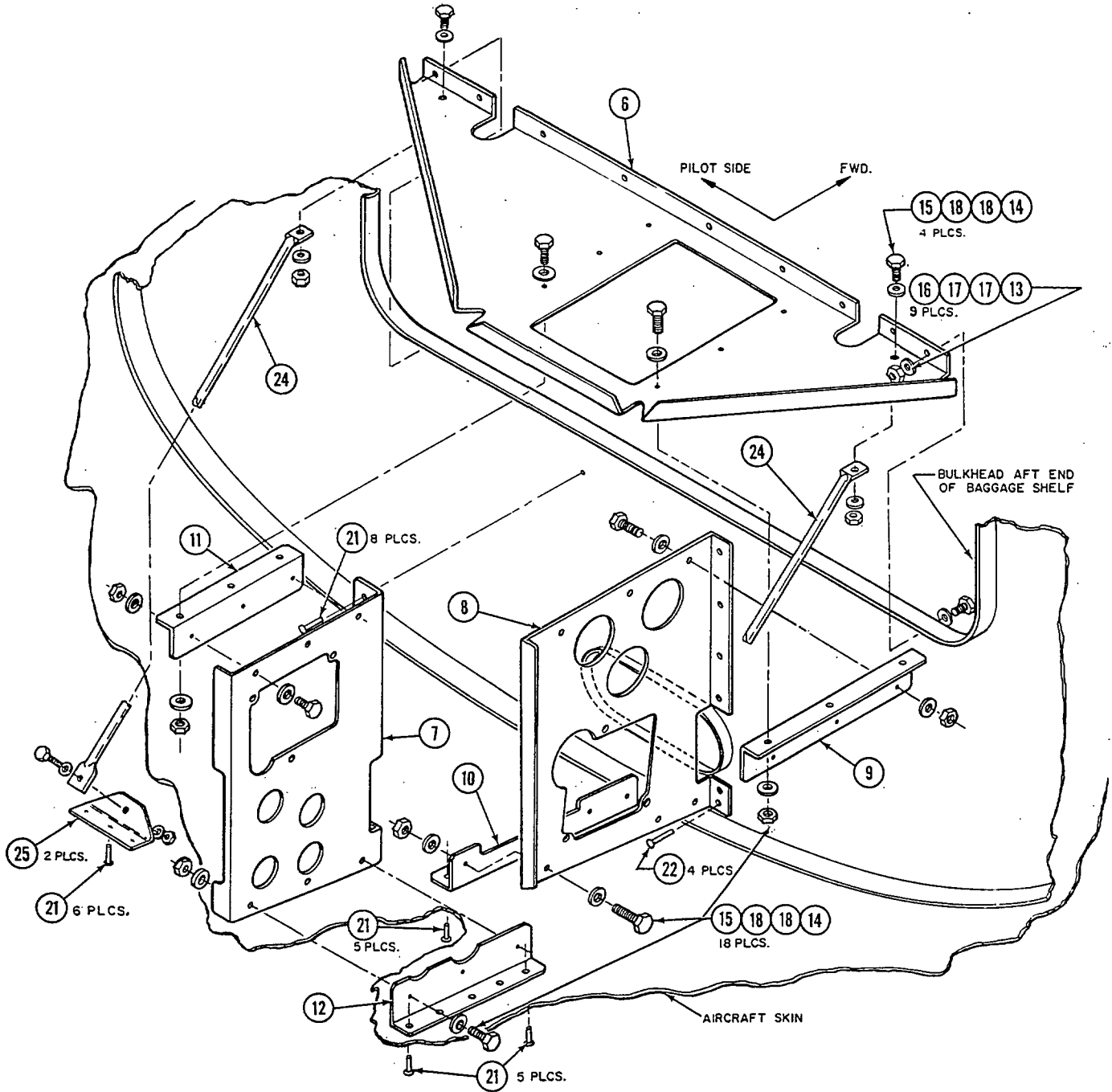


FIGURE 7-A TRIM BRACKET INSTALLATION

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-10

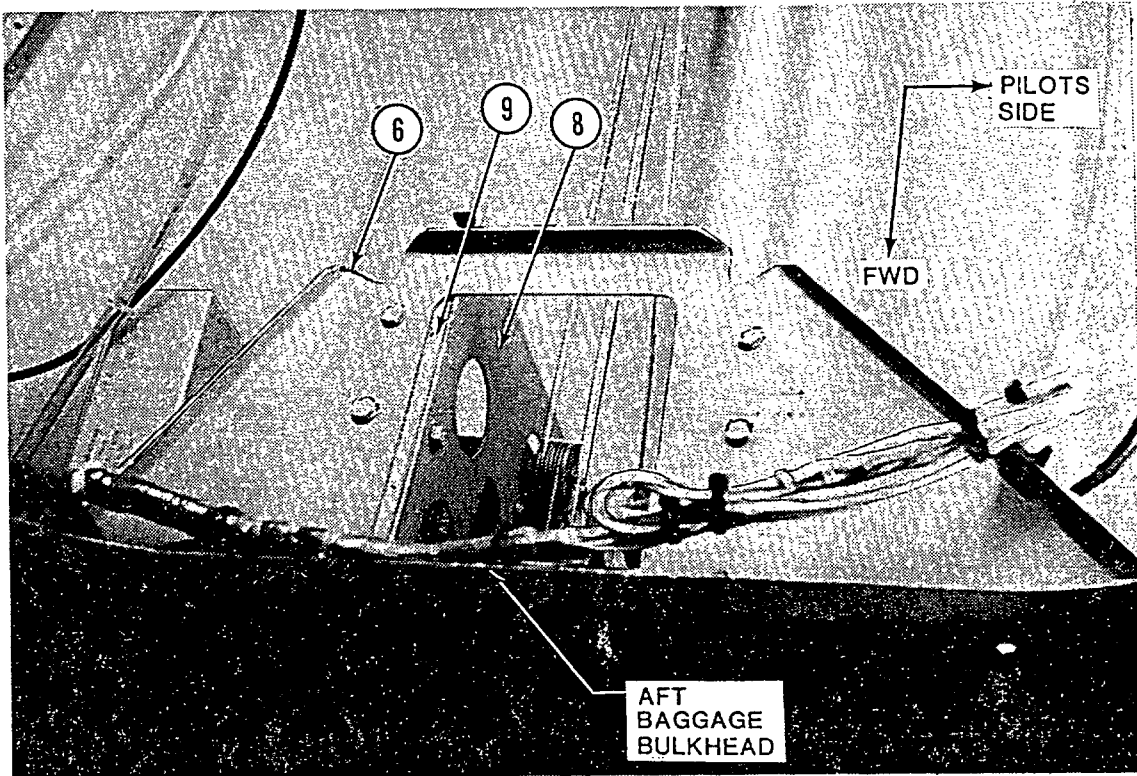


FIGURE 7-B TRIM BRACKET INSTALLATION

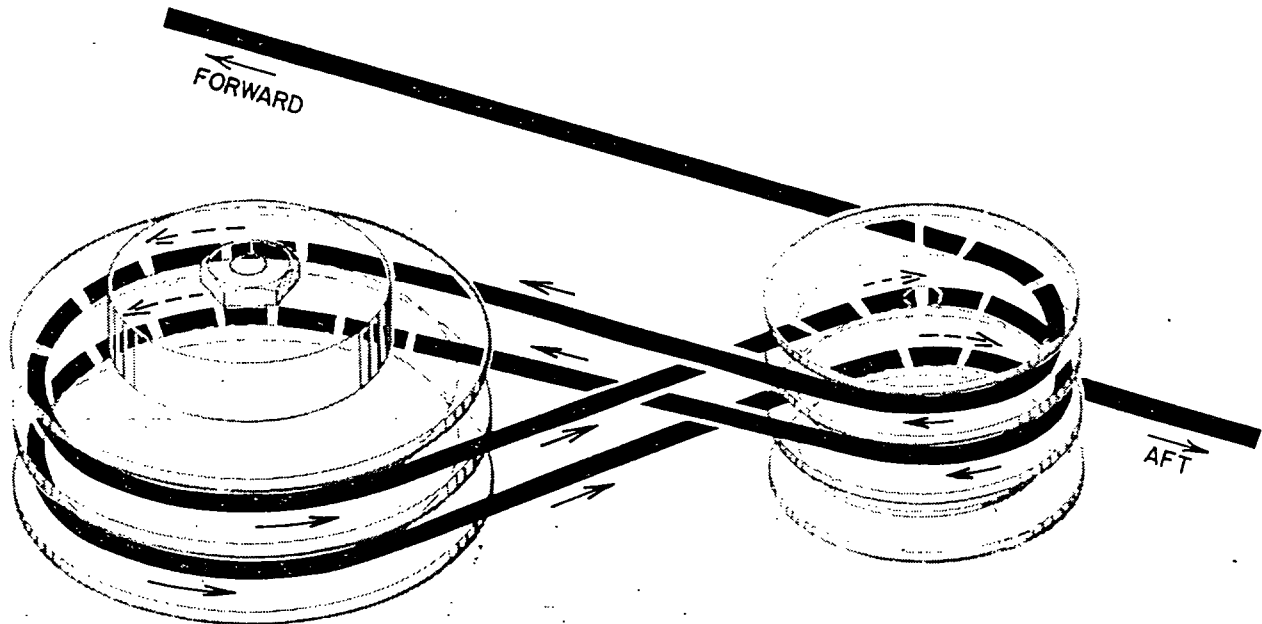


FIGURE 7-C TRIM CABLE WRAP

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-10

7.0 (Cont'd)

- O. Remove the pitch trim cable blocks and tension the pitch trim cable per the SOCATO maintenance manual. Safety wire the two new turnbarrels, standard turnbarrel clips will not fit these turnbarrels. Install the KS 179 capstan and idler pulley cable guards. See Figure 7-D.
- P. Using the connector (030-2000-00) (Item 3), Hood (030-1009-00) (Item 2) and Pivot Assembly (030-1008-00) (Item 1) provided, connect the wiring to the servo as shown in Section 10.

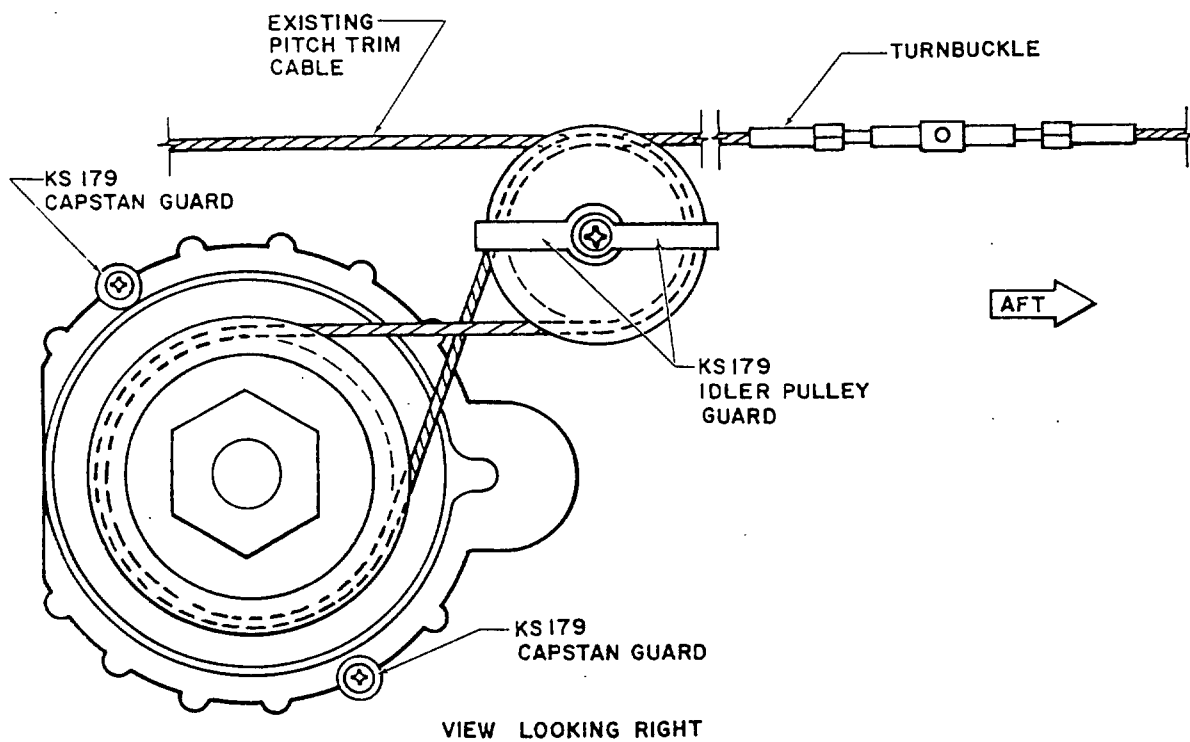


FIGURE 7-D TRIM CABLE GUARD INSTALLATION

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-11

8.0

PITCH SERVO INSTALLATION

This section applies to the installation of the KS 177 Unit.

The KS 177 Unit Installation Kit 050-1817-00 consists of the following:

ITEM	KING PART NO.	DESCRIPTION	SPEC	QTY
1	030-1008-00	Lvr/Pvt Ass'y	PMA	2
2	030-1009-00	Hood Conn	PMA	1
3	030-2000-00	Conn 14 Pin FFM	PMA	1
4	089-5393-06	Bolt	PMA	3
5	089-8227-09	Washer	PMA	3

The Pitch Installation Kit 050-2299-00 consists of the following:

ITEM	KING PART NO.	DESCRIPTION	SPEC	QTY
6	047-5658-01	Pitch Link	PMA	1
7	047-7283-01	Pitch Lever	PMA	2
8	076-1656-01	Pitch Spacer	PMA	1
9	089-2334-02	Nut	AN320C-3	3
10	089-2344-03	Nut	AN365-1032	5
11	089-6419-02	Bolt	AN23-11	1
12	089-6425-02	Bolt	AN3-5A	3
13	089-6425-03	Bolt	AN3-6A	4
14	089-7040-04	Bolt	AN3-7	1
15	089-8227-09	Washer	AN960-10	20
16	090-0217-00	Clip	MS21256-1	2
17	090-0324-02	Cotter Pin	MS24665-134	3
18	147-0059-00	Bushing	PMA	1
19	200-3499-00	Bridle Cable	PMA	1
20	089-6419-03	Bolt	AN23-12	1
21	089-8227-08	Washer	AN960-10L	3
22	088-1864-00	Spacer	PMA	1

or S.O.C.A.T.A. P/N
TB20-78-942-108

- A. The KS 177 Pitch Servo is to be installed for KAP 150 Systems and KFC 150 Systems. It is NOT installed for KAP 100 Systems. The Pitch Servo is located just aft of the baggage compartment at Sta. 129.10 opposite the Pitch Trim Servo. Adjust the slip clutch of the capstan to the value shown in Section 5.0 (Page 5-1). See Figure 5-B for adjustment procedure of the clutch.
- B. Install the KS 177 Pitch Servo in the pitch servo bracket using three Bolts (089-6425-02) (Item 12) and three Washers (089-8227-09) (Item 5). See Section 7 of this manual for installation of the pitch servo bracket.
- C. The pitch push tube lever just aft of the KS 177 pitch servo must be removed from the airplane and drilled as shown in Figure 8-A to allow attachment of the pitch lever assembly and autopilot pitch bridle cable.

CAUTION

DRILL THE AIRPLANE BELLCRANK EXACTLY AS SHOWN \pm .03 INCHES. IMPROPER DRILLING WILL RESULT IN POOR BRIDLE CABLE TENSION AND AUTOPILOT PERFORMANCE.

- D. Assemble the two halves of the pitch lever and spacers to the airplane pitch lever and reinstall the pitch lever in the airplane as shown in Figure 8-A and 8-B.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-11

8.0 (Cont'd)

- E. Place the airplane elevator surface in the center of travel and the KS 177 capstan ball location straight forward. Using the Pitch Bridle Cable (200-3499-00) (Item 19) wrap the capstan as shown in Figure 8-C. Route the turnbuckle end of the bridle cable aft to the bottom of the pitch lever assembly. Route the other end of the bridle cable aft to the top end of the pitch lever assembly.
- F. Attach the top end of the bridle cable to the lever assembly using one Bolt (089-6419-03) (Item 20), one Washer (089-8227-08) (Item 21) under the head of the bolt, one Washer (089-8227-09) (Item 15) on each side of the bridle cable eye end but between the pitch lever halves, one washer (089-8227-08) (Item 21) under the Castle Nut (089-2334-02) (Item 9) and one Cotter Pin (090-0324-02) (Item 17). Attach the fork end of the bridle cable to the Pitch Link (047-5658-01) (Item 6) using one Bolt (089-6419-02) (Item 11), one Washer (089-8227-09) (Item 15), one Washer (089-8227-08) (Item 21), one Castle Nut (089-2334-02) (Item 9) and one Cotter Pin (090-0324-02) (Item 17). Attach the pitch link to the bottom of the pitch lever assembly and bellcrank using one Bolt (089-7040-04) (Item 14), three Washers (089-8227-09) (Item 15), one Bushing (147-0059-00) (Item 18), one Castle Nut (089-2334-02) (Item 9) and one Cotter Pin (090-0324-02) (Item 17). Use one washer on each side of the bushing and torque the castle nut to 25 ± 5 inch pounds before installing the Cotter Pin. See Figure 8-B.
- G. Place the airplane elevator surface full nose down and tension the pitch bridle cable to 10 ± 2 pounds. Check the bridle cable tension at all extremes of travel to insure tension does not exceed 30 pounds. Install two Locking Clips (090-0217-00) (Item 16) in the turnbarrel. Install the two cable guard posts on the KS 177 Capstan so they do not rub on the bridle cable, but are opposite each other. Safety wire the guard posts to the attaching screws. See Figure 8-F.
- H. Using the Connector (030-2000-00) (Item 3), Hood (030-1009-00) (Item 2) and Lever and Pivot Assembly (030-1008-00) (Item 1), connect the wiring per Section 10.

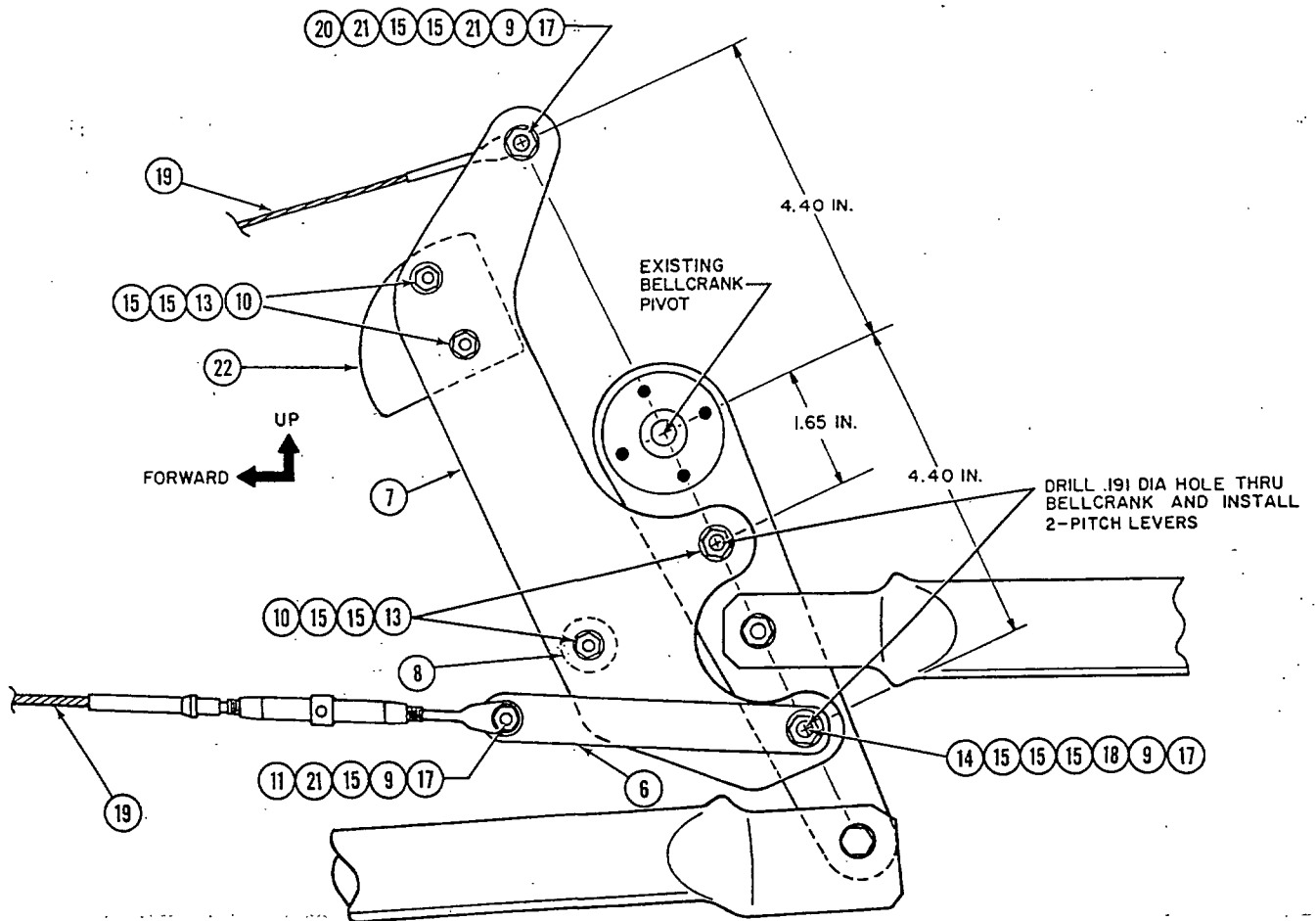


FIGURE 8-A PITCH LEVER INSTALLATION

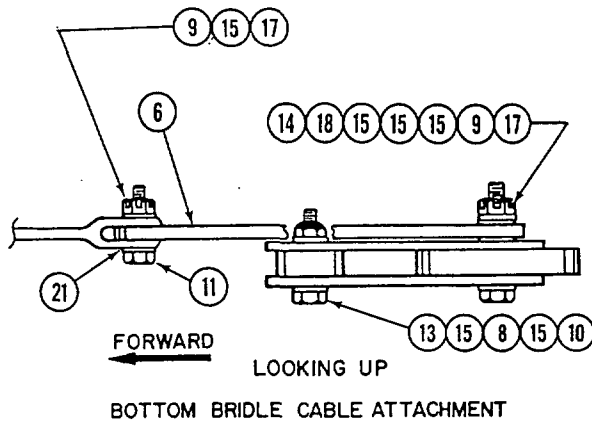
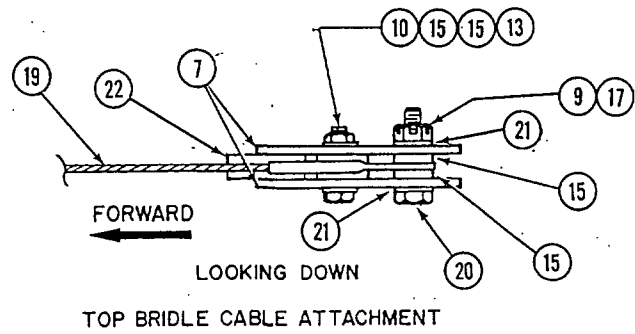


FIGURE 8-B PITCH BRIDLE CABLE ATTACHMENT

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-11

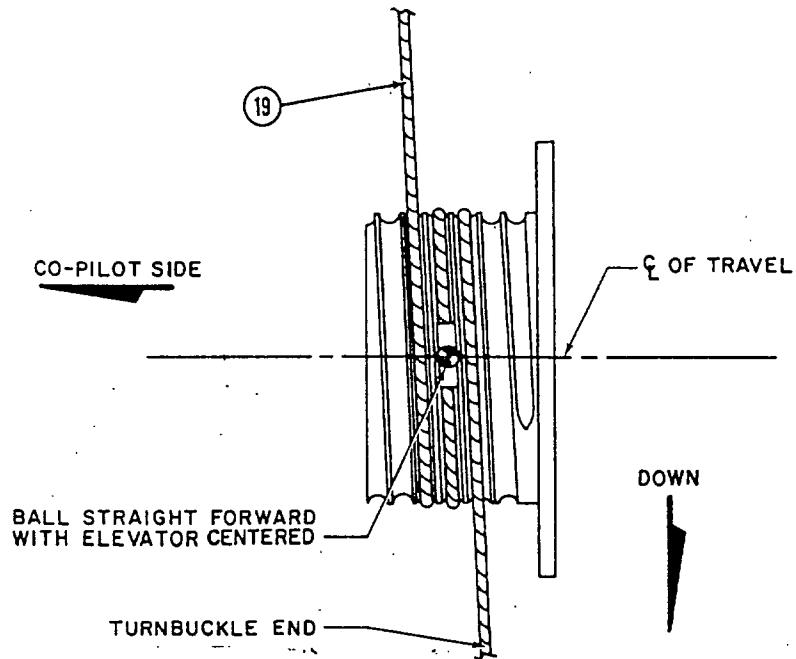


FIGURE 8-C PITCH BRIDLE CABLE WRAP

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM001-11

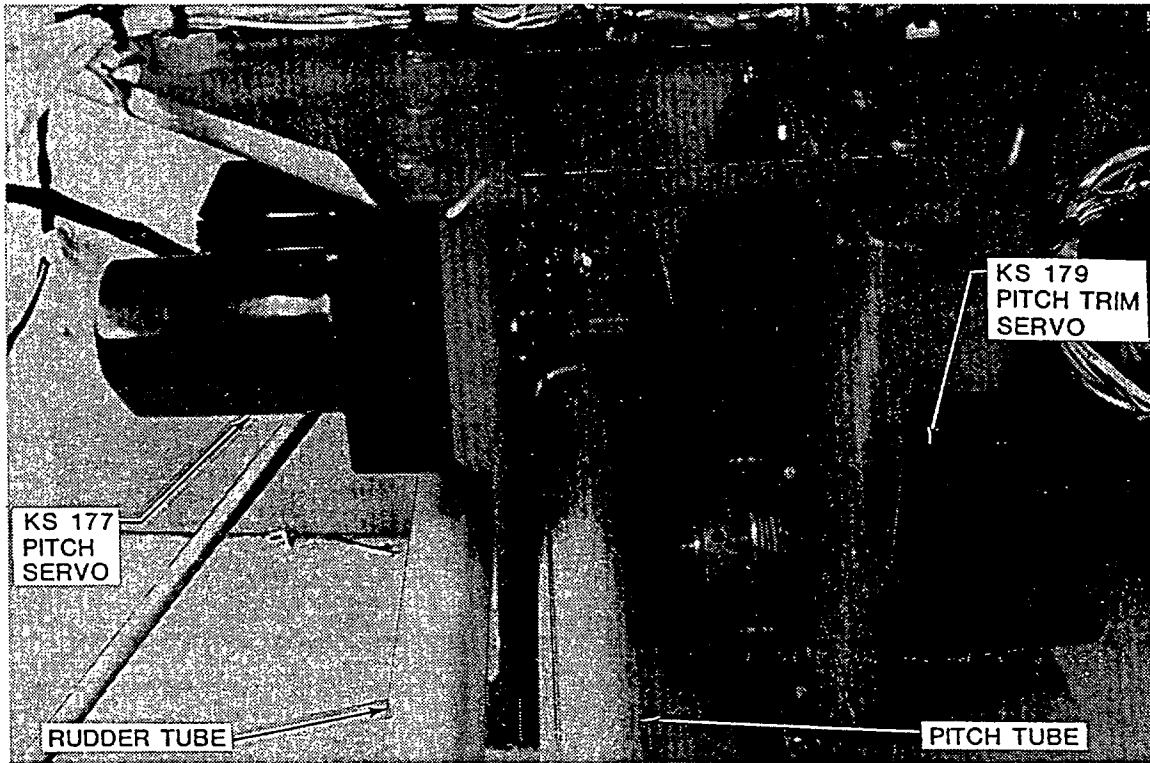


FIGURE 8-D PITCH SERVO INSTALLATION

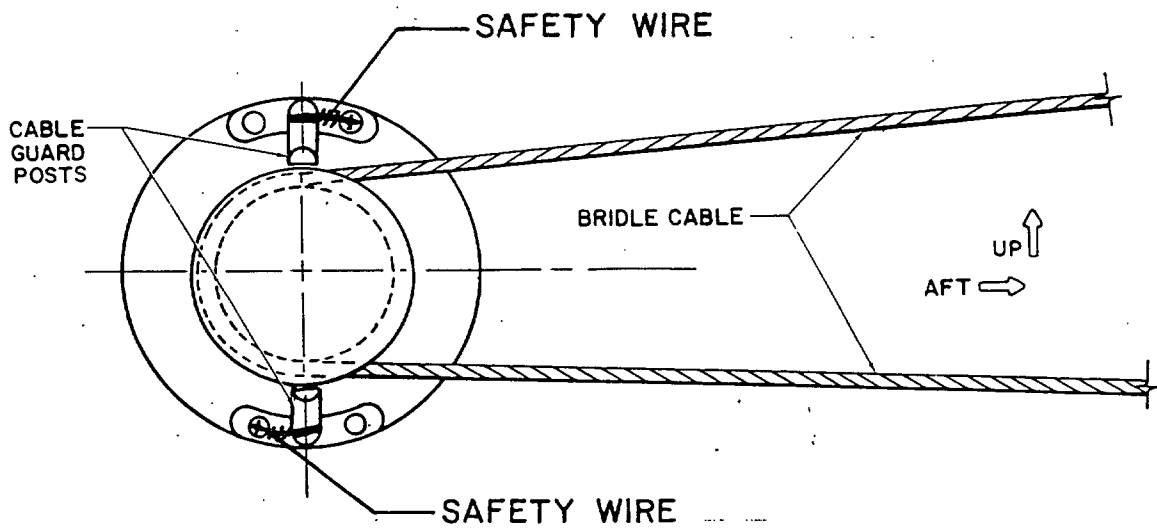


FIGURE 8-E PITCH CABLE GUARD INSTALLATION

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00

9.0 DOCUMENTATION INSTALLATION

Upon completion of the installation, insert the appropriate Flight Manual Supplement (006-0435-XX) into the airplane's operator handbook.

Documentation Kit 050-2295-00 contains the following items:

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>
006-0294-00	Installation Manual	1
006-0435-00	KAP 100 Flight Manual Supplement	1
006-0435-01	KAP 150/KFC 150 Flight Manual Supplement	1

9.1 When the optional KAS 297B Vertical Speed and Altitude Selector is installed, also insert the following Flight Manual Supplement (contained in System 150AZALT-17) into the airplane's operator handbook:

<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>
006-0435-02	KAP 150/KFC 150 with KAS 297B Flight Manual Supplement	1



10.0 ELECTRICAL INTERCONNECT DIAGRAMS AND POWER DISTRIBUTION

10.1 ELECTRICAL INTERCONNECT DIAGRAMS

The following diagrams show the electrical wiring necessary for proper installation of the various systems.

For KAP 100 Systems (with or without electric pitch trim control) refer to Figure 10-A for 14 volt system or 10-F for 28 volt system.

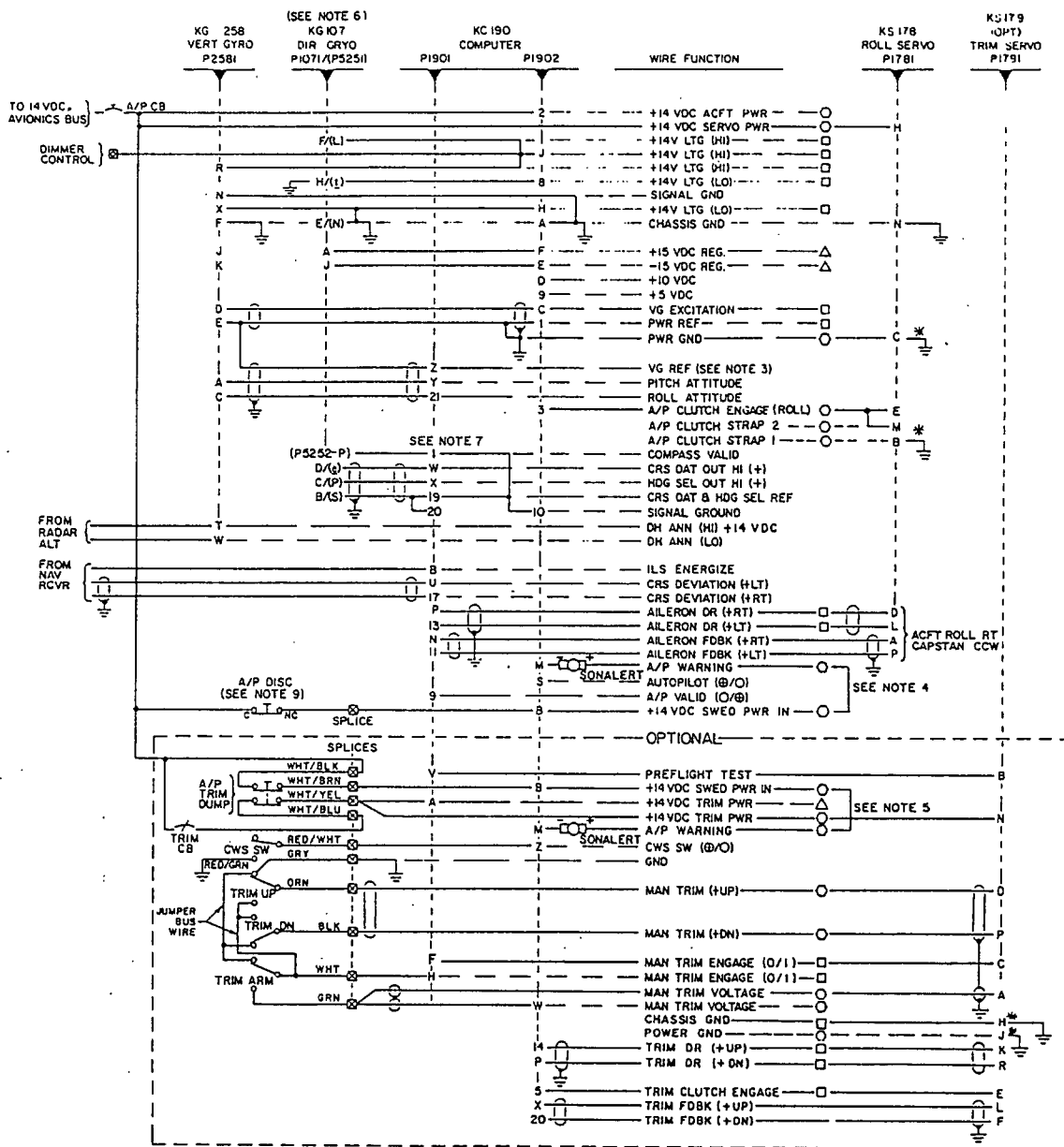
For KAP 150 or KFC 150 Systems refer to Figure 10-B for 14 volt system or 10-G for 28 volt system.

If a KCS 55A Slaved Compass System is installed, Figure 10-C for 14 volt system or 10-H for 28 volt system have been provided for wiring instructions.

For the Nav Switching option refer to Figure 10-D for 14 volt system or 10-J for 28 volt system.

For the KAS 297B Vertical Speed and Altitude Selector option, refer to Figure 10-E for 14 volt system or 10-K for 28 volt system.

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00



- NOTES:**
1. WIRES MARKED ○ ARE 18 AWG
WIRES MARKED □ ARE 20 AWG
WIRES MARKED △ ARE 22 AWG
UNMARKED WIRES ARE 24 AWG
 2. WIRES MARKED * ARE TIED TO ACFT GND AS CLOSE TO THE UNIT AS POSSIBLE. WHEN MORE THAN ONE WIRE IS BROUGHT TO COMMON GND, USE RESPECTIVE GAUGE WIRE TO TIE POINT. USE 18 AWG FROM THE TIE POINT TO GND.
 3. CONNECT VERTICAL GYRO REFERENCE TO POWER GND AT PIN "E" OF K1256/KG258.
 4. FOR KAP 100 SYSTEMS WITHOUT MANUAL ELECTRIC TRIM, CONNECT THE SONALERT AS SHOWN HERE.
 5. FOR KAP 100 SYSTEMS WITH MANUAL ELECTRIC TRIM, CONNECT THE SONALERT AS SHOWN HERE.
 6. NUMBERS IN PARENTHESES INDICATE K1525A PIN NUMBERS WHEN KCS 55A IS INSTALLED INSTEAD OF KG107. SEE KCS 55A INTERCONNECT PAGE FOR COMPLETE WIRING INFORMATION.
 7. PIN 1 OF P1901 MUST BE JUMPED TO SIG GND AT PIN 10, P1902 WHEN THE KG107 IS INSTALLED. WHEN THE KCS-55A COMPASS SYSTEM IS INSTALLED, PIN 1 OF P1901 MUST BE CONNECTED TO PIN P OF P5252 AND THE JUMPER TO SIG GND MUST BE OMITTED.
 8. SHIELDS ARE TO BE COMMON AT ONE END ONLY. FLOAT ALL SHIELDS ON FAR END.
 9. WIRE A/P DISC SWITCH AS SHOWN ONLY WHEN OPTIONAL ELECTRIC TRIM IS NOT INSTALLED. (78 10 ONLY). FOR 78 20 CONNECT PIN B OF P1902 DIRECTLY TO ACFT PWR ONLY WHEN OPTIONAL ELECTRIC TRIM IS NOT INSTALLED.

FIGURE 10-A KAP 100 ELECTRICAL INTERCONNECT (14 VOLT)
(155-9312-00, Sheet 1 of 7)

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-4

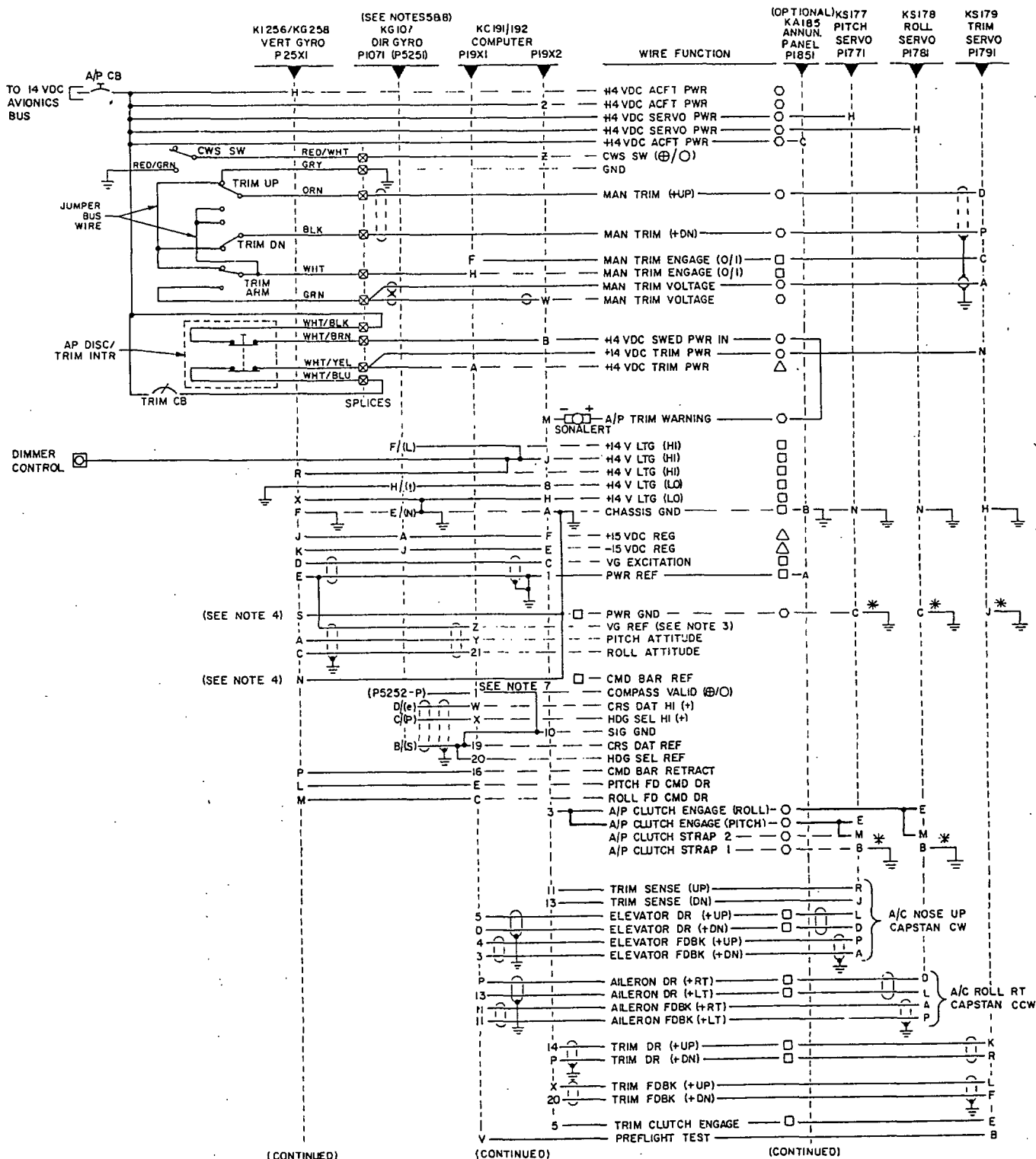
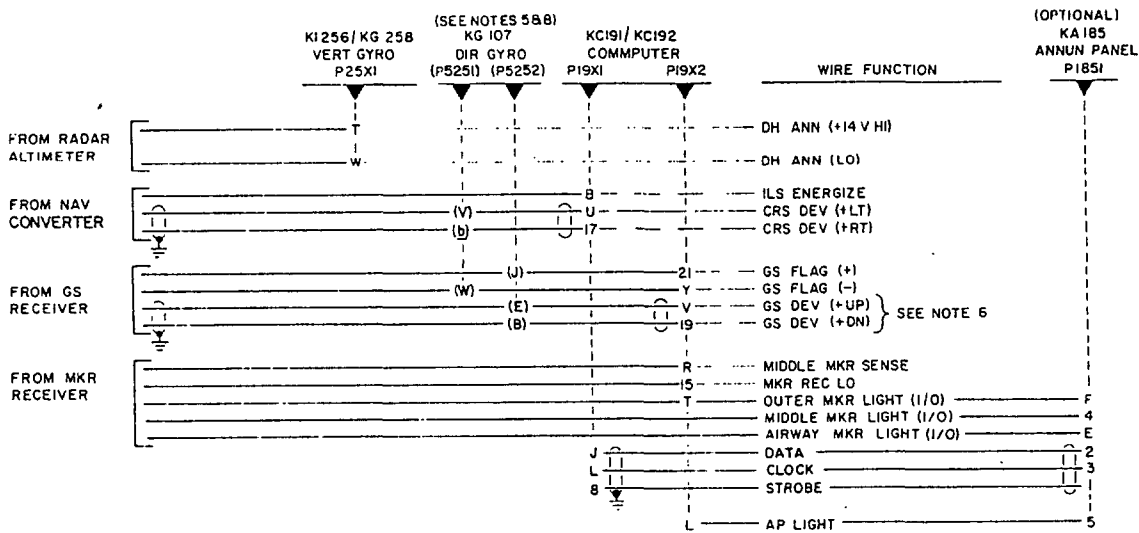


FIGURE 10-B KAP 150/KFC 150 ELECTRICAL INTERCONNECT (14 VOLT)
(155-9312-00, Sheet 2 of 7)

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-4

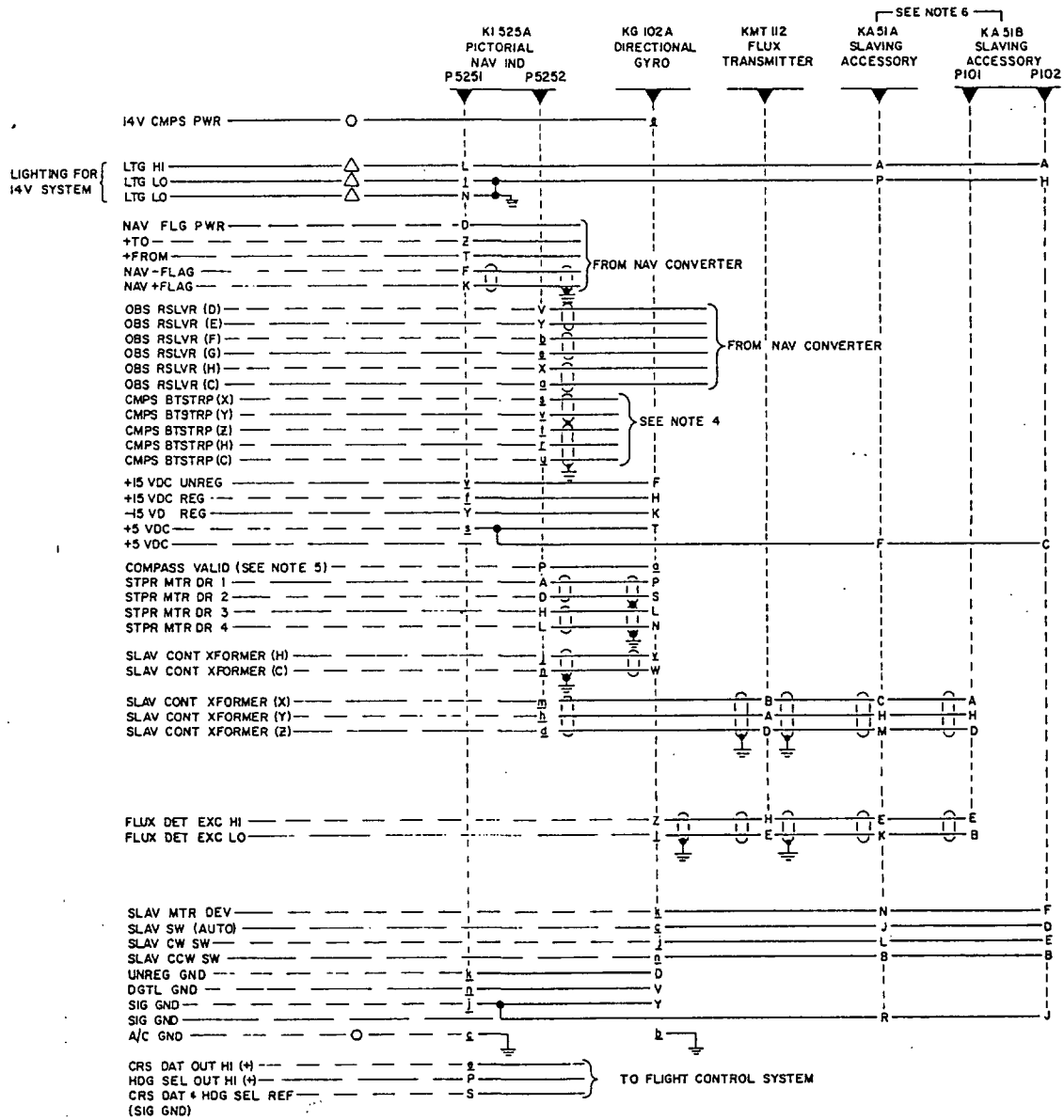


NOTES:

1. WIRES MARKED \square ARE 18 AWG
WIRES MARKED \square ARE 20 AWG
WIRES MARKED \triangle ARE 22 AWG
UNMARKED WIRES ARE 24 AWG
2. WIRES MARKED * ARE TIED TO A/C GND AS CLOSE TO THE UNIT AS POSSIBLE. WHEN MORE THAN ONE WIRE IS BROUGHT TO COMMON GND, USE SPECIFIED GAUGE WIRE TO TIE POINT. USE 18 AWG FROM THE TIE POINT TO GND.
3. CONNECT VERTICAL GYRO REFERENCE TO POWER GROUND AT PIN E OF KI256/KG258.
4. PINS N & S OF KI256 MUST BE RETURNED TO P-1922-A, AND MUST NOT BE JUMPERED TO PIN F OF KI256. WHEN KG 258 IS USED, PINS N & S ARE NOT USED.
5. NUMBERS IN PARENTHESES INDICATE KI255A PIN NUMBERS WHEN KCS 55A COMPASS SYSTEM IS INSTALLED INSTEAD OF KG 107. SEE KCS 55A INTERCONNECT PAGE FOR COMPLETE WIRING INFORMATION.
6. SHIELDS ARE TO BE COMMON AT ONE END ONLY. FLOAT ALL SHIELDS ON FAR END.
7. PIN 1 OF P19x1 MUST BE JUMPERED TO SIG GND AT PIN 10, P19x2 WHEN THE KG107 IS INSTALLED. WHEN THE KCS-55A COMPASS SYSTEM IS INSTALLED, PIN 1 OF P19x1 MUST BE CONNECTED TO PIN P OF P5252 AND THE JUMPER TO SIG GND MUST BE OMITTED.
8. THE KG 107 IS NOT APPROVED FOR USE WITH KFC150.

FIGURE 10-B KAP 150/KFC 150 ELECTRICAL INTERCONNECT (14 VOLT)
(155-9312-00, Sheet 3 of 7)

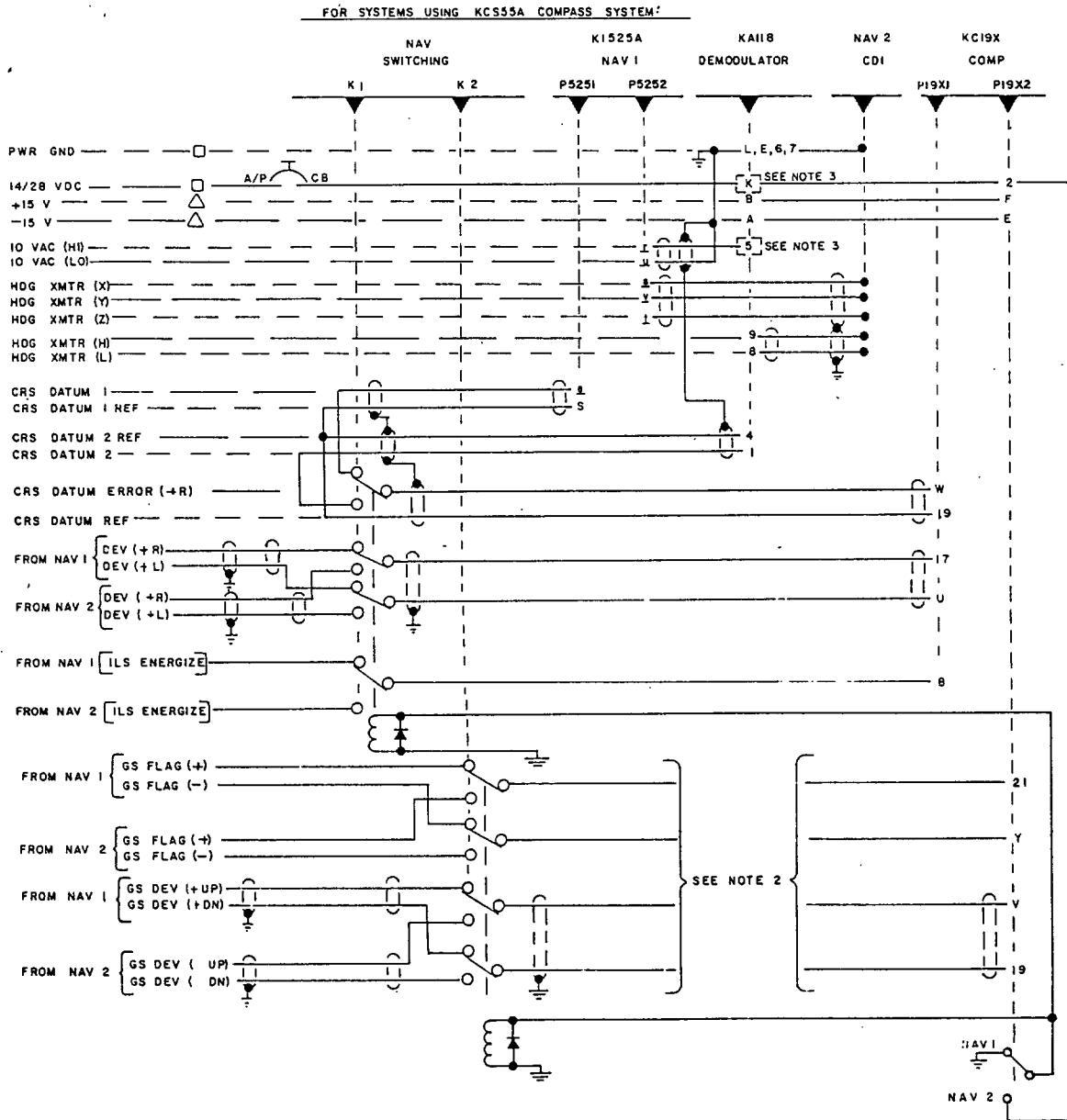
KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-4



- NOTES:
1. WIRES MARKED ○ ARE #18AWG
WIRES MARKED □ ARE #20AWG
WIRES MARKED △ ARE #22AWG
UNMARKED WIRES ARE #24AWG
 2. FOR COMP SYSTEM OPTIONS AND MECHANICAL INSTALLATION PROCEDURES, REFER TO THE KC55A INSTALLATION MANUAL.
 3. UNLESS OTHERWISE NOTED, ALL GROUNDS ARE TO BE TIED TO AIRCRAFT GROUND AS CLOSE TO EACH UNIT AS POSSIBLE.
 4. THE COMPASS BOOTSTRAP OUTPUT IS PROVIDED ON THE KI 525A, 006-3046-01 INDICATOR ONLY.
 5. ADDITIONAL CONNECTIONS FOR KI 525A CAN BE FOUND ON THE KAP100/KAP150/KFC150 INTERCONNECT.
 6. BOTH THE KASIA AND KASIB SLAVING ACCESSORIES ARE SHOWN. ONLY ONE IS REQUIRED. IGNORE ANY WIRE CONNECTIONS OR SHIELDS AT THE UNIT THAT IS NOT BEING USED.

FIGURE 10-C KCS 55A ELECTRICAL INTERCONNECT (14 VOLT)
(155-9312-00, Sheet 4 of 7)

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-4

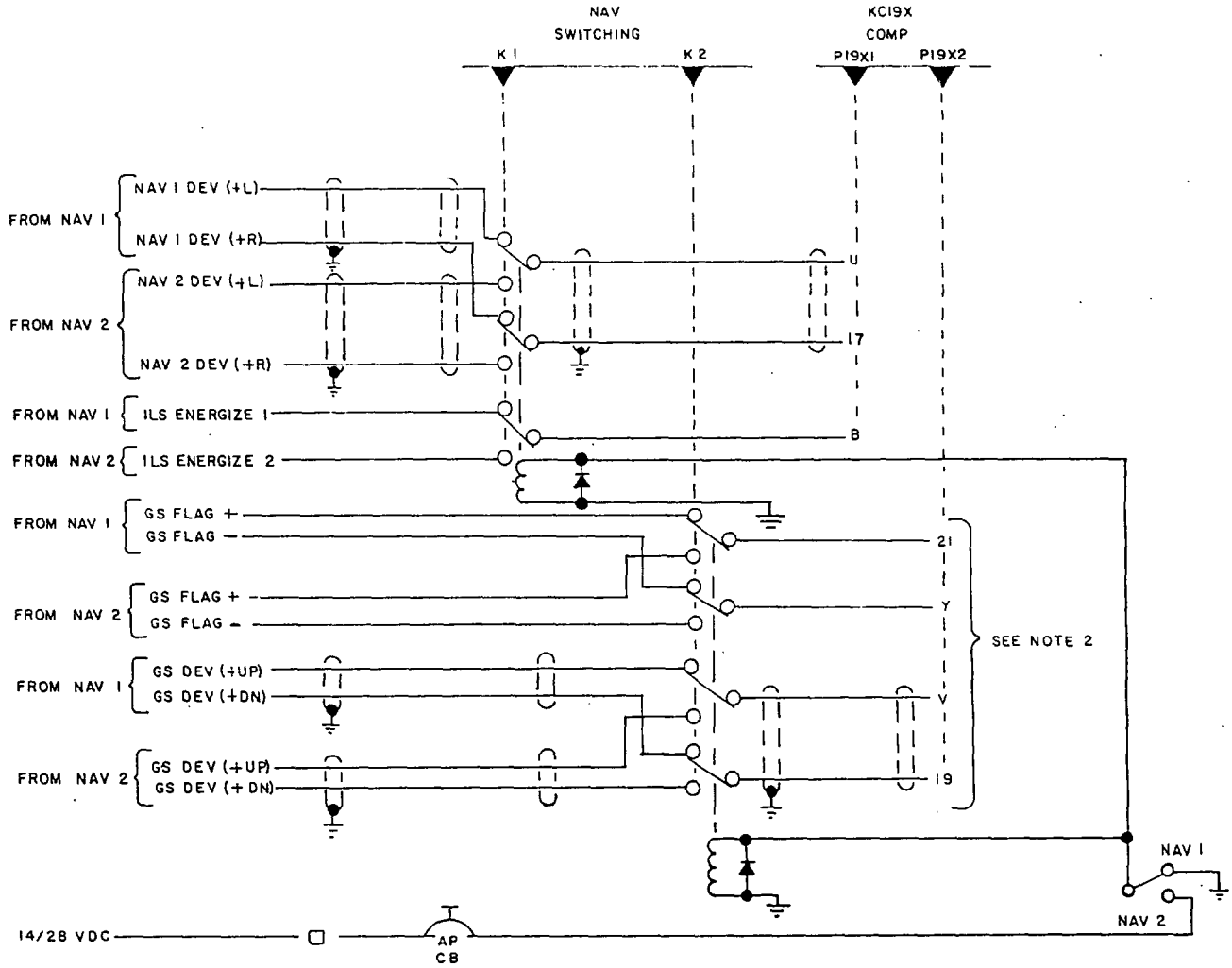


- NOTES:
1. WIRES MARKED \square ARE \neq 20 AWG
 WIRES MARKED \triangle ARE \neq 22 AWG
 UNMARKED WIRES ARE \neq 24 AWG
 2. IF KAP100 SYSTEM IS INSTALLED
 GLIDE SLOPE SWITCHING MAY BE OMITTED.
 3. WHEN AN OPTIONAL EXTERNAL INVERTER IS
 USED, A KAI18-DI MUST BE USED, AND THE
 FOLLOWING PINS MUST CHANGE. PIN K BECOMES
 OPEN AND PIN 5 BECOMES 26 VAC INPUT.

FIGURE 10-D AUTOPILOT NAV SWITCHING INTERCONNECT (14 VOLT)
 (155-9312-00, Sheet 5 of 7)

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-4

FOR SYSTEMS USING KG107 DIRECTIONAL GYRO:



- NOTES: 1. WIRES MARKED \square ARE #20 AWG
 WIRES MARKED \triangle ARE #22 AWG
 UNMARKED WIRES ARE #24 AWG
2. IF KAP 100 SYSTEM IS INSTALLED
 GLIDE SLOPE SWITCHING MAY BE OMITTED.

FIGURE 10-D AUTOPILOT NAV SWITCHING INTERCONNECT (14 VOLT)
 (155-9312-00, Sheet 6 of 7)

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-4

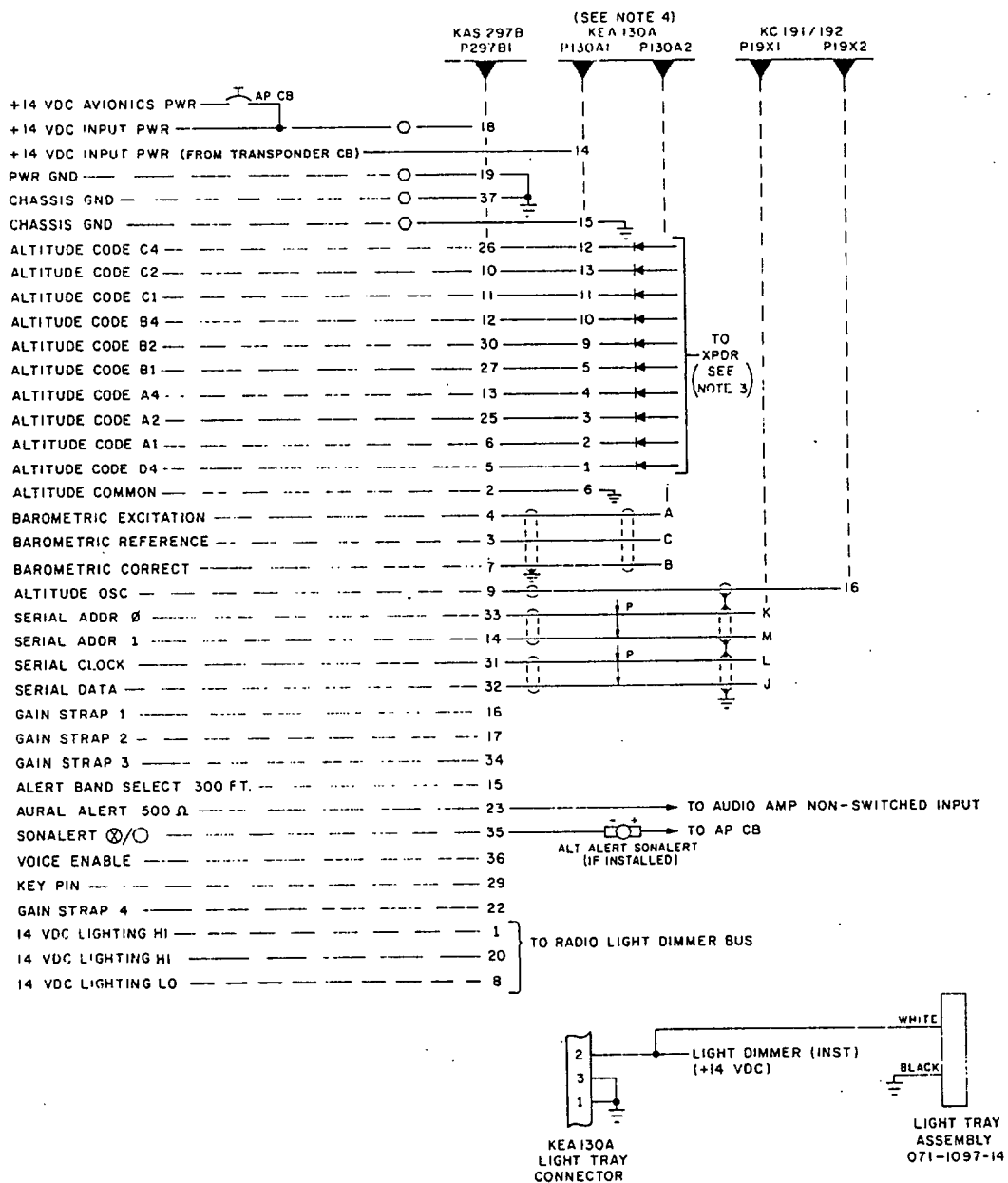


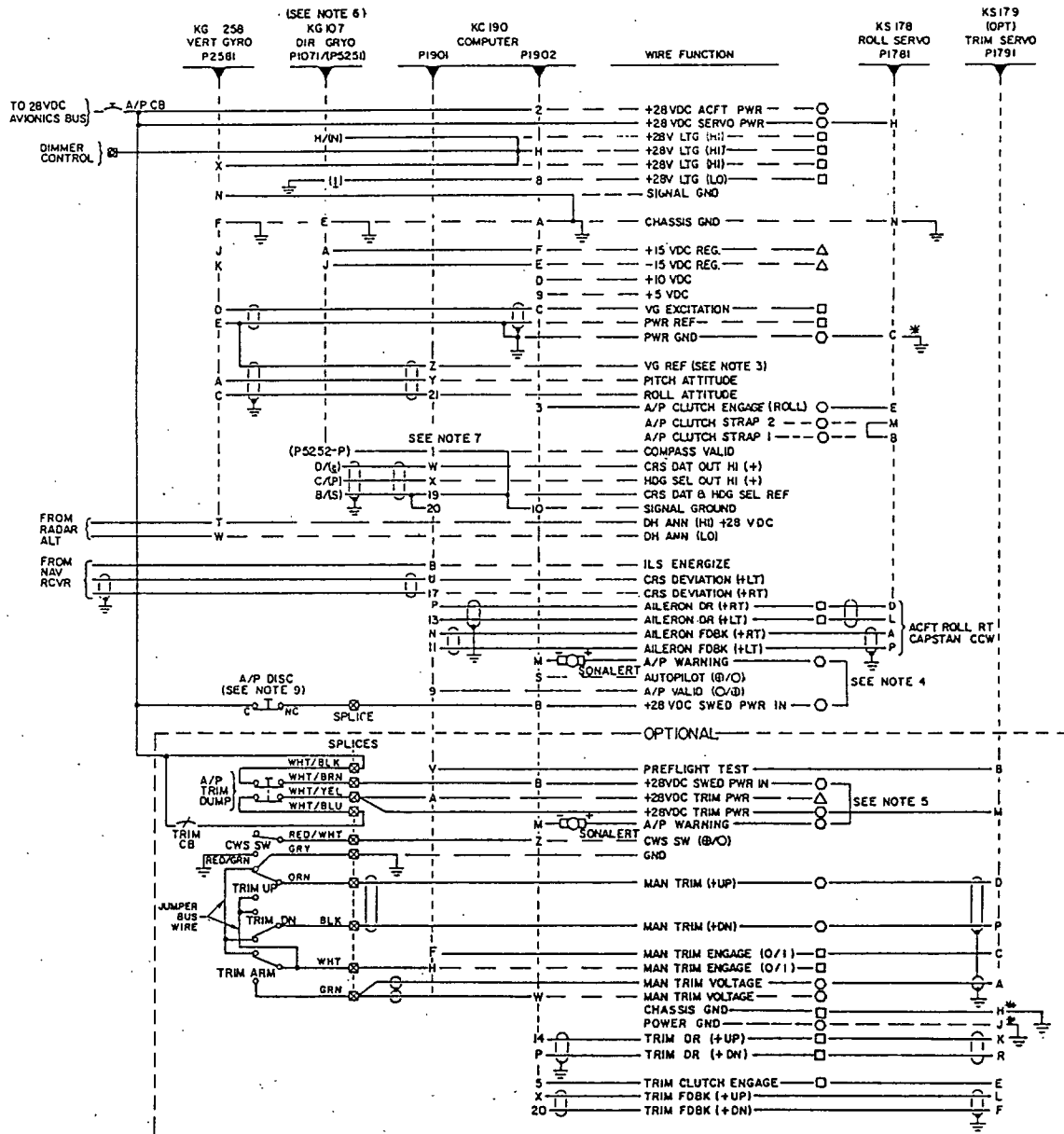
FIGURE 1

NOTES

- 1 UNLESS OTHERWISE NOTED ALL WIRES ARE 24 AWG.
- 2 WIRES MARKED ○ ARE 18 AWG
- 3 DIODE ISOLATION AT THE TRANSPONDER IS REQUIRED FOR CORRECT SYSTEM OPERATION. IF THE TRANSPONDER USED DOES NOT HAVE INTERNAL ISOLATION DIODES, INSTALL AN IN4003 OR EQUIVALENT DIODE ON EACH CODE LINE INTO THE UNIT.
- 4 CONNECTOR WIRING FOR THE KEA 130A REQUIRED LIGHT TRAY ASSEMBLY IS SHOWN IN FIGURE 1.

FIGURE 10-E OPTIONAL KAS 297B ELECTRICAL INTERCONNECT (14 VOLT)
(155-9312-00, Sheet 7 of 7)

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00



- NOTES:
1. WIRES MARKED ○ ARE 18 AWG
 WIRES MARKED □ ARE 20 AWG
 WIRES MARKED △ ARE 22 AWG
 UNMARKED WIRES ARE 24 AWG
 2. WIRES MARKED * ARE TIED TO ACFT GND AS CLOSE TO THE UNIT AS POSSIBLE. WHEN MORE THAN ONE WIRE IS BROUGHT TO COMMON GND, USE RESPECTIVE GAUGE WIRE TO TIE POINT. USE 18 AWG FROM THE TIE POINT TO GND.
 3. CONNECT VERTICAL GYRO REFERENCE TO POWER GND AT PIN "E" OF KI256/KG258.
 4. FOR KAP 100 SYSTEMS WITHOUT MANUAL ELECTRIC TRIM, CONNECT THE SONALERT AS SHOWN HERE.
 5. FOR KAP 100 SYSTEMS WITH MANUAL ELECTRIC TRIM, CONNECT THE SONALERT AS SHOWN HERE.
 6. NUMBERS IN PARENTHESES INDICATE K1525A PIN NUMBERS WHEN KCS 55A IS INSTALLED INSTEAD OF KG107. SEE KCS 55A INTERCONNECT PAGE FOR COMPLETE WIRING INFORMATION.
 7. PIN 1 OF P1901 MUST BE JUMPED TO SIG GND AT PIN 10, P1902 WHEN THE KG107 IS INSTALLED. WHEN THE KCS-55A COMPASS SYSTEM IS INSTALLED, PIN 1 OF P1901 MUST BE CONNECTED TO PIN P OF P5252 AND THE JUMPER TO SIG GND MUST BE OMITTED.
 8. SHIELDS ARE TO BE COMMON AT ONE END ONLY. FLOAT ALL SHIELDS ON FAR END.
 9. WIRE 'A/P DISC SWITCH AS SHOWN ONLY WHEN OPTIONAL ELECTRIC TRIM IS NOT INSTALLED. (TB 10 ONLY) FOR TB 20 CONNECT PIN B OF P1902 DIRECTLY TO ACFT PWR ONLY WHEN OPTIONAL ELECTRIC TRIM IS NOT INSTALLED.

FIGURE 10-F KAP 100 ELECTRICAL INTERCONNECT (28 VOLT)
(155-9312-01, Sheet 1 of 7)

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00

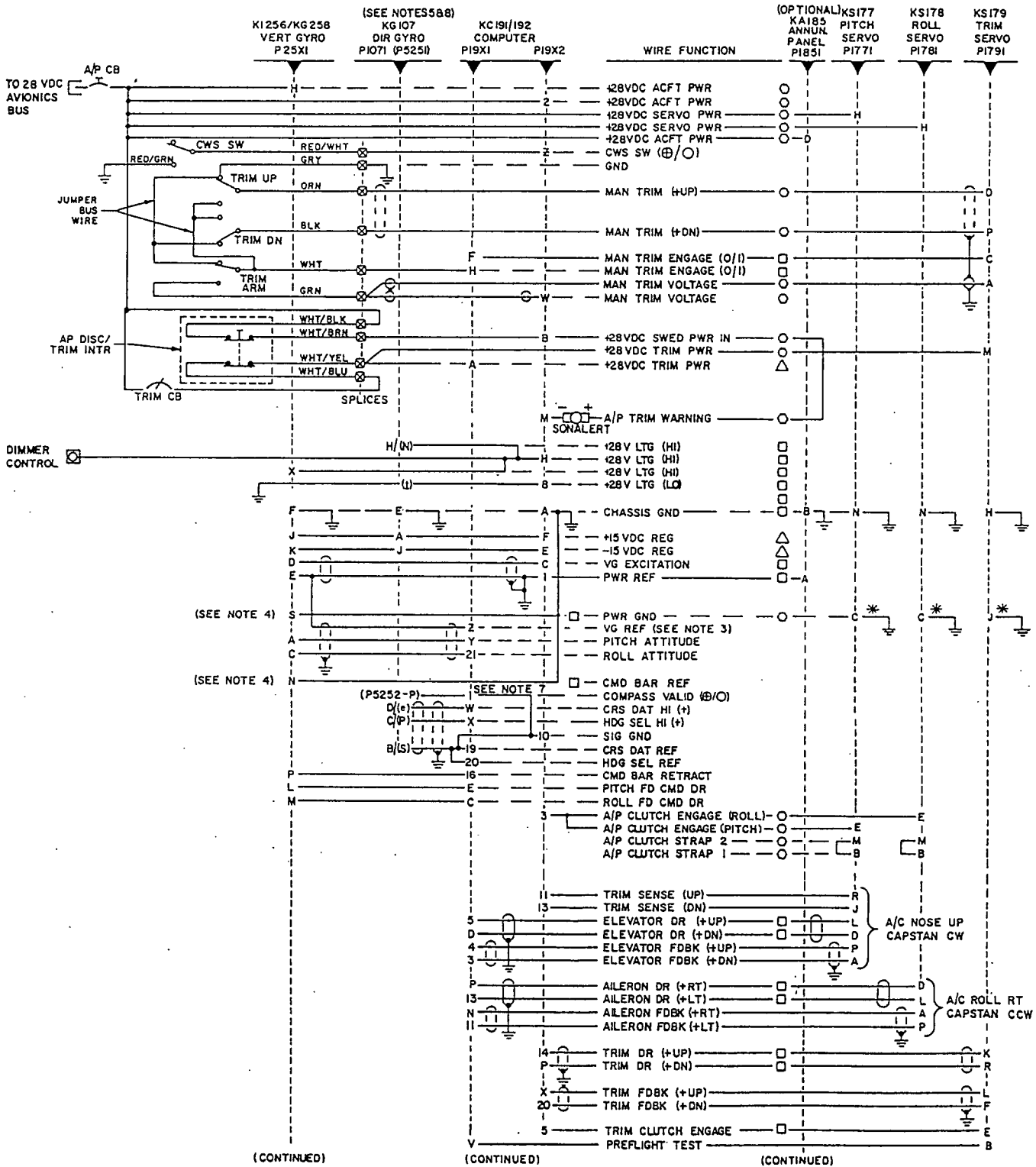
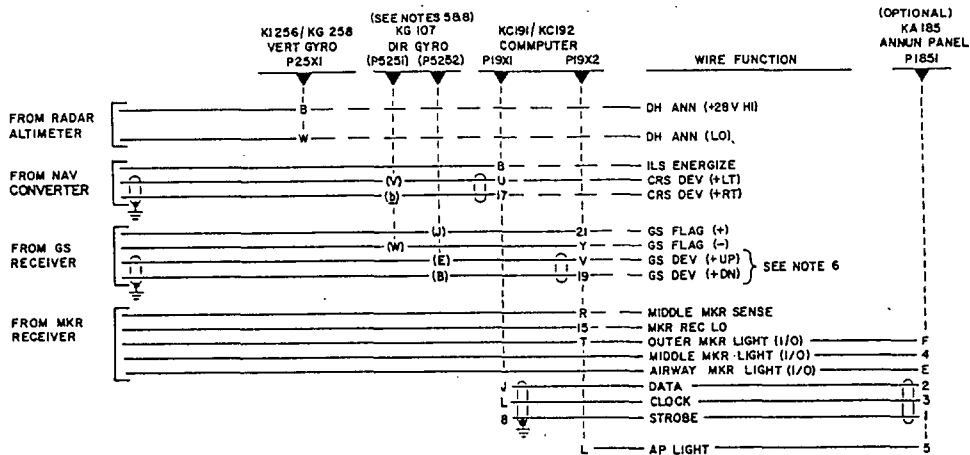


FIGURE 10-G KAP 150/KFC 150 ELECTRICAL INTERCONNECT (28 VOLT)
(155-9312-01, Sheet 2 of 7)

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-4

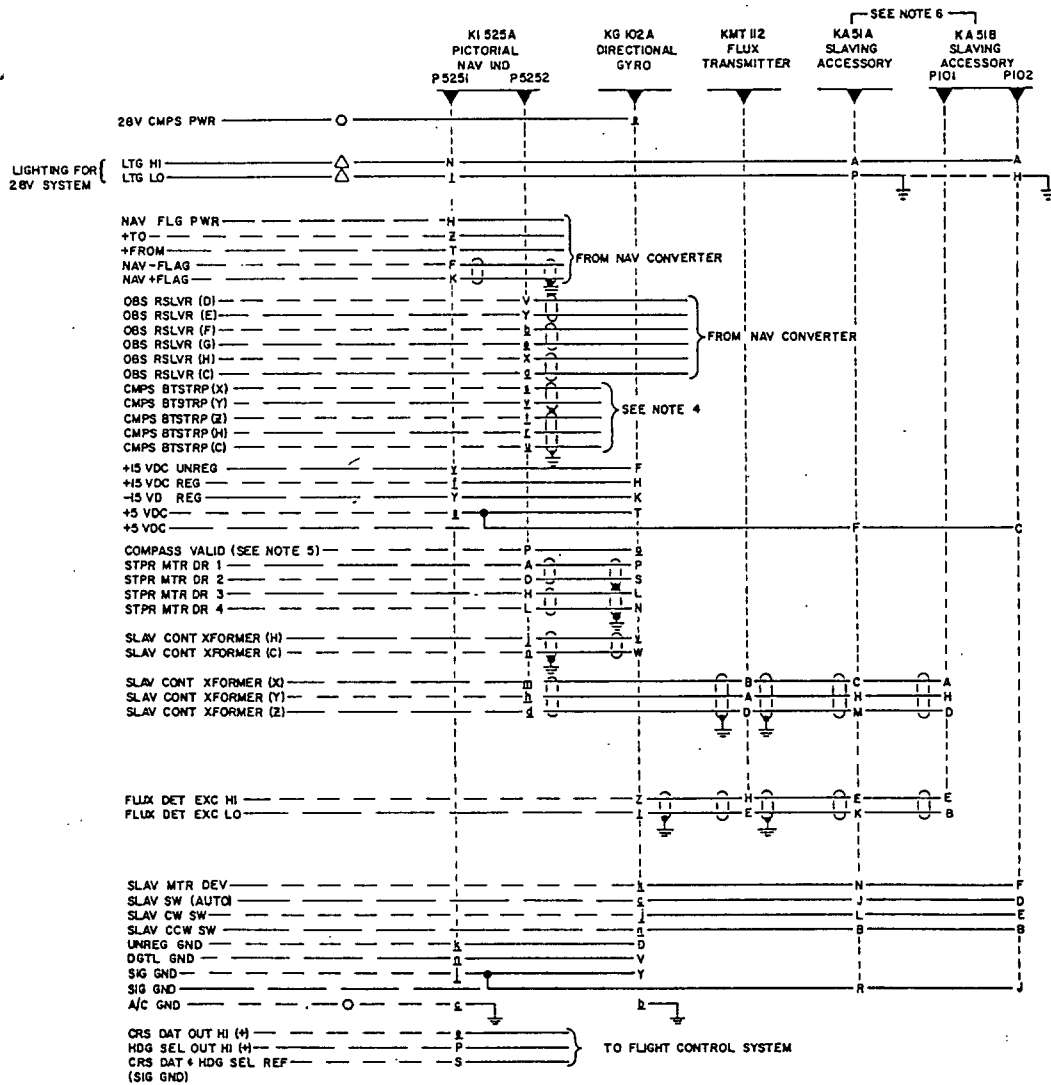


NOTES:

1. WIRES MARKED \square ARE 18 AWG
WIRES MARKED \square ARE 20 AWG
WIRES MARKED \triangle ARE 22 AWG
UNMARKED WIRES ARE 24 AWG
2. WIRES MARKED * ARE TIED TO A/C GND AS CLOSE TO THE UNIT AS POSSIBLE. WHEN MORE THAN ONE WIRE IS BROUGHT TO COMMON GND, USE SPECIFIED GAUGE WIRE TO THE POINT. USE 18 AWG FROM THE TIE POINT TO GND.
3. CONNECT VERTICAL GYRO REFERENCE TO POWER GROUND AT PIN E OF KI256/KG258.
4. PINS N4S OF KI 256 MUST BE RETURNED TO P-1922-A, AND MUST NOT BE JUMPERED TO PIN F OF KI 256. WHEN KG 258 IS USED, PINS N4S ARE NOT USED.
5. NUMBERS IN PARENTHESES INDICATE KI 525 A PIN NUMBERS WHEN KCS 55A COMPASS SYSTEM IS INSTALLED INSTEAD OF KG 107. SEE KCS 55 A INTERCONNECT PAGE FOR COMPLETE WIRING INFORMATION.
6. SHIELDS ARE TO BE COMMON AT ONE END ONLY. FLOAT ALL SHIELDS ON FAR END.
7. PIN 1 OF P19x1 MUST BE JUMPERED TO SIG GND AT PIN 10, P19x2 WHEN THE KG107 IS INSTALLED. WHEN THE KCS-55A COMPASS SYSTEM IS INSTALLED, PIN 1 OF P19x1 MUST BE CONNECTED TO PIN P OF P5252 AND THE JUMPER TO SIG GND MUST BE OMITTED.
8. THE KG 107 IS NOT APPROVED FOR USE WITH KFC 150.

FIGURE 10-G KAP 150/KFC 150 ELECTRICAL INTERCONNECT (28 VOLT)
(155-9312-01, Sheet 3 of 7)

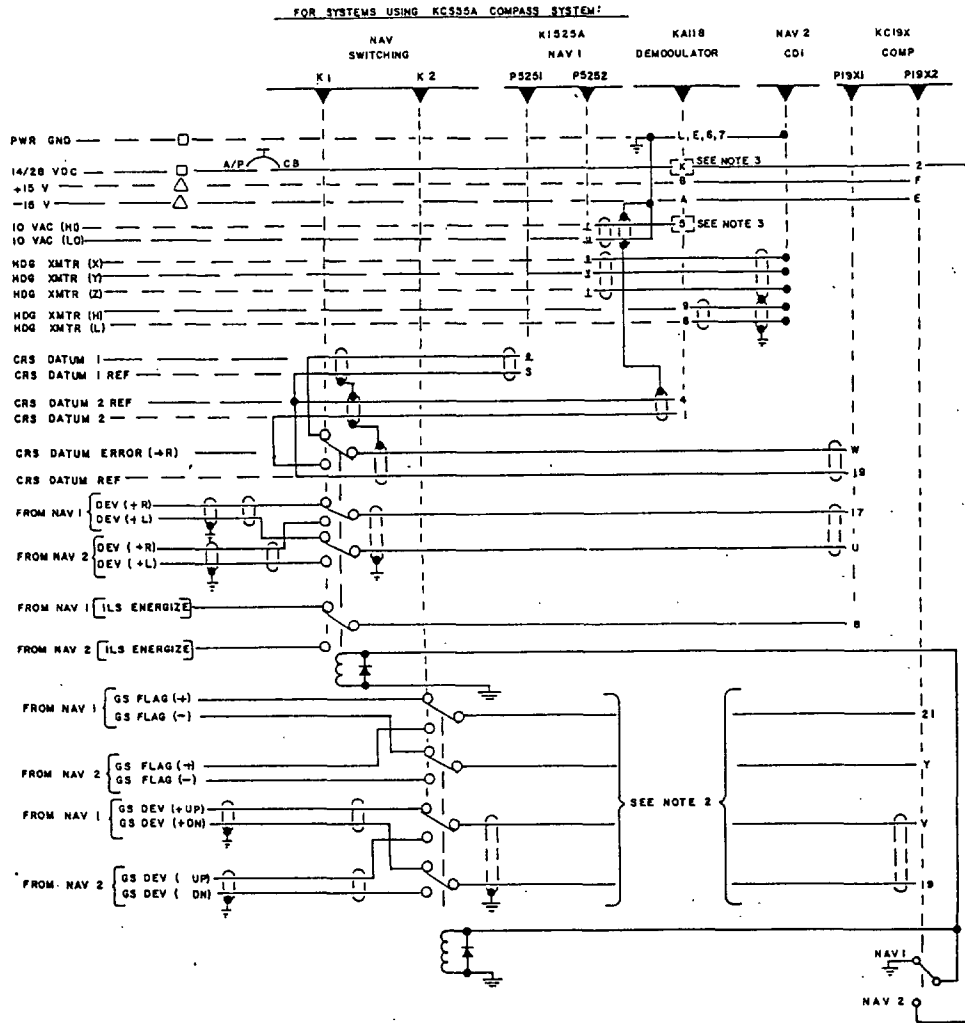
KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-4



- NOTES:
1. WIRES MARKED ○ ARE #18AWG
WIRES MARKED ◻ ARE #20AWG
WIRES MARKED △ ARE #22AWG
UNMARKED WIRES ARE #24 AWG
 2. FOR COMP SYSTEM OPTIONS AND MECHANICAL INSTALLATION PROCEDURES, REFER TO THE KCS55A INSTALLATION MANUAL.
 3. UNLESS OTHERWISE NOTED, ALL GROUNDS ARE TO BE TIED TO AIRCRAFT GROUND AS CLOSE TO EACH UNIT AS POSSIBLE.
 4. THE COMPASS BOOTSTRAP OUTPUT IS PROVIDED ON THE KI 525A, 006-3046-01 INDICATOR ONLY.
 5. ADDITIONAL CONNECTIONS FOR KI 525A CAN BE FOUND ON THE KAP100/KAP150/KFC150 INTERCONNECT.
 6. BOTH THE KASIA AND KASIB SLAVING ACCESSORIES ARE SHOWN. ONLY ONE IS REQUIRED. IGNORE ANY WIRE CONNECTIONS OR SHIELDS AT THE UNIT THAT IS NOT BEING USED.

FIGURE 10-H KCS 55A ELECTRICAL INTERCONNECT (28 VOLT)
(155-9312-01, Sheet 4 of 7)

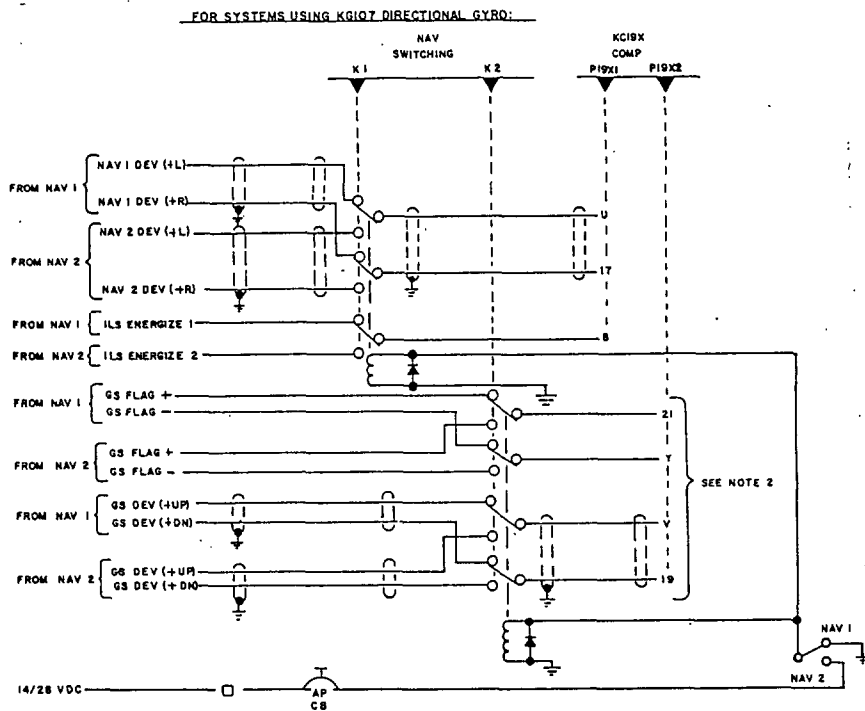
KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-4



- NOTES:
1. WIRES MARKED \square ARE \approx 20 AWG
 WIRES MARKED \triangle ARE \approx 22 AWG
 UNMARKED WIRES ARE \approx 24 AWG
 2. IF KAP 100 SYSTEM IS INSTALLED
 GLIDE SLOPE SWITCHING MAY BE OMITTED.
 3. WHEN AN OPTIONAL EXTERNAL INVERTER IS
 USED, A KAI18-01 MUST BE USED, AND THE
 FOLLOWING PINS MUST CHANGE. PIN K BECOMES
 OPEN AND PIN 5 BECOMES 28 VAC INPUT.

FIGURE 10-J AUTOPILOT NAV SWITCHING INTERCONNECT (28 VOLT)
 (155-9312-01, Sheet 5 of 7)

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-4



- NOTES: 1. WIRES MARKED □ ARE #20 AWG
 WIRES MARKED △ ARE #22 AWG
 UNMARKED WIRES ARE #24 AWG
 2. IF KAP 100 SYSTEM IS INSTALLED
 GLIDE SLOPE SWITCHING MAY BE OMITTED.

FIGURE 10-J AUTOPILOT NAV SWITCHING INTERCONNECT (28 VOLT)
 (155-9312-01, Sheet 6 of 7)

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-4

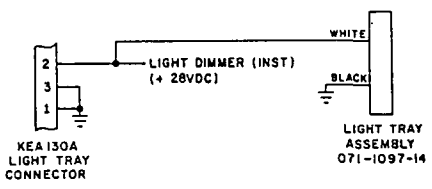
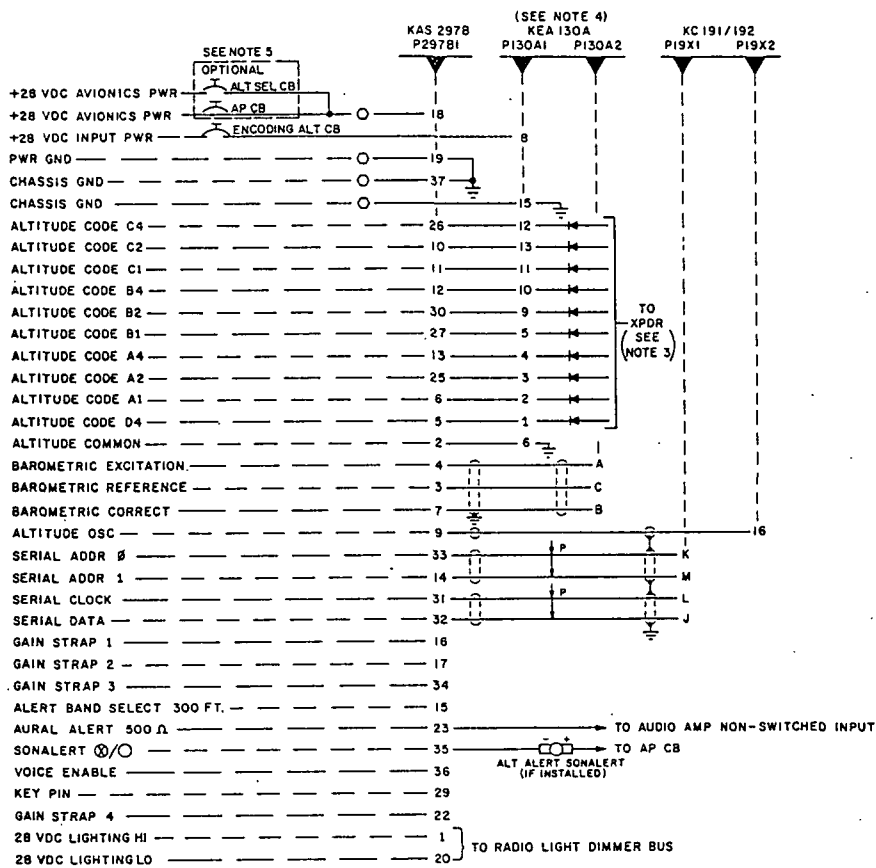


FIGURE 1

- NOTES:
1. UNLESS OTHERWISE NOTED ALL WIRES ARE 24 AWG.
 2. WIRES MARKED ○ ARE 18 AWG.
 3. DIODE ISOLATION AT THE TRANSPONDER IS REQUIRED FOR CORRECT SYSTEM OPERATION. IF THE TRANSPONDER USED DOES NOT HAVE INTERNAL ISOLATION DIODES, INSTALL AN IN4003 OR EQUIVALENT DIODE ON EACH CODE LINE INTO THE UNIT.
 4. CONNECTOR WIRING FOR THE KEA 130A REQUIRED LIGHT TRAY ASSEMBLY IS SHOWN IN FIGURE 1.
 5. THE KAS 297B MAY BE POWERED BY THE AP BUS OR THRU A SEPARATE IA ALT SEL CB.

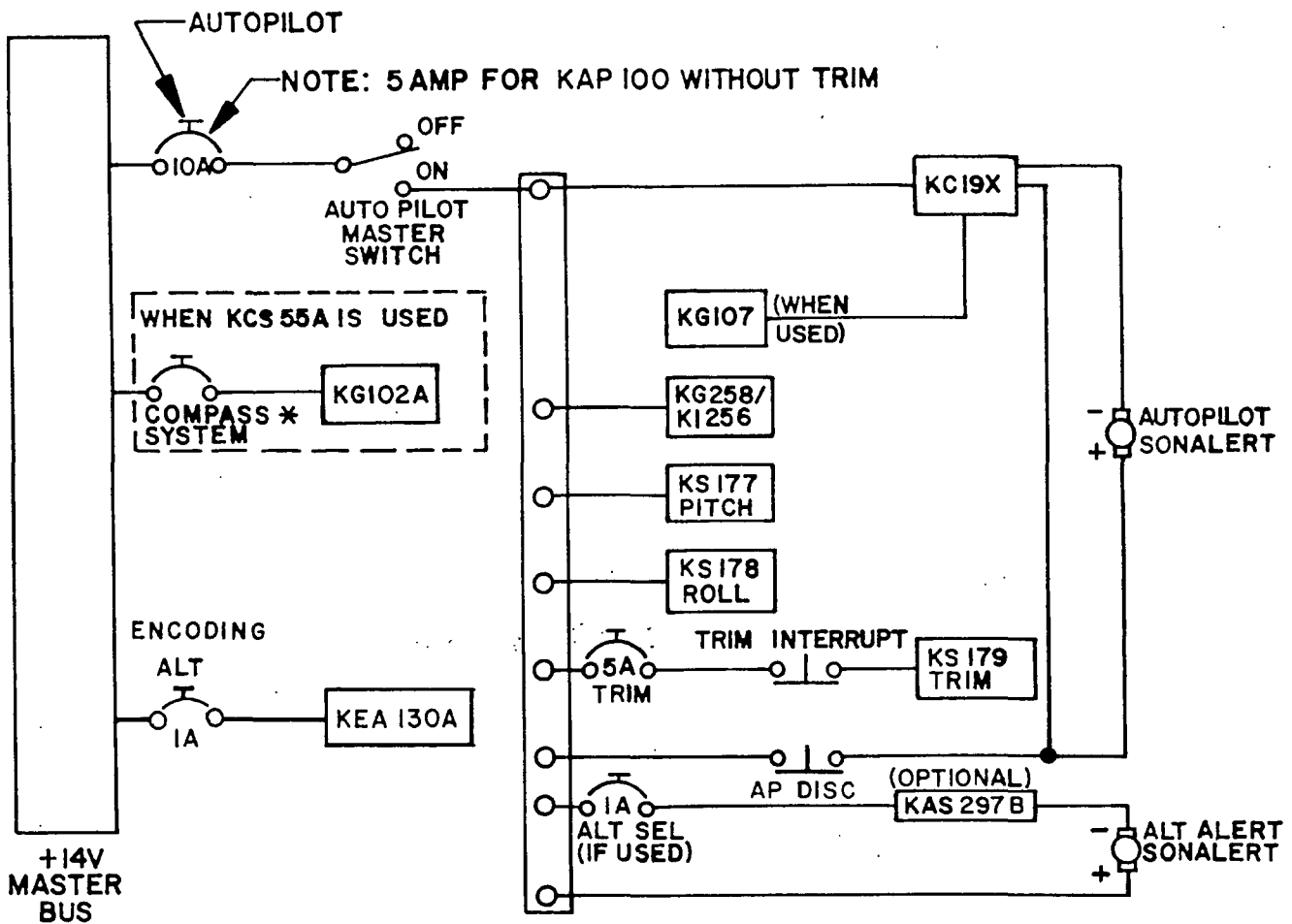
FIGURE 10-K OPTIONAL KAS 297B ELECTRICAL INTERCONNECT (28 VOLT)
(155-9312-01, Sheet 7 of 7)

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-4

10.2 POWER DISTRIBUTION

Figure 10-L for 14 volt system or 10-N for 28 volt system shows the power distribution for the KAP 100, KAP 150 and KFC 150 Systems with an autopilot master switch.

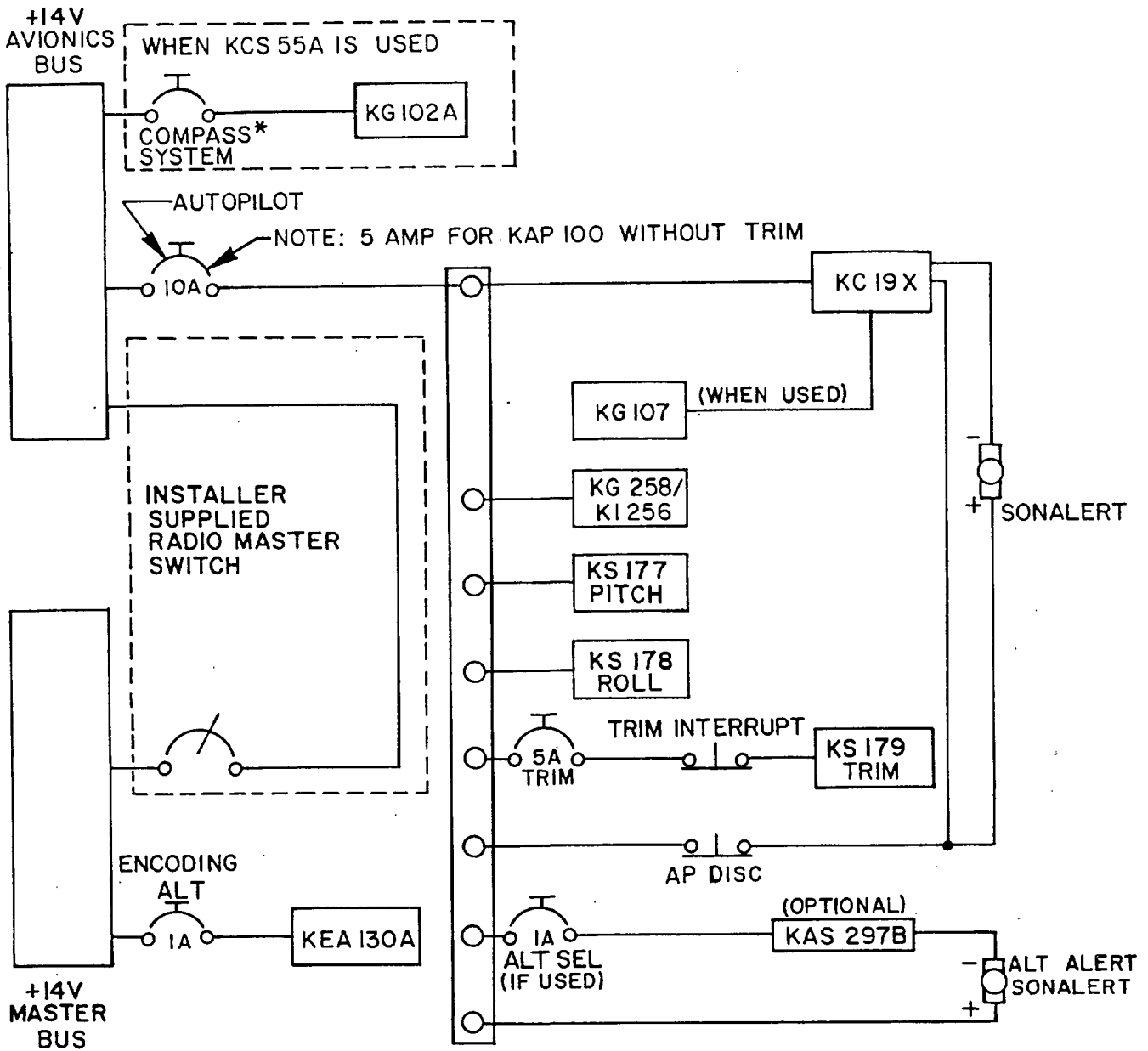
Figure 10-M for 14 volt system or 10-P for 28 volt system shows the power distribution for the KAP 100, KAP 150 and KFC 150 Systems with a radio master switch.



* WHEN A KCS 55A COMPASS SYSTEM IS TO BE INSTALLED, REFER TO THE KCS 55A INSTALLATION MANUAL (KPN 006-0111-XX) FOR CIRCUIT BREAKER VALUES.

FIGURE 10-L POWER DISTRIBUTION (14 VOLT)
 WITH AUTOPILOT MASTER

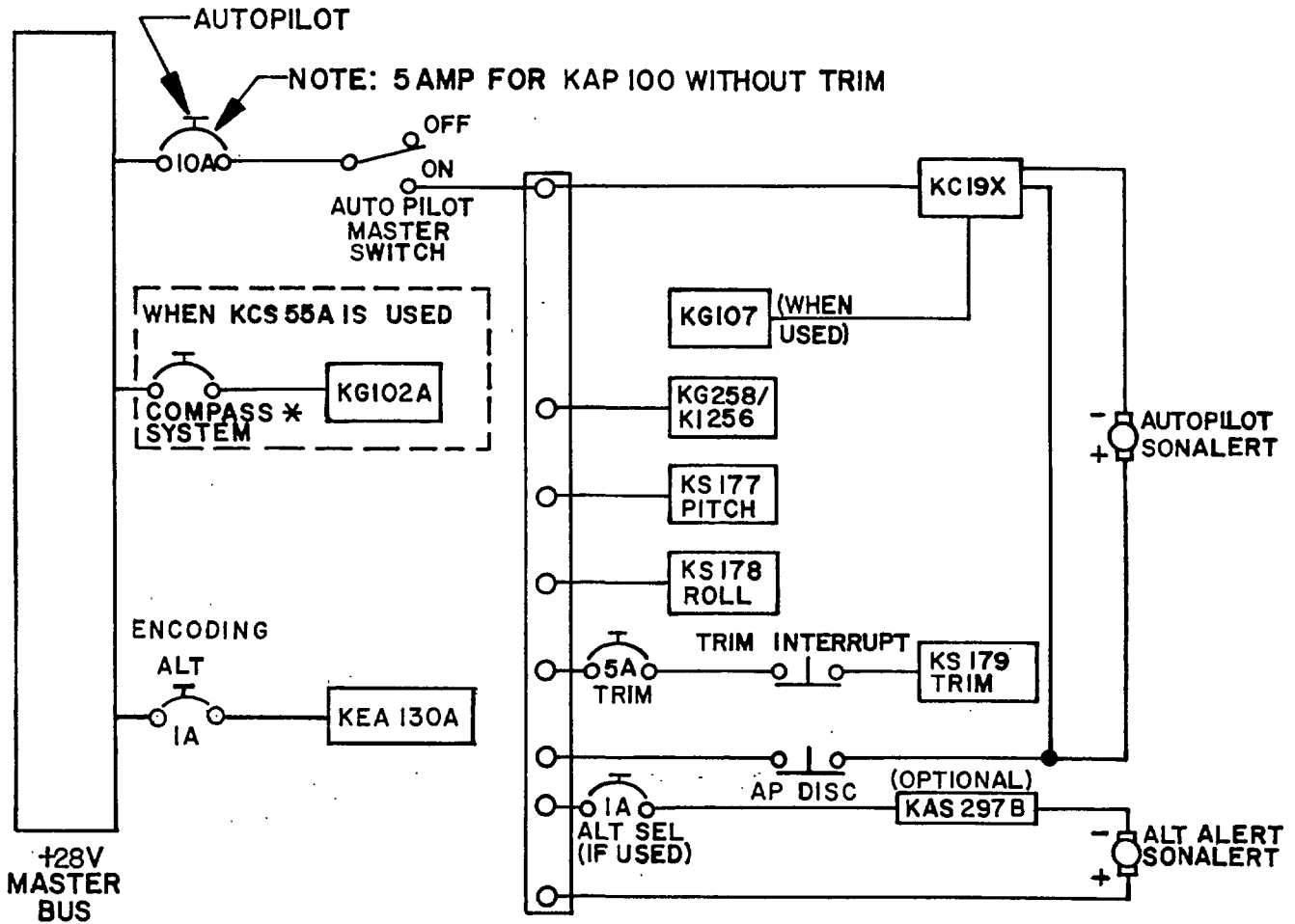
KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-4



* WHEN A KCS 55A COMPASS SYSTEM IS TO BE INSTALLED, REFER TO THE KCS 55A INSTALLATION MANUAL (KPN 006-0111-XX) FOR CIRCUIT BREAKER VALUES.

FIGURE 10-M POWER DISTRIBUTION (14 VOLT) WITH RADIO MASTER

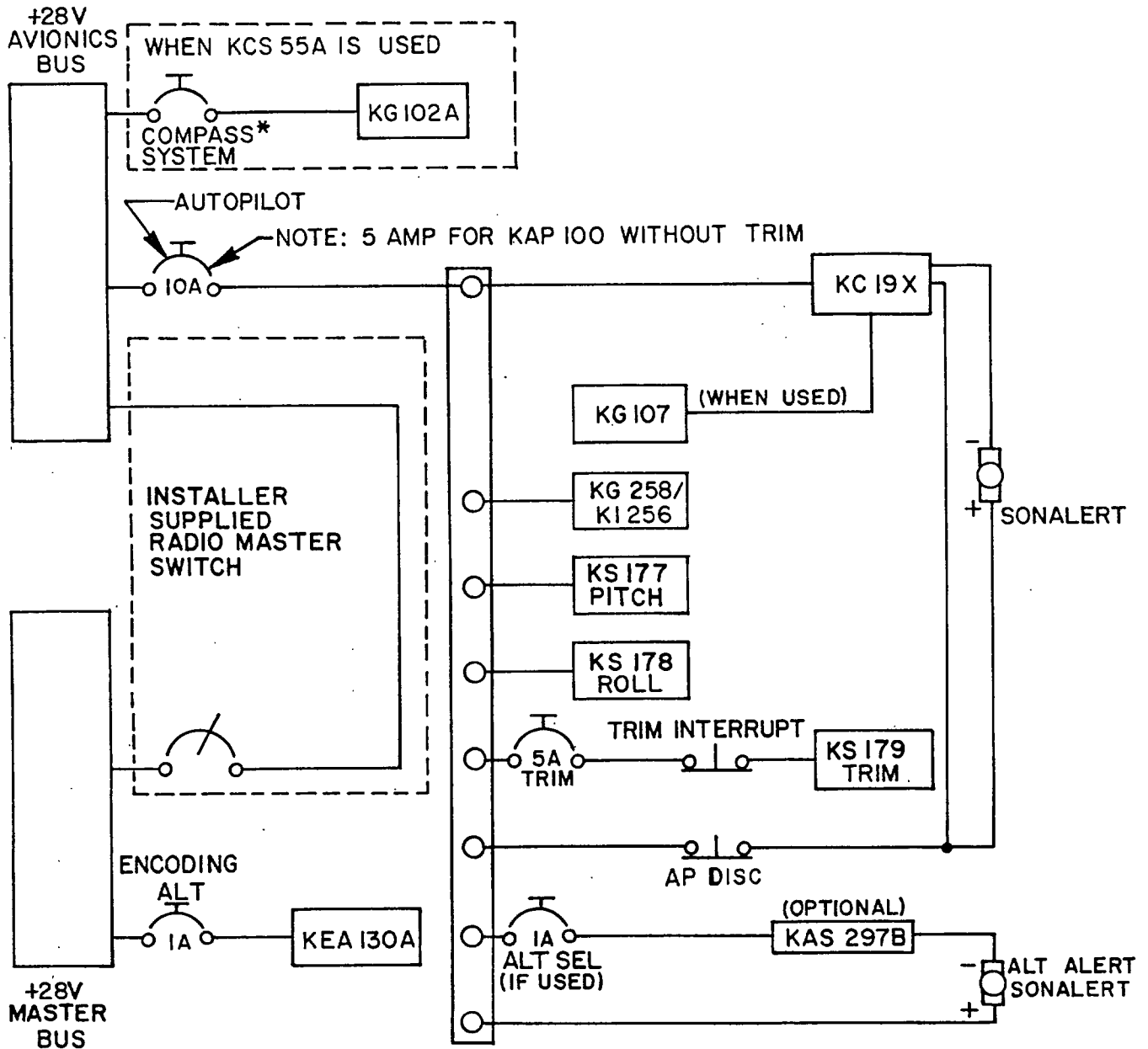
KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-4



* WHEN A KCS 55A COMPASS SYSTEM IS TO BE INSTALLED, REFER TO THE KCS 55A INSTALLATION MANUAL (KPN 006-0111-XX) FOR CIRCUIT BREAKER VALUES.

FIGURE 10-N POWER DISTRIBUTION (28 VOLT)
 WITH AUTOPILOT MASTER

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-4



* WHEN A KCS 55A COMPASS SYSTEM IS TO BE INSTALLED, REFER TO THE KCS 55A INSTALLATION MANUAL (KPN 006-0111-XX) FOR CIRCUIT BREAKER VALUES.

FIGURE 10-P POWER DISTRIBUTION (28 VOLT)
 WITH RADIO MASTER



BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00

SECTION ELEVEN

GROUND CHECKS AND FLIGHT ADJUSTMENTS

11.0 TEST EQUIPMENT REQUIRED

- A. Digital Voltmeter
- B. Nav 401L Ramp Generator or equivalent
- C. Ground Power Unit (GPU)
- D. Pressure or vacuum source of 4.5 \pm .5 in. Hg. for vertical gyro (A well filtered and regulated source is essential for correct gyro operation.)
- E. Small electronic alignment tool (for potentiometer adjustments)
- F. KTS 158 Autopilot tester
- G. Tilt stand from KTS 150 Autopilot tester
- H. KI 256/KG 258 Gyro simulator (or KI 256/KG 258 mounted in tilt stand)

11.1 PRE-OPERATIONAL CHECK

For operator convenience, the 150 Series Flight Control System checkout procedures are broken down into the following categories:

- A. Section 11.3 - 11.5: KFC 150 System with KCS 55A Compass System. KAP 150 System with KCS 55A Compass System or KG 107 Directional Gyro.
- B. Section 11.6 - 11.8: KAP 100 System with either of the above compasses and with or without Manual Electric Trim.
- C. Section 11.9: Optional KAS 297B Vertical Speed and Altitude Selector.

11.2 SYSTEM COOLING

- A. The KFC 150, KAP 150 and KAP 100 Systems all require forced air cooling for their respective Flight Computers. Proper installation and adequate air flow through the computer must be verified to assure safe and reliable operation of the Flight Control System.
- B. During system tests, forced air cooling must be provided to the computer if ground run time exceeds 15 minutes, or the computer may be opened to expose the unit power supply for ambient air cooling.

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00

11.3 GENERAL CHECKOUT PROCEDURES FOR KFC/KAP 150 SYSTEMS WITH KCS 55A OR KG 107

The following KFC/KAP 150 System installation checkout procedure is required prior to first flight. If problems are encountered in performing these procedures, the installer may refer to Section 10 of this manual for harness troubleshooting or the System Maintenance Manual to isolate faulty equipment.

11.3.1 (OPTIONAL) REMOTE MODE ANNUNCIATOR

The KA 185 Mode Annunciator is optional as a secondary "repeat" indicator for all systems. With the exception of ARM and CPLD all KA 185 Annunciator indications are the same as those on the KC 19X computer. The KC 19X computer will "flash" NAV or APR for an arm indication while the KA 185 will annunciate NAV or APR "ARM". The KC 19X computer will illuminate a "steady" NAV or APR for a coupled indication while the KA 185 will annunciate NAV or APR "CPLD".

11.3.2 COMPASS SYSTEM CHECK

Insure that the KCS 55A or the KG 107 has been installed in accordance with the appropriate installation manual. If any problems arise with the system while performing the checkout procedures, refer to the appropriate maintenance/overhaul manual. The KCS 55A will require swinging on the compass rose prior to flight as per the adjustment procedure in the KCS 55A Pictorial Navigation System Installation Manual.

11.3.3 GYRO ALIGNMENT PROCEDURES

The following system alignment is required in the KFC/KAP 150 System:

- A. Remove the KC 191/192 Computer from the airplane panel. Connect the computer to the autopilot tester with the cables provided.
- B. Mount the gyro in the gyro tilt stand. Place the tilt stand in a convenient location with reference to the autopilot computer. Level the tilt stand using the twist adjust knobs and bubble level. Connect the gyro air input to a regulated 4.5 in. Hg. source. Connect the KI 256/KG 258 Flight Command Indicator to the airplane harness using gyro extender cable.

NOTE

A PROPERLY REGULATED AND FILTERED AIR SOURCE IS ESSENTIAL FOR CORRECT GYRO OPERATION.

NOTE

WHEN MAKING GYRO ALIGNMENT ADJUSTMENTS, ALWAYS HAVE GYRO SET TO ZERO IN AXIS NOT UNDER TEST.

- C. Before applying power, make sure that the proper adapter boards are installed in the KC 191/192 by checking the part numbers in the windows on the top and bottom of the unit. Refer to the system parts list for the correct numbers. Apply power to the system. All associated circuit breakers must be installed and activated.
- D. After the gyro is fully erected (ten minutes minimum run-up time), proceed with the following.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.3.3. (Cont'd)

- E. Set the gyro stand to zero in both pitch and roll axis. Adjust leveling screws for pitch and roll zero visual indication.
- F. Adjust R286, Roll Null Adjust for 0.0 VDC. This is a potentiometer which is accessible through the hole labeled RN in the front of the computer. Measure the voltage from J19X1 (22) to the signal ground J19X2 (10) with a digital voltmeter when making this adjustment.
- G. Adjust R1148 Pitch Null Adjust for 0.0 VDC. This pot is accessible through the hole labeled PDN on the right hand side of the computer. Measure the voltage from TC101 (top board test connector), pin A4 to signal ground with a digital voltmeter.
- H. Tilt the gyro to a twenty-five degree right bank using the gyro tilt stand. Adjust R110, accessible through the hole labeled RDG on the right side of the computer, for -5 ± 0.1 VDC. Measure the voltage at J19X1 (22) with respect to signal ground.
- I. Tilt the gyro to a twenty-five degree left bank using the gyro tilt stand. Measure the voltage at the same point as Step H. It should read $+5 \pm 0.1$ VDC.

If the reading in Step I exceeds $+5.1$ VDC, repeat Step H and reduce the gain by one-half the amount exceeded in Step I. If Step I measured less than $+4.9$ VDC, repeat Step H and increase the gain setting by one-half the amount short in Step I. Repeat until there is a balance between left and right bank. The proper total voltage excursion should be 10 ± 0.2 VDC.
- J. With the gyro test stand in the zero pitch position, adjust the leveling screws on the test stand to obtain a pitch zero visual indication on the vertical gyro. (Horizon line aligned with 90° index marks.)
- K. Tilt the gyro ten degrees nose down on the tilt stand and adjust R1151, a potentiometer located on the right side of the computer through the hole labeled PDG, for $+2 \pm 0.1$ VDC. Measure the voltage at TC 101 (A4) to signal ground.
- L. Tilt the gyro ten degrees nose up on the tilt stand. The meter should read -2 ± 0.1 VDC at the same point as Step K. If the meter exceeds -2.1 VDC, repeat Step K and reduce the gain by one-half the amount exceeded in Step L. If the meter reads less than -1.9 VDC, repeat Step K and increase the gain by one-half the amount short in Step L.

11.4 GROUND CHECKS FOR KAP KFC 150 SYSTEMS

NOTE

DUE TO THE ATTITUDE LIMITS BUILT INTO THE KFC/KAP 150 AUTOPILOT SYSTEM, THE AUTOPILOT MAY NOT ENGAGE IF THE GYRO IS TUMBLED. THEREFORE, IT IS RECOMMENDED THAT THE KI 256/KG 258 BE MOUNTED IN THE TILT STAND AND FULLY UP TO SPEED (OR SIMULATOR SET TO ZERO) FOR THE FOLLOWING CHECKS.

11.4.1 SELF TEST

Check that the AUTOPILOT, TRIM and COMPASS circuit breakers are in. Apply power to the system by turning on the Avionics Master Switch. With all modes disengaged, the TRIM annunciator should be illuminated and all other annunciators off. Press the test switch on the KC 191/192. All annunciators should illuminate. The TRIM Fault Annunciator should flash 4 times. At the completion of the self test, all annunciators except AP should go out. The AP annunciator will flash approximately 12 times before going out and an aural alert will sound to indicate a successful test.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.4.2 CONTROL WHEEL SWITCH CHECKS

- A. Actuate the left side of the split manual electric trim switch to the fore and aft positions. This should engage the trim servo clutch. Check this by manually rotating the trim wheel; increased force will be necessary to override the torque of the clutch. The trim wheel should not move on its own.
- B. Actuate the right side of the split switch to the fore and aft positions. The trim servo clutch should not engage and the wheel should not turn. Manually rotate trim wheel; it should rotate freely.
- C. Actuate both switches to the fore (nose down) and aft (nose up) positions. The trim clutch should engage and the trim wheel should drive in the directions indicated. Trim time from stop to stop should be 30 ± 6 seconds.
- D. Press the AP DISC/TRIM INTER switch down and hold. Actuate manual electric trim. Trim should not run in either direction.
- E. If using KFC 150 System, depress CWS switch, FD annunciator should illuminate and command bars on KI 256 should be in view.
- F. Engage the autopilot. With FD System, FD must be engaged first. Press the CWS switch. The servos should release. Check for free control wheel movement in both axes.
- G. Release the CWS switch and depress the AP DISC/TRIM INTER switch. If FD System, FD will extinguish. The AP annunciator will flash then extinguish. The aural alerter should sound and the servo clutches should disengage. Check for free control wheel movement in both axes.

11.4.3 AUTOPILOT OVERPOWER CHECK

Engage the AP. Apply force to the controls to determine if the AP can be overpowered.

11.4.4 AUTOPILOT DISCONNECT CHECKS

The following conditions should disengage the autopilot modes:

- A. Activation of the Manual Electric Trim Switch, either up or down, will disengage all modes in the KAP 150 System; it will disengage only the autopilot in the KFC 150 System.
- B. Pulling the AUTOPILOT circuit breaker to the off position. (Requires re-running the pre-flight test before AP will engage.)
- C. If the HDG Flag comes into view when any mode is on that uses heading information. (Disengages AP and all lateral modes.)
- D. Excessive roll and/or pitch rates.
- E. Pressing the pilot's AP DISC/TRIM INTER switch will disconnect the AP (and FD if so equipped).

NOTE

A FLASHING TWO SECOND AUDIO WARNING WILL SOUND WHENEVER THE AUTOPILOT IS DISENGAGED, EXCEPT WHEN AP CIRCUIT BREAKER IS PULLED.

IF THE AP DISC/TRIM INTER SWITCH IS PRESSED DOWN AND HELD IN FOR THREE SECONDS OR MORE THE AUDIO WARNING WILL NOT SOUND.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.4.5 FD/AP CHECKS

NOTE

IF USING THE GYRO SIMULATOR TO CHECK A KFC 150 SYSTEM, THE FLIGHT DIRECTOR ENGAGE SWITCH MUST BE DEPRESSED TO BRING COMMAND BARS INTO VIEW. COMMAND BARS SHOULD NOT BE LEFT IN VIEW FOR LONG PERIODS OF TIME (5 MINUTES OR MORE) WITHOUT AIR APPLIED TO THE GYRO.

- A. Engage the autopilot. Press the Vertical Trim rocker switch on the KC 191/192 to the nose-up position. The control column should drive back. Prevent the column from driving back and after a short delay, the autotrim should begin driving in the nose-up direction. With KFC 150 System, the command bars will indicate nose-up.
- B. Depress the CWS switch to sync the system back to zero and repeat Step A in the nose-down direction. The command bars, column and autotrim should respond in a nose down direction.

11.4.6 HEADING MODE

- A. With the autopilot engaged, press the HDG switch on the KC 191/192. If the compass/DG is valid, the HDG annunciator will illuminate on the computer. Rotate the heading bug to an increased setting from the lubber line. The control wheel should drive to the right. If using KFC 150 System, command bars will command a right bank. Rotate heading bug to a decreased setting from the lubber line. Control wheel should drive left and command bars should display left bank.

11.4.7 THE FOLLOWING ARE APPROACH MODE CHECKS FOR A KCS 55A COMPASS SYSTEM. (REFER TO 11.4.9 FOR KG 107 DIRECTIONAL GYRO)

- A. With the KI 256/KG 258 level (or the Gyro Simulator set to zero), set the test generator to a VOR frequency and select the test frequency on the Nav receiver. Set the bearing selector on the test generator to the same bearing as the airplane heading and select a course to give full scale deviation. Engage the HDG mode and the APR mode. HDG should illuminate and the APR annunciator will flash, indicating approach arm.
- B. Slowly change the course selector to center the deviation. The system will automatically go from APR arm and HDG to APR coupled when the computed capture point is reached. The HDG annunciator will go out and the APR annunciator will cease flashing and remain on steady.
- C. Set the course selector on the KI 525A to the lubber line and change the bearing selector to give full scale left deflection. With the KFC 150 System the command bars should roll to the left, in the KAP 150 System the control wheel should roll to the left. Change the bearing selector to give full scale right deflection. With the KFC 150 System the command bars should roll to the right, in the KAP 150 System the control wheel should roll to the right.
- D. With a full scale right deflection displayed, rotate the course selector on the KI 525A counterclockwise. In the KFC 150 System this will center the roll command bar, with the KAP 150 System this will stop the control wheel. The course will be a $40 \pm 7^\circ$ decreased heading from the lubber line. Set the test generator bearing selector for a full left deflection and rotate the course selector clockwise until, with the KFC 150 System, the command bars are zeroed; with the KAP 150 System the control wheel stops. The course will be a $40 \pm 7^\circ$ increased heading from the lubber line.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.4.8 GLIDESLOPE MODE

- A. With the KI 256/KG 258 level (or Gyro Simulator at zero), select a glideslope signal on the test generator and set the NAV Receiver to the same frequency. Adjust the test generator to give a maximum up deviation on the KI 525A and a centered LOC DEV indication. Engage the APR mode. (With the KAP 150 System the Autopilot must be engaged first.)
- B. Slowly move the glideslope deviation toward center. When the deviation reaches center, the GS Annunciator will illuminate, indicating GS coupled. Further movement of the GS deviation will cause a down command from the AP/FD. A glideslope up deviation will cause an up command from the AP/FD.
- C. If the KTS 158 Test Set is being used, check the glideslope gain switching signal by tuning the NAV generator to provide a middle marker test signal. Measure the voltage between P1912 Pin R and P1912 Pin 15 on the KTS 158. The voltage should be $3.5 \pm .5$ VDC.

11.4.9 THE FOLLOWING APPROACH MODE CHECK IS FOR KAP 150 SYSTEMS WITH THE KG 107 DIRECTIONAL GYRO

- A. With the KG 258 level (or the GYRO Simulator set to zero), set the test generator to a VOR frequency and select the test frequency on the NAV receiver. Set the bearing selector on the test generator to the same bearing as the airplane heading and adjust the OBS knob on the NAV Indicator to give full scale deviation. Set the HDG SEL/CRS DAT bug on the lubber line. Engage the HDG mode and the APR mode. HDG should illuminate and the APR annunciator will flash, indicating approach arm. After a 5 second delay, the autopilot will command a roll in the direction of the indicated deviation.
- B. Slowly rotate the HDG SEL/CRS DAT bug in the direction opposite of the deviation until the autopilot stops driving. The bug should be at $45^\circ \pm 5^\circ$ from the lubber line. Slowly change the OBS knob to center the deviation. The system will automatically go from APR arm and HDG to APR coupled when the computed capture point is reached. The HDG annunciator will go out and the APR annunciator will cease flashing and remain on steady. Set the HDG SEL/CRS DAT bug on the lubber line, the autopilot will cease driving (may creep).
- C. With HDG SEL/CRS DAT bug on the KG 107 set under the lubber line, change the bearing selector to give a full scale left deflection. The control wheel should roll to the left. Change the bearing selector to give full scale right deflection. The control wheel should roll to the right.
- D. With a full scale right deflection displayed, rotate the bug on the KG 107 counterclockwise to stop the control wheel. The course will be a $40 \pm 7^\circ$ decreased heading from the lubber line. Set the test generator bearing selector for a full scale left deflection and rotate the bug clockwise until the control wheel stops. The course will be $40 \pm 7^\circ$ increased heading from the lubber line.

11.4.10 GLIDESLOPE MODE (KAP 150 SYSTEM)

- A. With the KG 258 level (or GYRO Simulator at zero), select a glideslope signal on the test generator and set the NAV receiver to the same frequency. Adjust the test generator to give a maximum up deviation on the NAV Indicator and a centered localizer deviation indication. APR will illuminate when APR switch is pressed. Autopilot must be engaged first.
- B. Slowly move the glideslope deviation toward center. When the deviation reaches center, the GS Annunciator will illuminate, indicating GS coupled. Further movement of the glideslope deviation will cause the control column to drive in pitch. A glideslope deviation up will cause a nose up movement.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.4.10 (Cont'd)

- c. If the KTS 158 Test Set is being used, check the glideslope gain switching signal by tuning the NAV generator to provide a middle marker test signal. Measure the voltage between P1912 pin R and P1912 Pin 15 on the KTS 158. The voltage should be $3.5 \pm .5v$.

11.5 INFLIGHT CHECKS AND ADJUSTMENTS (with all units installed and all test equipment removed)

This checkout should be run on all new installations and any time there has been a major system rework or airplane wiring change.

THE AUTOPILOT MUST BE OPERATED IN ACCORDANCE WITH THE APPROVED FLIGHT MANUAL SUPPLEMENT.

11.5.1 PRE-FLIGHT CHECKOUT

Prior to take off, perform the pre-flight checkout as outlined in the appropriate Airplane Flight Manual Supplement.

11.5.2 IN-FLIGHT CHECKS

A. ALT HOLD CHECKS

Hand fly the airplane to a safe altitude. Manually trim the airplane for a maximum climb rate. Engage the autopilot by pressing AP switch on the front of the KC 191/192 Computer (KC 192 will require the FD to be engaged first). The AP Annunciator will illuminate and the autopilot will take over control of the airplane. While climbing at best rate of climb speed, engage the ALT mode. The ALT Annunciator will illuminate and the airplane will smoothly round out and return to the altitude at which engaged.

Fly on ALT Hold for five minutes at a cruise power setting. The system should be stable with no noticeable porpoising. Increase to full power while flying on altitude hold. Observe that the autotrim will run in the nose down direction to compensate for the increased airspeed. Allow the trim to stabilize the airplane. The altitude should be at the original value ± 20 feet. Reduce power to cruise speed and allow the system to stabilize.

With the KC 191/192 system in ALT Hold and AP engaged, use the Vertical Trim switch on the KC 191/192 Flight Computer to trim the altitude up 250 feet, then trim down 250 feet. The altitude will change smoothly and will stabilize at a climb or descent rate of about 500 feet per minute.

B. GYRO ZEROING ADJUSTMENT

With the airplane in cruise flight condition and on ALT Hold, disconnect the Autopilot. The Autotrim should have the airplane in trim until no appreciable transient can be observed. Hand fly the airplane and observe the KI 256/KG 258 Horizon Indicator with the wings level. Due to gyro manufacturing tolerances and the possibility of a misaligned instrument mounting, some small bank angle may be displayed. A releveling of the KI 256/KG 258 in the panel should be considered if the angle displayed with the wings level is more than two degrees.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.5.2 (Cont'd)

1. ROLL ADJUSTMENT

At a safe altitude and with the airplane trimmed for straight and level flight, engage the autopilot. The autopilot should hold the airplane at the pitch angle present when engaged and at zero roll attitude as indicated on the KI 256/KG 258 roll display. If the airplane does not maintain zero roll attitude, an adjustment of the KC 191/192 R286 roll adjust pot (RM) is required. Adjust the control as necessary for a zero roll indication. Adjustment should be made slowly to avoid over compensation.

2. COMMAND BAR ADJUSTMENTS (KFC 150 SYSTEM ONLY)

In-flight adjustment of the command bars is necessary if, when flying straight and level, the command bars are not zeroed in either axis. The pitch and roll command bar adjust pots are accessible through the face of the computer. R275 is the Roll Command Bar adjust and R276 is the Pitch Command Bar adjust. These are labeled RC and PC, respectively. With the wings level, adjust R275 for a zero degree roll command on the command bars. With the airplane flying level in pitch, adjust R276 for a zero degree pitch command on the command bars. These are visual indications.

C. BASIC AP/FLT DIR CHECKS

With the system flying on FD mode (only KFC 150 uses FD) and Autopilot engaged in level flight cruise configuration, press the CWS switch on the pilot's control wheel. Manually change the heading and pitch attitude. Release the CWS switch and the airplane should return to wings level and remain at the pitch attitude present when the switch was released if it is not greater than +15, -10 degrees.

D. HDG SEL CHECKS (Cruise Configuration)

Set the HDG bug on the KPI 525 or the HDG SEL/CRS DAT bug on the KG 107 to a 90 degree increase in heading and engage the HDG mode. (If KFC 150 System is used, command bars on the KI 256 will command a right bank.) The Autopilot will bank the airplane up to $20^{\circ} \pm 3^{\circ}$ right bank. The airplane will roll out on the selected heading with no overshooting. Repeat the test using a 90° decrease in selected heading. If the system flies with a HDG bug offset of 3° or more, airplane trim should be checked closely as well as the KI 256/KG 258 Gyro installation in the airplane panel for proper leveling.

11.5.3 THE FOLLOWING ARE NAVIGATION CHECKS FOR KCS 55A COMPASS SYSTEM. (Refer to 11.5.4 for KG 107 Directional Gyro.)

A. NAV CHECKS

Select a VOR station at approximately twenty miles distance and set in the desired course on the Pictorial Navigation Indicator. Select the course by turning the course pointer until the KI 525A deviation indicator is centered in the "T0" position. Then increase or decrease the course selected by ten degrees.

Engage the HDG mode and set up an intercept angle of 20° to 60° using the HDG SEL bug. Arm the NAV mode by pressing the NAV switch on the KC 191/192 Computer. The system will fly on HDG until the proper intercept point is reached, where it will automatically switch from HDG, NAV arm (flashing) to NAV coupled (steady). When NAV coupled is achieved, the system will bank the airplane up to the necessary bank angle to execute the turn on to the radial with minimum overshoot. Allow the system to track the radial for five minutes. The system will command the airplane to fly along the radial with no large steering maneuvers.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.5.3 (Cont'd)

NOTE

IF THE CDI DEVIATION IS LESS THAN THREE DOTS AND THE BANK ANGLE IS LESS THAN FOUR DEGREES, THE SYSTEM WILL GO TO CPLD AFTER 2 SECONDS IN ARM.

B. APR (ILS) CHECKS

While approaching the station in the HDG mode, tune the LOC receiver and set the course pointer to the published runway inbound heading. Set up an intercept angle of greater than 90° to the inbound course. Arm the APR mode and engage the BC switch in advance of beam interception. The BC annunciator will illuminate and APR will flash on the KC 191/192 Computer. The system will capture and track the localizer outbound. (Some overshoot may occur if the angle is too sharp or if the capture is made extremely close in.) While on the localizer outbound, descend to the desired altitude by using the Vertical Trim switch on the KC 191/192 Computer.

Engage ALT hold when the desired altitude is reached. Set the HDG bug to the procedure-turn heading and press the HDG switch on the KC 191/192. The airplane will turn to the procedure-turn outbound heading. Use the HDG mode to complete the procedure-turn. When the airplane is within 90° of the inbound course, press the APR switch on the KC 191/192. With the APR mode armed, set up a 45° intercept angle using the HDG mode. When the proper intercept is reached, the system will automatically transfer from HDG, APR arm (flashing) to APR coupled (steady) and turn on to the inbound localizer. As the airplane flies into the glideslope beam, the automatic capture circuit will transfer from ALT hold to GS, as displayed on the KC 191/192 Computer.

Establish the airplane in the approach configuration. Set the HDG bug to the go around heading. When desired, disconnect the autopilot by use of the AP DISC/TRIM INTER Switch.

C. APR (VOR) CHECKS

Using the published VOR approach information, set the course selector on the Pictorial Navigation Indicator to the inbound course. Use the HDG mode to set up a 45° intercept of the VOR radial. Arm the approach mode by pressing the APR switch while the deviation is still full scale. When the proper intercept point is reached, the system will go from HDG, APR arm (flashing) to APR coupled (steady). Use Pitch Attitude Hold and Vertical Trim to maintain the desired descent rate while on the approach. When desired, execute missed approach procedure or disengage the autopilot and execute a landing.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.5.4 THE FOLLOWING ARE NAVIGATION CHECKS FOR THE KG 107 DIRECTIONAL GYRO

A. NAV CHECKS

Select a VOR station at approximately twenty miles distance and set in the desired course by turning the OBS knob until the NAV Indicator deviation is centered in the "TO" position. Then increase or decrease the course selected by ten degrees.

Engage the HDG mode and set up an intercept angle of 90° using the HDG SEL/CRS DAT bug. Arm the NAV mode by pressing the NAV switch on the KC 191 Computer and turning the HDG SEL/CRS DAT bug to the radial selected on the NAV Indicator. The NAV Annunciator will flash to indicate NAV arm mode and after a 5 second delay the airplane will turn to make a 45° intercept of the radial selected. As the airplane approaches the radial it will automatically switch from HDG, NAV arm to NAV coupled. When NAV coupled is achieved, the NAV Indicator will cease flashing and remain on, the autopilot will bank the airplane up to the necessary bank angle to execute the turn on to the radial with minimum overshoot. Allow the autopilot to track the radial for five minutes. The autopilot will command the airplane to fly along the radial with no large steering maneuvers.

NOTE

IF THE CDI DEVIATION IS LESS THAN THREE DOTS AND THE BANK ANGLE IS LESS THAN FOUR DEGREES, THE SYSTEM WILL GO TO CPLD AFTER 2 SECONDS IN ARM.

B. APR (ILS) CHECKS

While approaching the station in the HDG mode, tune in the LOC receiver and set the OBS knob to the published runway inbound heading. Set up an intercept angle of greater than 90° to the inbound course. Engage the BC switch and turn the HDG SEL/CRS DAT bug on the KG 107 to the localizer inbound course. The BC annunciator will illuminate and the APR annunciator will flash to indicate APR arm mode. After a five second delay the airplane will turn to make a 45° intercept of the localizer outbound course. The autopilot will capture and track the localizer outbound. While on the localizer outbound, descend to the desired altitude by using the Vertical Trim switch on the KC 191 Computer.

Engage ALT hold when the desired altitude is reached. Set the HDG SEL/CRS DAT bug to the procedure-turn heading and press the HDG switch on the KC 191. Use HDG mode to complete the procedure turn. When the airplane is within 90° of the inbound course, press the APR switch on the KC 191 and turn the bug to the localizer inbound course. The autopilot will set up a 45° intercept angle automatically. When the proper intercept is reached, the autopilot will switch from HDG, APR arm (flashing) to APR coupled (steady) and turn onto the inbound localizer. As the airplane flies into the glideslope beam, the automatic capture circuit will transfer from ALT hold to GS, as displayed on the KC 191 Computer.

Establish the airplane in the approach configuration. When desired, disconnect the autopilot by use of the AP DISC/TRIM INTER Switch.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.5.4 (Cont'd)

Ç. APR (VOR) CHECKS

Using the published VOR approach information, set the OBS knob on the MAV Indicator to the inbound course. Arm the APR mode by pressing the APR switch on the KC 191 while the deviation is still full scale and turn the HDG SEL/CRS DAT bug to the inbound course. The APR annunciator will flash to indicate APR arm mode. After a five second delay the airplane will turn to make a 45° intercept of the inbound radial. When the proper intercept point is reached, the autopilot will go from APR arm (flashing) to APR coupled (steady). Use Pitch Attitude Hold and Vertical Trim to maintain the desired descent rate while on the approach. When desired, execute missed approach procedure or disengage the autopilot and execute a landing.

THIS CONCLUDES THE NORMAL INSTALLATION FLIGHT CHECK OF THE KFC 150/KAP 150 SYSTEM WITH KI 256 AND KG 258.

BENDIX/KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00

11.6 GENERAL CHECKOUT PROCEDURE FOR KAP 100 SYSTEM WITH KCS 55A COMPASS SYSTEM OR KG 107 DIRECTIONAL GYRO AND WITH OR WITHOUT MANUAL ELECTRIC TRIM OPTION.

The KAP 100 System installation checkout procedure is required prior to first flight. If problems are encountered in performing these procedures the installer may refer to Section 10 of this manual for harness troubleshooting or the System Maintenance Manual to isolate faulty equipment.

11.6.1 NOT USED

11.6.2 COMPASS SYSTEM CHECK

Insure that the KCS 55A or the KG 107 has been installed in accordance with the appropriate installation manual. If any problems arise with the system while performing the checkout procedures, refer to the appropriate maintenance/overhaul manual. The KCS 55A will require swinging on the compass rose prior to flight as per the adjustment procedures in the KCS 55A Pictorial Navigation System Installation Manual.

11.6.3 GYRO ALIGNMENT PROCEDURES

The following alignment procedures are required in the KAP 100 System:

- A. Remove the KC 190 Computer from the airplane panel. Connect the computer to the autopilot tester with the provided cables.
- B. Mount the gyro in the gyro tilt stand. Place the tilt stand in a convenient location with reference to the autopilot computer. Level the tilt stand using the twist adjust knobs and bubble level. Connect the gyro air input to a regulated 4.5 in. Hg. source. Connect the KG 258 Flight Command Indicator to the airplane harness using the gyro extender cable.

NOTE

A PROPERLY REGULATED AND FILTERED AIR SOURCE IS ESSENTIAL FOR CORRECT GYRO OPERATION.

NOTE

WHEN MAKING GYRO ALIGNMENT ADJUSTMENTS, ALWAYS HAVE GYRO SET TO ZERO IN AXIS NOT UNDER TEST.

- C. Before applying power, make sure that the proper adapter boards are installed in the KC 190 by checking the part numbers in the windows on the top and bottom of the unit. Refer to the system parts list for the correct numbers. Apply power to the system. All associated circuit breakers must be installed and activated.
- D. After the gyro is fully erected (ten minutes minimum run-up time), proceed with the following.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.6.3 (Cont'd)

- E. Set the gyro stand to zero in both pitch and roll axis. Adjust leveling screws for pitch and roll zero visual indication.
- F. Adjust R286, Roll Null adjust for 0.0 VDC. This is a potentiometer which is accessible through the hole labeled RN in the front of the computer. Measure the voltage from J1921 (22) to the signal ground J1922 (10) with the digital voltmeter when making this adjustment.
- G. Tilt the gyro to a twenty-five degree right bank using the gyro tilt stand. Adjust R110, accessible through the hole labeled RDG on the right side of the computer, for -5 ± 0.1 VDC. Measure the voltage at J1921 (22) with respect to signal ground.
- H. Tilt the gyro to a twenty-five degree left bank using the gyro tilt stand. Measure the voltage at the same point as Step G. It should read $+5 \pm 0.1$ VDC.

If the reading in Step I exceeds $+5.1$ VDC, repeat Step H and reduce the gain by one-half the amount exceeded in Step I. If Step I measured less than $+4.9$ VDC, repeat Step H and increase the gain setting by one-half the amount short in Step I. Repeat until there is a balance between left and right bank. The proper total voltage excursion should be $10 \pm .2$ VDC.

11.7 GROUND CHECKS FOR KAP 100 SYSTEMS

Due to the attitude limits built into the KAP 100 System the autopilot may not engage if the gyro is tumbled. Therefore, it is recommended that the KG 258 be mounted in the tilt stand and fully up to speed (or simulator set to zero) for the following checks.

11.7.1 SELF TEST

Check that the AUTOPILOT, TRIM (if so equipped) and COMPASS circuit breakers are in. Apply power to the system by turning on the Avionics Master Switch. With all modes disengaged, the TRIM annunciator should be illuminated (if equipped with Manual Electric Trim). All other modes should be off. Press the test switch on the KC 190. All annunciators should illuminate. The TRIM Fault Annunciator should flash 4 times, if equipped with Manual Electric Trim. At the completion of the self test, all annunciators except AP should go out. The AP annunciator will flash approximately 12 times before going out and an aural alert will sound (if equipped with Manual Electric Trim) to indicate a successful test.

11.7.2 CONTROL WHEEL SWITCH CHECKS

The following Control Wheel checks are required only if you have a KAP 100 System with Manual Electric Trim.

- A. Actuate the left side of the split Manual Electric Trim switch to the fore and aft positions. This should engage the trim servo clutch. Check this by manually rotating the trim wheel; increased force will be necessary to override the torque of the clutch. The trim wheel should not move on its own.
- B. Activate the right side of the split switch to the fore and aft positions. The trim servo clutch should not engage and the wheel should not turn. Manually rotate trim wheel; it should rotate freely.
- C. Actuate both switches to the fore (nose down) and aft (nose up) positions. The trim clutch should engage and the trim wheel should drive in the directions indicated. Trim time from stop to stop should be 42 ± 8 seconds.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.7.2 (Cont'd)

- D. Press the AP DISC/TRIM INTER switch down and hold. Actuate Manual Electric Trim. Trim should not run in either direction.
- E. Engage the autopilot. Press the CWS switch. The servo should release the control wheel. Check for free control wheel movement in the roll axis.
- F. Release the CWS switch and depress the AP DISC/TRIM INTER switch. The AP annunciator will flash then extinguish. The aural alerter (if installed) should sound and the servo clutch should disengage. Check for free control wheel movement in the roll axis.

11.7.3 AP MODE

- A. With the gyro level in the tilt stand (or simulator set to zero), engage the autopilot. The controls will feel stiff and the AP annunciator should illuminate. The control wheel should not drive (may creep).
- B. Rotate the vertical gyro (or set simulator) for a right bank. The autopilot should command a left roll to roll back to a wings level position.
- C. Rotate the vertical gyro (or set simulator) for a left bank. The autopilot should command a right roll to roll back to wings level. Zero the vertical gyro or simulator.

11.7.4 HDG MODE

- A. With all modes disengaged, level the vertical gyro (or set simulator to zero) and set the HDG SEL/CRS DAT bug on the KI 525A/KG 107 under the lubber line. Engage the AP and HDG modes. AP and HDG should illuminate on the annunciator panel of the computer.
- B. Set the HDG SEL/CRS DAT bug to an increased heading from the lubber line. The autopilot should command a right roll.
- C. Set the HDG SEL/CRS DAT bug to a decreased heading from the lubber line. The autopilot should command a left roll.

11.7.5 APPROACH MODE WITH A KCS 55A COMPASS SYSTEM. (Refer to 11.7.6 for KG 107 Directional Gyro.)

- A. With the KG 258 level (or the Gyro Simulator set to zero), set the test generator to a VOR frequency and select the test frequency on the Nav receiver. Set the bearing selector on the test generator to the same bearing as the airplane heading and select a course to give full scale deviation. Engage the HDG mode and the APR mode. HDG should illuminate and the APR annunciator will flash, indicating approach arm.
- B. Slowly change the course selector to center the deviation. The system will automatically go from APR arm and HDG to APR coupled when the computed capture point is reached. The HDG annunciator will go out and the APR annunciator will cease flashing and remain on steady.
- C. Set the course selector on the KI 525A to the lubber line and change the bearing selector to give full scale deflection. The control wheel should roll to the left. Change the bearing selector to give full scale right deflection, the control wheel should roll to the right.
- D. With a full scale deflection displayed, rotate the course selector on the KI 525A counterclockwise. This will stop the control wheel. The course will be a $40 \pm 7^\circ$ decreased heading from the lubber line. Set the test generator bearing selector for a full left deflection and rotate the course selector clockwise until the control wheel stops. The course will be a $40 \pm 7^\circ$ increased heading from the lubber line.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.7.6 APPROACH MODE WITH A KG 107 DIRECTIONAL GYRO

- A. With the KG 258 level (or the Gyro Simulator set to zero), set the test generator to a VOR frequency and select the test frequency on the NAV receiver. Set the bearing selector on the test generator to the same bearing as the airplane heading and adjust the OBS knob on the NAV Indicator to give full scale deviation. Set the HDG SEL/CRS DAT bug on the lubber line. Engage the HDG mode and the APR mode. HDG should illuminate and the APR annunciator will flash, indicating approach arm. After a 5 second delay, the autopilot will command a roll in the direction of the indicated deviation. Adjust the HDG SEL/CRS DAT bug on the KG 107 to stop the control wheel's motion. The bug should indicate a $45 \pm 5^\circ$ decrease from the lubber line.
- B. Slowly reduce the bearing offset on the test generator to center the deviation. As the deviation indicator moves toward the center, the APR Annunciator will cease flashing and remain on indicating APR coupled. The autopilot will command a left roll. Center the bug under the lubber line. The autopilot will stop driving (may creep).
- C. Slowly change the OBS knob to center the deviation. The system will automatically go from APR arm and HDG to APR coupled when the computed capture point is reached. The HDG annunciator will go out and the APR annunciator will cease flashing and remain on steady. The autopilot will cease driving (may creep).
- D. Set the HDG SEL/CRS DAT bug on the KG 107 to the lubber line and change the bearing selector to give a full scale left deflection. The control wheel should roll to the left. Change the bearing selector to give full scale right deflection. The control wheel should roll to the right.
- E. With a full scale right deflection displayed, rotate the bug on the KG 107 counterclockwise to stop the control wheel. The course will be a $40 \pm 7^\circ$ decreased heading from the lubber line. Set the test generator bearing selector for a full scale left deflection and rotate the bug clockwise until the control wheel stops. The course will be $40 \pm 7^\circ$ increased heading from the lubber line.

11.7.7 AUTOPILOT OVERPOWER CHECK

Engage the AP. Apply force to the control wheel to determine if the roll servo clutch can be overpowered.

11.7.8 AUTOPILOT DISCONNECT CHECKS

The following conditions should disengage the autopilot modes:

- A. Pulling the AUTOPILOT circuit breaker to the off position. (Pre-flight test must be initiated and passed before the autopilot can be re-engaged).
- B. Pressing the pilot's AP DISC/TRIM INTER switch will disconnect the AP (airplanes equipped w/Manual Electric Trim, only).
- C. Excessive roll rate.
- D. If the HDG Flag comes into view when any mode is on that uses heading information (disengages AP and all lateral modes).

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.7.8 (Cont'd)

NOTE

A FLASHING TWO SECOND AUDIO WARNING WILL SOUND WHENEVER THE AUTOPILOT IS DISENGAGED, EXCEPT WHEN AP CIRCUIT BREAKER IS PULLED.

IF THE AP DISC/TRIM INTER SWITCH IS PRESSED DOWN AND HELD IN FOR THREE SECONDS OR MORE THE AUDIO WARNING WILL NOT SOUND.

11.8 IN-FLIGHT CHECKS AND ADJUSTMENTS

This checkout should be run on all new installations and any time there has been a major system rework or airplane wiring change.

THE AUTOPILOT MUST BE OPERATED IN ACCORDANCE WITH THE APPROVED FLIGHT MANUAL SUPPLEMENT.

11.8.1 PRE-FLIGHT CHECKOUT

Prior to takeoff, perform the pre-flight checkout as outlined in the appropriate Airplane Flight Manual Supplement.

11.8.2 IN-FLIGHT CHECKS

A. GYRO ZEROING ADJUSTMENT

With the airplane in cruise flight condition, disconnect the Autopilot. Hand fly the airplane and observe the KG 258 Horizon Indicator with the wings level. Due to gyro manufacturing tolerances, and the possibility of a misaligned instrument mounting, some small bank angle may be displayed. A releveling of the KG 258 in the panel should be considered if the angle displayed with the wings level is more than two degrees.

B. BASIC AP

At a safe altitude, and with the airplane trimmed for straight and level flight, engage the AP mode. The autopilot should hold the airplane at zero roll attitude as indicated on the KG 258 roll display. If the airplane does not maintain zero roll attitude, an adjustment of the KC 190 R286 roll adjust pot (RN) is required. Adjust the control as necessary for a zero roll indication. Adjustment should be made slowly to avoid overcompensation.

Overpower the roll servo clutch and manually change the heading attitude. Release control back to the autopilot and the airplane should return to wings level.

C. HDG SEL CHECKS (Cruise Configuration)

Set the HDG bug on the KPI 525 or the HDG SEL/CRS DAT bug on the KG 107 to a 90 degree increase in heading and engage the HDG mode. The autopilot will bank the airplane up to $20^{\circ} \pm 3^{\circ}$ right bank. The airplane will roll out on the selected heading with no overshooting. Repeat the test using a 90° decrease in selected heading. (If the system flies with a HDG bug offset of 3° or more, airplane trim should be checked closely as well as the KG 258 Gyro installation in the airplane panel for proper leveling.)

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.8.3

THE FOLLOWING ARE NAVIGATION CHECKS FOR KCS 55A COMPASS SYSTEM. REFER TO 11.8.4 FOR KG 107 DIRECTIONAL GYRO

A. NAV CHECKS

Select an omni station at approximately twenty miles distance and set in the desired course on the Pictorial Navigation Indicator. Select the course by turning the course pointer until the KI 525A deviation indicator is centered in the "TO" position. Then increase or decrease the course selected by ten degrees.

Engage the AP and HDG modes and set up an intercept angle of twenty to sixty degrees using the HDG SEL bug. Arm the NAV mode by pressing the NAV switch. The system will fly on HDG until the proper intercept point is reached, where it will automatically switch from HDG, NAV Arm (flashing) to NAV coupled (steady). When NAV coupled is achieved, the system will bank the airplane up to the necessary bank angle to execute the turn on to the radial with minimum overshoot. Allow the system to track the radial for five minutes. The system will command the airplane to fly along the radial with no large steering maneuvers.

NOTE

IF THE CDI DEVIATION IS LESS THAN THREE DOTS AND THE BANK ANGLE IS LESS THAN FOUR DEGREES, THE SYSTEM WILL GO TO COUPLED AFTER 2 SECONDS IN ARM.

B. APR (ILS) CHECKS

While approaching the station in the HDG mode, tune in the LOC receiver and set the course pointer to the published runway inbound heading. Set up an intercept angle of greater than 90° to the inbound course. Arm the APR mode and engage the BC switch in advance of beam interception. The BC Annunciator will illuminate and APR will flash. The system will capture and track the localizer outbound. (Some overshoot may occur if the angle is too sharp or if the capture is made extremely close in.) While on the localizer outbound, descend to the desired altitude.

Set the HDG bug to the procedure-turn heading and press the HDG switch. The airplane will turn to the procedure-turn outbound heading. Use the HDG mode to complete the procedure-turn. When the airplane is within 90° of the inbound course, press the APR switch. With the APR mode armed (flashing), set up a 45° intercept angle using the HDG mode.

When the proper intercept is reached, the system will automatically transfer from HDG, APR arm to APR coupled (annunciator on steady) and turn onto the inbound localizer.

Establish the airplane in the approach configuration. When desired, disconnect the autopilot by use of the AP DISC/TRIM INTER switch.

C. APR (VOR) CHECKS

Using the published VOR approach information, set the course selector on the Pictorial Navigation Indicator to the inbound course. Use the HDG mode to set up a forty-five degree intercept of the VOR radial. Arm the approach mode by pressing the APR switch while the deviation is still full scale. When the proper intercept point is reached, the system will go from HDG, APR Arm (flashing) to APR coupled (steady). When desired, execute a missed approach procedure or disengage the autopilot and execute a landing.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.8.4 KG 107 DIRECTIONAL GYRO NAVIGATION CHECKS

A. NAV CHECKS

Select a VOR station at approximately twenty miles distance and set in the desired course by turning the OBS knob until the NAV Indicator deviation is centered in the "TO" position. Then increase or decrease the course selected by ten degrees.

Engage the HDG mode and set up an intercept angle of 90° using the HDG SEL/CRS DAT bug. Arm the NAV mode by pressing the NAV switch on the KC 190 Computer and turning the HDG SEL/CRS DAT bug to the radial selected on the NAV Indicator. The NAV Annunciator will flash to indicate NAV arm mode and after a 5 second delay the airplane will turn to make a 45° intercept of the radial selected. As the airplane approaches the radial it will automatically switch from HDG, NAV arm to NAV coupled. When NAV coupled is achieved, the NAV Indicator will cease flashing and remain on, the autopilot will bank the airplane up to the necessary bank angle to execute the turn on to the radial with minimum overshoot. Allow the autopilot to track the radial for five minutes. The autopilot will command the airplane to fly along the radial with no large steering maneuvers.

NOTE

IF THE CDI DEVIATION IS LESS THAN THREE DOTS AND THE BANK ANGLE IS LESS THAN FOUR DEGREES, THE SYSTEM WILL GO TO CPLD AFTER 2 SECONDS IN ARM.

B. APR (ILS) CHECKS

While approaching the station in the HDG mode, tune in the LOC receiver and set the OBS knob to the published runway inbound heading. Set up an intercept angle of greater than 90° to the inbound course. Engage the BC switch and turn bug on the KG 107 to the localizer inbound course. The BC annunciator will illuminate and the APR annunciator will flash to indicate APR arm mode. After a five second delay the airplane will turn to make a 45° intercept of the localizer outbound course. The autopilot will capture and track the localizer outbound. While on the localizer outbound, descend to the desired altitude.

Set the HDG SEL/CRS DAT bug to the procedure-turn heading and press the HDG switch on the KC 190. The airplane will turn to the procedure-turn outbound heading. Use the HDG mode to complete the procedure-turn. When the airplane is within 90° of the inbound course, press the APR switch on the KC 190 and turn the bug to the localizer inbound course. The autopilot will set up a 45° intercept angle automatically. When the proper intercept is reached, the autopilot will switch from HDG, APR arm (flashing) to APR coupled (steady) and turn onto the inbound localizer.

Establish the airplane in the approach configuration. When desired, disconnect the autopilot by use of the AP switch on the KC 190.

C. APR (VOR) CHECKS

Using the published VOR approach information, set the OBS knob on the NAV Indicator to the inbound course. Arm the APR mode by pressing the APR switch on the KC 190 while the deviation is still full scale and turn the HDG SEL/CRS DAT bug to the inbound course. The APR annunciator will flash to indicate APR arm mode. After a five second delay the airplane will turn to make a 45° intercept of the inbound radial. When the proper intercept point is reached, the autopilot will go from APR arm (flashing) to APR coupled (steady). When desired, execute missed approach procedure or disengage the autopilot and execute a landing.

THIS CONCLUDES THE NORMAL INSTALLATION FLIGHT CHECKS OF THE KAP 100 AUTOPILOT SYSTEM WITH KCS 55A OR KG 107 AND WITH OR WITHOUT MANUAL ELECTRIC TRIM.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.9 CHECKOUT PROCEDURE FOR OPTIONAL KAS 297B VERTICAL SPEED AND ALTITUDE SELECTOR (KAP 150 AND KFC 150 FLIGHT CONTROL SYSTEMS ONLY).

11.9.1 KAS 297B UNIT ALIGNMENT

Alignment of the KAS 297B is not mandatory, but is recommended in order to provide optimum performance and accuracy.

In order to perform the KAS 297B Unit Alignment, a static pressure system tester must be connected to the airplane pitot-static system. An altitude range of 0 to 30,000 feet will be required. Apply power to the KAP/KFC 150 System, KAS 297B, and KEA 130A Encoding Altimeter; it is not necessary to remove the KAS 297B from the panel to conduct the alignment procedure.

A. Calibrate Procedure Background

The KAS 297B can be calibrated at 7 points; 0, 5,000, 10,000, 15,000, 20,000, 25,000, and 30,000 feet. Since the KAS 297B incorporates a proximity detector, any one, two, or all of the points may be used, and may be updated in any sequence. Therefore, if operation at the 15,000 foot altitude only is not satisfactory, simply enter the calibrate mode and correct this single point. To enter the calibrate routine, press and hold both the VS ENG and ALT ARM buttons. After 5 seconds the VS and ALT annunciators will go out and the CAPT Annunciator will come on; release the buttons. At this time, the unit will display an uncorrected barometric altitude close to what is indicated on the KEA 130A Altimeter. When a calibrate point is entered by pressing the VS ENG button, the display will momentarily indicate the calibrate altitude. Example: The KEA 130A indicates 10,000 feet, the KAS 297B display reads 9,910 feet. Press the VS ENG button, the display will momentarily indicate 10,000 feet. Release the button and the 90 foot error difference is now stored for operational use. Errors of greater than 150 feet can not be corrected. To exit the calibrate mode first press the ALT ARM button, then press the VS ENG button and release both. The unit will now resume normal operation.

- B. Momentarily press the self test switch on the KC 191/192 flight computer. For the duration of the self test all modes and annunciators will illuminate on the KAS 297B; the unit will also display 88,800.
- C. Move the inner concentric knob on the KAS 297B to the "in" position; this will select the altitude preselect mode, and the unit will display the altitude desired as adjusted by the increment/decrement knots.
- D. Set the baro select on the KEA 130A Encoding Altimeter precisely to 29.92 inches Hg. Reduce the static pressure source unit the altimeter reads 500 feet below sea level.
- E. Simultaneously press and hold the VS ENG and ALT ARM switches on the KAS 297B faceplate. After approximately 5 seconds the VS and Alt Annunciators will go out and the CAPT Annunciator will illuminate. This indicates the unit is now in the calibrate mode and ready for the alignment sequence. Release the two switches.
- F. Using the static pressure source, increase the altitude to 0 feet as indicated on the KEA 130A. When stable and holding at 0 feet press the VS ENG button momentarily. The CAPT Annunciator will go out, then come back on as the button is released. This indicates the KAS 297B has stored the first alignment point.
- G. Continue increasing the altitude, and when stable at each alignment point (5,000, 10,000, 15,000, 20,000, 25,000 and 30,000 feet) press the VS ENG button.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.9.1 (Cont'd)

- H. After the final desired calibrate altitude has been entered, exit the mode by pressing and holding the ALT ARM button, then momentarily pressing the VS ENG button (both buttons depressed at the same time). Release, and the unit is now ready for normal operation.
- I. The static pressure system tester may now be disconnected from the airplane. This ends the KAS 297B alignment procedure.

11.9.2 KAS 297B OPERATIONAL CHECKS

- 11.9.2.1 Connect a static-pressure system tester to the airplane; an altitude range of 0 to 30,000 feet will be required. The KAS 297B will not need to be removed from the panel. Apply power to the flight Control System, KAS 297B, and KEA 130A encoding altimeter.
- 11.9.2.2 To check for proper KAS 297B operation when approaching the selected altitude from below:
 - A. Adjust the baro set on the KEA 130A Altimeter to 29.92 inches. With all KFC 150 System modes disengaged, select an altitude on the KAS 297B at least 1100 feet above the altitude indicated on the KEA 130A Altimeter.
 - B. Engage the ALT "ARM" mode by pressing the arm switch on the KAS 297B (Note: the KAS 297B MUST be displaying the selected altitude before the arm mode is able to be engaged). The "ARM" annunciator in the KAS 297B and "FD" annunciator on the KC 192 Flight Computer should illuminate and the command bars on the KI 256 Flight Command Indicator should come into view.
 - C. Slowly adjust the static system tester to increase the Altimeter Altitude. At 1000 + 50 feet below the selected altitude, the "ALERT" Annunciator in the KAS 297B will light and an audio warning sound. Continue increasing the altitude and at 300 + 50 feet below the selected altitude the alert light will extinguish. At the selected altitude, + 50 feet, the "ALERT" light in the KAS 297B will flash and the aural alert will sound for approximately 2 seconds, and the KC 192 will annunciate the "ALT" Mode. In addition, the "ARM" annunciator in the KAS 297B will go out. Continue to increase the Altitude and note the point when the Altitude Selector "ALERT" light again illuminates. This will occur at 300 + 50 feet above the selected altitude and the "ALERT" light shall flash and a 2 second aural tone sound. Continue to increase the altimeter until the flashing ALERT annunciator extinguishes. This will occur at 1000 + 50 feet above the selected altitude.
- 11.9.2.3 To check for proper KAS 297B Altitude Select operation when approaching the selected altitude from above perform the steps outlined in section 11.9.2.2.C above, selecting an altitude lower than the starting altitude. All warnings and annunciations should operate as in step 11.9.2.2.C however, they will occur before reaching the selected altitude and after continuing on 300 and 1000 feet past the selected altitude.

NOTE

REPEAT THE CHECK OF ALTITUDE SELECT OPERATION, BOTH CLIMBING AND DESCENDING, AT A VARIETY OF ALTITUDES THROUGHOUT THE ALTITUDE RANGE OF THE AIRPLANE. IF ACCURACIES LESS THAN THOSE LISTED RESULT, THE TWO CALIBRATE POINTS NEAREST THE PROBLEM AREA SHOULD BE UPDATED, AS PER THE CALIBRATE ROUTINE SECTION 11.9.1.

THIS CONCLUDES THE GROUND CHECKOUT OF THE KAS 297B ALTITUDE/VERTICAL SPEED SELECTOR OPTION.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-5

11.9.3 IN-FLIGHT CHECKS

11.9.3.1 ALT ARM

Establish the airplane in straight and level flight in the FD and HDG Mode with AP engaged. Select an altitude at least 2000 feet higher on the KAS 297B Altitude/Vertical Speed Selector and using the vertical trim switch on the KC 192 Flight Computer start a climb toward the selected Altitude. Use an appropriate pitch attitude and power setting to maintain a safe climb speed. Engage the ALT ARM Mode and ARM will annunciate on the KAS 297B. At 1000 + 100 feet below the selected altitude, the ALERT Annunciator on the KAS 297B will illuminate and an Audio warning sound. At 300 + 100 feet below the selected altitude, the ALERT Annunciator will extinguish, indicating entry into the "SAFE" band. The airplane will begin to smoothly round out to a level flight attitude 200 to 500 feet below the selected altitude, depending upon rate of climb. At the selected altitude + 100 feet, the ALT ARM Mode will disengage and the system will transfer to the Altitude Hold (ALT) Mode, as indicated on the KC 192. Repeat this procedure for a selected altitude at least 2000 feet below present altitude. Maintain an appropriate descent rate and observe the ALERT annunciate 1000 + 100 feet above the selected altitude. The ALERT Annunciator will extinguish at 300 + 100 feet above the selected altitude and the airplane will capture the desired altitude and transfer to Altitude Hold (ALT) Mode within 100 feet of the selected altitude.

11.9.3.2 VERTICAL SPEED MODE

- A. Establish the airplane in straight and level Flight in the FD and HDG modes with AP engaged. With the KAS 297B displaying vertical speed, select + 500 feet per minute on the unit and engage vertical speed hold by pressing the VS ENG button. The autopilot will smoothly fly to the climb or descent rate and hold within + 100 feet per minute. Rotate the VS select controls to select a new rate and note that the autopilot will smoothly fly to and track the selected Vertical Speed.
- B. With FD, HDG and AP modes selected, engage the VS mode. With the KAS 297B displaying selected altitude on the KAS 297B operation of the CWS switch on the pilot's control wheel will cause the KAS 297B to temporarily revert back to the vertical speed display, and track and display the present vertical speed. The system will lock on to the vertical speed present when the switch is released and track within + 100 feet per minute.

NOTE

DURING TURNING FLIGHT THE VS MODE MAY BE EXPECTED TO INITIALLY VARY BY AS MUCH AS 350 FEET PER MINUTE DUE TO CHANGING AIRPLANE LIFT REQUIREMENTS. HOWEVER, VS MODE TRACKING SHOULD STABILIZE ONCE THE BANK ANGLE IS ACHIEVED AND THE TURN RATE IS STABLE.



KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-6

12.0 APPENDIX

The following pages show specific unit installation drawings of the units used in this installation.

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-6

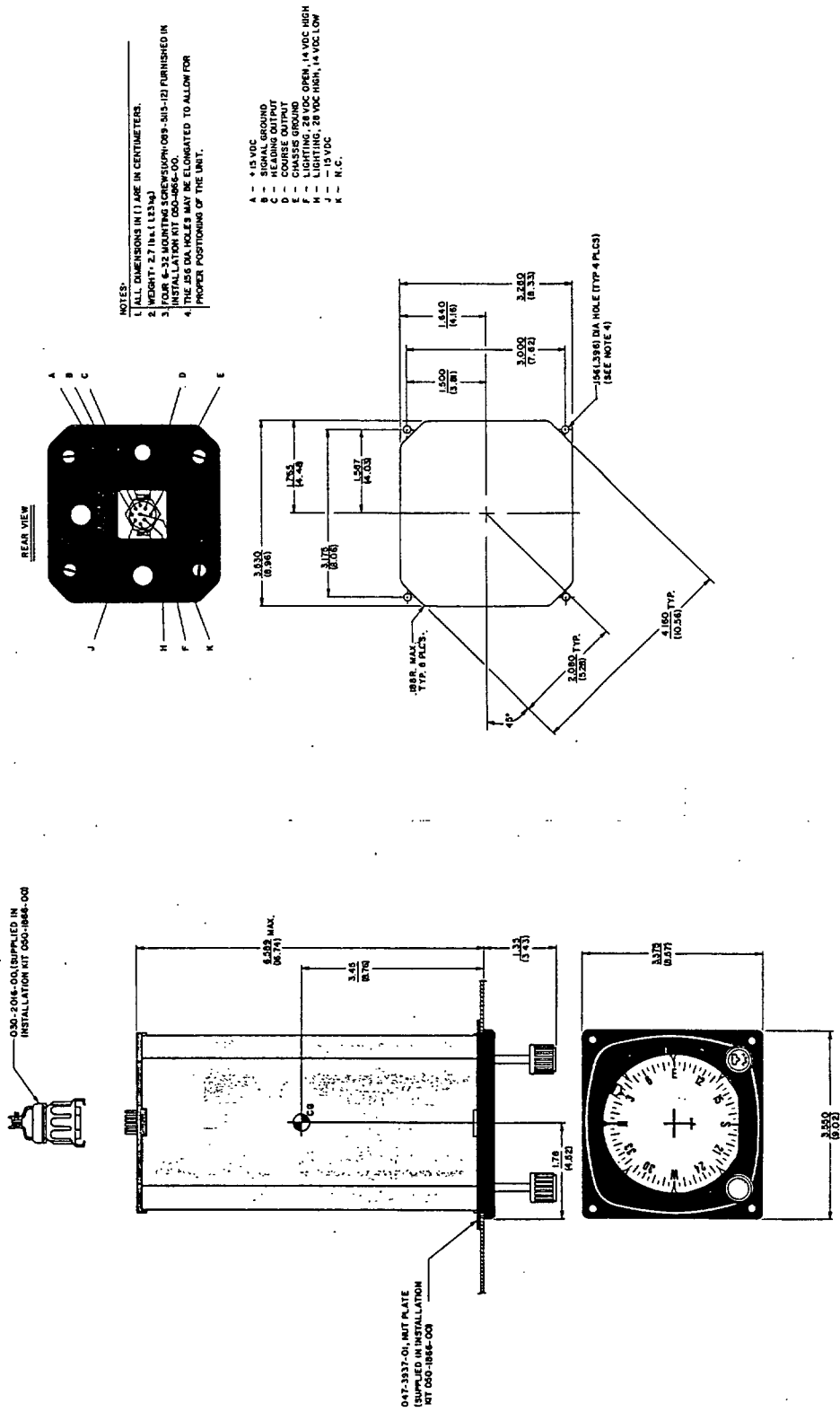


FIGURE 12-A KG 107 INSTALLATION DRAWING

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KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-6

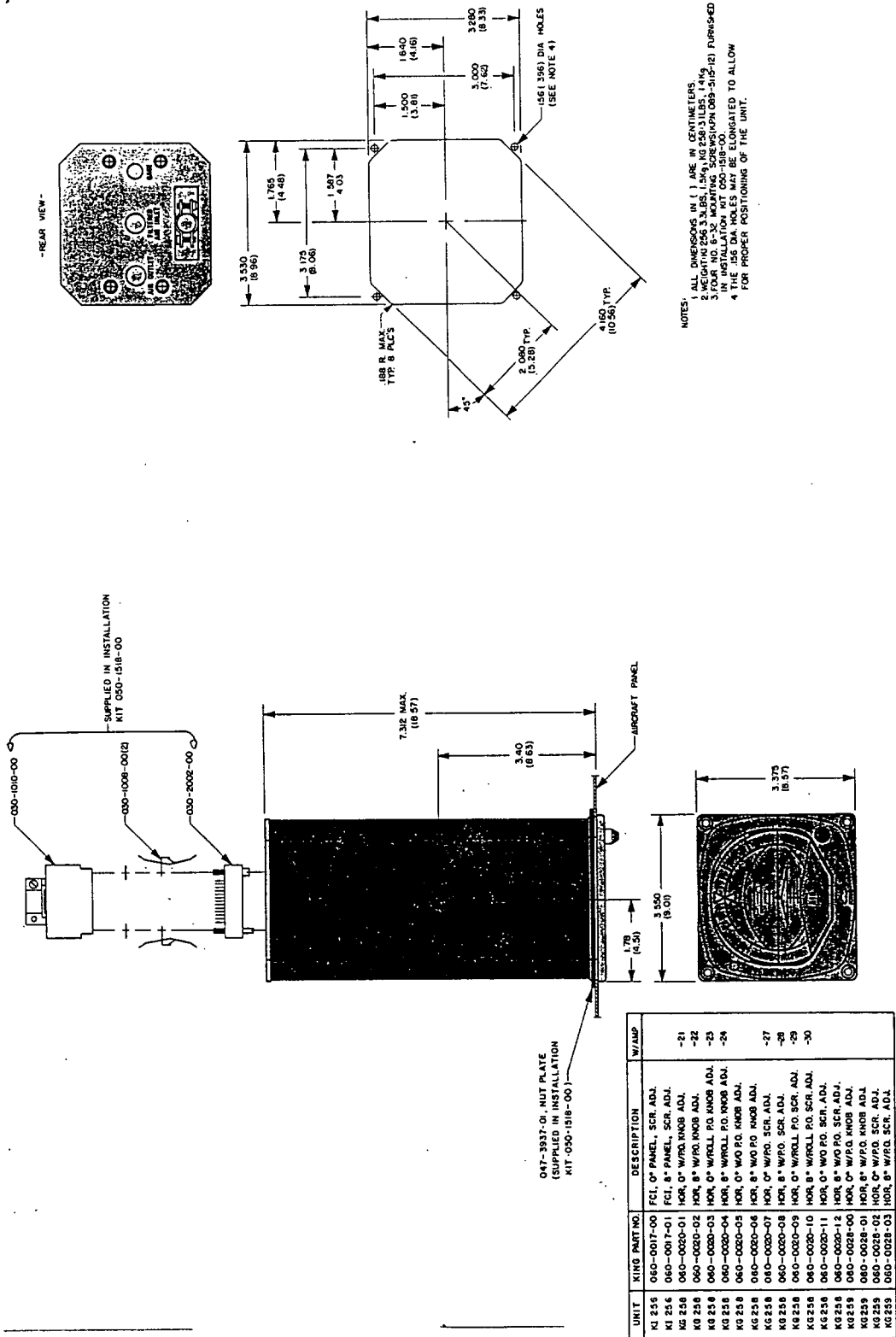


FIGURE 12-B KG 258/KI 256 INSTALLATION DRAWING

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 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-6

- NOTES:
 1 ALL DIMENSIONS IN () ARE IN CENTIMETERS.
 2 HEIGHT 2.125" WITH WTS. MOUNTING CONNECTORS.
 3 DIMENSIONS WITH WTS. MOUNTING CONNECTORS.
 4 ATTACHED TO PANEL MOUNT.
 5 INSTALLATION FITS RPN 000-163-00

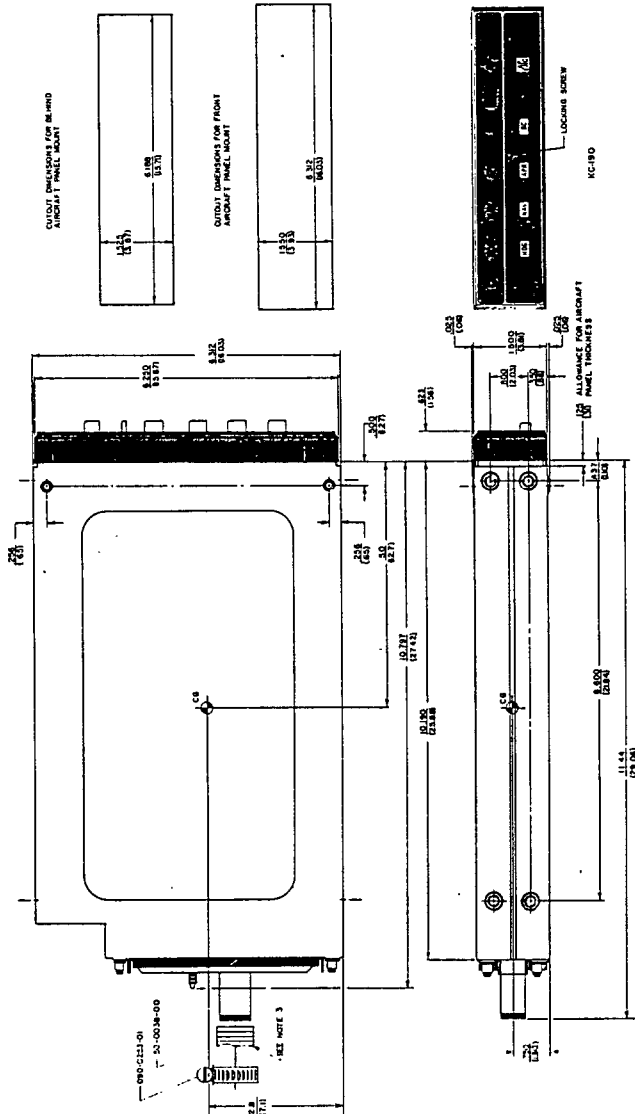


FIGURE 12-C KC 190 INSTALLATION DRAWING
 (Sheet 1 of 2)

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-6

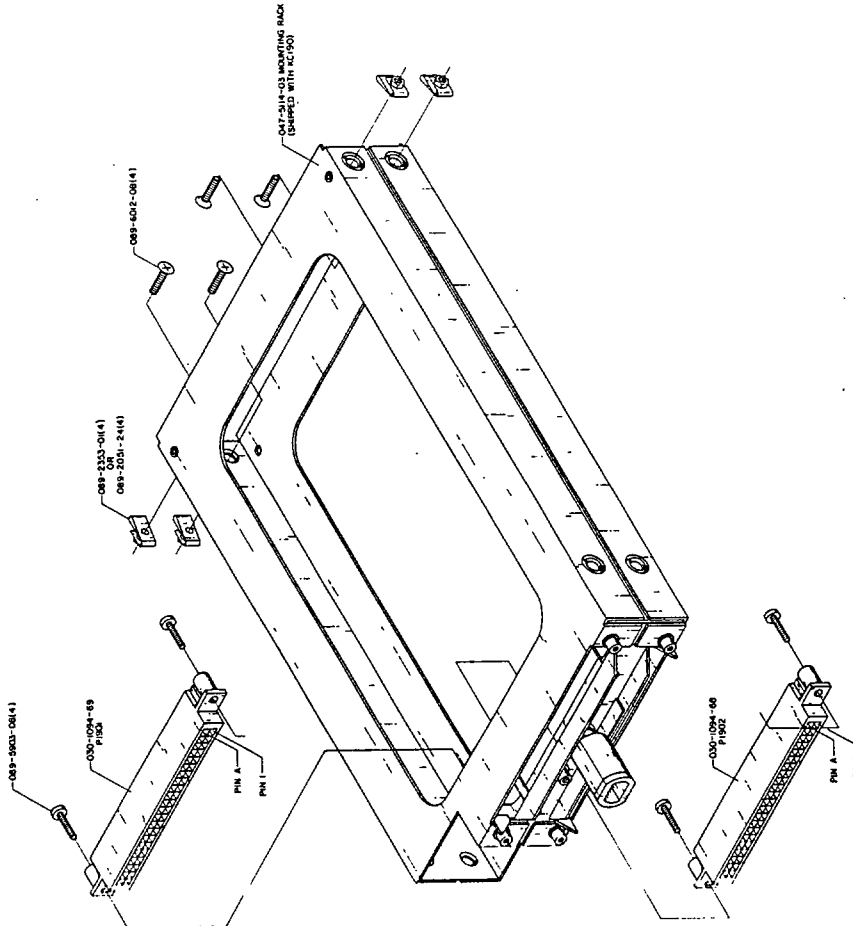
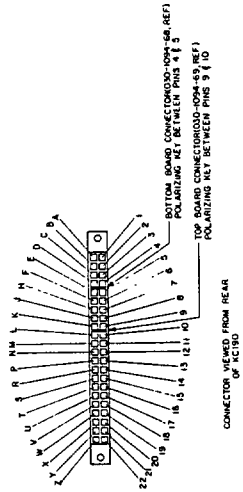


FIGURE 12-D KC 190 INSTALLATION DRAWING
 (Sheet 2 of 2)

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-6

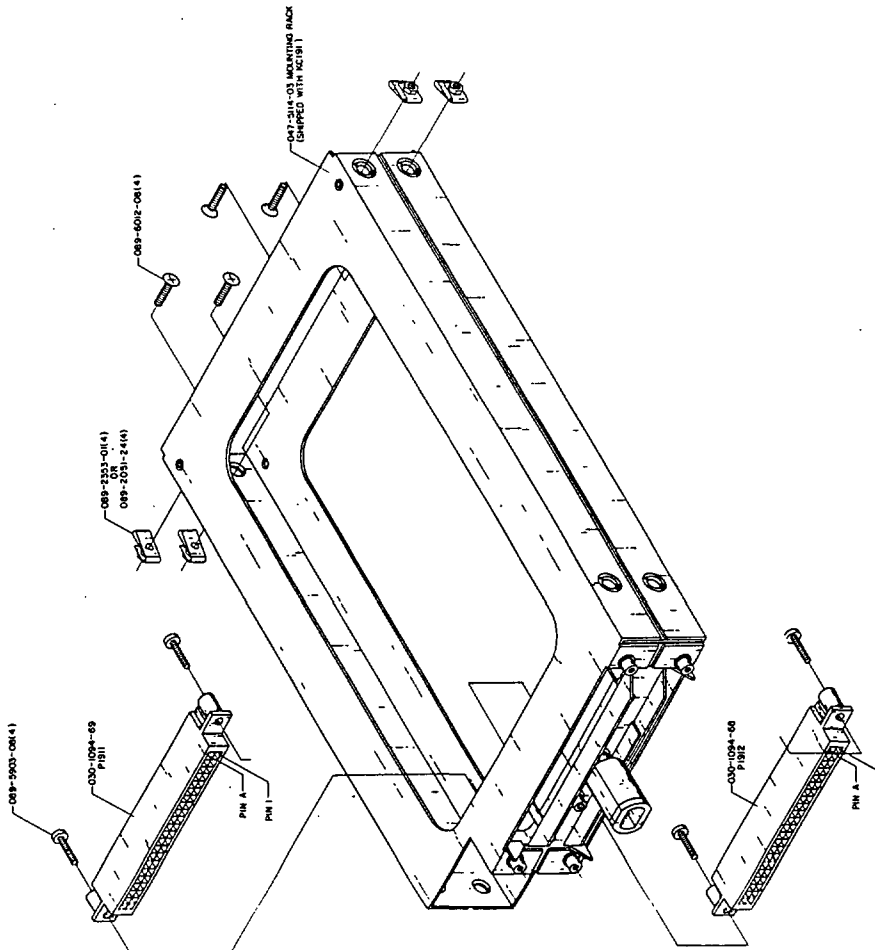
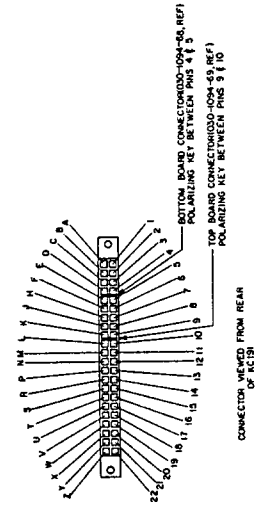
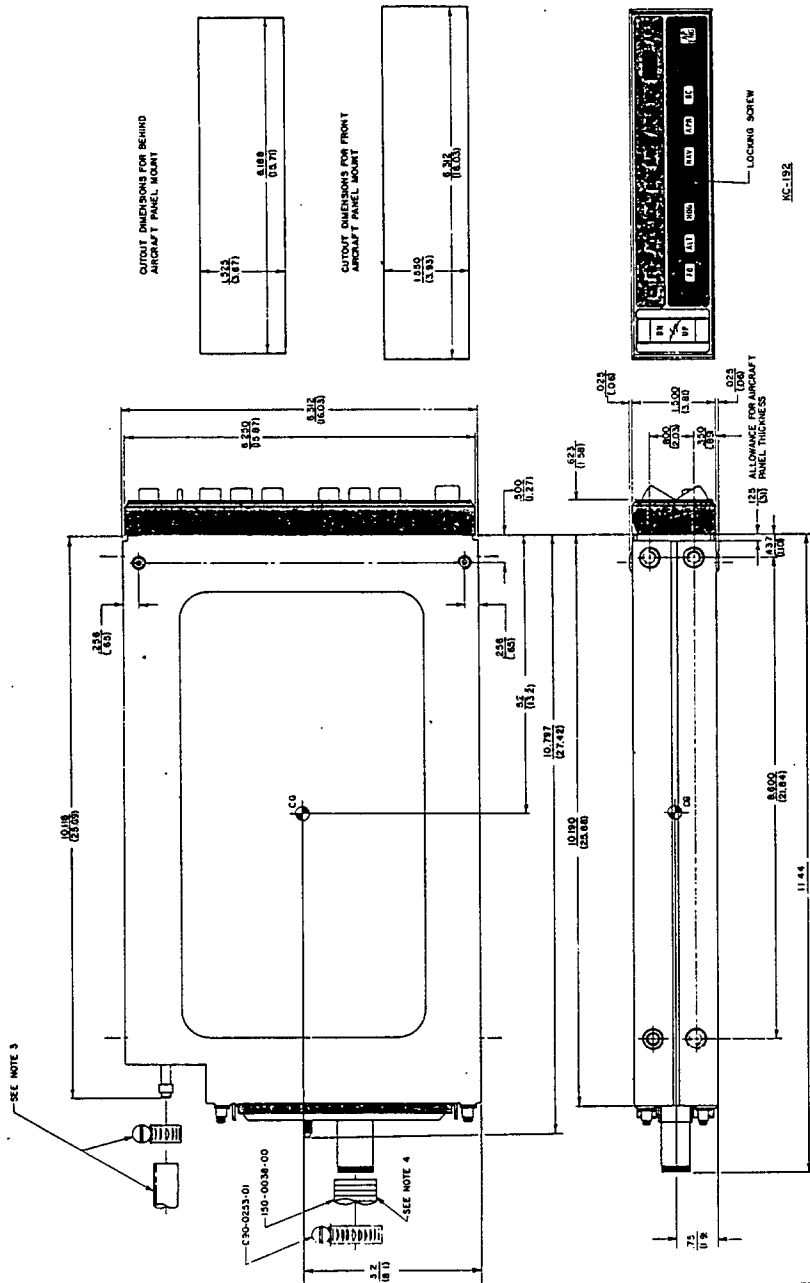


FIGURE 12-F KC 191 INSTALLATION DRAWING
 (Sheet 2 of 2)

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-6



- NOTES:
- 1 DIMENSIONS IN PARENTHESIS IN CENTIMETERS
 - 2 WEIGHT - 2.5 LBS. WITHOUT MTO RACK.
 - 3 INSTALL 3.1 LBS. WITH MTO RACK AND CONNECTOR.
 - 4 COOLING BLOWER KIT: KPN 07-4031-00 OR EQUIV. (MIN. OR 1894U (M/SEC))
 - 5 INSTALLATION KIT IS KPN 050-1838-00

FIGURE 12-G KC 192 INSTALLATION DRAWING
 (Sheet 1 of 2)

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-6

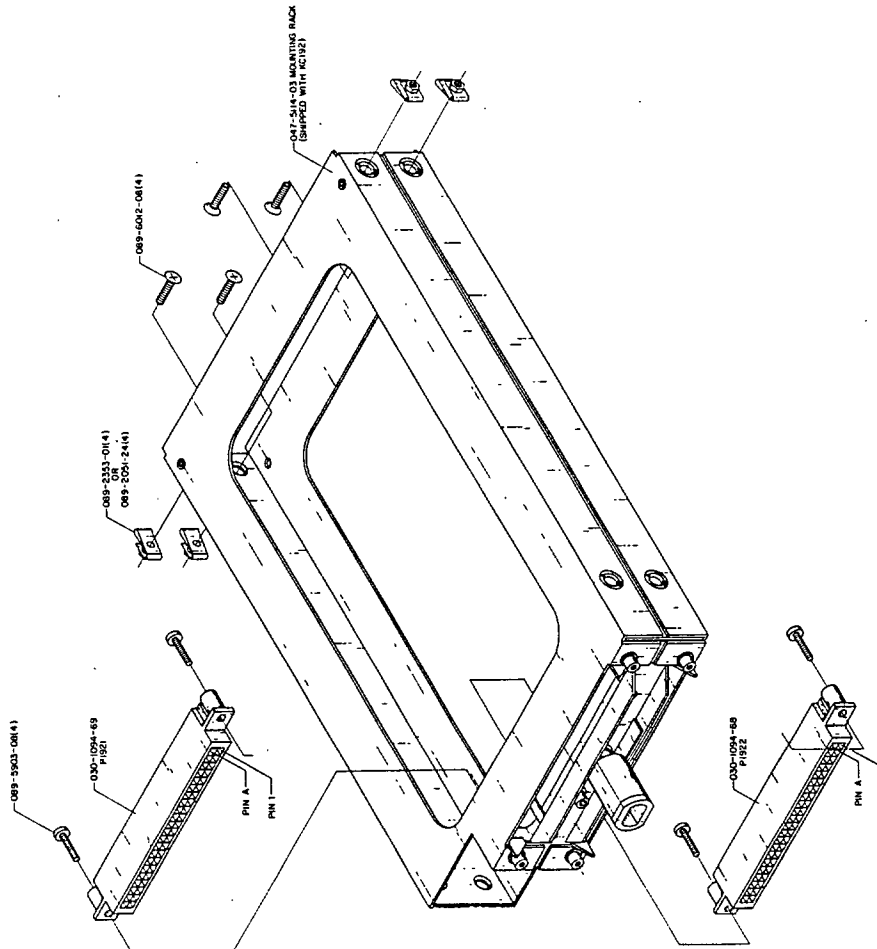
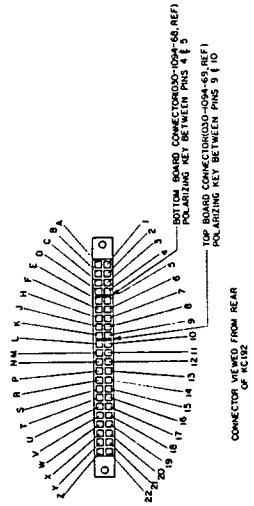


FIGURE 12-H KC 192 INSTALLATION DRAWING
 (Sheet 2 of 2)

KING
KAP 100/KAP 150/KFC 150
FLIGHT CONTROL SYSTEM
006-0294-00
AIM002-6

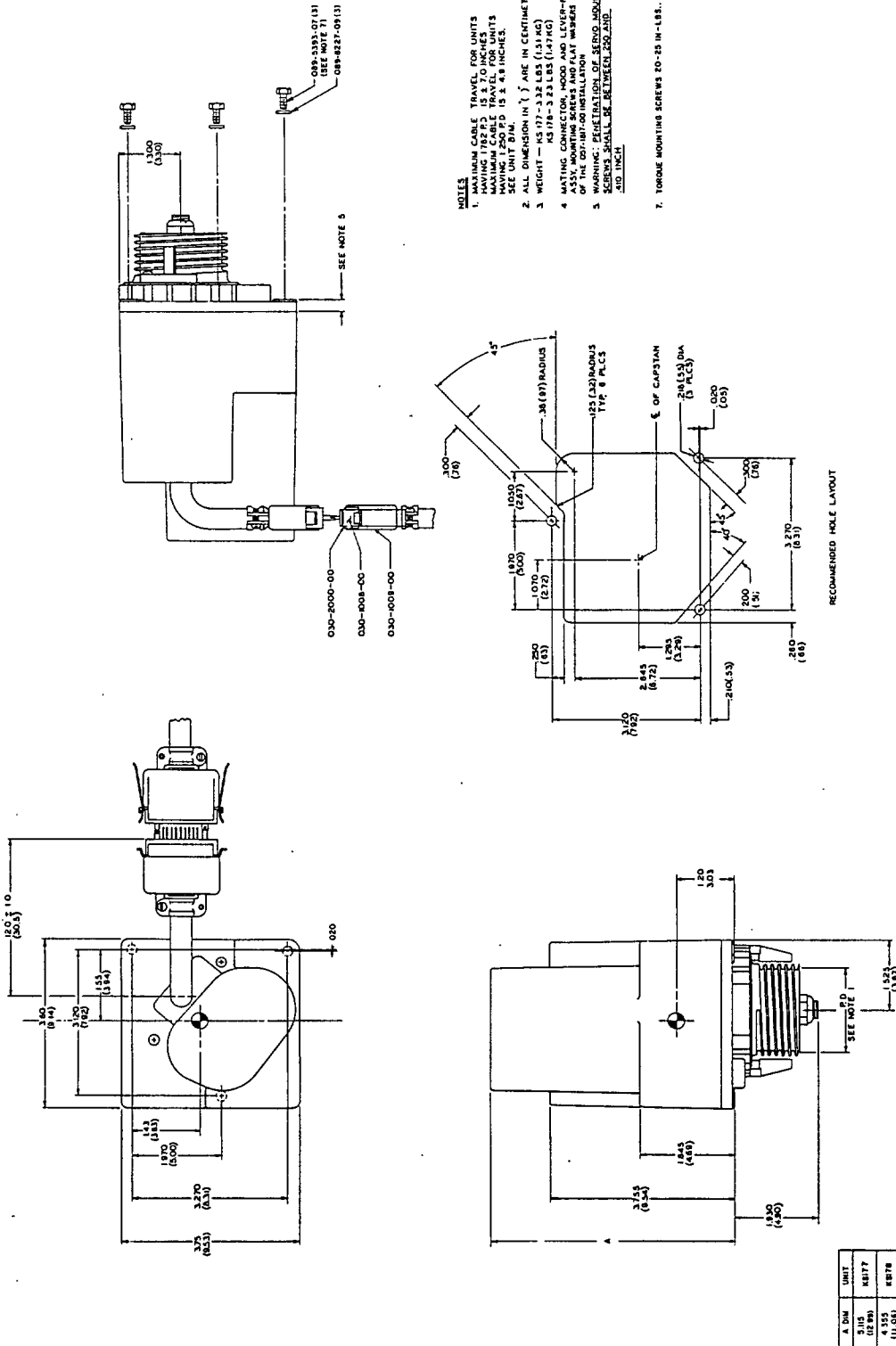


FIGURE 12-I KS 177/KS 178 INSTALLATION DRAWING

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-6

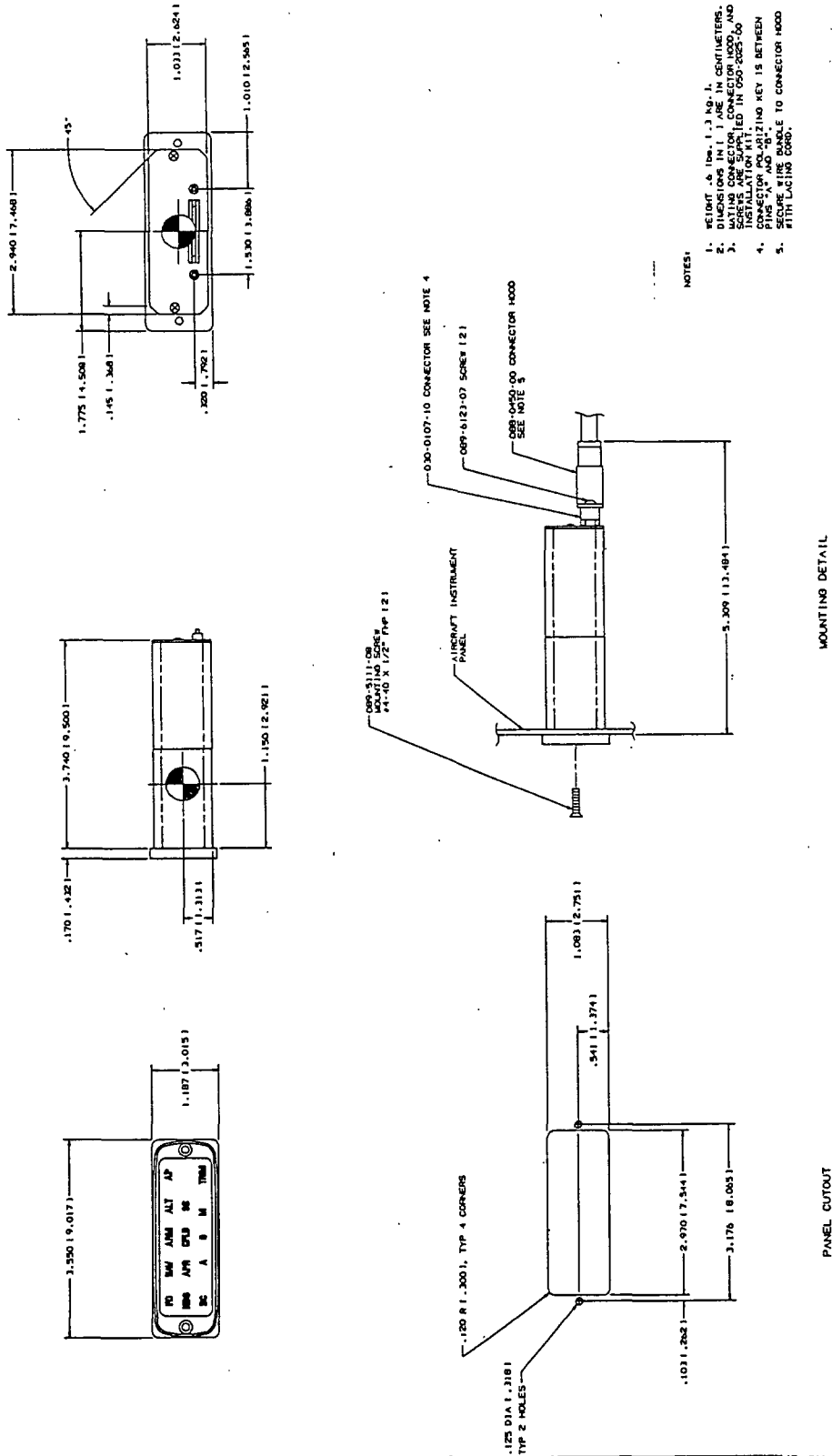


FIGURE 12-K KA 185 INSTALLATION DRAWING

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-6

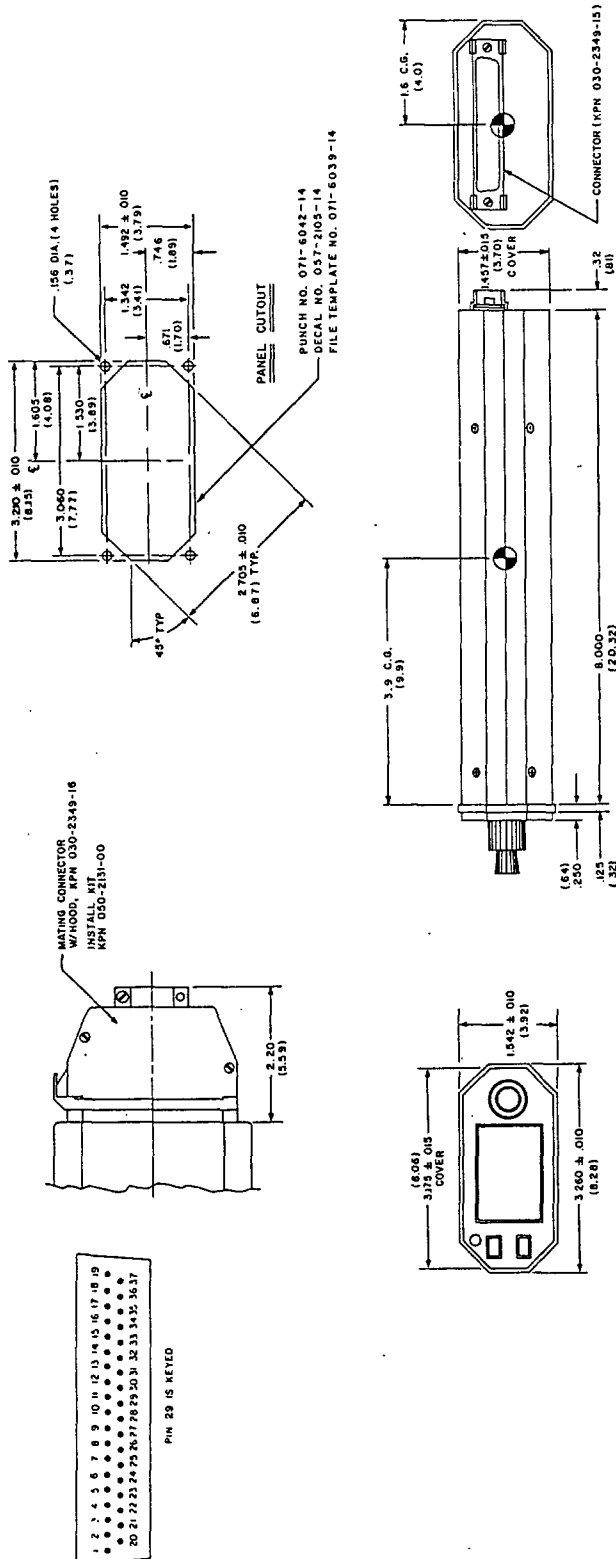


FIGURE 12-L KAS 297B INSTALLATION DRAWING

KING
 KAP 100/KAP 150/KFC 150
 FLIGHT CONTROL SYSTEM
 006-0294-00
 AIM002-6

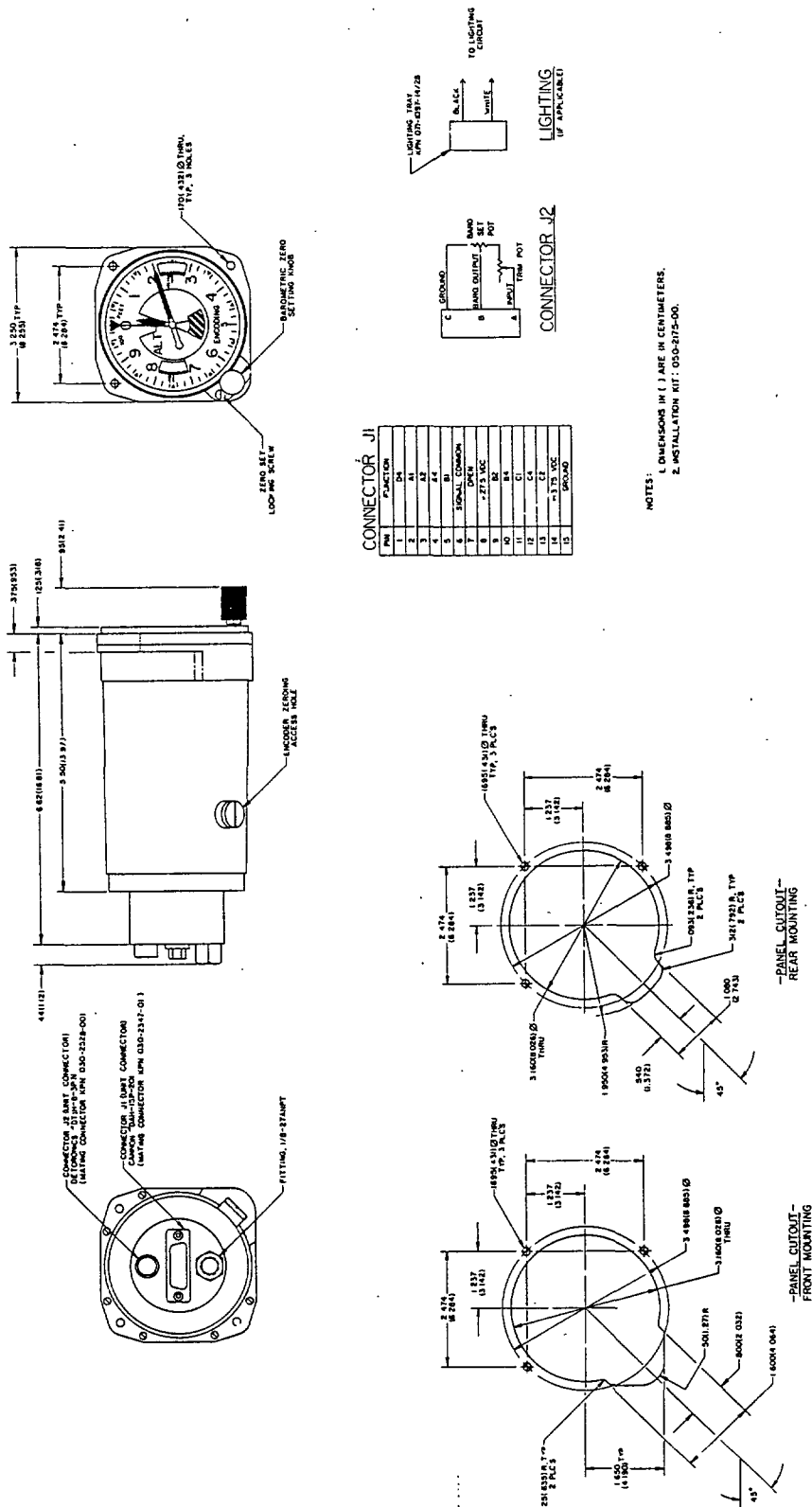


FIGURE 12-M KEA 130A INSTALLATION DRAWING