AlliedSignal

AEROSPACE

COMMERCIAL AVIONICS SYSTEMS

INSTALLATION MANUAL

BENDIX/KING®

KFC 150

FLIGHT CONTROL SYSTEM

MANUAL NUMBER 006-10552-0003

REVISION 3, SEPTEMBER, 1996

SECTION I
GENERAL INFORMATION

SECTION II
INSTALLATION

SECTION III
OPERATION

LIST OF ILLUSTRATIONS

TABLES

SECTION I

GENERAL INFORMATION

1.1 KFC 150 FLIGHT CONTROL SYSTEMS

The KFC 150 Flight Control System was developed in 1980 to provide two axis digital flight control to the low end General Aviation market. The system was designed under the King Radio Silver Crown System format and included a panel mounted Flight Computer which also served as the Mode Controller and Annunciator and a new line of Servo Actuators , KS 17X, which had the servo mount as an intregal part of the actuator itself. The Flight Computers also interfaced with the existing KS 27X series of Servo Actuators. The KFC 150 interfaced with a Flight Command Indicator which displayed Flight Director commands along with a Roll and Pitch attitude presentation.

Optional systems were developed to work with the basic system in 1980 and from these projects, the KAP 150 Autopilot Only System (no Flight Director Command bars) and the KAP 100 Roll Axis Only System were released. All three systems were designed to interface with an add-on Yaw axis to give two or three axis flight control options. A small External Mode Annunciator was designed to accommodate larger aircraft panels and the KAS 297B Altitude Selector and Vertical Speed Computer was designed to interface with the KC 192 Flight Computer. The Flight Computer matchup with the approriate system is as follows:

KFC 150 Flight Control System	KC 192 Flight Computer;
KAP 150 Autopilot Only System	KC 191 Flight Computer;
KAP 100 Roll Axis Only System	KC 190 Flight Computer.

In 1996, the -15 version of the KC192 and KC191 Flight Computers was introduced. These computers replace all the previously released flavors of the computers and provide significant improvements in the manufacturing and testing of the units. The circuit components were upgraded to the latest technology and the units remain completely compatible with any of the 6,000 installations in the field. At the same time, a -16 version of the KC 192 was developed to provide an interface with our EFIS 40 ADI and HSI Electronic Flight Instrument System (EFIS).

Identical Flight Computers are certified in over 40 different types of aircraft. Adapter modules, small plastic carriers with passive circuit components, connected between the forty pins, are used to adapt the software algorithms to the particular gains needed to provide satisfactory performance in all modes for each individual airframe. These modules, two for each flight computer, are encased in resin to prevent altering, and reside in forty pin sockets within the units. Various methods were used to insure that the proper module was placed in the correct location. The modules are shipped as separate items with instructions on the proper installation within the flight computer during the system installation. Successful completion of a five second comprehensive Self Test is required before Autopilot Engagement is allowed.

1.2 EQUIPMENT DESCRIPTION

The system modes for the KFC 150 Flight Control System is as follows:

Pitch Modes:	Pitch Attitude Hold Altitude Hold Glideslope Altitude Select Capture (With KAS 297B) Vertical Speed Hold(With KAS 297B)

Roll Modes :	Wings Level Heading Select Nav Approach Back Course

Other :	Flight Director (Pitch Attitude Hold, Wings Level) Autopilot Manual Trim and Automatic Trim Self Test Yaw Damper (With KC 296) Control Wheel Steering

The KFC 150 Flight Control System for a full three axis configuration consists of the following units:

KC 192	Flight Computer (Flight Director Mode)
KAS 297B	Altitude Select/Vertical Speed Computer
KS 270B	Pitch Axis Servo Actuator
KS 271B	Roll Axis Servo Actuator
KS 272B	Elevator Trim Servo Actuator
KI 256	Flight Command Indicator (Use KVG 350 if interfaced to EFIS)
KCS 55A	Compass System
KC 296	Yaw Computer
KRG 331	Yaw Rate Gyro (Use KRG 332 if interfaced to EFIS)
KS 271B	Yaw Axis Servo Actuator
KA 185	External Mode Annunciator
KM 275	Servo Mount
KM 276	Servo Mount

The KAP 150 Flight Control System for a three axis configuration consists of the following units:

KC 191	Flight Computer (No Flight Director mode)
KAS 297B	Altitude Select/Vertical Speed Computer
KS 270B	Pitch Axis Servo Actuator
KS 271B	Roll Axis Servo Actuator
KS 272B	Elevator Trim Servo Actuator
KG 258	Attitude Gyro
KCS 55A	Compass System
KC 296	Yaw Computer
KRG 331	Yaw Rate Gyro
KS 271B	Yaw Axis Servo Actuator
KM 275	Servo Mount
KM 276	Servo Mount

The KAP 100 Flight Control System for a single axis configuration consists of the following units:

KC 190	Autopilot Computer (No Pitch axis)
KS 271B	Roll Axis Servo Actuator
KS 272B	Elevator Trim Servo Actuator
KG 258	Attitude Gyro
KCS 55A	Compass System
KM 275	Servo Mount
KM 276	Servo Mount

1.2.1 Modes of Operation

MODE GUIDANCE DISPLAY PROVIDED

MODE	GUIDANCE DISPLAY PROVIDED
Attitude Reference	Power on, Gyros erected, warning flags out of view, and no modes selected. Existing Roll, Pitch, and Heading information is displayed but no flight commands are computed.
Flight Director (optional)	Pitch Attitude Hold and Wings Level Flight Director commands. Commands to maintain Pitch Attitude that exists at the time of Flight Director Mode selection and a return to a Wings Level condition.
Heading Select/Preselect	Roll command to the heading selected on the PNI heading bug.
NAV	Roll command to capture and track a navigation course provided by a NAV, RNAV, or Long Range Navigation Receiver/converter.
Approach	Roll and Pitch commands to capture and track LOC and GS Beams, and MLS Tracks, VOR, RNAV, and Long Range Navigation Approach course.
Back Course	Roll command to capture and track a reverse LOC course.
Altitude Hold	Pitch command to hold a selected altitude.
Vertical Trim	Pitch Command to modify engaged Altitude, or Pitch attitude.
Vertical Speed	Pitch Command to select and track a Vertical Speed
Altitude Capture	Pitch Command to select and capture an altitude
Yaw Damper	Provides stability in the Yaw axis and automatic turn coordination.
Autopilot	Provides servo actuator commands during all the selected modes.

1.3 TECHNICAL CHARACTERISTICS

1.3.1 System Technical Characteristics

Computed Roll Axis Command Rates	5.0°/sec Nominal
Maximum Bank Angles	Selected angle (8 to 30 degrees) ± 3.0°.
Heading Stability	± 3°
VOR Crosswind Compensation	Up to 30° right or left
NAV/APR/BC Capture Capability	All angles
NAV/APR/BC Capture Computation	Scheduled by beam closure rate
NAV Track Computation	Scheduled by beam rate and deviation
APR/BC Track Computation	Scheduled by beam rate and deviation
NAV Tracking	System will track without large bank angles keeping beam deviation to less than 1.0° of VOR. Actual performance will depend upon quality of VOR beam being received.
LOC Tracking	System will track without large bank angles keeping beam deviation to less than .25° of LOC. Actual performance will depend upon quality of LOC beam being received.
Pitch Attitude Hold Limits	15° Up to 10° Down
Pitch Attitude Stability	± 1.0°
Altitude Stability	– 1000 to 35,000 ft
Altitude Hold Stability	± 50ft
Altitude Overshoot	System will limit overshoot to less than 15 % (in feet) of the rate of climb or descent (limited to 3,000 feet per minute).
Altitude Trim Rate	500 ± 50 ft per minute at 0 feet
Vertical Trim Sensitivity	0.9 deg per second for Pitch Attitude Hold
Glideslope Capture Computation	Scheduled by beam crossing

Autopilot Disconnect Alerting	External Sonalert
Turn Coordination	System shall keep the Side-Slip indicator centered during all turns.
Gust Stability	System shall exhibit less than 1/4 the Yaw movement in the Yaw Damper mode than that experienced with the mode off.

1.3.2 System Components Technical Characteristics

KA 185	
TSO Compliance	TSO C52a, C9c, DO 138 Env. Cat, DA/P/AAA/XXXXXX
Physical Dimensions:	
Width: Height: Length:	3.55 in (9.02 cm) 1.18 in (3.01 cm) 5.48 in (13.92 cm)
Weight:	0.64 Lbs (.29 Kg)
Mounting:	Panel, with two #4 Flathead screws
Mating Connector:	P/N KRC 030-00107-0011
Temperature Range:	-20° C to 55° C
Altitude Range:	Up to 35,000 FT
Power Inputs:	28VDC at 1.0 A MAX 5VDC at 0.1 A MAX (From KC 19X)
Signal Inputs:	Clock, strobe and serial data lines are used to determine which mode lights are activated. A single wire ground input is used to light the AP annunciator . Outer, Middle and Inner Marker lights are inputted for display.

KC 192/1/0

TSO Compliance:	See Appendix A
Physical Dimensions:	
Width:	6.312 in (16.03 cm)
Height:	1.55 in (3.93 cm)
Length:	11.62 in (29.51 cm)
Weight:	2.3 lbs (1.04 kg)
Mounting:	Panel with supplied rack
Mating Connectors:	Board edge Connectors P/N 030-01094-0082 P/N 030-01094-0069
Temperature:	-20° C to +55° C
Altitude Range:	Up to 35,000 Ft
Power Inputs:	+28VDC at 1.2A, 14V DC at 2.4A
Power Outputs:	+15VDC at .2A -15VDC at .2A + 5VDC at .2A 10 VAC 506 Hz at 2.5 VA
Signal Inputs:	
Vertical Reference:	2 Wire, Pitch and Roll, 50mV AC per degree 2 Wire, Pitch and Roll, 206mV AC per degree (EFIS)
Directional Reference:	2 Wire Heading Datum, 550mV DC/Degree 2 Wire Heading Datum, 393mV AC/Degree (EFIS)
Course Datum:	2 Wire Course Datum, 210mV DC/Degree 2 Wire Heading Datum, 393mV AC/Degree (EFIS)
VOR/RNAV Receiver:	60mV/Deg/Localizer, 15mV per Deg/VOR, 30mV/NM RNAV Enroute, 120mV/NM RNAV APPR.

LOC Energize Sense:	Ground for LOC Enable
Glideslope Receiver:	214mV/Deg
Symbol Generator (EFIS) Valid:	0/28V, 1 Wire
Glideslope Valid:	180mV for Valid
Middle Marker Sense:	1 Wire, 2VDC Minimum for MKR on
Outer Marker Sense:	1 Wire, 2VDC Minimum for MKR on
Pitch Servo Tach Feedback:	2 Wire, DC Differential voltage
Roll Servo Tach Feedback:	2 Wire, DC Differential voltage
Switched 28VDC (For Servo Engages):	1 Wire
Yaw Damp Engage:	1 wire
Compass Valid:	Hi = Invalid, Ground = Valid 28v = Valid, Ground = Invalid (EFIS)
Back Lighting:	3 wires (14 or 28v inputs)
Pitch Servo Drive:	2 Wire DC Differential, 0 to 28V max.
Roll Servo Drive:	2 Wire DC Differential, 0 to 28V max.
Servo Clutch Engages:	1 Wire, 14V or 28V to engage
AP Valid:	Open= Valid, Ground= Invalid
VG Excitation:	10VAC at 506 Hz
Pre-Flight Test Out:	1 Wire 28V = Test Mode On
External Annunciation:	7 Wires

KC 296

TSO Compliance	TSO C52a, C9c, DO 138 Env. Cat BAJAAA/XXXXXX
Physical Dimensions:	
Width:	3.30 in (8.38 cm)
Height:	2.56 in (6.50 cm)
Length:	4.80 in (12.19 cm)
Weight:	0.5 lbs (.226 kg)
Mounting:	Remote, four # 6 screws
Mating Connector:	P/N 030-00107-0016 P/N 030-00107-0017
Power Inputs:	+28VDC at 0.8A, +14VDC at 1.2A
Signal Inputs:	
Yaw Rate Gyro Input:	200mV/deg/sec
AP Disconnect:	28V = Off , 0V = Disconnect
AP Engage:	0 = Off, 28V = Engage
Servo Feedback:	2 Wire DC, Differential Voltage
Pre-Flight Test:	Open = No Test 28V = Test
Yaw Damper Engage:	0 = Off, +28V = Engage
Roll Crossfeed:	2 Wire, Differential Voltage
Signal Out:	
Yaw Servo Drive:	Differential Output ±15V
Yaw Annunciate:	Open = Off, 0V = Annunciate
Power Outputs:	+15V at .050 amps - 15V at .050 amps +10V at .050 amps

KS 270/1/2 B

TSO Compliance:	See Appendix A
Physical Dimensions:	
Length:	5.83 in (14.81 cm)
Width:	4.68 in (11.87 cm)
Height:	3.92 in (9.97 cm)
Weight:	
KS 270B:	2.5 lbs (1.09 kg)
KS 271B:	2.2 lbs (1.00 kg)
KS 272B:	2.1 lbs (0.95 kg)
Mounting:	Two (2) AN 3 bolts
Mating Connector:	030-02000-0000
Power Inputs:	+28VDC or +14VDC at 5 amps
Signal Inputs:	
Servo Drive Command:	0 to +15VDC
Clutch Engage Signal:	+28VDC or +14VDC to Engage
Signal Outputs:	
Tach Output:	1.1V per 1000 RPM of motor
KM 275 Servo Mount	1.0lbs (.45 Kg)

1.4 UNIT INSTALLATION

1.4.1 Unit Flavors

1.4.1.1 KA 185

The KA 185 is available in the following versions:

065-00058-0000	14v Standard
065-00058-0001	28v Standard
065-00058-0002	14v No FD
065-00058-0003	28v No FD
065-00058-0006	28v Lightning Resistant Standard
065-00058-0007	28v Lightning Resistant No FD

1.4.1.2 KC 19X

The KC 19X Flight Computer flavors that have been developed over the years include the following:

KC192

065-0042-00 (14 volt)	(Obsoleted)
065-0042-01 (28 volt)	(Obseleted)
065-0042-02 (14 volt)	(Standard)
065-0042-03 (28 volt)	(Standard)
065-0042-04 (14 volt)	(With “G-Dump”)
065-0042-05 (28 volt)	(With “G-Dump”)
065-0042-06 (14 volt)	(With Improved “G-Dump”)
065-0042-07 (28 volt)	(With Improved “G-Dump”)
065-0042-09 (28 volt)	(For Lake Renegade)
065-0042-12 (28 volt)	(With Lightning Resistance)
065-0042-15	(Replaces all flavors)
065-0042-16	For EFIS Installations

KC 191

065-0054-00 (14 volt)	(Obsoleted)
065-0054-01 (28 volt)	(Obseleted)
065-0054-02 (14 volt)	(Standard)
065-0054-03 (28 volt)	(Standard)
065-0054-04 (14 volt)	(With “G-Dump”)
065-0054-05 (28 volt)	(With “G-Dump”)
065-0054-06 (14 volt)	(With Improved “G-Dump”)
065-0054-07 (28 volt)	(With Improved “G-Dump”)
065-0054-09 (28 volt)	(For Lake Renegade)
065-0054-12 (28 volt)	(With Lightning Resistance)
065-0054-15	(Replaces all flavors)

KC 190

065-0055-00 (14 volt)	(Obsoleted)
065-0055-01 (28 volt)	(Obsoleted)
065-0055-02 (14 volt)	(Standard)
065-0055-03 (28 volt)	(Standard)
065-0055-12 (28 volt)	(With Lightning Resistance)

1.4.1.3 KC 296

The KC 296 is available in the following versions:

065-00036-0000	No Roll X Feed and Standard Tach
065-00036-0001	With DC Roll X Feed and Breakout Modifications
065-00036-0002	With AC Roll X Feed and Breakout Modifications
065-00036-0006	With DC Roll X Feed and Standard Tach and Lightning Resistant

1.4.1.4 KS 270B/271B/272B

The KS270B/271B/272B is available in the following versions:

	KPN	SPEED	TORQUE SENSE
KS 270B	065-00172-0100	5.0 RPM	6.0 in-lbs
	065-00172-0200	2.6 RPM	6.0 in-lbs
	065-00172-0300	5.0 RPM	11.0 in-lbs
	065-00172-0400	2.6 RPM	11.0 in-lbs
KS 271B	065-00173-0100	5.0 RPM	Tach

	065-00173-0400	15.0 RPM	No Tach
	065-00173-0500	3.8 RPM	Tach
KS 272B	065-00174-0600	14.0 RPM	28V
	065-00174-1300	2.5 RPM	28V
	065-00174-2700	3.0 RPM	28V

1.4.1.5 KM 275/276/277

The KM 275 is available in the following versions:

Part Number	Slip Clutch Used	Preset Torque (in-lbs)
065-00030-0000	200-01678-0000 (Standard)	Variable
065-00030-0002	200-02380-0000	Variable
065-00030-0003	200-03243-0000	Variable
065-00030-0020	200-01678-0000 (Standard)	46 $\pm$ 4
065-00030-0021	200-01678-0000 (Standard)	23 $\pm$ 3
065-00030-0022	200-01678-0000 (Standard)	14 $\pm$ 2
065-00030-0023	200-01678-0000 (Standard)	29 $\pm$ 3
065-00030-0024	200-01678-0000 (Standard)	18 $\pm$ 2
065-00030-0025	200-01678-0000 (Standard)	32 $\pm$ 3

Part Number	Slip Clutch Used	Preset Torque (in-lbs)
065-00030-0026	200-01678-0000 (Standard)	40 ± 5
065-00030-0027	200-01678-0000 (Standard)	22 ± 2
065-00030-0028	200-01678-0000 (Standard)	14 ± 2
065-00030-0029	200-01678-0000 (Standard)	27 ± 2
065-00030-0030	200-01678-0000 (Standard)	60 ± 6
065-00030-0031	200-01678-0000 (Standard)	38 ± 4
065-00030-0032	200-01678-0000 (Standard)	36 ± 4
065-00030-0033	200-02380-0000	40 ± 4
065-00030-0034	200-02380-0000	28 ± 3
065-00030-0035	200-01678-0000 (Standard)	39 ± 4
065-00030-0036	200-01678-0000 (Standard)	35 ± 4
065-00030-0037	200-01678-0000 (Standard)	30 ± 3
065-00030-0038	200-01678-0000 (Standard)	26 ± 3
065-00030-0039	200-01678-0000 (Standard)	50 ± 5
065-00030-0041	200-01678-0000 (Standard)	50 ± 5
065-00030-0042	200-01678-0000 (Standard)	20 ± 2
065-00030-0043	200-01678-0000 (Standard)	31 ± 3

KM276

The KM 276 is available in the following versions:

Part Number	Slip Clutch Used	Preset Torque (in-lbs)
065-00031-0000	200-01675-0000	Variable
065-00031-0001	200-01675-0001	Variable
065-00031-0002	200-01675-0002	Variable
065-00031-0003	200-01675-0003	Variable
065-00031-0004	200-02380-0001	Variable
065-00031-0020	200-01675-0000	15 ± 3
065-00031-0021	200-01675-0000	16 ± 3
065-00031-0022	200-01675-0001	19 ± 2
065-00031-0023	200-02380-0000	20 ± 2
065-00031-0024	200-01675-0001	16 ± 2
065-00031-0042	200-01675-0002	Variable

KM277

The KM 277 is available in the following versions:

Part Number	Slip Clutch Used	Preset Torque (in-lbs)
065-00041-0000	200-02085-0000	Variable
065-00041-0001	200-02085-0001	Variable
065-00041-0002	200-02085-0002	Variable

1.4.1.6 KAA15

The KAA 15 is available in the following versions:

Part Number	Description
071-01466-00	28VDC
071-01466-01	28VDC with strap options
071-01466-06	28VDC with strap options and lighting
071-01466-10	14VDC

1.4.2 Installation Kits

1.4.2.1 KA 185

The KA 185 Installation Kit (P/N 050-02025-0000) consists of the following items:

Symbol	CAS PN	Standard Description	UOM	QTY
	030-01094-0068	CONN W/POLARIZER	EA	1
	030-01094-0069	CONN W/POLARIZER	EA	1
	030-01107-0080	CONNECTOR TERM 80T	EA	1
	089-02051-0024	NUT SPEED U 6-32	EA	4
	089-02353-0001	NUT CLIP 6-32	EA	4
	089-05903-0008	SCR PHP 4-40X1/2	EA	4
	089-06012-0008	SCR FHP 6-32X1/2	EA	4
	090-00253-0001	HOSE CLAMP 32007	EA	1
	150-00038-0000	FLX HOSE 5/8”X3FT	EA	1

1.4.2.2 KC 19X

Besides the KC 19X installation kit the KC 19X also requires an external cooling kit. The Blower kit is available under P/N 071-4031-00. The KC 19X Installation Kit (P/N 050-01636-0000) consists of the following items:

Symbol	CAS PN	Standard Description	UOM	QTY
	030-01094-0068	CONN W/POLARIZER	EA	1
	030-01094-0069	CONN W/POLARIZER	EA	1
	030-01107-0080	CONNECTOR TERM 80T	EA	1
	089-02051-0024	NUT SPEED U 6-32	EA	4
	089-02353-0001	NUT CLIP 6-32	EA	4
	089-05903-0008	SCR PHP 4-40X1/2	EA	4
	089-06012-0008	SCR FHP 6-32X1/2	EA	4
	090-00253-0001	HOSE CLAMP 32007	EA	1
	150-00038-0000	FLX HOSE 5/8”X3FT	EA	1
	047-05114-0007	RACK	EA	1

1.4.2.3 KC 296

The KC 296 Installation Kit (P/N 050-01475-0000/0001) consists of the following items:

Symbol	CAS PN	Standard Description	UOM	-0000	-0001	-0002
	030-00107-0016	CONN DUEL RO	EA	1		
	030-00107-0017	CONN DUEL RO	EA	1		
	030-00107-0020	CONN DUEL RO	EA		1	1
	030-00107-0023	CONN DUEL RO	EA		1	
	057-01925-0001	UNIT ID TAG J2961	EA	1		
	057-01925-0002	UNIT ID TAG J2962	EA	1		
	057-02048-0000	CONN TAG	EA		1	
	057-02048-0001	CONN TAG	EA		1	
	088-00438-0000	HOOD CONNECTOR	EA	2	2	1
	089-05903-0007	SCR PHP 4-40X7/16	EA	4	4	2

1.4.2.4 KS 270B/271B/272B

The KS 271B Installation Kit (P/N 050-00398-0000) consists of the following items:

Symbol	CAS PN	Standard Description	UOM	QTY
	030-01008-0000	LVR/PVT ASSY	EA	2
	030-01009-0000	HOOD CONN	EA	1
	030-01080-0000	CONN FM CRMP 20AWG	EA	14
	030-03248-0000	CONN RCPT HOUSING	EA	1
	057-01739-0000	INSTALLATION TAGS	EA	1
	089-05899-0003	SCR PHP 2-56X3/16	EA	4
	090-00731-0000	NUT ANCHOR CORNER	EA	2

1.4.2.5 KM 275

The KM 275 Installation Kit (P/N 050-01716-0000/0001) consists of the following items:

Symbol	CAS PN	Standard Description	UOM	-0000	-0001
	047-04678-0001	CBL GRD	EA	2	
	047-06758-0000	PLATE ASSY	EA		1
	047-06760-0001	CABLE GUARD W/F	EA		1
	089-02344-0003	NUT LOCK 10-32	EA	2	
	089-07023-0005	SCR FLHP 8-32X5/16	EA		1
	089-08227-0008	WSHR FLT 10X.438	EA	2	
	090-00252-0004	PULLEY GUARD PIN	EA		4
	200-02428-0000	CAPSTAN IDLER	EA	1	

1.4.2.6 KAA 15

The KAA 15 Installation Kit (P/N 050-02751-0000) consists of the following items:

Symbol	CAS PN	Standard Description	UOM	-0000
	030-01094-0081	CONN/KEYED(12DPOS)	EA	1
	050-02751-0099	COMMON BOM	EA	1
	089-02015-0037	NUT FLAT 8-32	EA	4
	089-05909-0007	SCR PHP 8-32X7/16	EA	4
	089-08111-0034	WSHR SPLT LK#8	EA	4

1.5 ACCESSORIES REQUIRED BUT NOT SUPPLIED

Some of the following accessories are required, but not supplied as a part of the KAP 150 Flight Control System. Consult the appropriate STC Installation Manual for requirements pertaining to your aircraft.

A. KI 525A (P/N 066-3046-XX) Horizontal Situation Indicator and installation kit (P/N 050-01344-XXXX).

B. KA 51B (P/N 071-1242-XX) Compass Slaving Accessory and installation kit (P/N 050-01928-XXXX).

C. KRG 331 (P/N 060-0024-XX) Remote Yaw Rate Gyro and installation kit (P/N 050-01865-XXXX).

D. KMT 112 (P/N 071-1052-XX) Compass Flux Valve and installation kit (P/N 050-01361-0000).

E. KG 258 (P/N 060-0020-XX) Vertical Gyro and installation kit (P/N 050-01518-0000/0001).

F. KG 256 (P/N 060-0XXX-XX) Vertical Gyro and installation kit (P/N 050-01518-0000/0001).

G. KG 102A (P/N 060-0015-00) Directional Gyro and installation kit (P/N 050-01410-XXXX).

H. KVG 350 (P/N 060-0026-00) Vertical Gyro and installation kit (P/N 050-01873-0000).

I. KG 253 (P/N 060-0038-XX) Vertical Gyro and installation kit (P/N 02740-0001).

J. KG 254 (P/N 060-0xxx-XX) Vertical Gyro and installation kit (P/N 02740-0001).

1.6 LICENSE REQUIREMENTS

None.

THIS PAGE IS RESERVED

SECTION II
INSTALLATION

2.1 GENERAL INFORMATION

This section contains general suggestions and information to consider before installation of the KFC 150 Flight Control System. Close adherence to these suggestions will assure optimum performance from the equipment. Specific installation requirements are contained in the STC Installation Manual that pertains to the particular type of aircraft which the equipment is to be installed.

2.2 UNPACKING AND INSPECTING EQUIPMENT

Exercise extreme care when unpacking the equipment. Make a visual inspection of the 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. The claim should be promptly filed with the transportation company. It would be advisable to retain the container and packaging material after all equipment has been removed in the event that equipment storage or reshipment should become necessary.

2.3 EQUIPMENT INSTALLATION

2.3.1 Avionics Cooling requirements for Panel Mounted Equipment

The greatest single contributor to increased reliability of all modern day avionics is to limit the maximum operating temperature of the individual units whether panel mounted or remote mounted. While modern day individual circuit designs consume much less electrical energy, watts per cubic inch dissipated within the avionics unit remains much the same due to high density packaging techniques utilized. Consequently, the importance of providing cooling to the avionics stack is still with us today.

While each individual unit may or may not require forced air cooling, the combined heat load of several units operating in a typical avionics location will significantly degrade the reliability of the avionics if provisions for cooling are not incorporated in the initial installation. Failure to provide cooling to the equipment will lead to increased avionics maintenance costs and may also void the AlliedSignal Avionics Systems warranty.

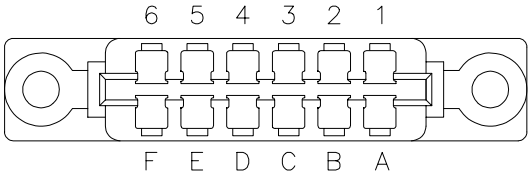
The KFC 150 Flight Computers require a cooling blower kit (PN 071-04031-0000) for a 4 cubic foot per minute air flow.

2.3.2 KFC 150 Installation

The KFC 150 installation will conform to standards designated by the customer, installing agency, and existing conditions as to the unit location and type of installation. However, the following suggestions will assure a more satisfactory performance from the equipment.

2.3.3 Installation Procedures

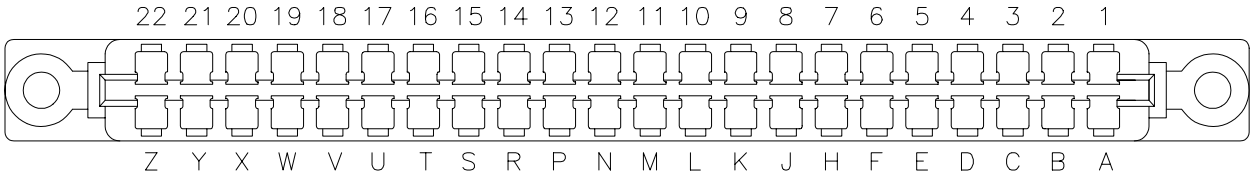
Refer to the appropriate STC installation manual.



P1851

1	Strobe
2	Data
3	Clock
4	Middle Marker (1/0)
5	AP Light (Open/0)
6	Test Switch (Open/ 0)
A	Power Ground
B	Chassis Ground
C	Not Used
D	+14 vdc or +28vdc
E	Inner Marker (1/0)
F	Outer Marker (1/0)

TABLE 2-1 KA 185 CONNECTOR PIN FUNCTIONS

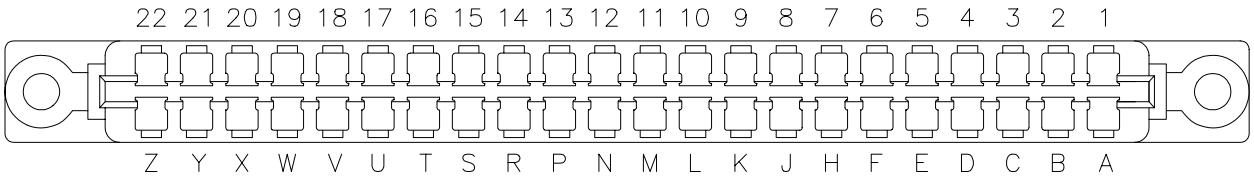


J19X1-XX KEY PIN = 9 - 10 (-15) 11 - 12 (-16)

TABLE 2-2 KC 19X TOP CONNECTOR PIN FUNCTIONS

Pin	Description
1	Compass Valid (Open/0) (**EFIS** Open/28v)
2	Pitch Attitude Out (-.2v/Deg => Up)
3	Pitch Tach Feedback (+ Dn)
4	Pitch Tach Feedback (+ Up)
5	Pitch Servo Drive (+ Up)
6	Pitch Rate (+.1v/Deg/s => Up)
7	"G" Dump (KA152) Input (Open/0)
8	Log Adr 2
9	AP Valid (0/14 or 28)
10	Nav Valid (+) (>180 mv = Valid)
11	Roll Tach Feedback (+ Lf)
12	Pitch Servo Effort (+ Up)
13	Roll Servo Drive (+ Lf)
14	Nav Valid (-)
15	YD Ann In (Open/0)
16	Cmd Bar Retract (15/Open) (**EFIS** 0/Open)
17	Nav Deviation (+.015 v/Deg VOR =>Rt)
18	EFIS DG Exc (Hi)
19	Course Datum (-) (**EFIS** DG Exc Lo)
20	Heading Datum (-) (**EFIS** DG Exc Lo)
21	Roll Attitude (Hi) (50 mv/Deg AC Out Phase => Rt) (**EFIS** 206 mv/deg AC , out of phase => RT)

22	Roll Att X Feed (-.2v/Deg => Rt)
A	Trim Power (14 v or 28v)
B	Loc Eng (Open/0)
C	Roll Cmd Bar Drive (-.168v/Deg => Rt)
D	Pitch Servo Drive (+ Down)
E	Pitch Cmd Bar Drive (-.453v/Deg => Up)
F	Man Trim Up Intrlk Out (0/14 or 28)
H	Man Trim Up Intrlk In (0/14 or 28)
Pin	Description
J	Log Data In/Out
K	Log Adr 0
L	Log Clock
M	Log Adr 1
N	Roll Tach Feedback (+ Rt)
P	Roll Servo Drive (+ Rt)
R	EFIS BC Eng (Open/28)
S	SPARE
T	SPARE
U	Nav Deviation (-)
V	PFT Out (Open/14 or 28)
W	Course Datum (+.21v/Deg => Rt) (**EFIS** 393mv/Deg Out phase = RT)
X	Heading Datum (+.55 v/Deg => Rt) (**EFIS** 393mv/Deg Out phase = RT)
Y	Pitch Attitude (Hi) (50 mv/Deg AC Out Phase => Up) (**EFIS** 206 mv/deg AC , out of phase => Up)
Z	Pitch and Roll Attitude (Lo) (**EFIS** VG Exc Lo)

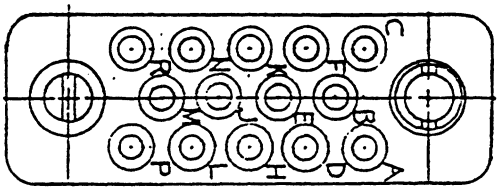


J19X2-XX KEY PIN 4 - 5 (-15) 6 - 7 (-16)

TABLE 2-3 KC 19X BOTTOM CONNECTOR PIN FUNCTIONS

Pins	Description
1	Power Gnd
2	+14/+28v Power Input
3	AP Clutch Eng (0/14 or 28v)
4	SPARE
5	Trim Clutch Eng (0/14 or 28v
6	EFIS VG Excitation (H)
7	SPARE
8	Panel Lamps (Lo)
9	+5v Out
10	Signal Ground
11	Trim Sense Up (1/0)
12	BC Ann (Open/0)
13	Trim Sense Dn (1/0)
14	Trim Servo Up Drive (0/14 or 28v)
15	Mid Mkr (-)
16	Alt Osc Output (4.750 Khz)
17	Flaps Eng (Open/0)
18	Flaps Motor Up Input (0/14 or 28v)
19	GS Deviation (-)
20	Trim Dn Fbk (0/14 or 28v)
21	GS Valid (+180 mv => Valid)
22	EFIS AP Valid Out (0/28)

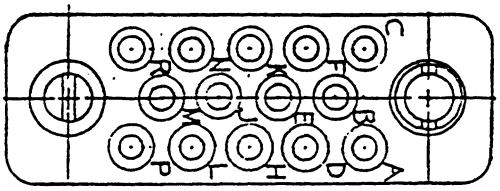
Pins	Description
A	Chassis Gnd
B	+14/28v Switched (From AP Disconnect Switch)
C	VG Exc Output (10 Vac @ 500 Hz) (**EFIS** 0.0v)
D	SPARE
E	– 15v Out
F	+15v Out
H	Panel lamps (High for 28v Acft, Lo for 14v Acft)
J	Panel lamps (Open for 28v Acft, Hi for 14v Acft)
Pins	Description
K	Flaps Eng (0/14v or 28v)
L	AP Ext Ann (Open/0)
M	AP/Trim Aural Alert (Open/0)
N	Trim Fail Ann (Open/0)
P	Trim Servo Down Drive (0/14v or 28v)
R	Mid Mkr (+) (> 2.0v => On)
S	AP Mode On (Open/0)
T	Outer Mkr (> 2.0v => On)
U	Flaps Motor Dn Input (0/14v or 28v)
V	GS Deviation (+ .214v/Deg => Up)
W	Manual Electric Trim Voltage In
X	Trim Up Fbk (0/14v or 28v)
Y	GS Valid (–)
Z	CWS Switch (Open/0)



P270B1

A	Motor Sense 2
B	Solenoid Strap 1
C	Power Ground
D	Capstan CW Drive
E	AP Clutch Engage
F	Spare
G	Spare
H	+14/28v power input
I	Spare
J	CCW Torque Sense
K	Spare
L	Capstan CDW Drive
M	Solenoid Strap 2
N	Chassis Ground
O	Spare
P	Motor Sense 1
Q	Spare
R	CW Torque Sense

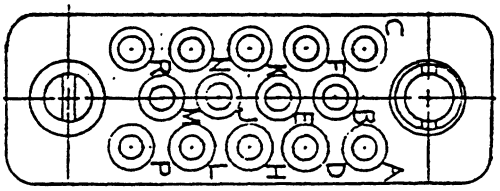
TABLE 2-4 KS 270B CONNECTOR PIN FUNCTIONS



P271B1

A	Motor Sense 2
B	Solenoid Strap 1
C	Power Ground
D	Capstan CW Drive
E	AP Clutch Engage
F	Spare
G	Spare
H	+14/28v power input
I	Spare
J	Spare
K	Spare
L	Capstan CCW Drive
M	Solenoid Strap 2
N	Chassis Ground
O	Spare
P	Motor Sense 1
Q	Spare
R	Spare

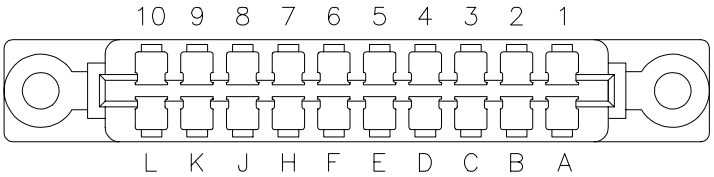
TABLE 2-5 KS 271B CONNECTOR PIN FUNCTIONS



P272B1

A	Manual trim Volts
B	Spare
C	Spare
D	Manual Trim CW Drive
E	AP Clutch Engage
F	Motor FB CCW
G	Spare
H	Chassis Ground
I	Spare
J	Power Ground
K	Autotrim CW Drive
L	Motor FB CW
M	28v Power
N	14v Power
O	Spare
P	Manual Trim CCW
Q	Spare
R	Autotrim CCW Drive

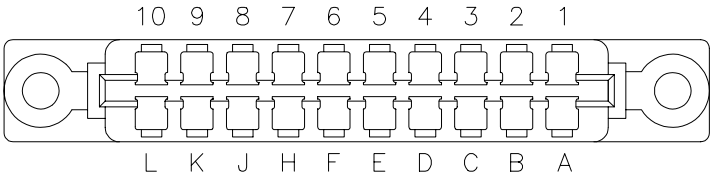
TABLE 2-6 KS 272B CONNECTOR PIN FUNCTIONS



P2961

1	Gain Strap
2	Yaw Rate 1
3	YD Servo Effort (TP 2)
4	TP 3
5	Yaw Rate (TP 1)
6	TP 6
7	CW Servo Drive
8	CCW Servo Drive
9	Strap Line 4
10	Strap Line 5
A	Chassis Gnd
B	Spare
C	Yaw Ref
D	TP 7
E	Spare
F	Roll Ref
H	Roll Crossfeed
J	Strap Line 3
K	Servo Feedback (+ CCW Drive)
L	Servo Feedback (+ CW Drive)

TABLE 2-7 KC 296 TOP CONNECTOR PIN FUNCTIONS



P2962

1	+28vdc
2	Not Used
3	Spare
4	Spare
5	TP 4
6	TP 6
7	Yaw Annunciate
8	-15vdc
9	Yaw Clutch Engage
10	Spare
A	+10vdc
B	+15vdc
C	Aircraft Gnd
D	Aircraft Gnd
E	Spare
F	Spare
H	Spare
J	AP Disconnect (28/0)
K	Yaw Damper Engage (0/1)
L	AP Engage Switch(0/28)

TABLE 2-8 KC 296 BOTTOM CONNECTOR PIN FUNCTIONS

THIS PAGE IS RESERVED

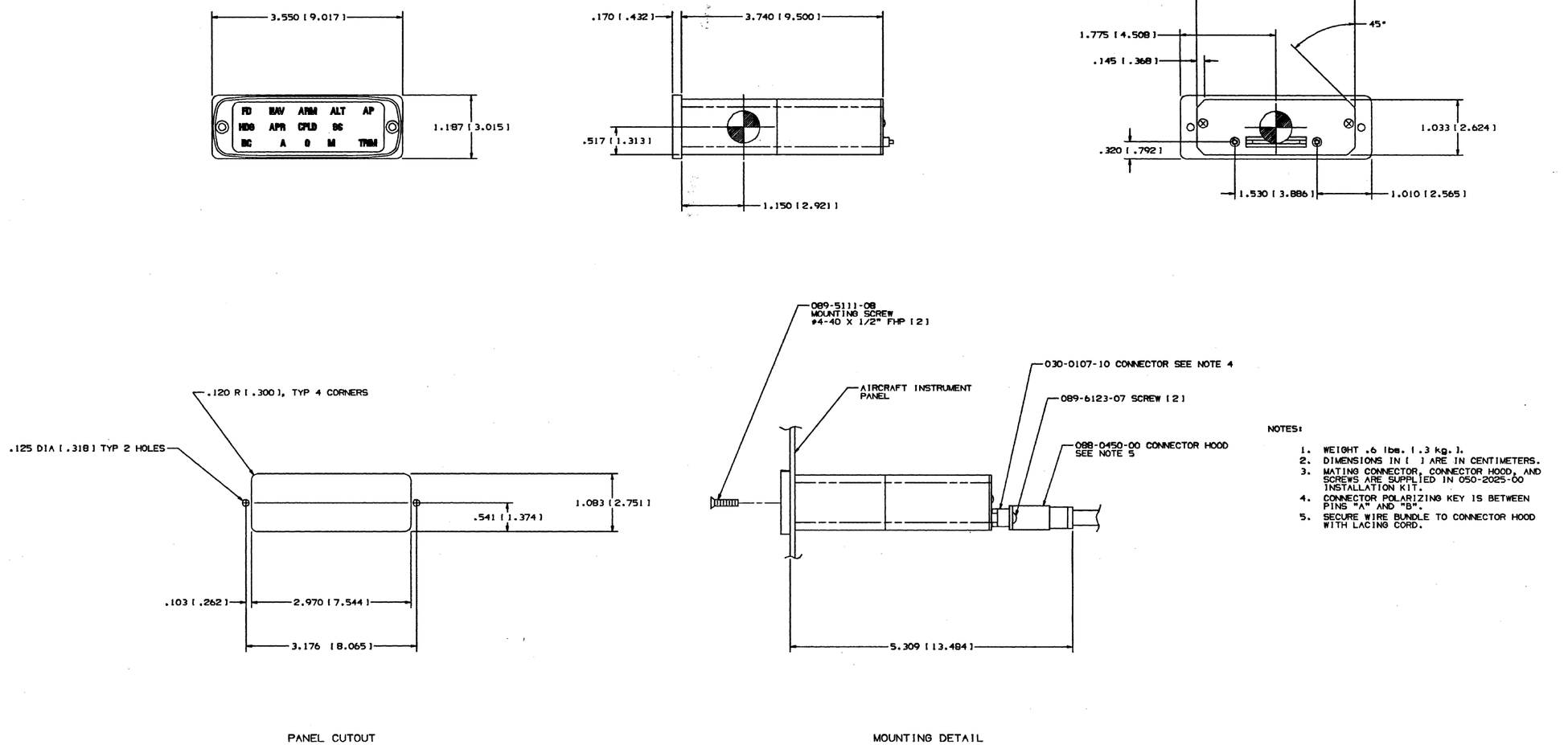
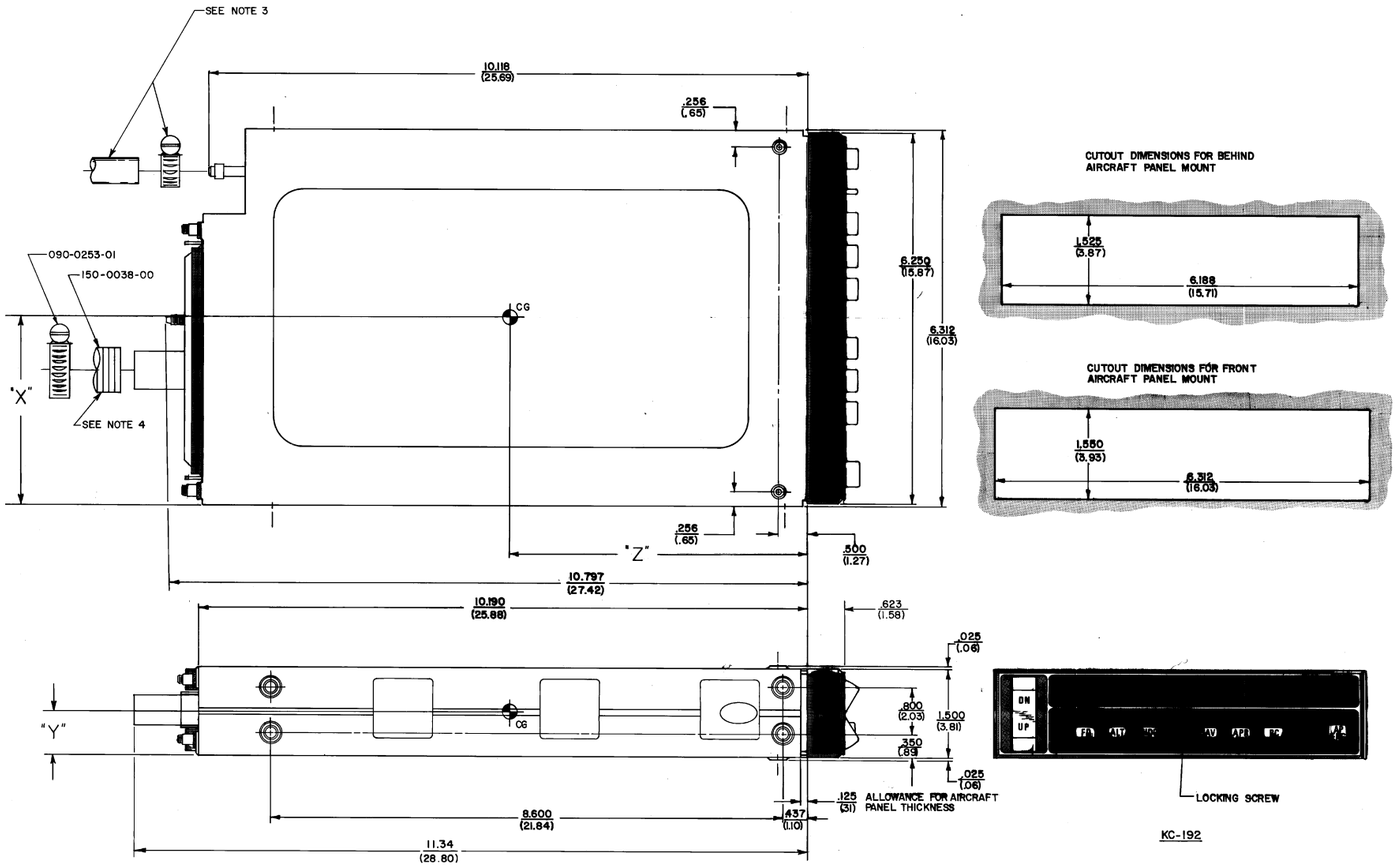


FIGURE 2-1 KA 185 INSTALLATION DRAWING
(Dwg No 155-05413-0000, Rev 0)



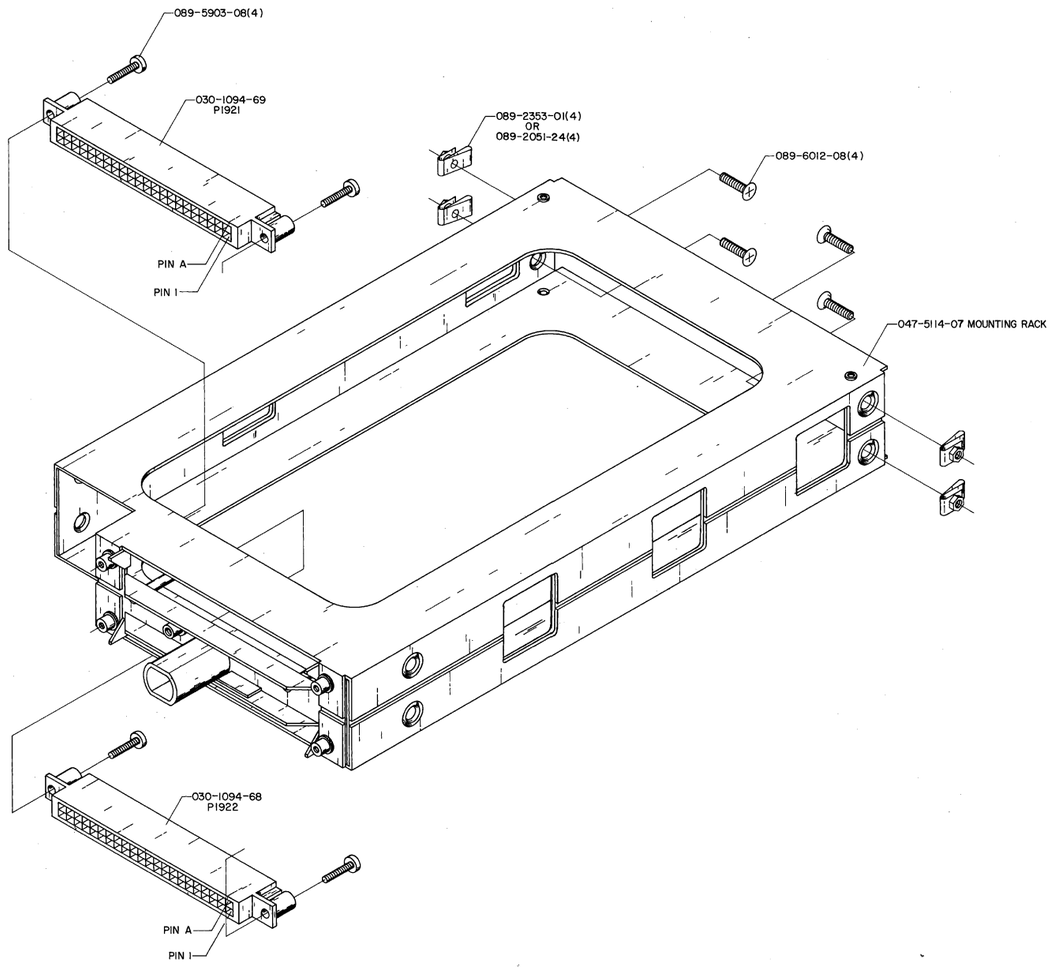
CUTOUT DIMENSIONS FOR BEHIND AIRCRAFT PANEL MOUNT

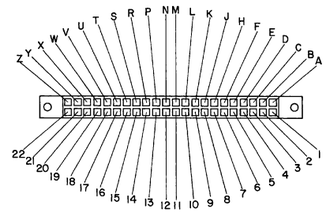
CUTOUT DIMENSIONS FOR FRONT AIRCRAFT PANEL MOUNT

NOTES:
1. DIMENSIONS IN ( ) ARE IN CENTIMETERS.
2. WEIGHT = SEE TABLE.
3. INSTALLATION REQUIRES 3/16" I.D. STATIC HOSE & CLAMP, NOT SUPPLIED WITH UNIT OR INSTALLATION KIT.
4. COOLING BLOWER KIT, K.P.N. 071-4031-00 OR EQUIV. ($4 ft^3/MIN$, OR $1.89 \times 10^{-3} m^3/SEC$) ATTACHES TO HOSE SHOWN.
5. INSTALLATION KIT IS K.P.N. 050-1636-00.

UNIT VERSION	WEIGHT		CENTER OF GRAVITY OF UNIT WITH RACK & CONNECTORS			TOP BOARD CONNECTOR KEY LOCATION (030-1094-69)	BOTTOM BOARD CONNECTOR KEY LOCATION (030-1094-68)
	UNIT	UNIT W/ RACK AND CONNECTORS	"X"	"Y"	"Z"		
-00 THRU -14	2.5 lb (1.14 kg)	3.1 lb (1.41 kg)	3.20 (8.1)	.75 (1.9)	5.20 (13.2)	BETWEEN PINS 9 AND 10	BETWEEN PINS 4 AND 5
-15	2.6 lb (1.18 kg)	3.2 lb (1.45 kg)	3.22 (8.2)	.70 (1.8)	4.66 (11.8)	BETWEEN PINS 9 AND 10	BETWEEN PINS 4 AND 5
-16	2.6 lb (1.18 kg)	3.2 lb (1.45 kg)	3.22 (8.2)	.70 (1.8)	4.66 (11.8)	BETWEEN PINS 11 AND 12	BETWEEN PINS 6 AND 7

FIGURE 2-2 KC 192 OUTLINE AND INSTALLATION DRAWING
(Dwg No 155-05256-0000, Rev 5)
(Sheet 1 of 2)

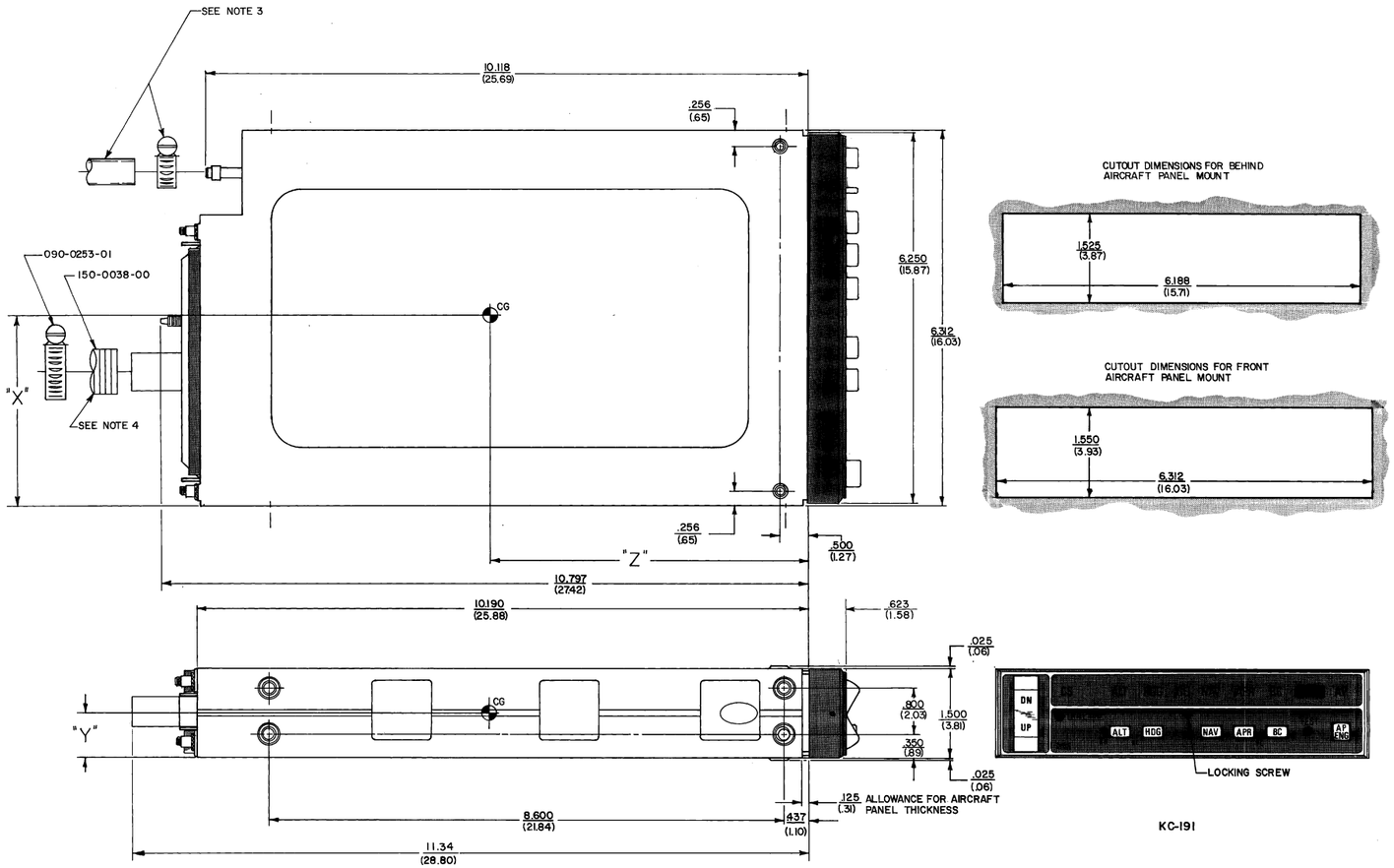




CONNECTOR VIEWED FROM REAR
OF KC192

SEE TABLE FOR
POLARIZING KEY LOCATIONS

FIGURE 2-2 KC 192 OUTLINE AND INSTALLATION DRAWING
(Dwg No 155-05256-0000, Rev 5)
(Sheet 2 of 2)



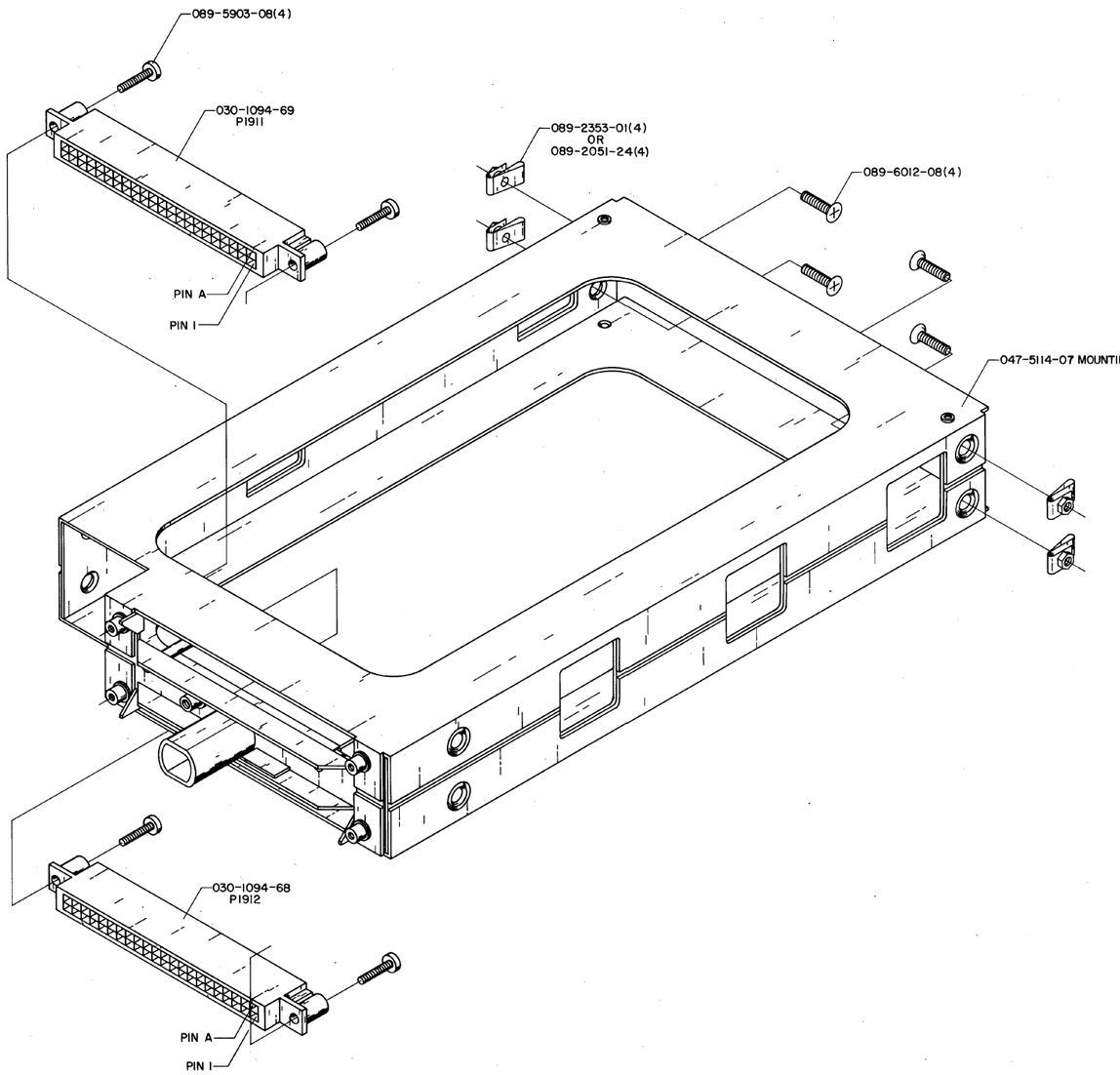
CUTOUT DIMENSIONS FOR BEHIND AIRCRAFT PANEL MOUNT

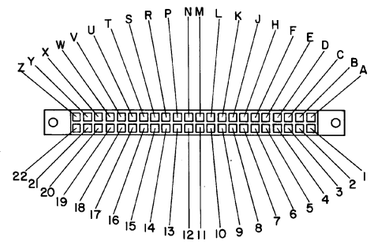
CUTOUT DIMENSIONS FOR FRONT AIRCRAFT PANEL MOUNT

NOTES:
1. ALL DIMENSIONS IN ( ) ARE IN CENTIMETERS.
2. WEIGHT: SEE TABLE.
3. INSTALLATION REQUIRES 3/16" I.D. STATIC HOSE & CLAMP, NOT SUPPLIED WITH UNIT OR INSTALLATION KIT.
4. COOLING BLOWER KIT, K.P.N. 071-4031-00 OR EQUIV. ($4 ft^3$/MIN, OR $1.89 \times 10^{-3} m^3$/SEC) ATACHES TO HOSE SHOWN.
5. INSTALLATION KIT IS K.P.N. 050-1636-00.

UNIT VERSION	WEIGHT		CENTER OF GRAVITY OF UNIT WITH RACK & CONNECTORS			TOP BOARD CONNECTOR KEY LOCATION (030-1094-69)	BOTTOM BOARD CONNECTOR KEY LOCATION (030-1094-68)
	UNIT	UNIT W/ RACK AND CONNECTORS	"X"	"Y"	"Z"		
-00 THRU -14	2.3 lb (1.05 kg)	2.9 lb (1.32 kg)	3.20 (8.1)	.75 (1.9)	5.30 (13.5)	BETWEEN PINS 9 AND 10	BETWEEN PINS 4 AND 5
-15	2.6 lb (1.18 kg)	3.2 lb (1.45 kg)	3.22 (8.2)	.70 (1.8)	4.66 (11.8)	BETWEEN PINS 9 AND 10	BETWEEN PINS 4 AND 5

FIGURE 2-3 KC 191 OUTLINE AND INSTALLATION DRAWING
(Dwg No 155-05372-0000, Rev 5)
(Sheet 1 of 2)

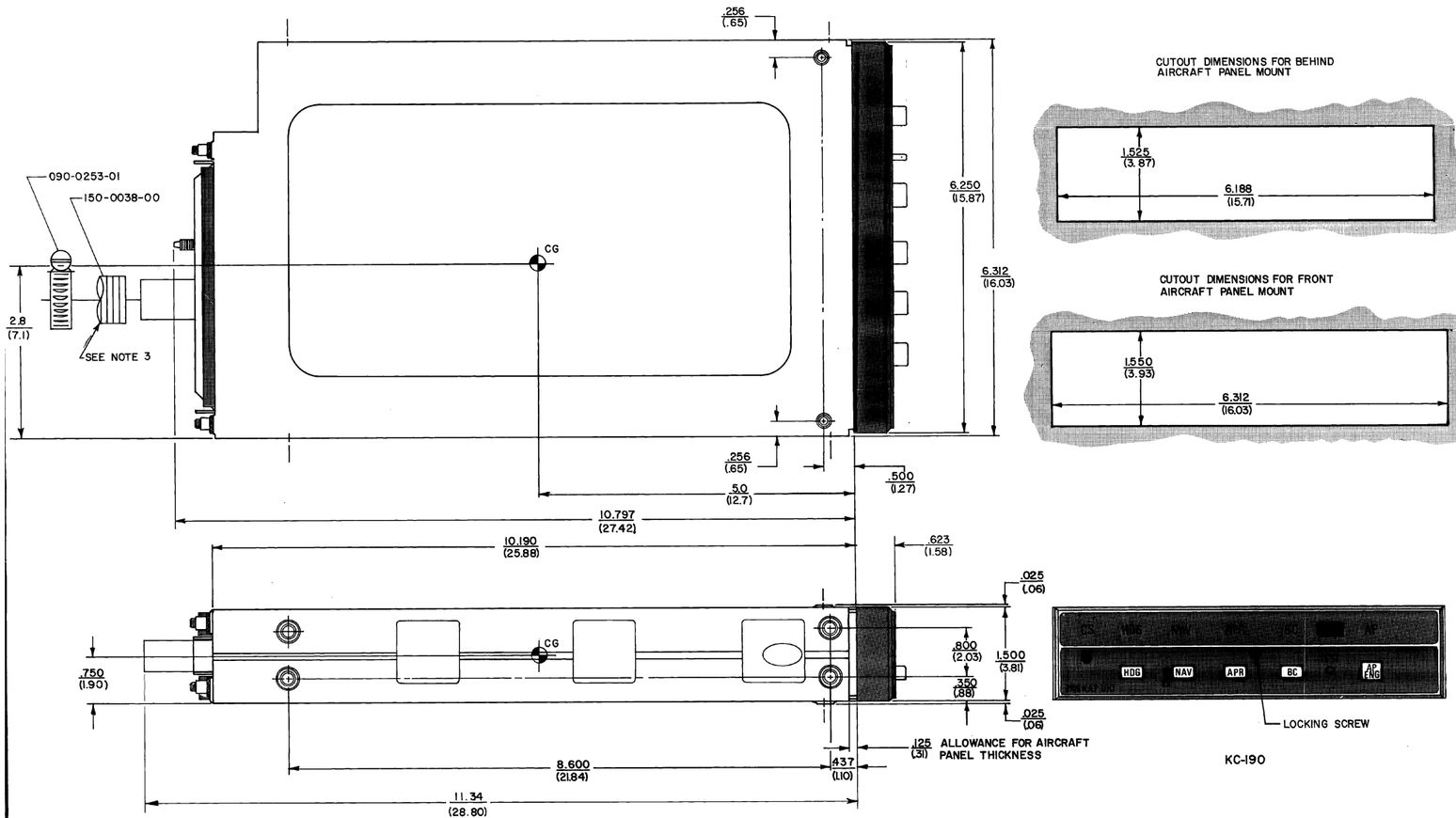




CONNECTOR VIEWED FROM REAR
OF KC191

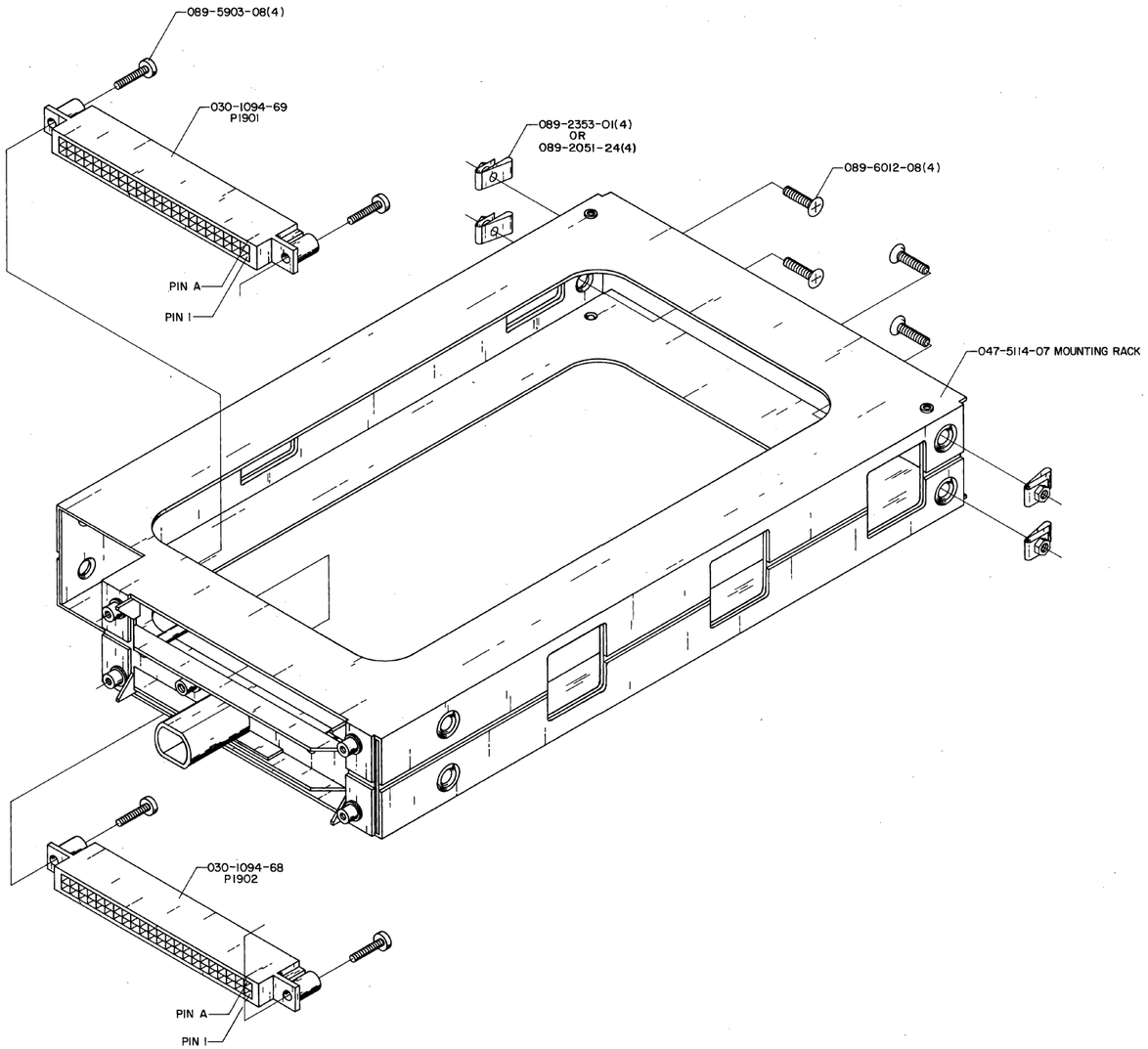
SEE TABLE FOR
POLARIZING KEY LOCATIONS

FIGURE 2-3 KC 191 OUTLINE AND INSTALLATION DRAWING
(Dwg No 155-05372-0000, Rev 5)
(Sheet 2 of 2)



NOTES:
1. ALL DIMENSIONS IN ( ) ARE IN CENTIMETERS.
2. WEIGHT= 1.9 LBS. WITHOUT MTG. RACK
   2.5 LBS. WITH MTG. RACK AND CONNECTORS
3. COOLING BLOWER KIT, K.P.N 071-4031-00 OR EQUIV.($4 ft^3$/MIN, OR $189 x 10^{-3} m^3$/SEC) ATTACHES TO HOSE SHOWN.
4. INSTALLATION KIT IS K.P.N. 050-1636-00.

FIGURE 2-4 KC 190 OUTLINE AND INSTALLATION DRAWING
(Dwg No 155-05373-0000, Rev 4)
(Sheet 1 of 2)



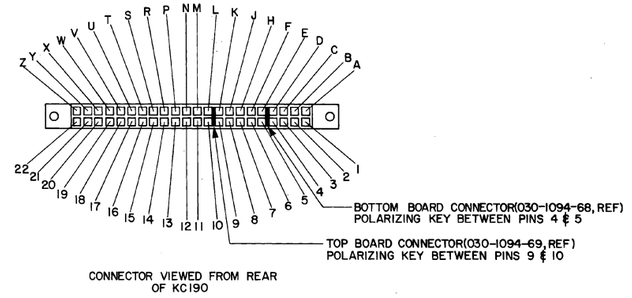
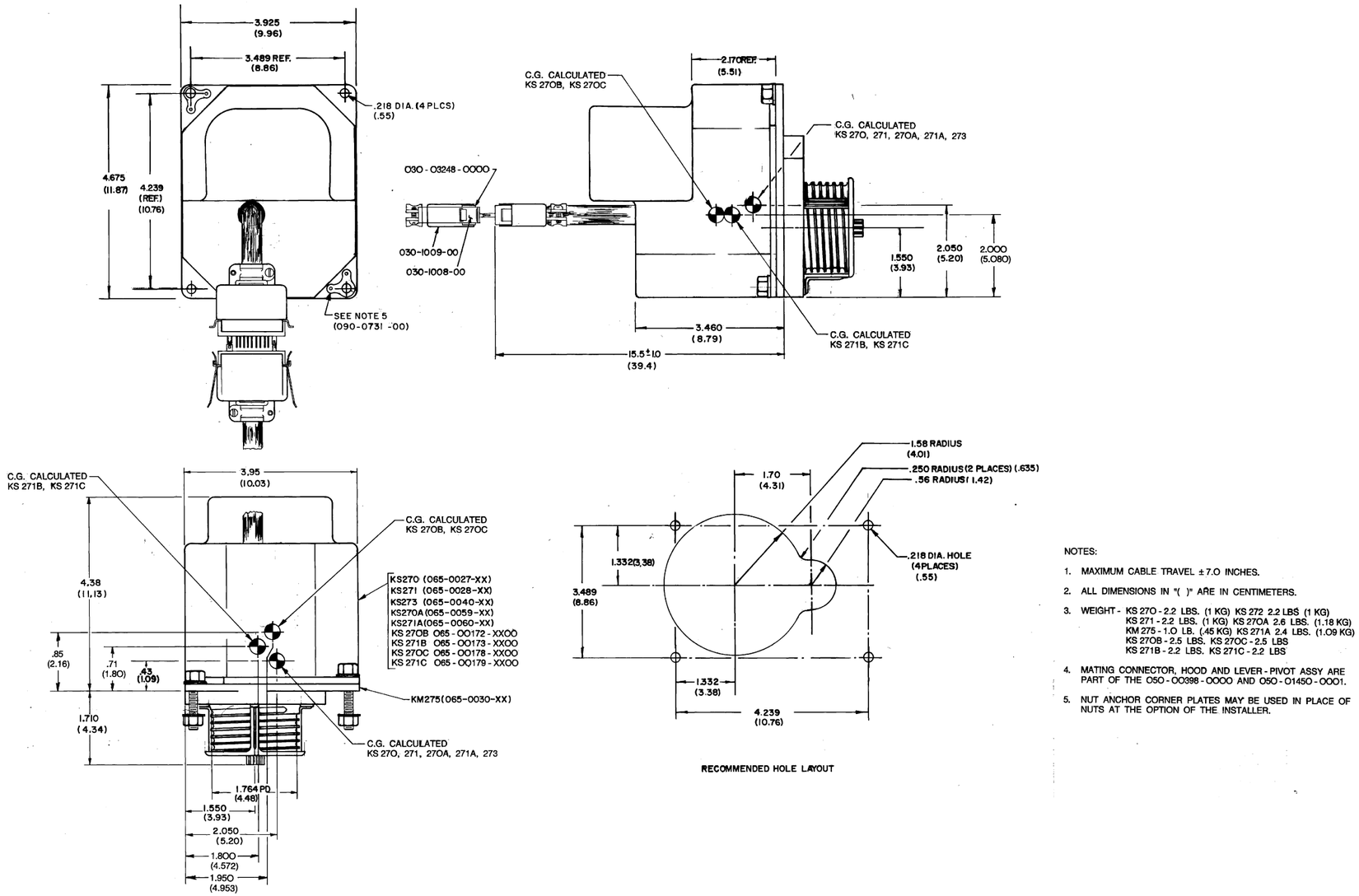


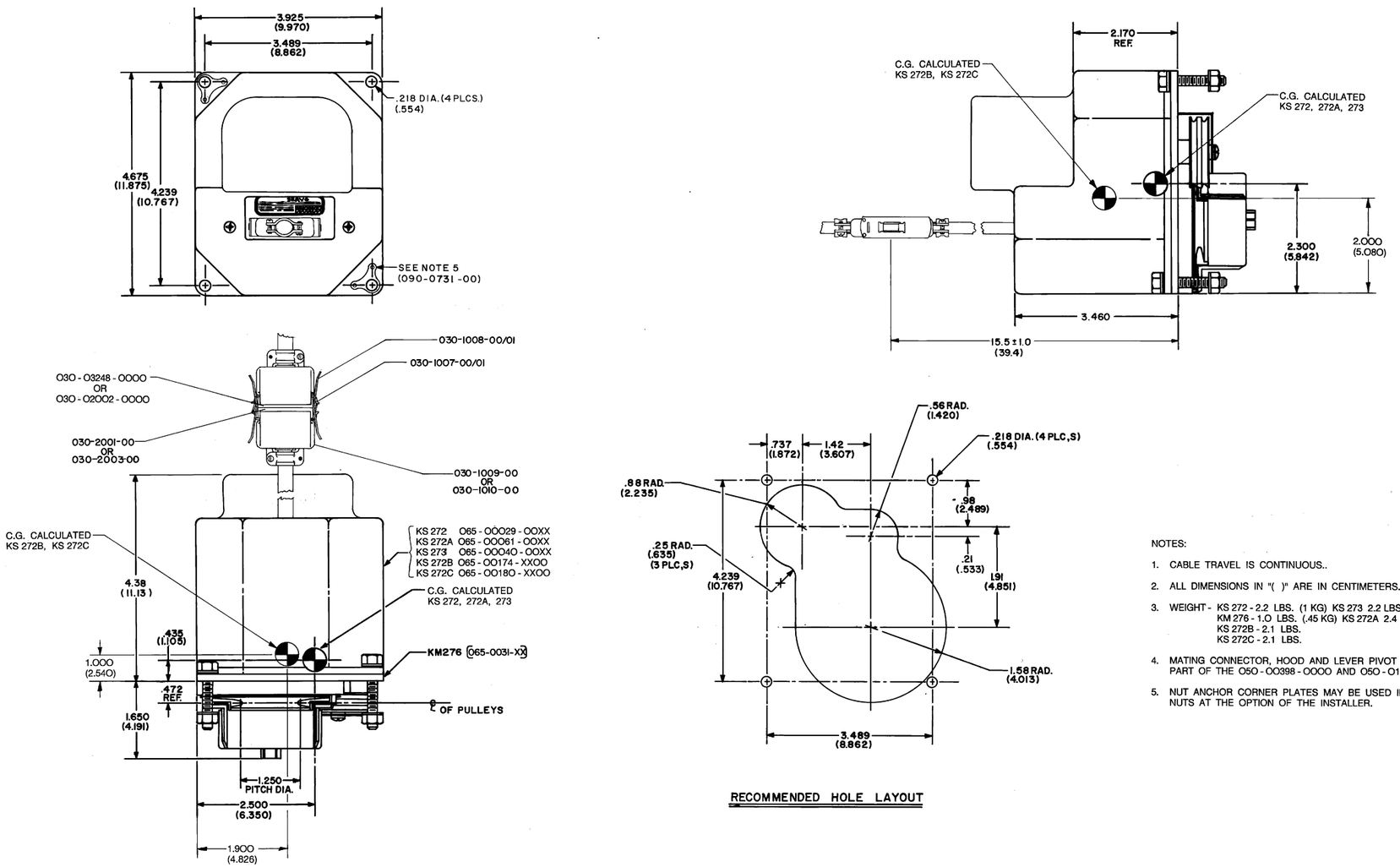
FIGURE 2-4 KC 190 OUTLINE AND INSTALLATION DRAWING
(Dwg No 155-05373-0000, Rev 4)
(Sheet 2 of 2)



NOTES:

1. MAXIMUM CABLE TRAVEL ±7.0 INCHES.
2. ALL DIMENSIONS IN "( )" ARE IN CENTIMETERS.
3. WEIGHT - KS 270 - 2.2 LBS. (1 KG) KS 272 2.2 LBS (1 KG)
   KS 271 - 2.2 LBS. (1 KG) KS 270A 2.6 LBS. (1.18 KG)
   KM 275 - 1.0 LB. (.45 KG) KS 271A 2.4 LBS. (1.09 KG)
   KS 270B - 2.5 LBS. KS 270C - 2.5 LBS
   KS 271B - 2.2 LBS. KS 271C - 2.2 LBS
4. MATING CONNECTOR, HOOD AND LEVER - PIVOT ASSY ARE PART OF THE 050 - 00398 - 0000 AND 050 - 01450 - 0001.
5. NUT ANCHOR CORNER PLATES MAY BE USED IN PLACE OF NUTS AT THE OPTION OF THE INSTALLER.

FIGURE 2-5 KS 270B/271B & KM 275 INSTALLATION DRAWING
(Dwg No 155-05161-0000, Rev 12)

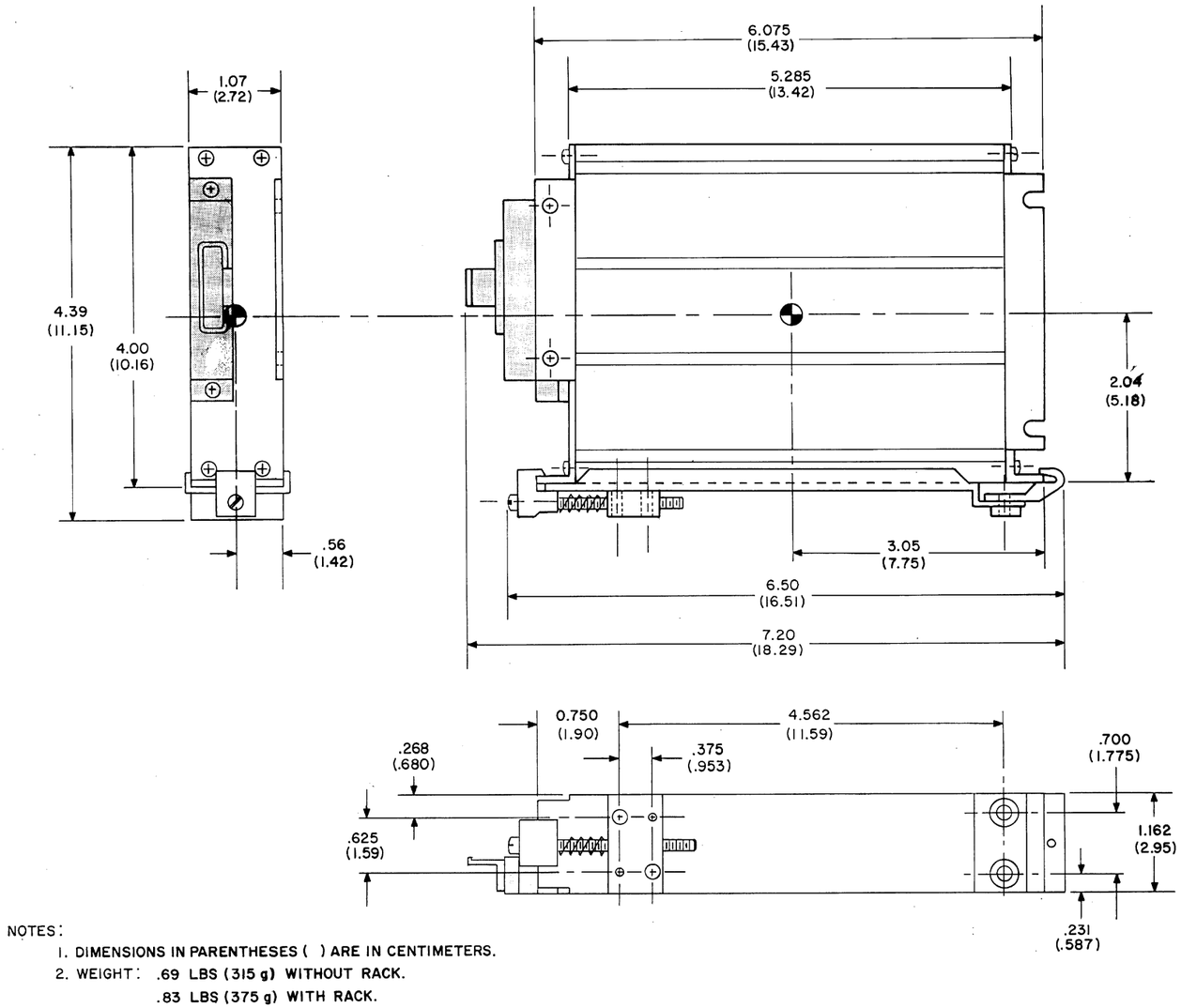


RECOMMENDED HOLE LAYOUT

NOTES:

1. CABLE TRAVEL IS CONTINUOUS..
2. ALL DIMENSIONS IN "( )" ARE IN CENTIMETERS.
3. WEIGHT - KS 272 - 2.2 LBS. (1 KG) KS 273 2.2 LBS (1 KG)
   KM 276 - 1.0 LBS. (.45 KG) KS 272A 2.4 LBS. (1.09 KG)
   KS 272B - 2.1 LBS.
   KS 272C - 2.1 LBS.
4. MATING CONNECTOR, HOOD AND LEVER PIVOT ASS'Y ARE PART OF THE 050-00398-0000 AND 050-01450-0001.
5. NUT ANCHOR CORNER PLATES MAY BE USED IN PLACE OF NUTS AT THE OPTION OF THE INSTALLER.

FIGURE 2-6 KS 272B & KM 276 INSTALLATION DRAWING
(Dwg No 155-05183-0000, Rev 11)



NOTES:
1. DIMENSIONS IN PARENTHESES ( ) ARE IN CENTIMETERS.
2. WEIGHT: .69 LBS (315 g) WITHOUT RACK.
.83 LBS (375 g) WITH RACK.

155-05770-0000 Rev 1

FIGURE 2-7 KAA 15 INSTALLATION DRAWING
(Dwg No 155-05770-0000, Rev 1)

BENDIX/KING
KING RADIO CORPORATION
OLATHE, KS
66062

NAME
ELECT INTCON
KFC/KAP 150 AFCS

DRN: LRG
CHK:

DATE
8-92

NUMBER
155-09645-0000

SHT
1

SHT REV

SEE SHT 1 FOR REV HISTORY

SHT DESCRIPTION
REVISION HISTORY

- GENERIC -

AIRPORT CAD: 11295-01

STATUS	
SHT	REV
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	

SHT REV REFLECTS REVISION LEVEL OF DRAWING PACKAGE WHEN SHEET WAS LAST CHANGED.

REVISION HISTORY

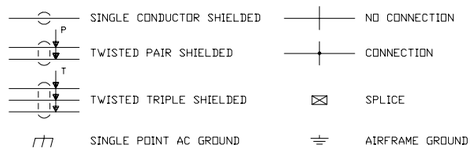
REV NO	SHEETS	DESCRIPTION
	1-11	FIRST RELEASE. APPVD: _____ DATE: _____

REVISION HISTORY

REV NO	SHEETS	DESCRIPTION

GENERAL NOTES:

1. STRANDED WIRE USED SHALL MEET OR EXCEED MIL-W-22759/16 SPEC.
   SHIELDED WIRE SHALL MEET OR EXCEED MIL-C-27500 SPEC.
   WIRES MARKED □ ARE 20 GAUGE.
   WIRES MARKED ○ ARE 18 GAUGE.
   WIRES MARKED ◇ ARE 16 GAUGE.
   UNMARKED WIRES ARE 22 GAUGE.



2. ALL PIN LETTERS PRECEDED BY Z REPRESENT LOWER CASE LETTERS.
3. BOTH SONALERT AND 500 OHM AURAL ALERTS ARE SHOWN. EITHER OR BOTH ALERTING OPTIONS MAY BE USED PENDING STC FLIGHT TEST EVALUATION.
4. BENDIX/KING RECOMMENDS INSTALLING A CONTROL WHEEL DISCONNECT DEVICE TO FACILITATE INSTALLATION OPTIONS, E.G., MANUAL ELECTRIC TRIM. USE ONLY ONE CONFIGURATION SHOWN. PIN NUMBER ASSIGNMENTS SHOWN ON THE CONTROL WHEEL DISCONNECTS ARE TYPICAL AND ARE FOR REFERENCE PURPOSES ONLY. THE INSTALLER IS RESPONSIBLE FOR CHOOSING AN ADEQUATE DISCONNECT DEVICE.
5. RELAYS RECOMMENDED FOR THIS INSTALLATION SHALL HAVE A COIL WORKING VOLTAGE OF 28VDC. CONTACTS SHALL BE RATED AT 3A MINIMUM AT 28VDC UNLESS OTHERWISE NOTED.
6. ACTUAL STRAPPING IS DETERMINED DURING AUTOPILOT STC FLIGHT TESTING.

AUTOPILOT NOTES:

7. TRIM SERVO WIRING SHOWN FOR NOSE DOWN; CAPSTAN CW.
8. PITCH SERVO WIRING SHOWN FOR NOSE DOWN; CAPSTAN CW.
9. ROLL SERVO WIRING SHOWN FOR ROLL RIGHT; CAPSTAN CW.
10. YAW SERVO WIRING SHOWN FOR NOSE RIGHT; CAPSTAN CW.
11. THESE PINS REPEATED THROUGHOUT INTERCONNECT FOR DRAWING CLARITY.

COMPASS SYSTEM NOTES:

12. FOR COMPASS SYSTEM OPTIONS AND MECHANICAL INSTALLATION PROCEDURES, REFER TO THE KCS 55A INSTALLATION MANUAL.
13. INTENTIONALLY LEFT BLANK.

ALTITUDE PRESELECT NOTES:

14. INTENTIONALLY LEFT BLANK.
15. DIODE ISOLATION AT THE TRANSPONDER IS REQUIRED FOR CORRECT SYSTEM OPERATION IF THE TRANSPONDER DOES NOT HAVE INTERNAL ISOLATION DIODES.

NAV 1/2 SWITCHING NOTES:

16. WHEN AN OPTIONAL EXTERNAL INVERTER IS USED, A KA 118-01 MUST BE USED, WITH THE FOLLOWING PINS CHANGING: PIN K BECOMES OPEN AND PIN 5 BECOMES 26VAC INPUT. KA 118-00 WIRING IS SHOWN.

YAW DAMPER NOTES:

17. WHEN OPTIONAL YAW DAMP SWITCH (P/N 031-00170-0000) IS NOT USED, PIN K OF P2962 MUST BE GROUNDED.
18. IF THE AIRCRAFT IS EQUIPPED WITH AN INVERTER, 26VAC HIGH MAY BE SUPPLIED FROM IT TO THE KRG 331. 26VAC LO FOR THE KRG 331 SHOULD BE GROUNDED AT THE INVERTER. IF THE AIRCRAFT DOES NOT HAVE AN INVERTER, AC POWER FOR THE KRG 331 MAY BE SUPPLIED BY THE KG 102A. IF THE KG 102A IS USED TO POWER THE KRG 331, THE FUSE SHOULD BE INSTALLED AS CLOSE TO THE KG 102A AS POSSIBLE.

FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 1 of 11)

FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 2 of 11)

POWER DISTRIBUTION
DIAGRAM

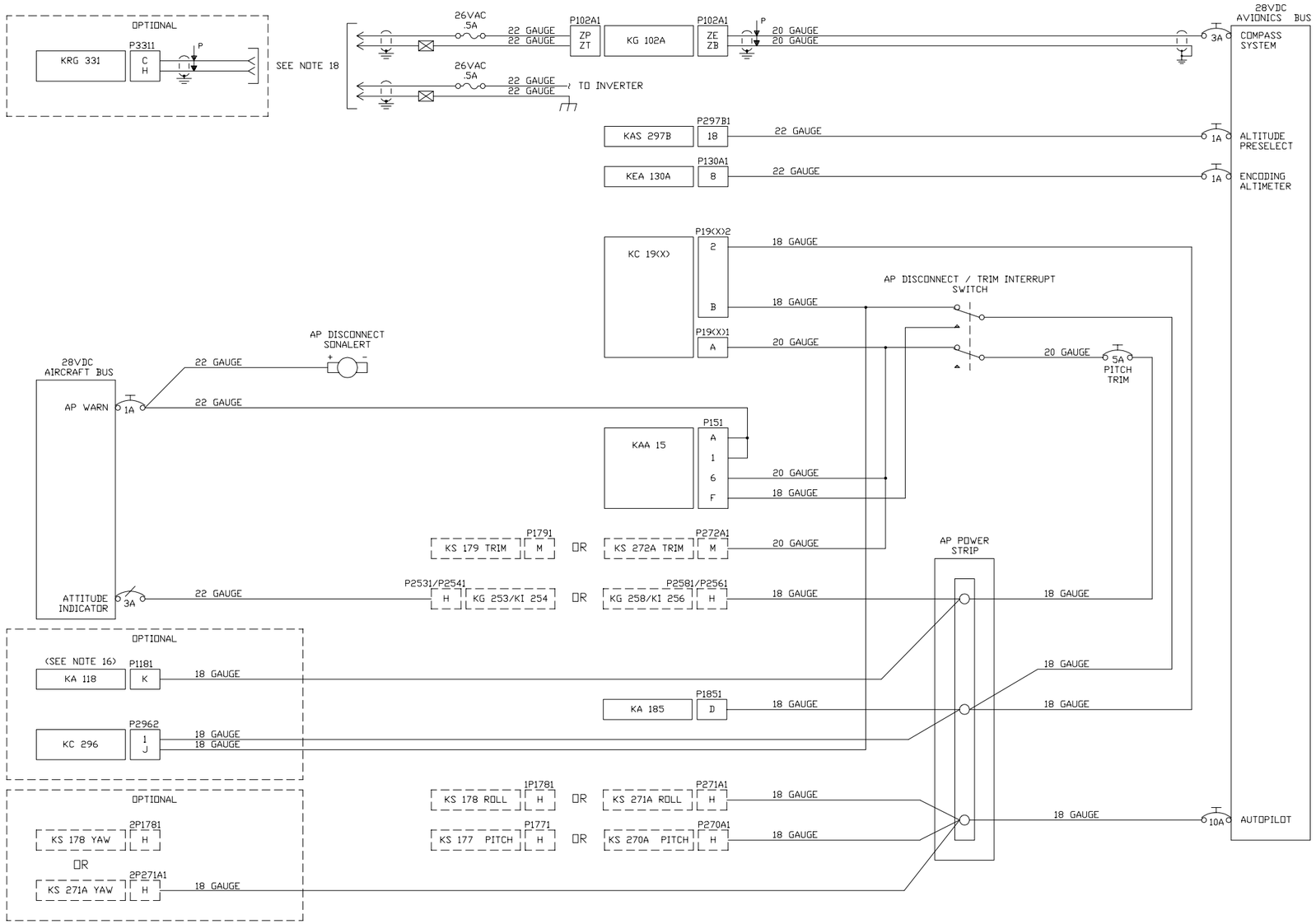


FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 3 of 11)

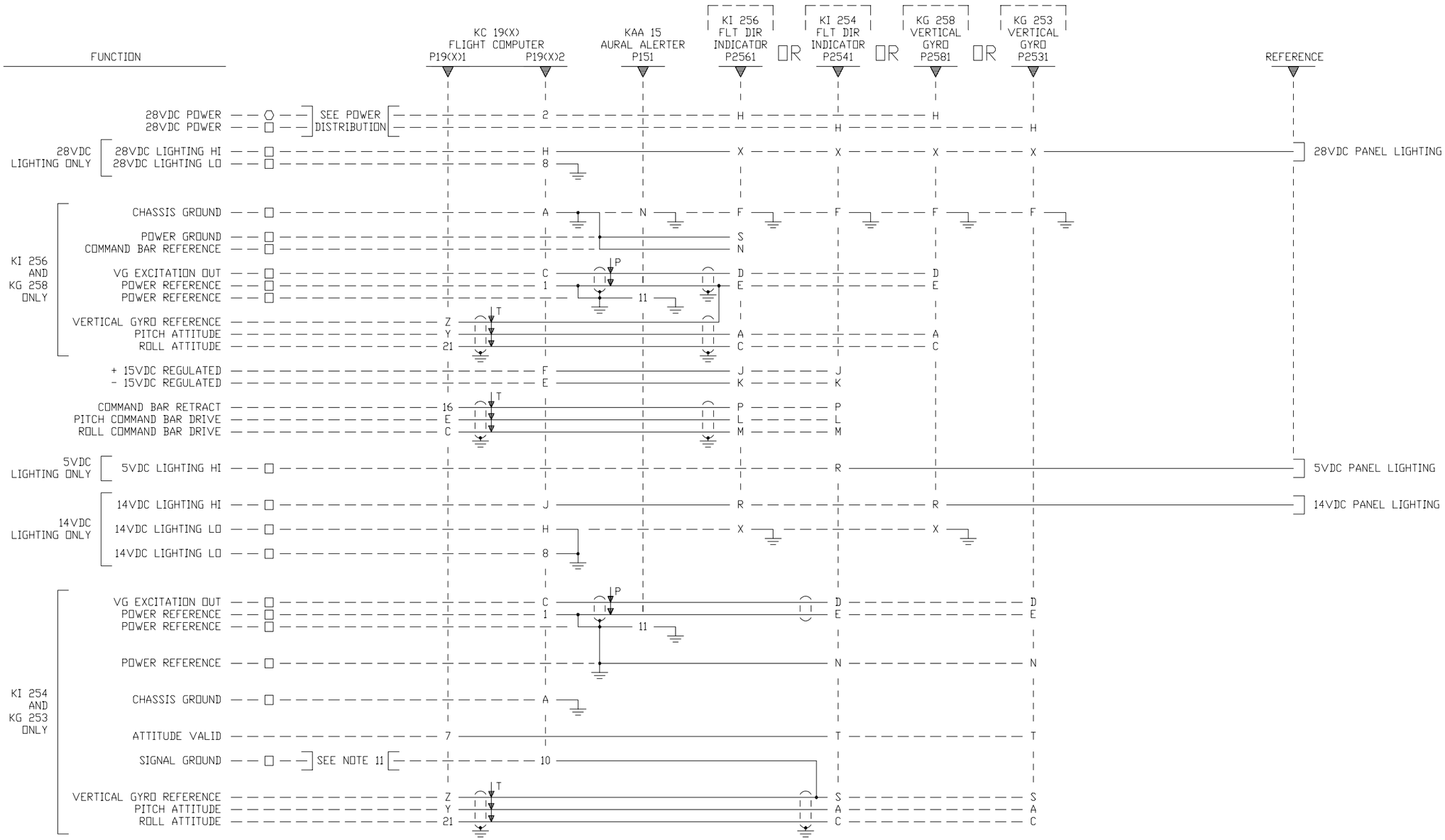


FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 4 of 11)

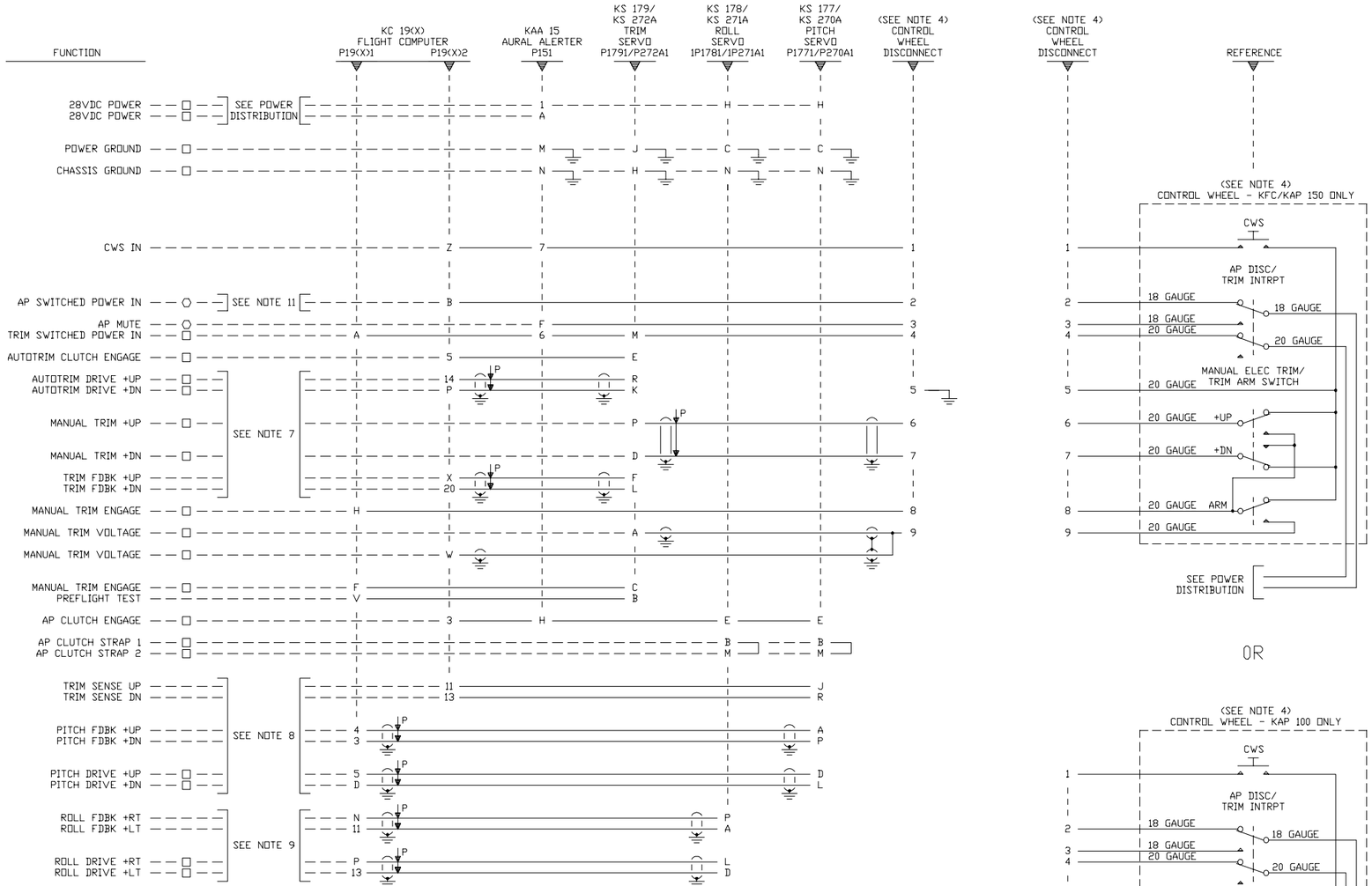


FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 5 of 11)

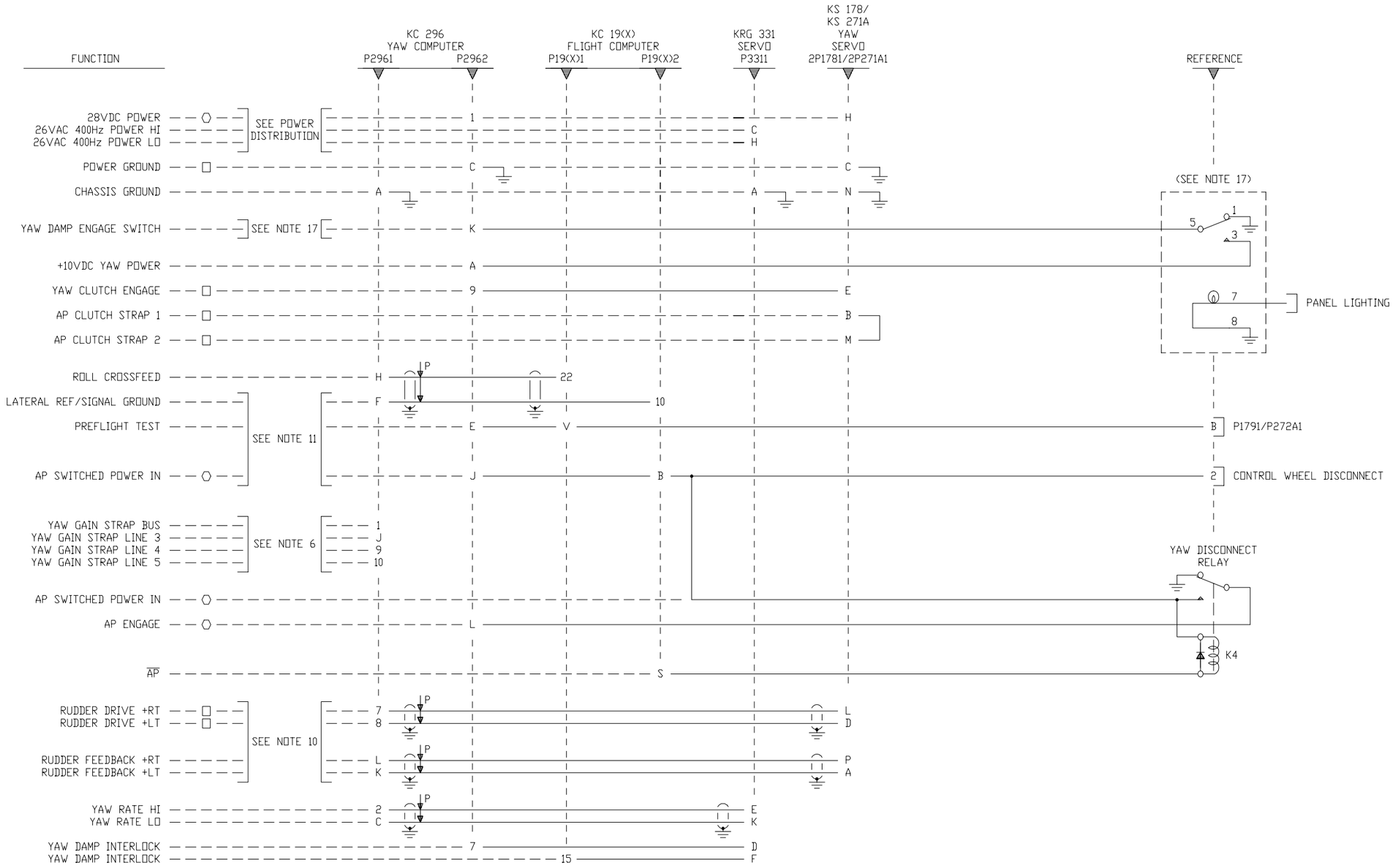


FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 6 of 11)

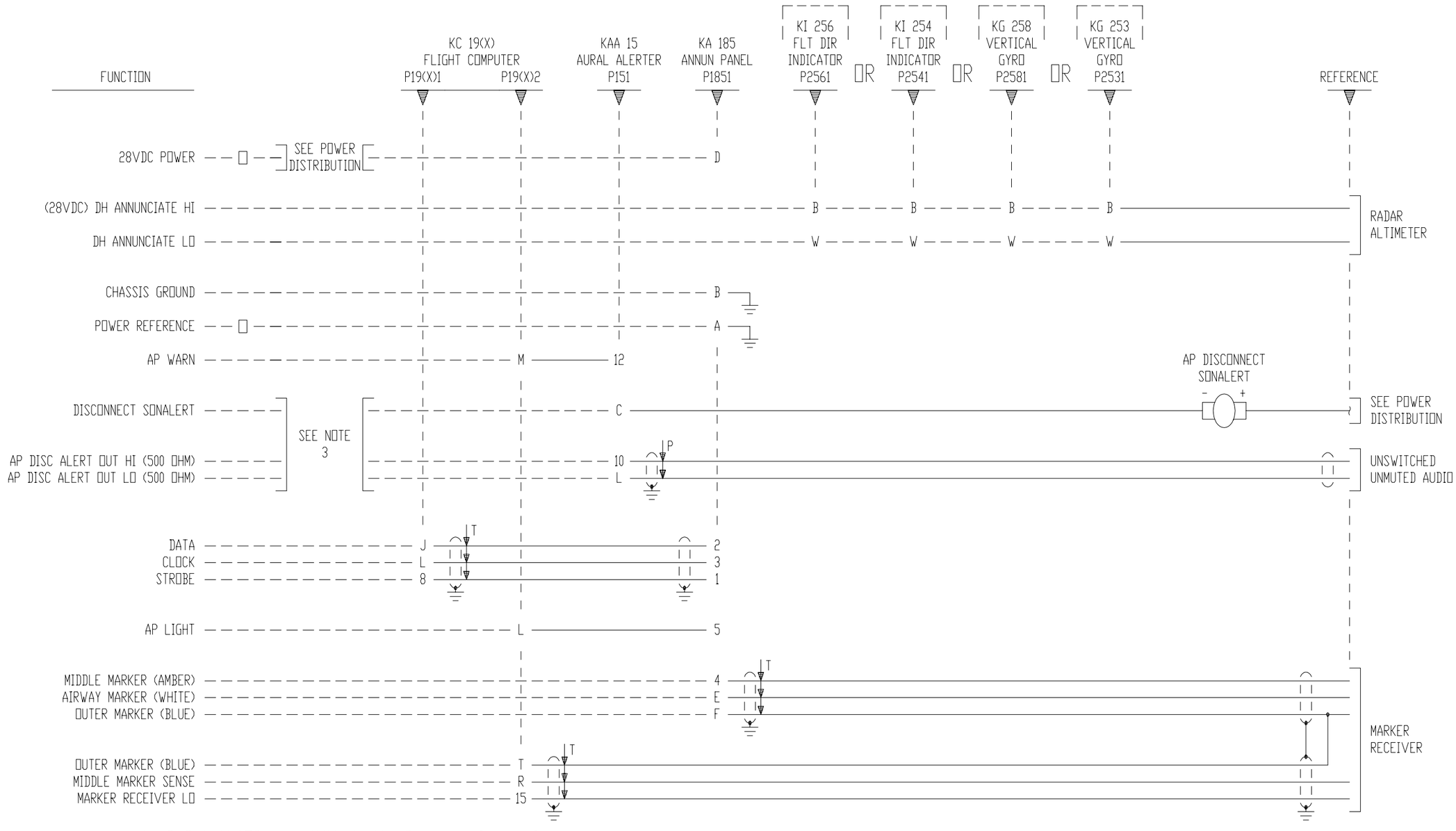


FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 7 of 11)

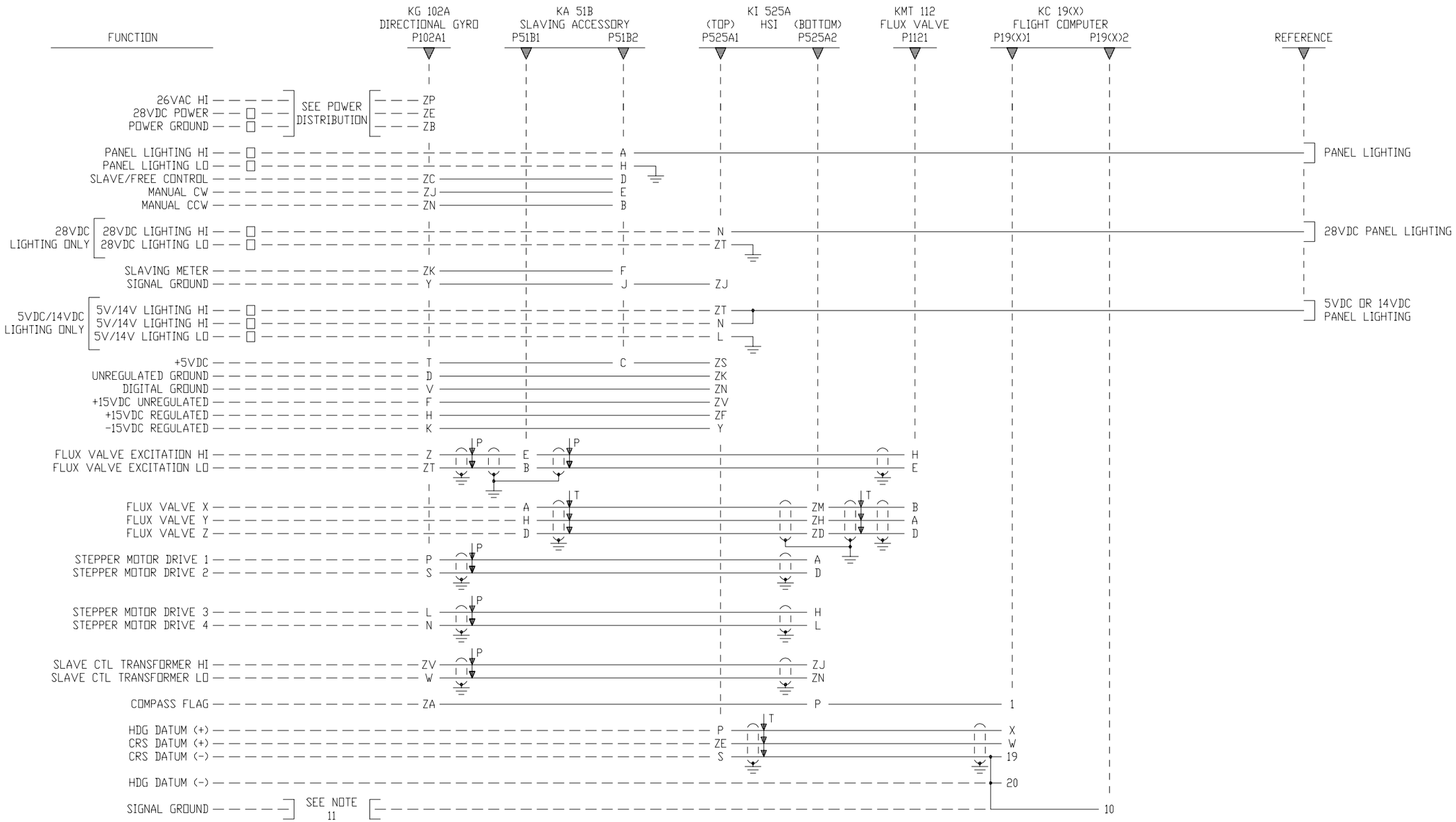


FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 8 of 11)

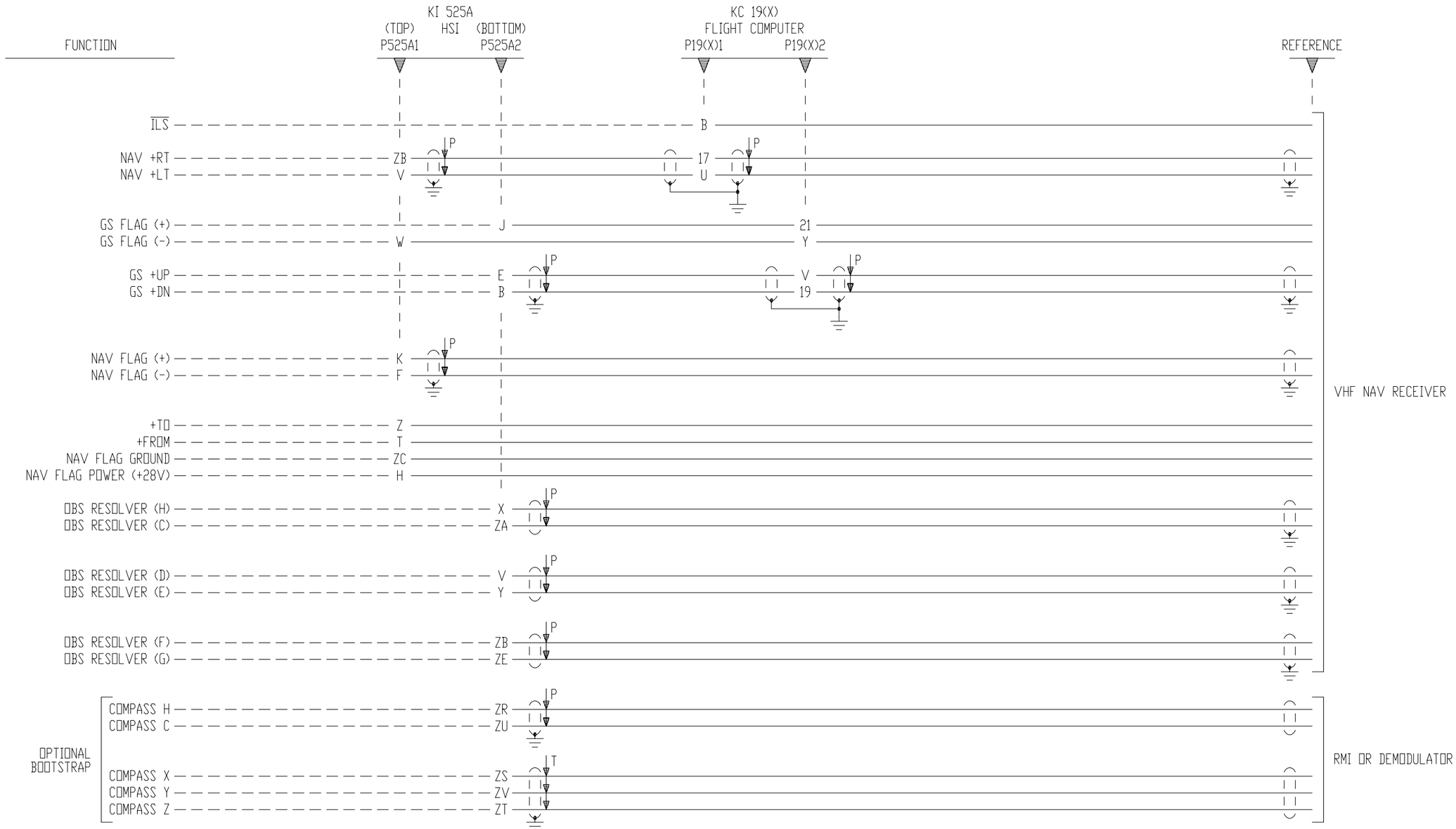


FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 9 of 11)

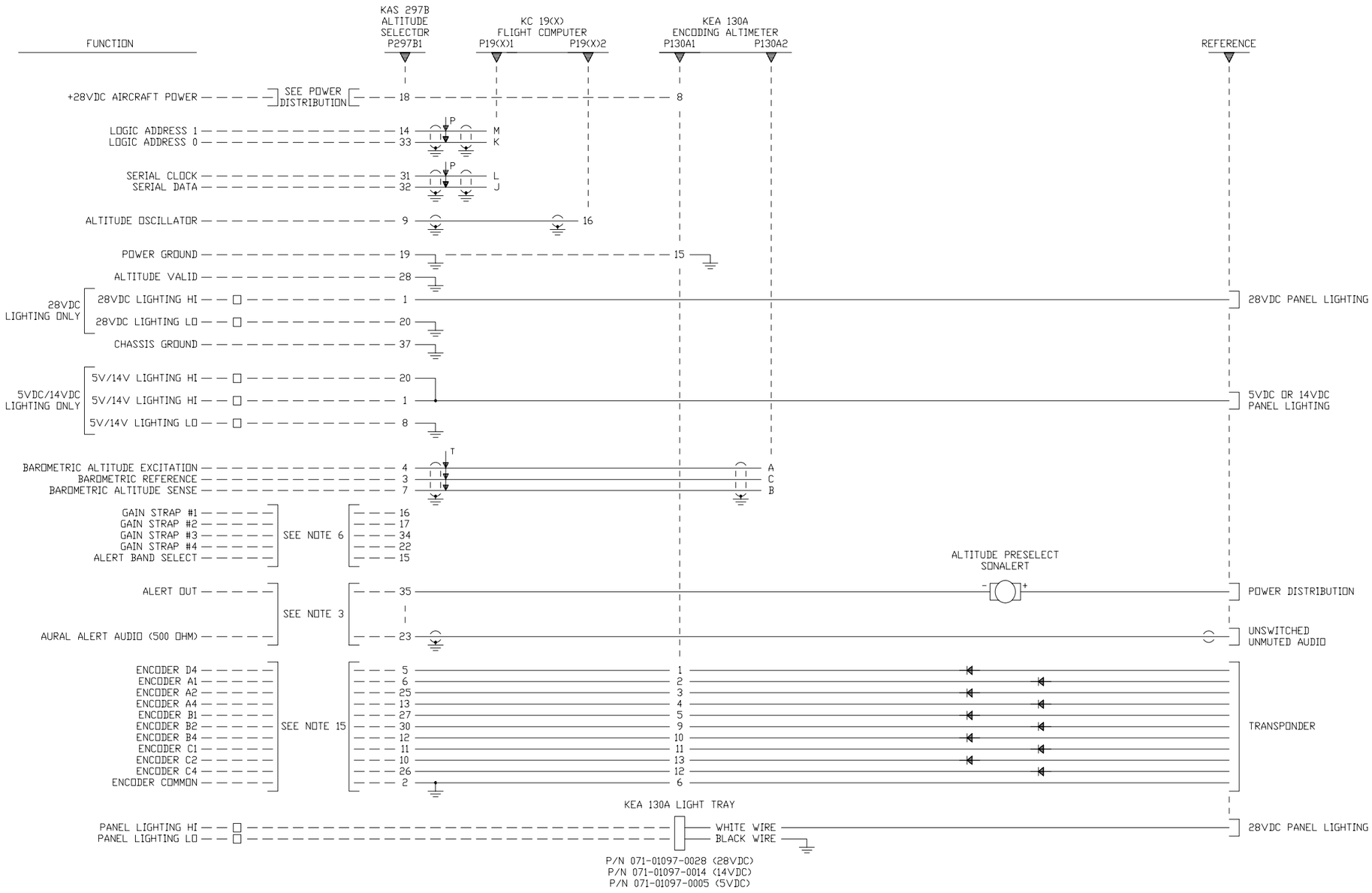


FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 10 of 11)

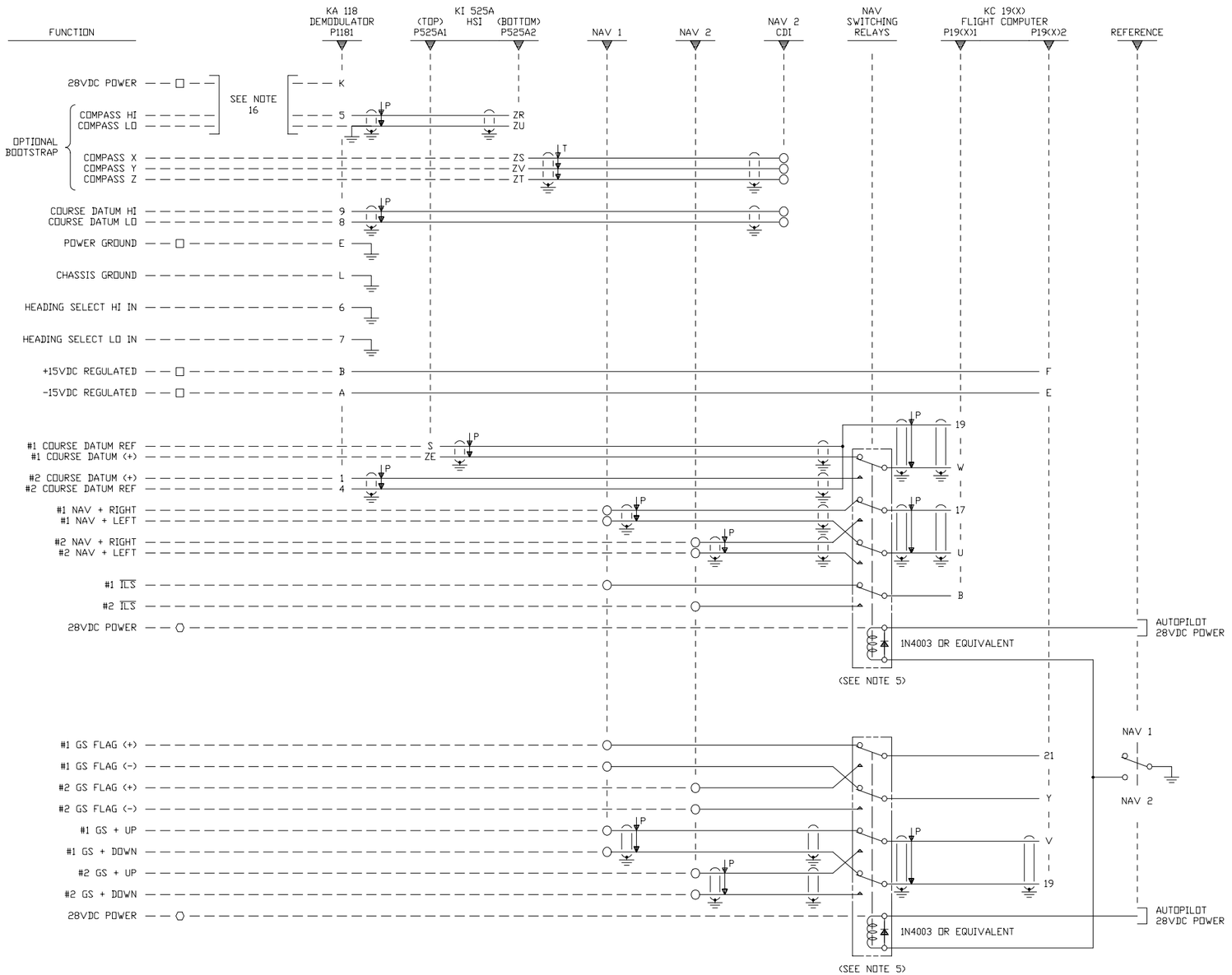


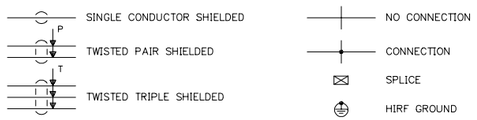
FIGURE 2-8 KFC 150 INTERCONNECT (3 inch Instruments)
(Dwg No 155-09645-0000, Rev 0)
(Sheet 11 of 11)

FIGURE 2-9 KFC 150 INTERCONNECT (EFIS)
(Dwg No 155-09645-1000, Rev 0)
(Sheet 1 of 10)

NOTES:

* AN ASTERISK FOLLOWING A PIN IDENTIFIER DENOTES A LOWER CASE LETTER.

1. STRANDED WIRE USED SHALL MEET OR EXCEED MIL-W-22759/16 SPEC.
   SHIELDED WIRE SHALL MEET OR EXCEED MIL-C-27500 SPEC.
   WIRES MARKED □ ARE 20 AWG.
   WIRES MARKED ○ ARE 18 AWG.
   WIRES MARKED ◇ ARE 16 AWG.
   UNMARKED WIRES ARE 22 AWG.



2. INSTALL SHIELDED WIRES WHERE INDICATED AND GROUND ONLY WHERE INDICATED. UNLESS OTHERWISE NOTED, ALL GROUNDS ARE TO BE TIED TO AIRCRAFT GROUND AS CLOSE TO EACH UNIT AS POSSIBLE.

3 THESE GROUNDS SHALL BE LIMITED TO A MAXIMUM WIRE LENGTH OF 24 INCHES.

4. BOTH SONALERT AND 500 OHM AURAL ALERTS ARE SHOWN. EITHER OR BOTH ALERTING OPTIONS MAY BE USED PENDING STC FLIGHT TEST EVALUATION.

5. ALLIEDSIGNAL CAS RECOMMENDS INSTALLING A CONTROL WHEEL DISCONNECT DEVICE TO FACILITATE INSTALLATION OPTIONS, E.G., MANUAL ELECTRIC TRIM. USE ONLY ONE CONFIGURATION SHOWN. PIN NUMBER ASSIGNMENTS SHOWN ON THE CONTROL WHEEL DISCONNECTS ARE TYPICAL AND ARE FOR REFERENCE PURPOSES ONLY. THE INSTALLER IS RESPONSIBLE FOR CHOOSING A SUITABLE DISCONNECT DEVICE.

6. RELAYS RECOMMENDED FOR THIS INSTALLATION SHALL HAVE A COIL WORKING VOLTAGE OF 28VDC. CONTACTS SHALL BE RATED AT 3A MINIMUM AT 28VDC UNLESS OTHERWISE NOTED.

7 ACTUAL STRAPPING IS DETERMINED DURING AUTOPILOT STC FLIGHT TESTING.

AUTOPILOT NOTES:

8. TRIM SERVO WIRING SHOWN FOR NOSE DOWN: CAPSTAN CW.

9. PITCH SERVO WIRING SHOWN FOR NOSE DOWN: CAPSTAN CW.

10. ROLL SERVO WIRING SHOWN FOR ROLL RIGHT: CAPSTAN CW.

11. YAW SERVO WIRING SHOWN FOR NOSE RIGHT: CAPSTAN CW.

12. THESE PINS REPEATED THROUGHOUT INTERCONNECT FOR DRAWING CLARITY.

13. R1 IS A 10Kohm 1/4 WATT RESISTOR. R2 IS A 169 ohm 1/4 WATT RESISTOR.

14. THE ATTITUDE INFORMATION PHASING FROM THE KVG 350 VERTICAL GYRO AS SHOWN ON THIS INTERCONNECT IS REFERENCED TO THE KVG 350 GYRO CONNECTOR FACING FORWARD. IF IT IS DESIRED TO MOUNT THE GYRO WITH THE CONNECTOR FACING AFT, THE WIRES IN THE FOLLOWING PINS MUST BE SWAPPED:

Y* ⟷ X* Q* ⟷ P*

COMPASS SYSTEM NOTES:

15. FOR COMPASS SYSTEM OPTIONS AND MECHANICAL INSTALLATION PROCEDURES, REFER TO THE KCS 55A INSTALLATION MANUAL.

16. INTENTIONALLY LEFT BLANK.

ALTITUDE PRESELECT NOTES:

17. INTENTIONALLY LEFT BLANK.

18. DIODE ISOLATION AT THE TRANSPONDER IS REQUIRED FOR CORRECT SYSTEM OPERATION IF THE TRANSPONDER DOES NOT HAVE INTERNAL ISOLATION DIODES.

YAW DAMPER NOTES:

19. WHEN OPTIONAL YAW DAMP SWITCH (P/N 031-00170-0000) IS NOT USED, PIN K OF P2962 MUST BE GROUNDED.

20. INTENTIONALLY LEFT BLANK.

EFIS 40/50 NOTES:

21. WIRE JUMPERS AT THE SG 465 MUST BE KEPT SHORT IN LENGTH SUCH THAT ALL CONNECTIONS ARE WITHIN THE CONNECTOR BACKSHELL.

22. REFER TO THE EFIS 40/50 INSTALLATION MANUAL FOR CONFIGURATION INFORMATION AS WELL AS ADDITIONAL INTERFACING INFORMATION.

AlliedSignal GENERAL AVIATION AVIONICS	AlliedSignal Avionics Inc. Olathe, Kansas 66062	NAME	ELECT INTCON KFC 150 TO EFIS 40/50	DRN: AJK CHK:	DATE 04/96
NUMBER 155-09645-1000	SHT 2	SHT REV Ø	SEE SHT 1 FOR REV HISTORY	SCALE NONE	SHT DESCRIPTION REVISION HISTORY
AIRPORT CAD: 12379-02	- KFC 150/EFIS -				

FIGURE 2-9 KFC 150 INTERCONNECT (EFIS)
(Dwg No 155-09645-1000, Rev 0)
(Sheet 2 of 10)

INTENTIONALLY LEFT BLANK

AlliedSignal Aerospace Company Bendix/King Division	NAME	ELECT INTCON KFC 150 TO EFIS 40/50	DRN: AJK	DATE	NUMBER	SHT	SHT REV	SEE SHT 1 FOR REV HISTORY	SCALE	SHT DESCRIPTION
	CHK: AK			04/96	155-09645-1000	3	1		NONE	INTENTIONALLY LEFT BLANK
									AIRPORT CAD: 12379-03	- KFC 150/EFIS -

FIGURE 2-9 KFC 150 INTERCONNECT (EFIS)
(Dwg No 155-09645-1000, Rev 0)
(Sheet 3 of 10)

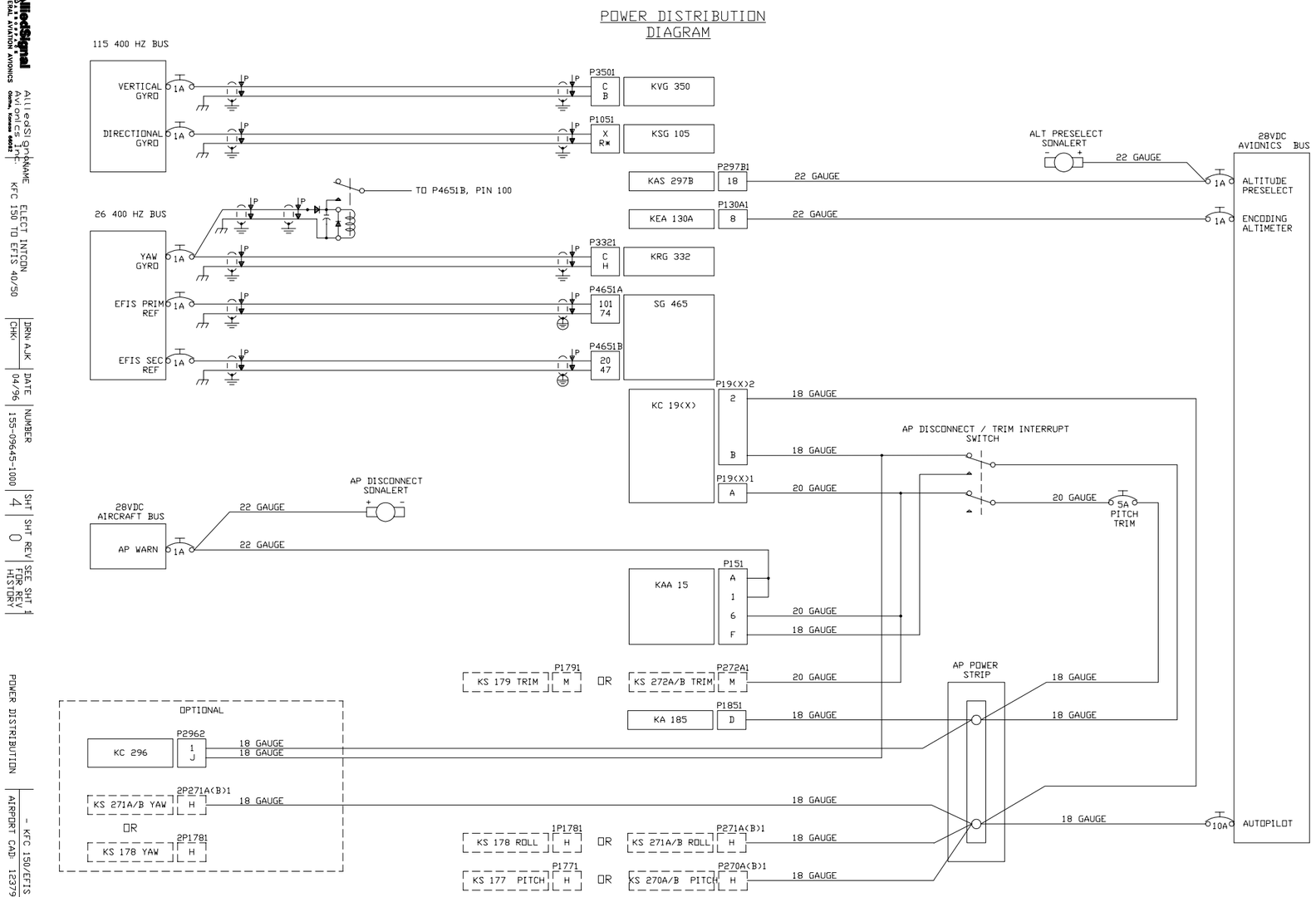


FIGURE 2-9 KFC 150 INTERCONNECT (EFIS)
(Dwg No 155-09645-1000, Rev 0)
(Sheet 4 of 10)

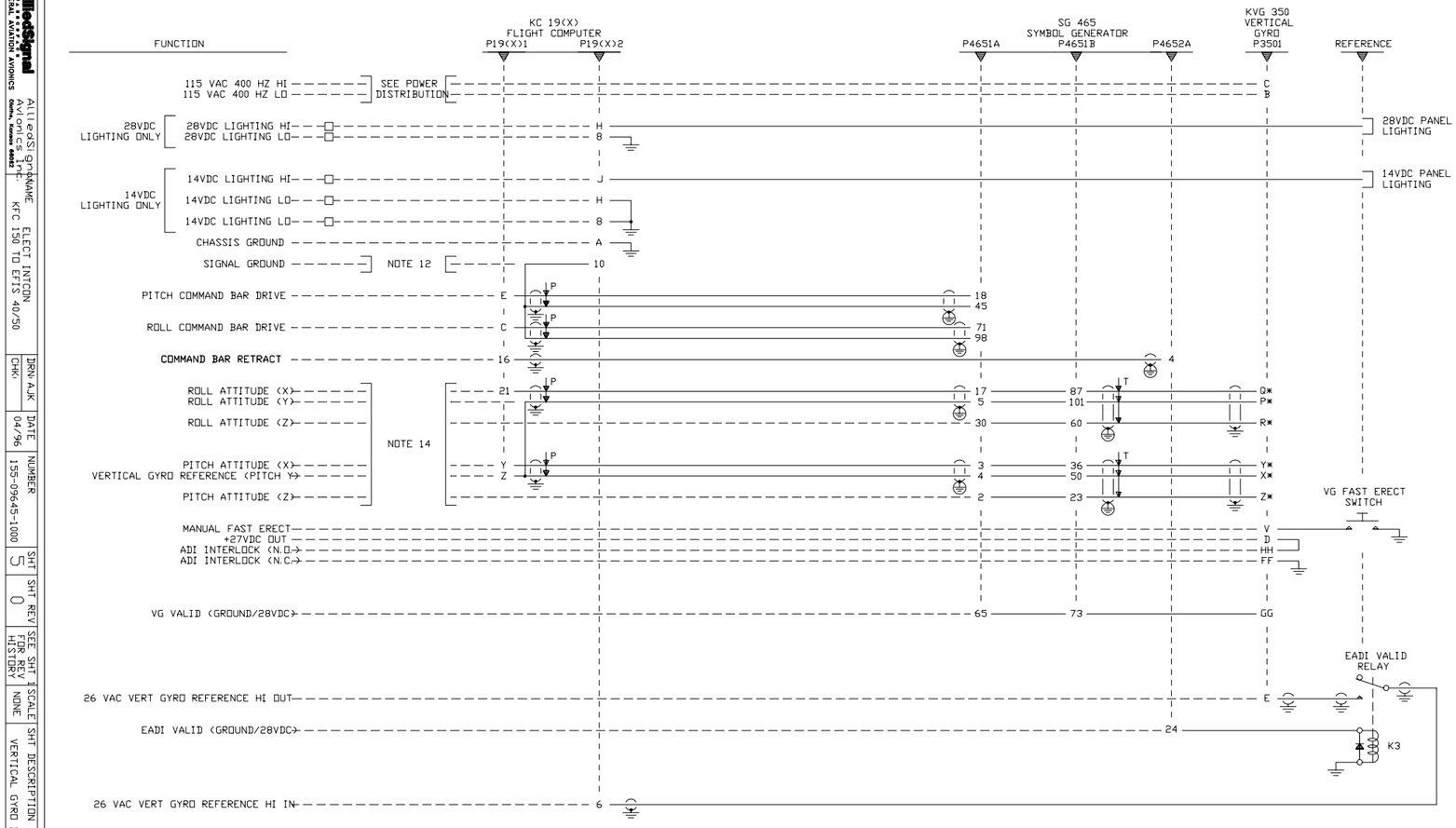
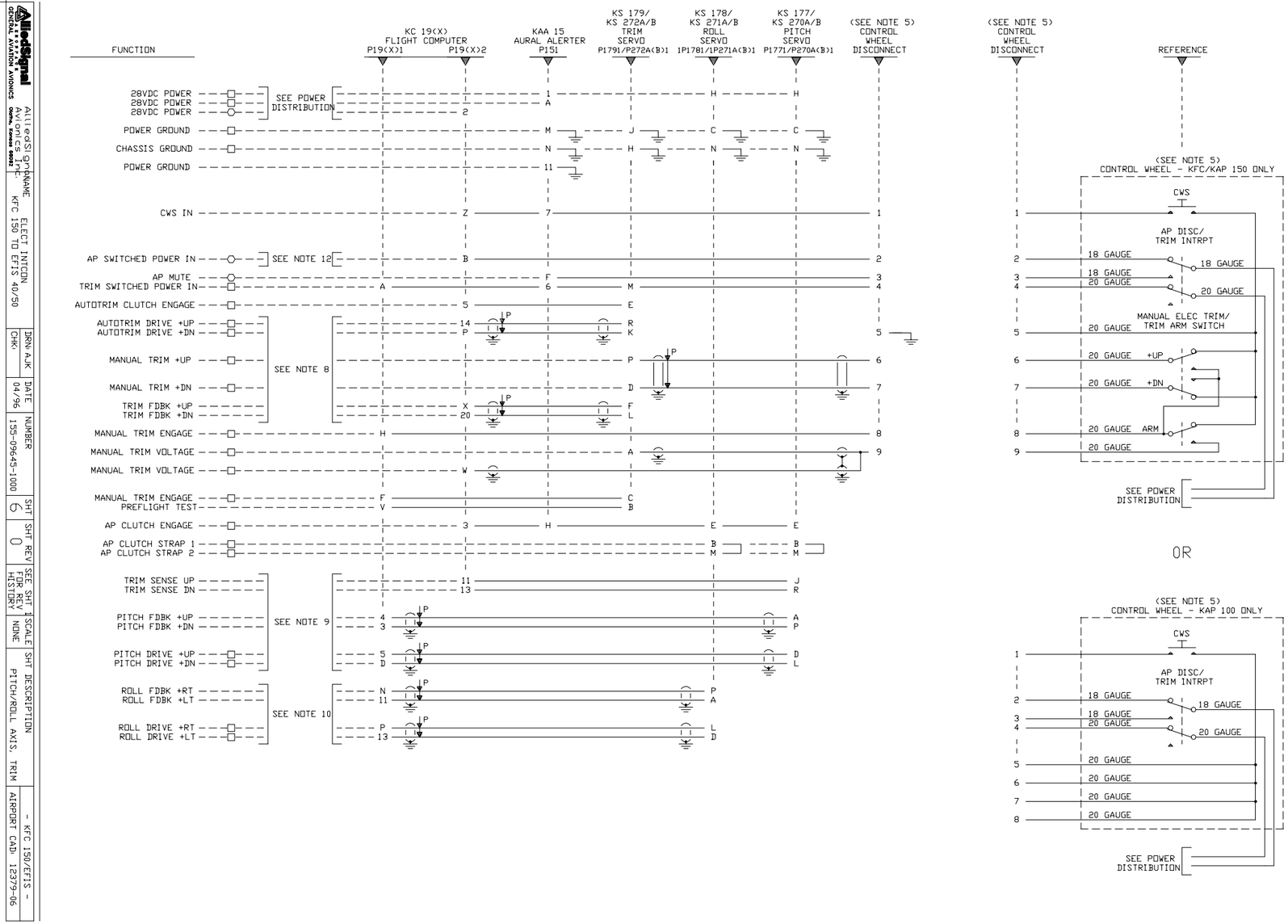
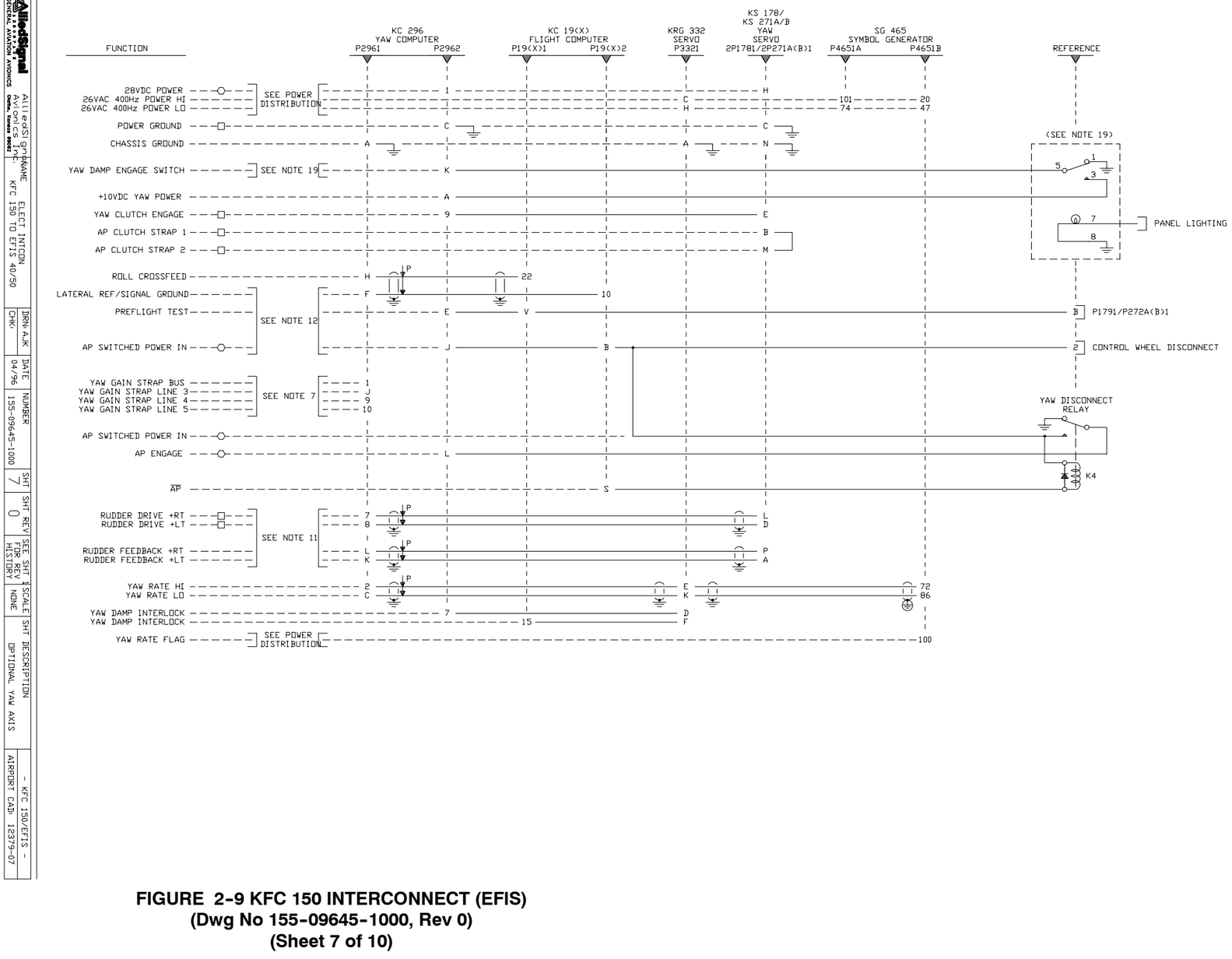


FIGURE 2-9 KFC 150 INTERCONNECT (EFIS)
(Dwg No 155-09645-1000, Rev 0)
(Sheet 5 of 10)



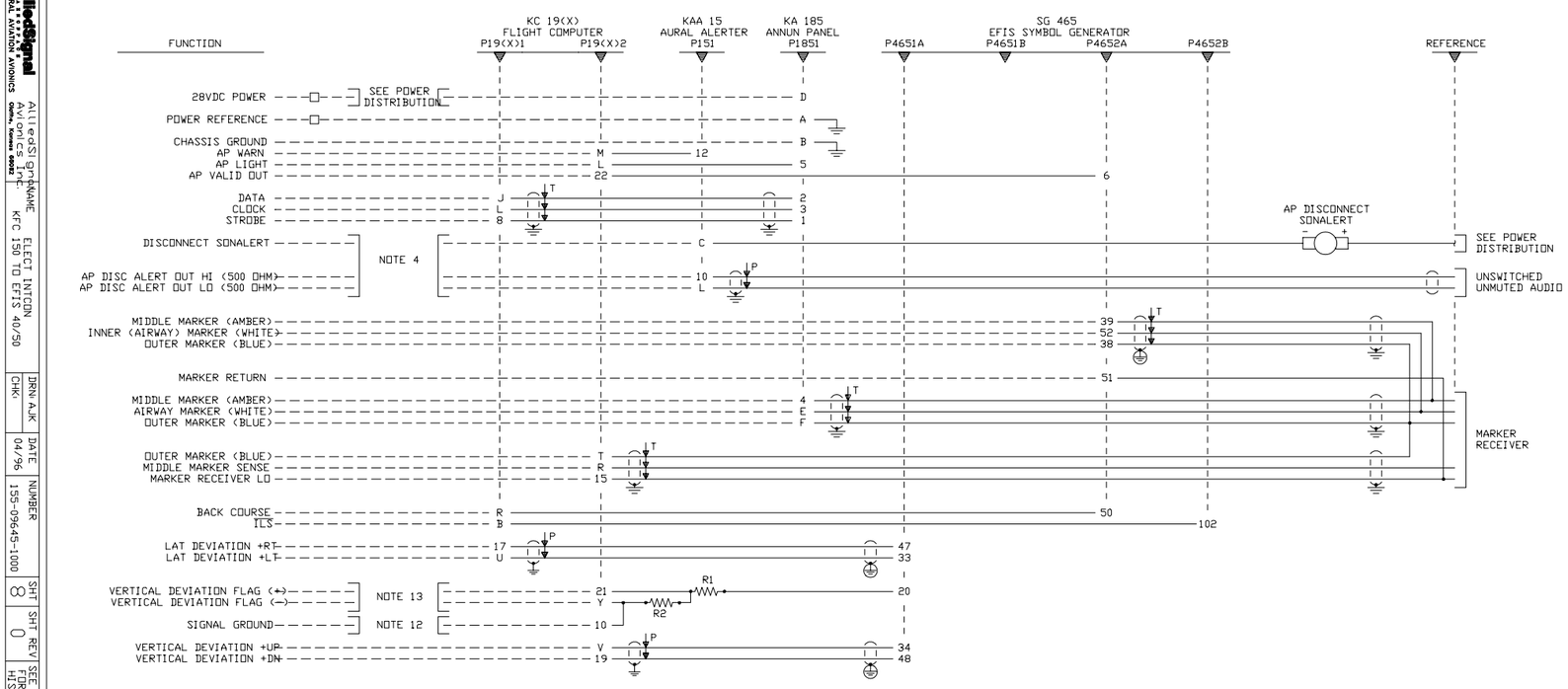
AlliedSignal GENERAL AVIATION AVIONICS
ALLIED SIGNAL AEROSPACE COMPANY
OLATHE, KANSAS 66062
ELECT INTCDN KFC 150 TO EFIS 40/50
DRN AJK
CHK
DATE 04/96
NUMBER 155-09645-1000
SHT 6
SHT REV 0
SEE SHT 1 FOR REV HISTORY
SCALE NONE
SHT DESCRIPTION PITCH/ROLL AXIS, TRIM
AIRPORT CAD 12379-06
- KFC 150/EFIS -

FIGURE 2-9 KFC 150 INTERCONNECT (EFIS)
(Dwg No 155-09645-1000, Rev 0)
(Sheet 6 of 10)



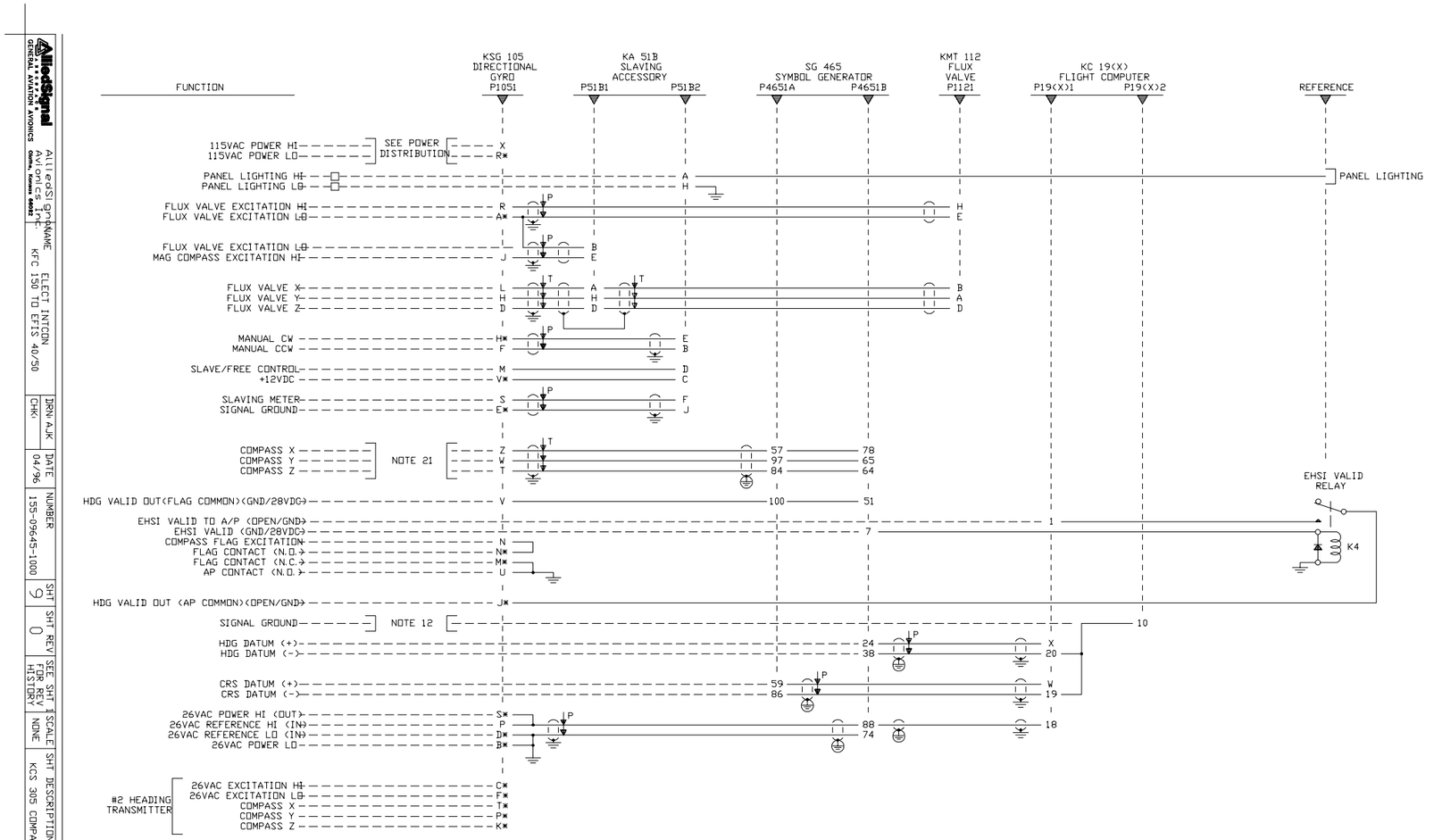
AlliedSignal GENERAL AVIATION AVIONICS
ALLIED SIGNAL AEROSPACE COMPANY
OLATHE, KANSAS 66062
TITLE: ELECT INTCON KFC 150 TO EFIS 40/50
DRN AJK
CHK
DATE 04/96
NUMBER 155-09645-1000
SHT 7
SHT REV 0
SEE SHT FOR REV HISTORY
SCALE NONE
SHT DESCRIPTION OPTIONAL YAW AXIS
AIRPORT CAD: 12379-07
- KFC 150/EFIS -

FIGURE 2-9 KFC 150 INTERCONNECT (EFIS)
(Dwg No 155-09645-1000, Rev 0)
(Sheet 7 of 10)



ALLIEDSIGNAL GENERAL AVIATION AVIONICS	ALLIEDSIGNAL AEROSPACE COMPANY Olathe, Kansas 66062
SHT NAME	ELECT INTCON KFC 150 TO EFIS 40/50
DRN AJK / CHK	
DATE	04/96
NUMBER	155-09645-1000
SHT	8
SHT REV	0
SEE SHT 1 FOR REV HISTORY	
SCALE	NONE
SHT DESCRIPTION	ALERTING/ANNUNCIATION, NAV INTERFACE
	- KFC 150/EFIS - AIRPORT CAD: 12379-08

FIGURE 2-9 KFC 150 INTERCONNECT (EFIS)
(Dwg No 155-09645-1000, Rev 0)
(Sheet 8 of 10)



Allied Signal Aerospace Company — General Aviation Avionics	
SPONAME	ELECT INTCON
	KFC 150 TO EFIS 40/50
DRN AJK	DATE 04/96
CHK	NUMBER 155-09645-1000
	SHT 9
	SHT REV 0
	SEE SHT FOR REV HISTORY
	SCALE NONE
	SHT DESCRIPTION KCS 305 COMPASS SYSTEM
AIRPORT CAD 12379-09	- KFC 150/EFIS -

FIGURE 2-9 KFC 150 INTERCONNECT (EFIS)
(Dwg No 155-09645-1000, Rev 0)
(Sheet 9 of 10)

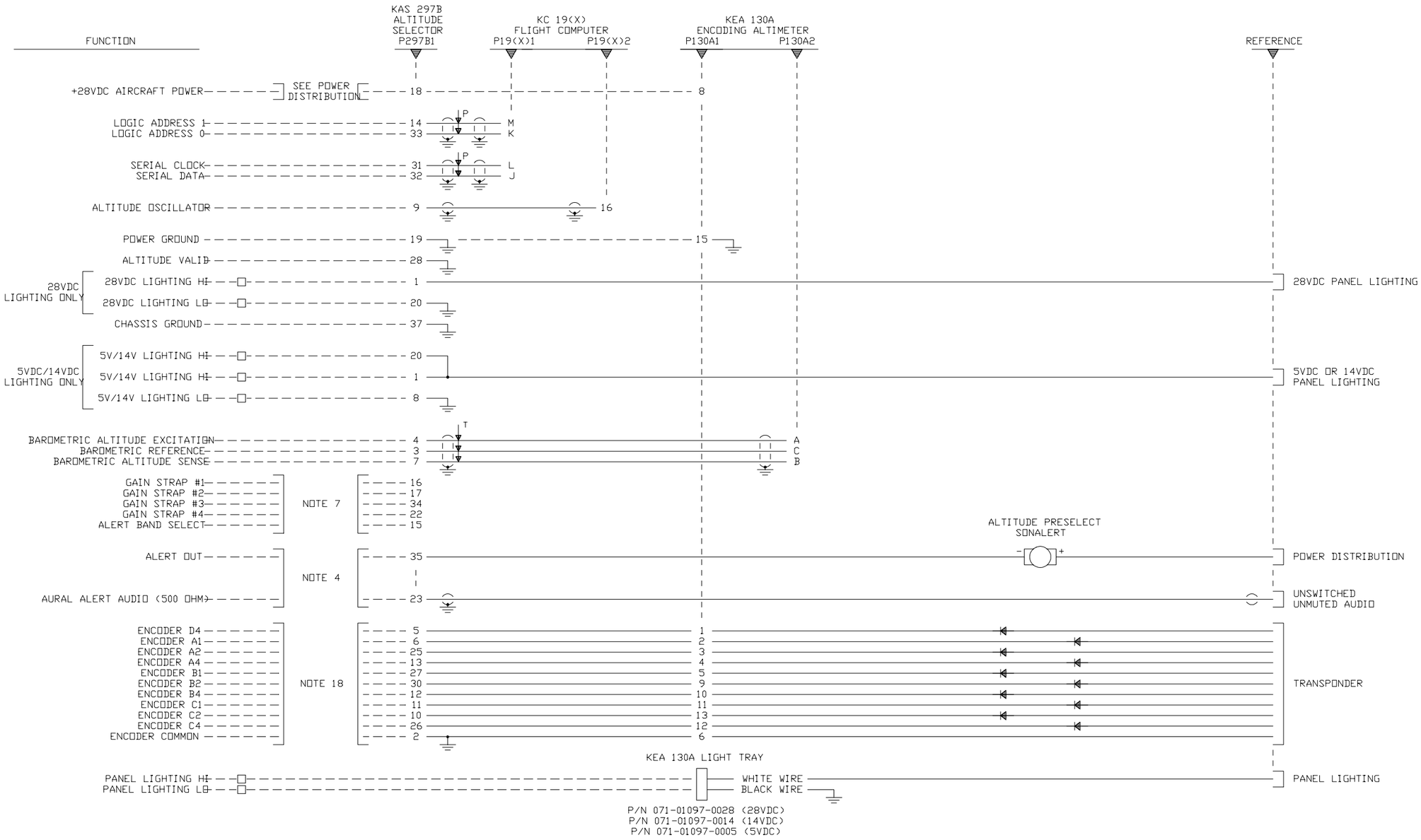


FIGURE 2-9 KFC 150 INTERCONNECT (EFIS)
(Dwg No 155-09645-1000, Rev 0)
(Sheet 10 of 10)

SECTION 3.0
OPERATION

3.1 GENERAL

Refer to the STC installation manual of the particular aircraft which the system is installed for operating procedures or the Flight Manual Supplement of the particular aircraft.

TSO APPENDIX
RTCA DO-160C
ENVIRONMENTAL QUALIFICATION
FORMS

RTCA/DO-160C
ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KC 192 Flight Computer
PART NUMBER:	065-0042-15,16
TSO NUMBER:	C9c,C52a
MANUFACTURER'S SPECIFICATION:	004-00265-0001 (KC 192-15) 004-00265-0002 (KC 192-16)
MANUFACTURER:	AlliedSignal Avionics Inc. A wholly-owned subsidiary of AlliedSignal Inc.
MANUFACTURER'S ADDRESS:	400 N. ROGERS ROAD OLATHE, KANSAS 66062, USA

CONDITIONS	SECTION	CONDUCTED TESTS
TEMPERATURE AND ALTITUDE	4.0	CATEGORIES A2/F1
INFLIGHT COOLING LOSS	4.5.4	CATEGORY W
TEMPERATURE VARIATION	5.0	CATEGORY B
HUMIDITY	6.0	CATEGORY A
SHOCK	7.0	OPERATIONAL SHOCK, CRASH SAFETY
VIBRATION	8.0	CATEGORIES M/S
EXPLOSION	9.0	CATEGORY X (NOT TESTED)
WATERPROOFNESS	10.0	CATEGORY X (NOT TESTED)
FLUID SUSCEPTIBILITY	11.0	CATEGORY X (NOT TESTED)
SAND AND DUST	12.0	CATEGORY X (NOT TESTED)
FUNGUS	13.0	CATEGORY X (NOT TESTED)
SALT SPRAY	14.0	CATEGORY X (NOT TESTED)
MAGNETIC EFFECT	15.0	CATEGORY Z
POWER INPUT	16.0	CATEGORIES B
VOLTAGE SPIKE	17.0	CATEGORIES B
AUDIO FREQ COND SUSCEPT	18.0	CATEGORIES B
INDUCED SIGNAL SUSCEPTIBILITY	19.0	CATEGORY A
RADIO FREQUENCY SUSCEPTIBILITY	20.0	CATEGORY T
RADIO FREQUENCY EMISSION	21.0	CATEGORY B
LIGHTNING IND TRANS SUSCEPT	RTCA 160B	CATEGORY K
LIGHTNING DIRECT EFFECTS	23.0	CATEGORY X (NOT TESTED)
ICING	24.0	CATEGORY X (NOT TESTED)

004-00265-4800
REVISION 0
PAGE 1 OF 2

KRC AUTHORIZED PRINT

(KPN 004-00265-4800)

RTCA/DO-160C
ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KC 191 Flight Computer
PART NUMBER:	065-0054-15
TSO NUMBER:	C9c
MANUFACTURER'S SPECIFICATION:	004-00265-0001
MANUFACTURER:	AlliedSignal Avionics Inc. A wholly-owned subsidiary of AlliedSignal Inc.
MANUFACTURER'S ADDRESS:	400 N. ROGERS ROAD OLATHE, KANSAS 66062, USA

CONDITIONS	SECTION	CONDUCTED TESTS
TEMPERATURE AND ALTITUDE	4.0	CATEGORIES A2/F1
INFLIGHT COOLING LOSS	4.5.4	CATEGORY W
TEMPERATURE VARIATION	5.0	CATEGORY B
HUMIDITY	6.0	CATEGORY A
SHOCK	7.0	OPERATIONAL SHOCK, CRASH SAFETY
VIBRATION	8.0	CATEGORIES M/S
EXPLOSION	9.0	CATEGORY X (NOT TESTED)
WATERPROOFNESS	10.0	CATEGORY X (NOT TESTED)
FLUID SUSCEPTIBILITY	11.0	CATEGORY X (NOT TESTED)
SAND AND DUST	12.0	CATEGORY X (NOT TESTED)
FUNGUS	13.0	CATEGORY X (NOT TESTED)
SALT SPRAY	14.0	CATEGORY X (NOT TESTED)
MAGNETIC EFFECT	15.0	CATEGORY Z
POWER INPUT	16.0	CATEGORIES B
VOLTAGE SPIKE	17.0	CATEGORIES B
AUDIO FREQ COND SUSCEPT	18.0	CATEGORIES B
INDUCED SIGNAL SUSCEPTIBILITY	19.0	CATEGORY A
RADIO FREQUENCY SUSCEPTIBILITY	20.0	CATEGORY T
RADIO FREQUENCY EMISSION	21.0	CATEGORY B
LIGHTNING IND TRANS SUSCEPT	RTCA 160B	CATEGORY K
LIGHTNING DIRECT EFFECTS	23.0	CATEGORY X (NOT TESTED)
ICING	24.0	CATEGORY X (NOT TESTED)

004-00373-4800
REVISION 0
PAGE 1 OF 2

KRC AUTHORIZED PRINT

(KPN 004-00373-4800)

RTCA/DO-160C
ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KS 270B Servo Actuator
PART NUMBER:	065-00172-0100,0200,0300,0400
TSO NUMBER:	C9c
MANUFACTURER'S SPECIFICATION:	004-02024-0000
MANUFACTURER:	AlliedSignal Avionics Inc. A wholly-owned subsidiary of AlliedSignal Inc.
MANUFACTURER'S ADDRESS:	400 N. ROGERS ROAD OLATHE, KANSAS 66062, USA

CONDITIONS	SECTION	CONDUCTED TESTS
TEMPERATURE AND ALTITUDE	4.0	CATEGORIES A2/F2
INFLIGHT COOLING LOSS	4.5	CATEGORY X (NOT TESTED)
TEMPERATURE VARIATION	5.0	CATEGORY B
HUMIDITY	6.0	CATEGORY A
SHOCK	7.0	OPERATIONAL SHOCK, CRASH SAFETY
VIBRATION	8.0	CATEGORIES L,M
EXPLOSION	9.0	CATEGORY E1
WATERPROOFNESS	10.0	CATEGORY X (NOT TESTED)
FLUID SUSCEPTIBILITY	11.0	CATEGORY X (NOT TESTED)
SAND AND DUST	12.0	CATEGORY X (NOT TESTED)
FUNGUS	13.0	CATEGORY X (NOT TESTED)
SALT SPRAY	14.0	CATEGORY X (NOT TESTED)
MAGNETIC EFFECT	15.0	CATEGORY A
POWER INPUT	16.0	CATEGORIES B
VOLTAGE SPIKE	17.0	CATEGORIES A/B
AUDIO FREQ COND SUSCEPT	18.0	CATEGORIES B
INDUCED SIGNAL SUSCEPTIBILITY	19.0	CATEGORY A
RADIO FREQUENCY SUSCEPTIBILITY	20.0	CATEGORY T
RADIO FREQUENCY EMISSION	21.0	CATEGORY Z
LIGHTNING IND TRANS SUSCEPT	RTCA 160B	CATEGORY K
LIGHTNING DIRECT EFFECTS	23.0	CATEGORY X (NOT TESTED)
ICING	24.0	CATEGORY A

004-02024-4800
REVISION 0
PAGE 1 OF 2

KRC AUTHORIZED PRINT

(KPN 004-02024-4800)

RTCA/DO-160C
ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KS 271B Servo Actuator
PART NUMBER:	065-00173-0100,0400,0500
TSO NUMBER:	C9c
MANUFACTURER'S SPECIFICATION:	004-002025-0000
MANUFACTURER:	AlliedSignal Avionics Inc. A wholly-owned subsidiary of AlliedSignal Inc.
MANUFACTURER'S ADDRESS:	400 N. ROGERS ROAD OLATHE, KANSAS 66062, USA

CONDITIONS	SECTION	CONDUCTED TESTS	
TEMPERATURE AND ALTITUDE	4.0	CATEGORIES	A2/F2
INFLIGHT COOLING LOSS	4.5	CATEGORY	X (NOT TESTED)
TEMPERATURE VARIATION	5.0	CATEGORY	B
HUMIDITY	6.0	CATEGORY	A
SHOCK	7.0	OPERATIONAL SHOCK, CRASH SAFETY	
VIBRATION	8.0	CATEGORIES	L/M
EXPLOSION	9.0	CATEGORY	E1
WATERPROOFNESS	10.0	CATEGORY	X (NOT TESTED)
FLUID SUSCEPTIBILITY	11.0	CATEGORY	X (NOT TESTED)
SAND AND DUST	12.0	CATEGORY	X (NOT TESTED)
FUNGUS	13.0	CATEGORY	X (NOT TESTED)
SALT SPRAY	14.0	CATEGORY	X (NOT TESTED)
MAGNETIC EFFECT	15.0	CATEGORY	A
POWER INPUT	16.0	CATEGORIES	B
VOLTAGE SPIKE	17.0	CATEGORIES	A/B
AUDIO FREQ COND SUSCEPT	18.0	CATEGORIES	B
INDUCED SIGNAL SUSCEPTIBILITY	19.0	CATEGORY	A
RADIO FREQUENCY SUSCEPTIBILITY	20.0	CATEGORY	T
RADIO FREQUENCY EMISSION	21.0	CATEGORY	Z
LIGHTNING IND TRANS SUSCEPT	RTCA 160B	CATEGORY	K
LIGHTNING DIRECT EFFECTS	23.0	CATEGORY	X (NOT TESTED)
ICING	24.0	CATEGORY	A

004-02025-4800
REVISION 0
PAGE 1 OF 2

KRC AUTHORIZED PRINT

(KPN 004-02025-4800)

RTCA/DO-160C
ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE:	KS 272B Servo Actuator
PART NUMBER:	065-00174-0600,1300,2700
TSO NUMBER:	C9c
MANUFACTURER'S SPECIFICATION:	004-02023-0000
MANUFACTURER:	AlliedSignal Avionics Inc. A wholly-owned subsidiary of AlliedSignal Inc.
MANUFACTURER'S ADDRESS:	400 N. ROGERS ROAD OLATHE, KANSAS 66062, USA

CONDITIONS	SECTION	CONDUCTED TESTS
TEMPERATURE AND ALTITUDE	4.0	CATEGORIES A2/F2
INFLIGHT COOLING LOSS	4.5	CATEGORY X (NOT TESTED)
TEMPERATURE VARIATION	5.0	CATEGORY B
HUMIDITY	6.0	CATEGORY A
SHOCK	7.0	OPERATIONAL SHOCK, CRASH SAFETY
VIBRATION	8.0	CATEGORIES L/M
EXPLOSION	9.0	CATEGORY E1
WATERPROOFNESS	10.0	CATEGORY X (NOT TESTED)
FLUID SUSCEPTIBILITY	11.0	CATEGORY X (NOT TESTED)
SAND AND DUST	12.0	CATEGORY X (NOT TESTED)
FUNGUS	13.0	CATEGORY X (NOT TESTED)
SALT SPRAY	14.0	CATEGORY X (NOT TESTED)
MAGNETIC EFFECT	15.0	CATEGORY A
POWER INPUT	16.0	CATEGORIES B
VOLTAGE SPIKE	17.0	CATEGORIES A/B
AUDIO FREQ COND SUSCEPT	18.0	CATEGORIES B
INDUCED SIGNAL SUSCEPTIBILITY	19.0	CATEGORY A
RADIO FREQUENCY SUSCEPTIBILITY	20.0	CATEGORY T
RADIO FREQUENCY EMISSION	21.0	CATEGORY Z
LIGHTNING IND TRANS SUSCEPT	RTCA 160B	CATEGORY K
LIGHTNING DIRECT EFFECTS	23.0	CATEGORY X (NOT TESTED)
ICING	24.0	CATEGORY A

004-02023-4800
REVISION 0
PAGE 1 OF 2

KRC AUTHORIZED PRINT

(KPN 004-02023-4800)