Honeywell

MAINTENANCE MANUAL

BENDIX/KING®

KS 271C

SERVO

MANUAL NUMBER 006-15647-0001
REVISION 1 OCT, 2005

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REVISION HISTORY

MANUAL: KS 271C SERVO

REVISION: 1, October 2005

PART NUMBER: 006-15647-0001

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

ITEM	ACTION
Full Reprint	Replaces all previous revisions.

Revision highlights include the following:

- Updated Speed Characteristics Test for the -0100 version and Cessna 182T.
- Updated
- Item 6.5 FINAL ASSEMBLY BILL OF MATERIAL 065-00179-XXXX.
- Figure 6-10 SERVO BOARD SCHEMATIC 002-09835-0000
- Figure 6-13 SERVO BOARD SCHEMATIC 002-09656-02
- Figure 6-14 SERVO BOARD ASSEMBLY DWG 300-09087-0000
- Figure 6-15 SERVO BOARD ASSEMBLY SCHEMATIC 002-09087-0000
- Item 6.15 SERVO BOARD BILL OF MATERIAL 200-09366-XXXX
- Figure 6-18 SERVO BOARD ASSEMBLY SCHEMATIC 002-09366-0000

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4.1 GENERAL

The KS 271C Primary Servo is used in the Roll and Yaw axies to provide AFCS control of the aircraft ailerons and rudder. It contains a servo motor with amplifier and an engage clutch solenoid.

The Roll Servo is installed with a KM 275 servo mount, which contains a slip clutch for pilot override. The servo receives a differential command input and drives the servo motor with a speed proportional to the magnitude of the command. The command polarity will determine direction of the servo rotation. The command inputs have an impedance of at least 15K ohms. The interface is designed such that an open command signal will not cause a servo drive of more than 25% of full-scale speed.

The Roll Servo also contains a validity circuit which compares the motor voltage against the servo command. The servo actuator outputs a open/ground discrete signal, where ground represents a valid servo. If the comparison fails, the servo outputs an invalid (open) signal to the FCC.

The -0600 version Servo is used in Yaw installations. This version uses motor voltage feedback to replace the tachometer used for speed control in other versions. This reduces the force required to backdrive the Servo, allowing the rudder to streamline in the absence of Yaw damper commands.

NOTE

Removing power to the servo (e.g. by pressing the AP DISC switch) will also cause the servo to be sensed as invalid.

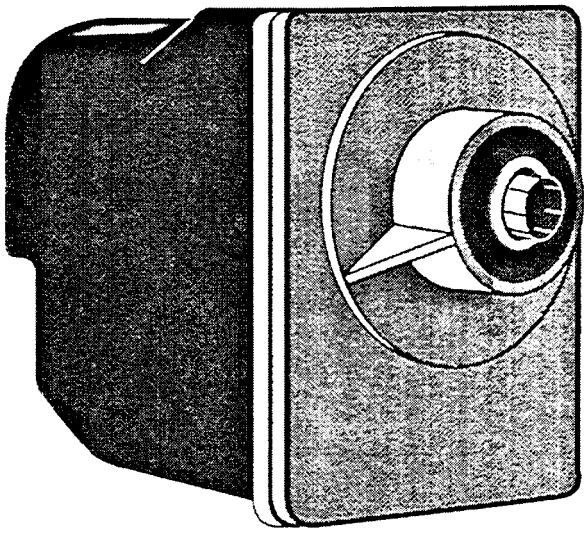

FIGURE 4-1 KS 271C Primary Servo

4.2 UNIT INTERFACE DESCRIPTION

4.2.1 ROLL SERVO INTERFACE TO THE KC 225

PIN	DESCRIPTION
P2251-1	ROLL_CLUTCH
P2251-5	ROLL_SERVO_VALID
P2251-17	ROLL_SERVO_CMD+
P2251-18	ROLL_SERVO_CMD_REF

TABLE 4-1 ROLL SERVO INTERFACE

The KS 271C Roll Servo consists of the following interfaces: a clutch high-side and a clutch low-side input, a command high and a command low input. These interfaces are similar to the equivalent interfaces for the Pitch Servo. When ROLL_SERVO_VALID is invalid the KC 225 locks out operation of the Pitch and Roll axes.

4.2.2 YAW SERVO INTERFACE TO THE KC 225

PIN	DESCRIPTION
P2252-13	YAW_CLUTCH
P2252-53	YAW_SERVO_VALID
P2252-54	YAW_SERVO_CMD+
P2252-55	YAW_SERVO_CMD_REF

TABLE 4-2 YAW SERVO INTERFACE

The KS 271C Yaw Servo consists of the following interfaces: a clutch high-side and a clutch low-side input, a command high and a command low input. These interfaces are similar to the equivalent interfaces for the Pitch Servo with the following exceptions. In the case of the Pitch and Roll command outputs, the processor in the KC 225 directly commands the servos. In the case of the Yaw command, the processor can only set the gain for the command. The actual command itself is generated from high passing the Yaw Rate signal with a small crossfeed term from the Roll Attitude. When YAW_SERVO_VALID is invalid the KC 225 locks out operation of the Yaw axis.

The ROLL_CLUTCH or YAW_CLUTCH signal from the FCC is wired to the low side of the servo engage clutch solenoid. The high side of the clutch is wired to the aircraft power through the AP DISC switch. When the clutch is disengaged by the FCC, there should be 28 V on the low side clutch (assuming AP DISC switch is not pressed). When the clutch is engaged, there should be >0.1 V and <2.5 V on the low side of the clutch. If AP DISC is pressed, 28 V is removed from the clutch solenoid and the clutch will disengage. When the low-side clutch engage transistor in the FCC is turned on, the current flowing in the solenoid (nominally 600mA @ 28 v or 1.2 A @ 14 V) is monitored to determine that the solenoid is working correctly during pre-flight test. These outputs begin to go into foldback current-limiting around 1.8 A. The FCC clutch output can be engaged or disengaged through the diagnostic pages. When the Pitch Clutch output is turned on (using the DISCRETE OUTPUTS page), the Pitch Clutch Engage discrete input (which can be viewed on the DISCRETE INPUT STATUS diagnostic page) should also be turned on. If the clutch engaged bit is not turned on when the clutch output is set, verify that power is supplied to the servo (e.g. AP DISC is not pressed) and the hardware monitors are not tripped. If a hardware monitor has failed, the clutch outputs associated with that monitor will not be able to be engaged. (The hardware monitor status can be viewed through the diagnostic pages.)

The ROLL_CMD or YAW_CMD outputs from the Flight Computer supply the servo command outputs to the KS 271C. The command high and low (REF) signals form a differential input that is used to drive the servomotor via the internal servo amplifier.

The command high input is a + or - 10 V signal (through a 2Kohm series resistor) generated by the Flight Computer. The command low input is a reference back to the internal Flight Computer ground, isolated through a 2Kohm series resistor. The value of the output signal determines how fast the servo is driven. Anything greater than +/- 9 volts will command full speed servo movement. The servo can be commanded to drive in either direction through the ANALOG OUTPUTS diagnostic interface.

NOTE

To be able to move the controls, the servo clutch must be engaged.

The ROLL_SERVO_VALID or YAW_SERVO_VALID signal from the KS 271C is used by the Flight Computer to determine if the pitch servo is working properly. If this output is at ground, the pitch servo is valid. If this output is open, the pitch servo is invalid. This output is routed to the Flight Computer 225 discrete input ROLL_SERVO_VALID or YAW_SERVO_VALID. When it is invalid, the Flight Computer locks out operation of the pitch and roll axies.

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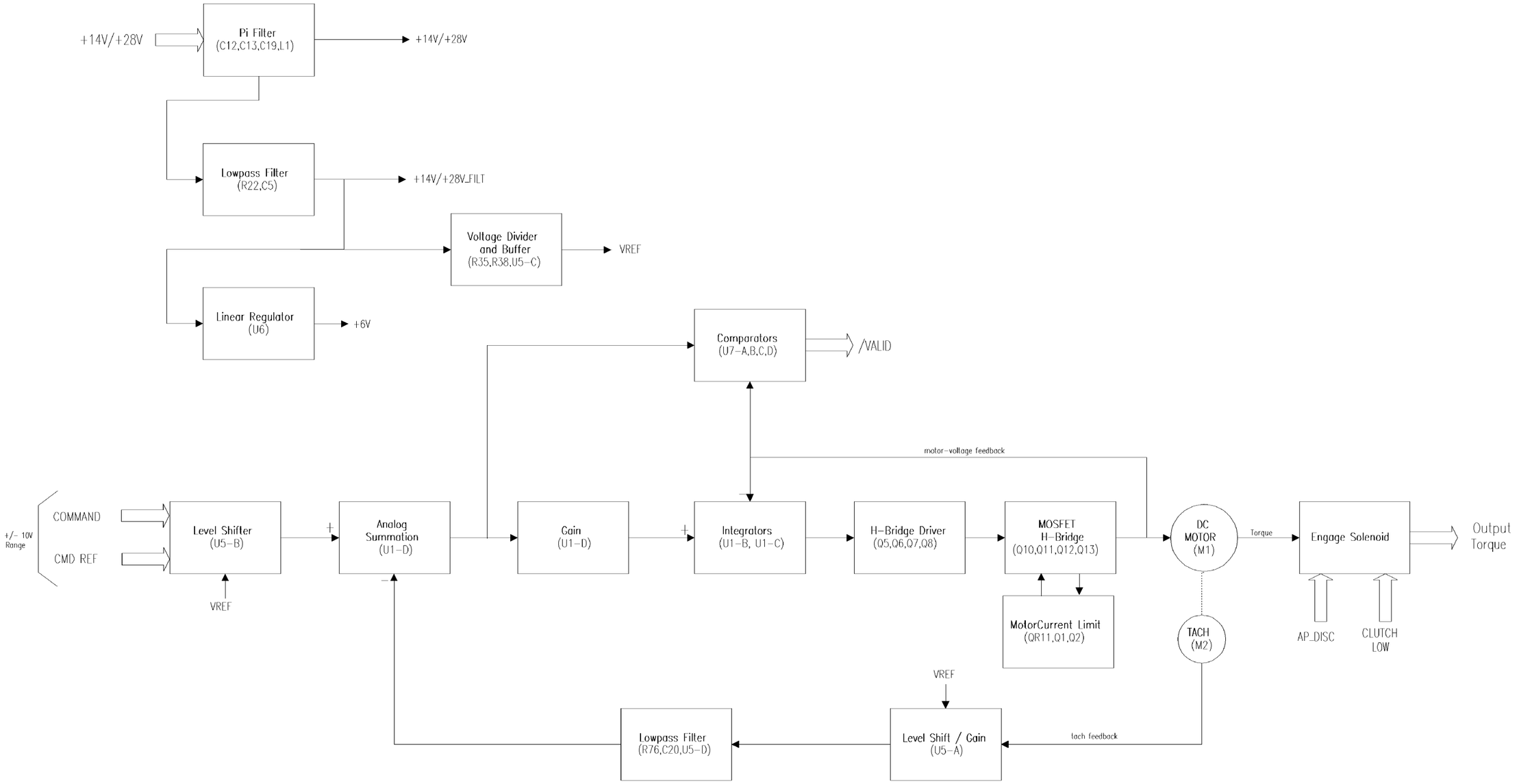

Note: The KS 271C Primary Servo currently operates only with +28VDC input power. The +14V/28V labeling used in the KS 271C documentation is to facilitate future version releases that may operate from +14V.

FIGURE 4-1 KS 271C Block Diagram
(Sheet 1 of 1)

SECTION V
MAINTENANCE

5.1 INTRODUCTION

The maintenance section contains test and alignment procedures for an operational KS 271C Roll and Yaw Servo Actuator PN 065-00179-XX00. This section also contains troubleshooting and assembly/disassembly Procedures. Before maintenance is attempted it is advisable to have a thorough understanding of the theory of operation of the unit.

5.2 TEST AND ALIGNMENT

5.2.1 STANDARD TEST CONDITIONS

Unless otherwise specified, all tests shall be made at an ambient room temperature of +25° ± 5° C with a relative humidity not to exceed 80%. No warm up is required. All tests shall be made with the cover on and the chassis at ground potential. Power input shall be at +27.5 ± 0.5 VDC.

Null adjustments, gain adjustments and mechanical adjustments are to be calibrated as per 5.2.4 with the unit cover removed.

All testing throughout 5.2.5 is to be performed with the unit cover in place.

Unless otherwise stated, all voltages are referenced to the POWER GND pin P101-C.

All tests marked with an asterisk are to be performed on all units. Tests not marked with an asterisk may be performed at the discretion of Test Engineering.

5.2.2 TEST EQUIPMENT REQUIRED

This section contains information on special tools, fixtures and test equipment used to test, troubleshoot and repair KS 271C Roll and Yaw Servo Actuator.

The following is a listing of the test equipment required to perform the testing and troubleshooting procedures described in this manual. Equipment other than that listed can be substituted if the characteristics fulfill those required.

EQUIPMENT	CHARACTERISTICS
Servo Test Set	CA-310 From Capital Avionics
Servo Test Cable	CAB-310-1 From Capital Avionics
Power Supply	+28VDC @ 3A
Force Gauge or Torque Wrench	Dillon Type A or equivalent/ Torque Wrench TE12A or equivalent can be used with test stand below.
BENDIX/KING Test Stand	PN 071-06028-0000
KM 275 Servo Mount	PN 065-00030-0000
Power Supply	28 VDC, 3 Amp.
Stop Watch	
2 Digital Multimeters	Fluke 8000A or equivalent
Storage Scope	Tektronic 350 or equivalent

EQUIPMENT	CHARACTERISTICS
Torque Screwdriver	22.5 in-lbs.
Torque Wrench	1.5 in-oz.

TABLE 5-1 REQUIRED TEST EQUIPMENT

5.2.3 TEST EQUIPMENT (OPTIONAL)

The following is a listing of optional equipment which enhance the testing and repair of the KS 271C Roll and Yaw Servo Actuator.

EQUIPMENT	CHARACTERISTICS
KTS Torque Sensing Unit	KPN 300-09812-0000

TABLE 5-2 OPTIONAL TEST EQUIPMENT

5.2.4 TESTING AND TROUBLESHOOTING

This section of the manual contains instructions for functional testing, troubleshooting and aligning the KS 271C Roll and Yaw Servo Actuator. The functional test is a cover-on test performed to determine the operational status of the KS 271C. The alignment procedures are used after a misalignment has been isolated during troubleshooting or a module or component has been replaced that requires alignment.

CAUTION

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

NOTE

ALL TESTS WITH * MUST BE PERFORMED.
ALL OTHER TESTS ARE AT THE DISCRETION OF THE TESTING FACILITY.

5.2.5 PRE-TEST ADJUSTMENTS

The unit cover must be removed to complete the following adjustments:

5.2.5.1 Test Panel Setup

Refer to FIGURE 5-1 TEST PANEL SETUP.

A. Connect test cable to rear of test panel.

B. Connect +28VDC power rear to test panel.

C. Connect DVM test leads to the Red and Black jacks on the front of panel.

Turn on DVM and select Resistance Mode.

(1) PANEL POWER to ON position

(2) UNIT POWER to the OFF position.

(3) MANUAL TRIM SHORT A-C/OPEN TOGGLE to the OFF position.

(4) SERVO CLUTCH POWER ON/OFF TOGGLE to the OFF position.

(5) CAPSTAN DRIVE ON/OFF TOGGLE to the OFF position.

(6) VLDTST HI/NORM/VLDTST LO TOGGLE to the NORMAL position.

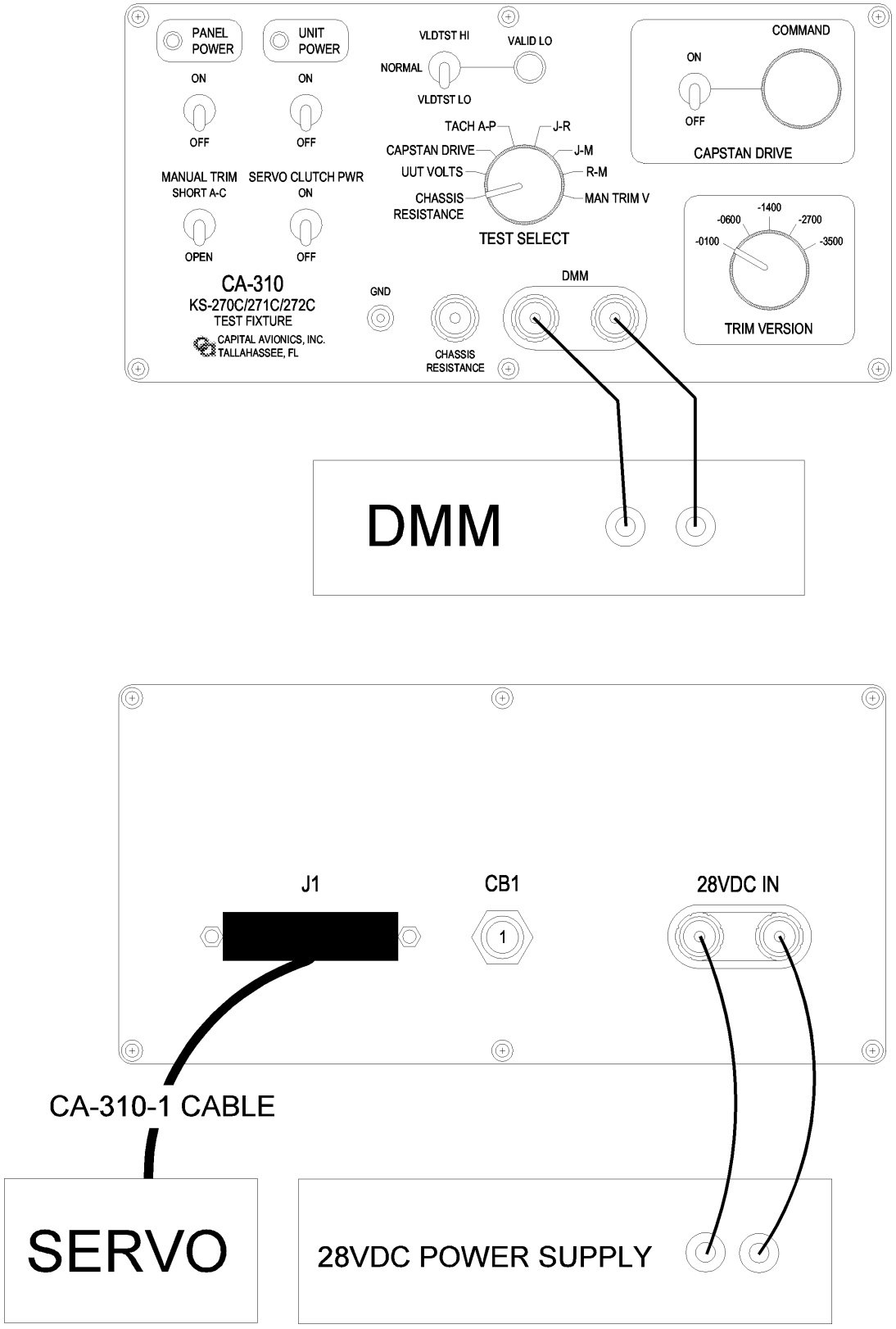

FIGURE 5-1 TEST PANEL SETUP
(Sheet 1 of 1)

5.2.5.2 Pre Test Adjustments

A. *Solenoid Adjustment

With the KS 271C mounted to a KM 275 engage the clutch by turning on the SERVO CLUTCH POWER switch.

The outer pinion gear should be able to rotate 1/4 of a degree. This can be measured by aligning an edge of a gear tooth on the large gear on the pinion gear shaft by line of sight and rotating the pinion gear back and forth. The large gear should rotate between 1/4 and 1 gear tooth width and show evidence that there is clearance between the intermediate clutch gear and the large gear on the pinion gear shaft to be acceptable. If the rotation is greater than this or if there is no backlash at all, the solenoid can be adjusted using the three screws which hold it in place. Inspect the alignment of the plunger going into the solenoid to insure that binding does not occur during engagement or disengagement of the clutch. Torque solenoid screws to 22.5 in-lbs $\pm$ 3 in-lbs. after alignment is complete.

Disengage the servo clutch buy turning off the SERVO CLUTCH POWER.

B. *Roll/Yaw Servo Null Adjust

Connect secondary DMM to TP3 and TP4.

Turn on the SERVO CLUTCH POWER.

Select CAPSTAN DRIVE on the TEST SELECT knob. Adjust CAPSTAN DRIVE to 0 VDC on the primary DMM. Turn on the CAPSTAN DRIVE. Measure the voltage between TP3 and TP4 and Adjust R78 for a voltage reading of 0V $\pm$ 0.15 V. the servo motor should not rotate.

Turn off CAPSTAN DRIVE. Apply glyptal to R78.

C. *Thermistor Test (-0600 version only, Mod 6 and above)

Turn Off PANEL POWER and UNIT POWER.

With Servo at room temperature (approximately 25°C) and with no power to the unit, measure the resistance of the Thermistor (Pin 1 and 2 on J2). The resistance should be 10Kohms ± 2Kohms. Raise the temperature of the Motor. The resistance of the Thermistor must decrease as the temperature of the Motor increases.

D. *Tach Time Constant

(For units with 200-09087-0000 PC Board)

(1) Turn on PANEL POWER and UNIT POWER.

(2) Select CAPSTAN DRIVE on the TEST SELECT knob.

(3) Adjust the CAPSTAN DRIVE to 10 v ± 0.2 v.

(4) Select TACH A-P and connect a storage scope to the DMM jacks.

(5) Turn on the CAPSTAN DRIVE and verify the tach time constant is 520 msec ± 15%. A sample measurement is shown in FIGURE 5-2 TACH TIME CONSTANT.

(6) Turn off CAPSTAN DRIVE.

(For units with 200-09366-0X00 and 300-09656-050X PC Board)

(1) Turn on PANEL POWER and UNIT POWER.

(2) Select CAPSTAN DRIVE on the TEST SELECT knob.

(3) Adjust the CAPSTAN DRIVE to 10 v ± 0.2 v.

(4) Select TACH A-P and connect a storage scope to TP5 with respect to TP3.

(5) Turn on the CAPSTAN DRIVE and verify the tach time constant is 520 msec ± 15%. A sample measurement is shown in FIGURE 5-2 TACH TIME CONSTANT.

(6) Turn off CAPSTAN DRIVE.

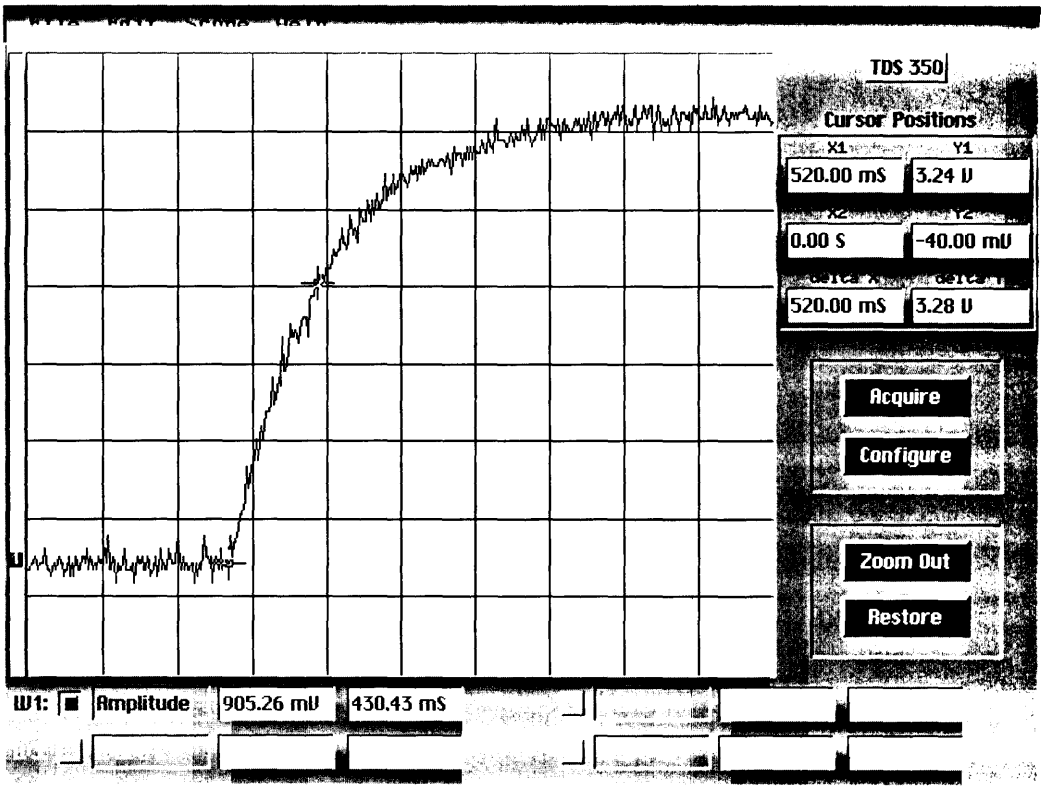

FIGURE 5-2 TACH TIME CONSTANT

E. *Voltage Feedback Scale Factor (-0600 Version Only)

Connect the secondary DMM to TP5 with respect to TP3.

With the KS 271C mounted on a KM 275 turn on the SERVO CLUTCH PWR. The solenoid should engage without hesitation.

CW

Select CAPSTAN DRIVE and adjust the CAPSTAN DRIVE to +8.0V ± .25V on the primary DMM.

Switch CAPSTAN DRIVE on.

The Capstan should rotate clockwise. Measure the time for one revolution of the Capstan and record the Tach Voltage from the secondary DMM. Apply this measured time (in seconds) to the -0600 version in TABLE 5-5 TACH SCALE FACTOR and verify the Tach Voltage is within tolerance.

Turn off the CAPSTAN DRIVE.

The Tach voltage should return to zero.

CCW

Adjust the CAPSTAN DRIVE to -8.0V ± .25V on the primary DMM.

Switch CAPSTAN DRIVE on.

The Capstan should rotate clockwise. Measure the time for one revolution of the Capstan and record the Tach Voltage from the secondary DMM. Apply this measured time (in seconds) to the -0600 version in TABLE 5-5 TACH SCALE FACTOR and verify the Tach Voltage is within tolerance.

Turn off the CAPSTAN DRIVE.

The Tach voltage should return to zero.

Turn off the SERVO CLUTCH PWR.

F. *Pinion Gear Shaft Alignment

Adjust the alignment between the servo subplate and the baseplate so that the output pinion gear spins freely. Torque up to 1.5 in-oz max is permissible.

5.2.6 MINIMUM PERFORMANCE TESTS

The unit cover must be in place to complete the following tests:

5.2.6.1 *Ohm Meter Measurements

A. Connect the UUT to the Test Cable and connect a lead from the CHASSIS RESISTANCE Banana Jack on the Test Panel to the UUT Chassis.

B. Configure the DMM for measuring Resistance.

Select "CHASSIS RESISTANCE" with the TEST SELECT knob.

C. The reading on the DMM must be NMT 2 Ohm.

IF OK, MARK SO ON THE DATA SHEET.

D. Remove ground lead from UUT Chassis.

5.2.6.2 External Strapping Test

A. Set the TEST SELECT switch to "UUT VOLTS".

B. Turn UNIT POWER "ON".

C. Set the SERVO CLUTCH PWR ON/OFF switch to "ON".

D. Adjust the POWER SUPPLY VOLTAGE for +27.5 ± 0.5V VDC as read on the DMM.

E. Switch the SERVO CLUTCH PWR switch to "ON" and "OFF" several times ensuring the Solenoid engages and disengages smoothly and without hesitation.

IF OK, MARK SO ON THE DATA SHEET.

5.2.6.3. *Solenoid Engage

A. Set the SERVO CLUTCH PWR ON/OFF switch to the "ON" position.

B. Adjust the POWER SUPPLY for no more than +20.5 ±0.1VDC as read on the DMM.

C. Turn the UUT on its left side so that the Solenoid is pulling against gravity. NOTE: Gear and pin are horizontal, facing forward, and above centerline.

D. Switch the SERVO CLUTCH PWR switch to "ON" and "OFF" several times ensuring the Solenoid engages and disengages smoothly and without hesitation.

IF OK, MARK SO ON THE DATA SHEET.

E. Return the SERVO CLUTCH PWR ON/OFF switch to the "OFF" position.

F. Readjust the POWER SUPPLY for 27.5 ± 0.5 VDC.

5.2.6.4. *Motor Breakout and Direction

(For all versions except -0600)

A. Ensure the SERVO CLUTCH PWR ON/OFF switch is set to the "OFF" position.

B. Attach Torque Wrench set for 1.5in/lbs to the Pinion Gear. Verify the Pinion Gear rotates freely. Tolerance is 1.5 in/lbs max. Remove Torque Wrench.

C. Set the SERVO CLUTCH PWR ON/OFF switch to "ON" position.

D. Set the TEST SELECT switch to the "CAPSTAN DRIVE" position.

E. Turn the UNIT POWER switch to "ON" and adjust the CAPSTAN DRIVE COMMAND potentiometer for +0.20 VDC on DMM.

F. Set the TEST SELECT switch to the "TACH A-P" position. Note Voltage on DMM.

G. Turn the CAPSTAN DRIVE ON/OFF switch to the "ON" position.

(1) The TACH VOLTAGE shall increase positive within 10 seconds.

(2) Verify CCW rotation of the pinion gear for a minimum of one (1) full rotation.

IF OK, MARK SO ON THE DATA SHEET.

H. Return the CAPSTAN DRIVE ON/OFF switch to the "OFF" position.

I. Set the TEST SELECT switch to the "CAPSTAN DRIVE" position, and adjust the CAPSTAN DRIVE COMMAND potentiometer for -0.20 Vdc on DMM.

J. Turn the CAPSTAN DRIVE switch to the "ON" position.

(1) The TACH VOLTAGE shall increase negative within 10 seconds.

(2) Verify CW rotation of the pinion gear for a minimum of one (1) full rotation.

IF OK, MARK SO ON THE DATA SHEET.

K. Return the CAPSTAN DRIVE switch to the "OFF" position. Return the SERVO CLUTCH PWR switch to the "OFF" position.

(For -0600 versions only)

A. Ensure the SERVO CLUTCH PWR ON/OFF switch is set to the "OFF" position.

B. Attach Torque Wrench set for 1.5in/lbs to the Pinion Gear. Verify the Pinion Gear rotates freely. Tolerance is 1.5in/lbs max. Remove Torque Wrench.

C. Set the SERVO CLUTCH PWR ON/OFF switch to "ON" position.

D. Set the TEST SELECT switch to the "CAPSTAN DRIVE" position.

E. Turn the UNIT POWER switch to "ON" and adjust the CAPSTAN DRIVE COMMAND potentiometer for +0.30 VDC on DMM.

F. Turn the CAPSTAN DRIVE ON/OFF switch to the "ON" position.

Verify CCW rotation of the pinion gear within 10 seconds.

IF OK, MARK SO ON THE DATA SHEET

G. Return the CAPSTAN DRIVE ON/OFF switch to the "OFF" position.

H. Set the TEST SELECT switch to the "CAPSTAN DRIVE" position, and adjust the CAPSTAN DRIVE COMMAND potentiometer for -0.30 Vdc on DMM.

I. Turn the CAPSTAN DRIVE switch to the "ON" position.

Verify CW rotation of the pinion gear within 10 seconds.

IF OK, MARK SO ON THE DATA SHEET

J. Return the CAPSTAN DRIVE switch to the "OFF" position. Return the SERVO CLUTCH PWR switch to the "OFF" position

5.2.6.5. *Speed Characteristics and Phasing and Tach Scale Factor

A. Mount the KS 271C to a KM 275. Refer to FIGURE 5-4 TEST STAND SETUP.

CAUTION

WHEN MOUNTING THE KS 271C AND KM 275 ON THE TEST STAND, TIGHTEN ALL MOUNTING BOLTS SECURELY. DO NOT LEAVE BOLTS LOOSE FOR IT WILL RESULT IN THE BREAKAGE OF THE GUIDE PIN ON THE KS 271C FRONT PLATE.

NOTE

When Testing At - 55° C, The Motor Must Start Rotating Within 10 Sec. After A 30 Sec. Warm Up Period, The Capstan Must Obtain 75% Of The Speed That Is Specified In TABLE 5-3 SPEED CHARACTERISTICS.

B. Set the SERVO CLUTCH PWR switch to the "ON" position.

The solenoid should engage without hesitation.

C. Set the TEST SELECT switch to "CAPSTAN DRIVE".

D. Adjust the CAPSTAN DRIVE COMMAND potentiometer for -8.0 ± 0.25 VDC on DMM

E. Set the TEST SELECT switch to "TACH A-P".

F. Set the CAPSTAN DRIVE switch to the "ON" position

Check for a CCW rotation of the CAPSTAN and a negative reading on the DMM.

IF OK, MARK SO ON DATA SHEET.

NOTE

DMM Reading for all flavors
EXCEPT
-0600 flavor units.

G. Time the CAPSTAN for the number of revolutions as specified in TABLE 5-3 SPEED CHARACTERISTICS.

IF OK, MARK SO ON THE DATA SHEET. -0100 VERSIONS NOTE TIME.

KS 271C Version	Number of Revolutions	Time (Secs.)
-0100	1	14.5 to 19.5
-0100 IN CESSNA 182T	1	17-18
-0200	1	11 to 15
-0300	1	43.5 to 58.5
-0400, -0600	5	17 to 23
-0500	1	21 to 29

TABLE 5-3 SPEED CHARACTERISTICS

H. See TABLE 5-5 TACH SCALE FACTOR for the absolute TACH output voltage requirement based on the time determined above.

IF OK, MARK SO ON THE DATA SHEET.

NOTE
DMM Reading for all flavors
EXCEPT
-0600 flavor units.

I. Set the TEST SELECT switch to "CAPSTAN DRIVE".

J. Adjust the CAPSTAN DRIVE COMMAND potentiometer for -4.0 ± 0.10 VDC on DMM.

K. Set the TEST SELECT switch to "TACH A-P".

Time the capstan for the number of revolutions as specified in step G above. The time and tolerance for the specific number of revolutions shall double.

IF OK, MARK SO ON THE DATA SHEET.

L. Set the CAPSTAN DRIVE ON/OFF switch to the ""OFF" position.

The DMM reading shall return to 0.0 ± 0.1 VDC.

IF OK, MARK SO ON THE DATA SHEET.

NOTE
DMM Reading for all flavors
EXCEPT
-0600 flavor units.

M. Set the TEST SELECT switch to "CAPSTAN DRIVE" position.

N. Adjust the CAPSTAN DRIVE COMMAND potentiometer for +8.0 ± 0.25 VDC on DMM.

O. Set the TEST SELECT switch to "TACH A-P".

P. Set the CAPSTAN DRIVE ON/OFF switch to the "ON" position.

Check for CW rotation of the CAPSTAN and a positive reading on the DMM.

IF OK, MARK SO ON THE DATA SHEET.

NOTE
DMM Reading for all flavors
EXCEPT
-0600 flavor units.

Q. Time the CAPSTAN for the number of revolutions as specified in TABLE 5-3 SPEED CHARACTERISTICS.

IF OK, MARK SO ON THE DATA SHEET. -0100 VERSIONS NOTE TIME.

R. See TABLE 5-5 TACH SCALE FACTOR for the absolute TACH voltage requirement based on the time determined above.

IF OK, MARK SO ON THE DATA SHEET.

NOTE
DMM Reading for all flavors
EXCEPT
-0600 flavor units.

S. Set the TEST SELECT switch to "CAPSTAN DRIVE" and adjust the CAPSTAN DRIVE COMMAND potentiometer for +4.0 ± 0.10 VDC on DMM.

Set the TEST SELECT switch to "TACH A-P".

T. Time the CAPSTAN for the number of revolutions as specified in TABLE 5-3 SPEED CHARACTERISTICS. The time and tolerance for the specific number of revolutions shall double.

IF OK, MARK SO ON THE DATA SHEET.

U. Set the CAPSTAN DRIVE ON/OFF switch to the "OFF" position.

The DMM reading shall return to 0.0 ± 0.1 VDC.

IF OK, MARK SO ON THE DATA SHEET.

NOTE
DMM Reading for all flavors
EXCEPT
-0600 flavor units.

V. Return the SERVO CLUTCH PWR switch to the "OFF" position.

W. -0100 Versions apply the following equation.

(Step G. Time + Step Q. Time)/2 should equal the values in TABLE 5-3 SPEED CHARACTERISTICS. If not change the values of both R46 and R47 per TABLE 5-4 CAPSTAN SPEED RESISTOR OPTIONS FOR -0100 UNITS. Refer to FIGURE 5-3 RESISTOR POSITIONS.

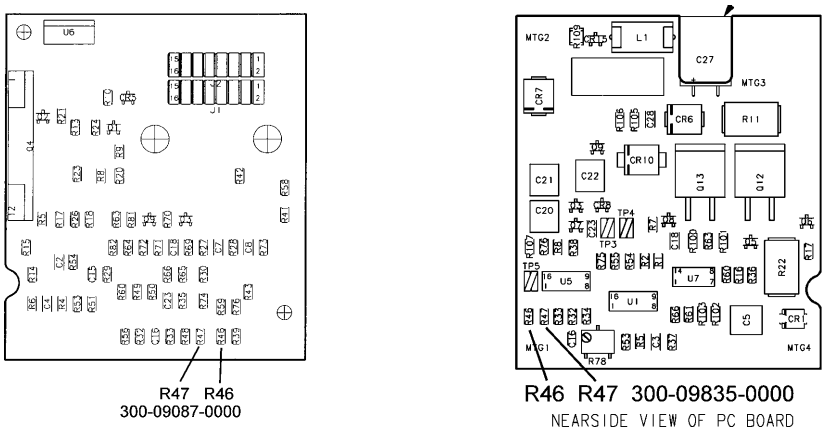

FIGURE 5-3 RESISTOR POSITIONS

Lower resistance values will make servo run slower.
Higher resistance values will make servo run faster.

VALUE	PART NUMBER
24.9K	139-02492-0000
25.5K	139-02552-0000
26.1K	139-02612-0000
27.4K	139-02742-0000
28.0K	139-02802-0000
28.7K	139-02872-0000
29.4K	139-02942-0000
30.1K	139-03012-0000
30.9K	139-03092-0000
31.6K	139-03162-0000

TABLE 5-4 CAPSTAN SPEED RESISTOR OPTIONS FOR -0100 UNITS

If resistor values are changed then retest from step A.

Version -0100	TACH VOLTAGE	
Sec for 1 Rev	Min	Max
14.5	4.51	6.10
15.0	4.35	5.89
15.5	4.21	5.70
16.0	4.08	5.52
16.5	3.96	5.36
17.0	3.84	5.20
17.5	3.73	5.05
18.0	3.63	4.91
18.5	3.53	4.78
19.0	3.44	4.65
19.5	3.35	4.53

TABLE 5-5 TACH SCALE FACTOR

Version -0200	TACH VOLTAGE	
Sec for 1 Rev	Min	Max
11	4.45	6.02
11.5	4.25	5.75
12	4.08	5.51
12.5	3.91	5.29
13	3.76	5.09
13.5	3.62	4.90
14	3.49	4.73
14.5	3.37	4.56
15	3.26	4.41

Version -0300	TACH VOLTAGE	
Sec for 1 Rev	Min	Max
43.5	4.43	6.00
44.2	4.36	5.90
44.9	4.30	5.81
45.6	4.23	5.72
46.3	4.17	5.64
47	4.10	5.55
47.5	4.06	5.49
48	4.02	5.44
48.5	3.98	5.38
49	3.94	5.33
49.5	3.90	5.27
50	3.86	5.22
50.5	3.82	5.17
51	3.78	5.12
51.5	3.75	5.07
52	3.71	5.02
52.5	3.67	4.97
53	3.64	4.92
53.5	3.61	4.88
54	3.57	4.83
54.5	3.54	4.79
55	3.51	4.74
55.5	3.48	4.70
56	3.44	4.66
56.5	3.41	4.62
57	3.38	4.58
57.5	3.35	4.54
58	3.33	4.50
58.5	3.30	4.46

Version -0400 and -0600	TACH VOLTAGE	
Sec for 5 Rev	Min	Max
17	4.83	6.53
17.5	4.69	6.34
18	4.56	6.17
18.5	4.44	6.00
19	4.32	5.84
19.5	4.21	5.69
20	4.10	5.55
20.5	4.00	5.42
21	3.91	5.29
21.5	3.82	5.16
22	3.73	5.05
22.5	3.65	4.93
23	3.57	4.83

Version -500	TACH VOLTAGE	
Sec for 1 Rev	Min	Max
21	4.63	6.26
21.5	4.52	6.12
22	4.42	5.98
22.5	4.32	5.85
23	4.23	5.72
23.5	4.14	5.60
24	4.05	5.48
24.5	3.97	5.37
25	3.89	5.26
25.5	3.81	5.16
26	3.74	5.06
26.5	3.67	4.96
27	3.60	4.87
27.5	3.54	4.78
28	3.47	4.70
28.5	3.41	4.62
29	3.35	4.54

5.2.6.6 *Valid Output

A. Set the TEST SELECT switch to the "CAPSTAN DRIVE" position.

B. Adjust CAPSTAN DRIVE COMMAND potentiometer for +3.5 ± 0.10 VDC on DMM.

C. Set the CAPSTAN DRIVE ON/OFF switch to "ON"

Verify the "VALID LO" led is illuminated.

IF OK, MARK SO ON THE DATA SHEET.

D. Set the VLDTST HI/NORM/VLDTST LO switch to the "VLDTST LO" position.

Verify "VALID LO" led is extinguished.

IF OK, MARK SO ON THE DATA SHEET.

E. Turn the CAPSTAN DRIVE ON/OFF switch to "OFF".

F. Set VLDTST HI/NORM/VLDTST LO switch back to "NORM".

G. Adjust CAPSTAN DRIVE COMMAND potentiometer for -3.5± 0.10 Vdc on DMM.

H. Set the CAPSTAN DRIVE ON/OFF switch to "ON".

Verify the "VALID LO" led is illuminated.

IF OK, MARK SO ON THE DATA SHEET

I. Set VLDTST HI/NORM/VLDTST LO switch to "HI".

Verify “VALID LO” led is extinguished.

IF OK, MARK SO ON THE DATA SHEET.

J. Turn the CAPSTAN DRIVE ON/OFF switch to "OFF".

K. Return the VLDTST HI/NOM/VLDTST HI/NORM/VLDTST TO "NORM"

5.2.6.7 *Torque Characteristics

Mount the KS 271C on a KM 275 and secure the two units in a test stand. Adjust the KM 275 clutch to slip at 80 lbs. nominal. Refer to FIGURE 5-4 TEST STAND SETUP.

NOTE

80 lbs. on a KM 275 capstan is equivalent to 70.6 in-lbs torque.

NOTE

When using a Dillon Force Gauge the capstan size conversion is Torque * 1.15 = Force

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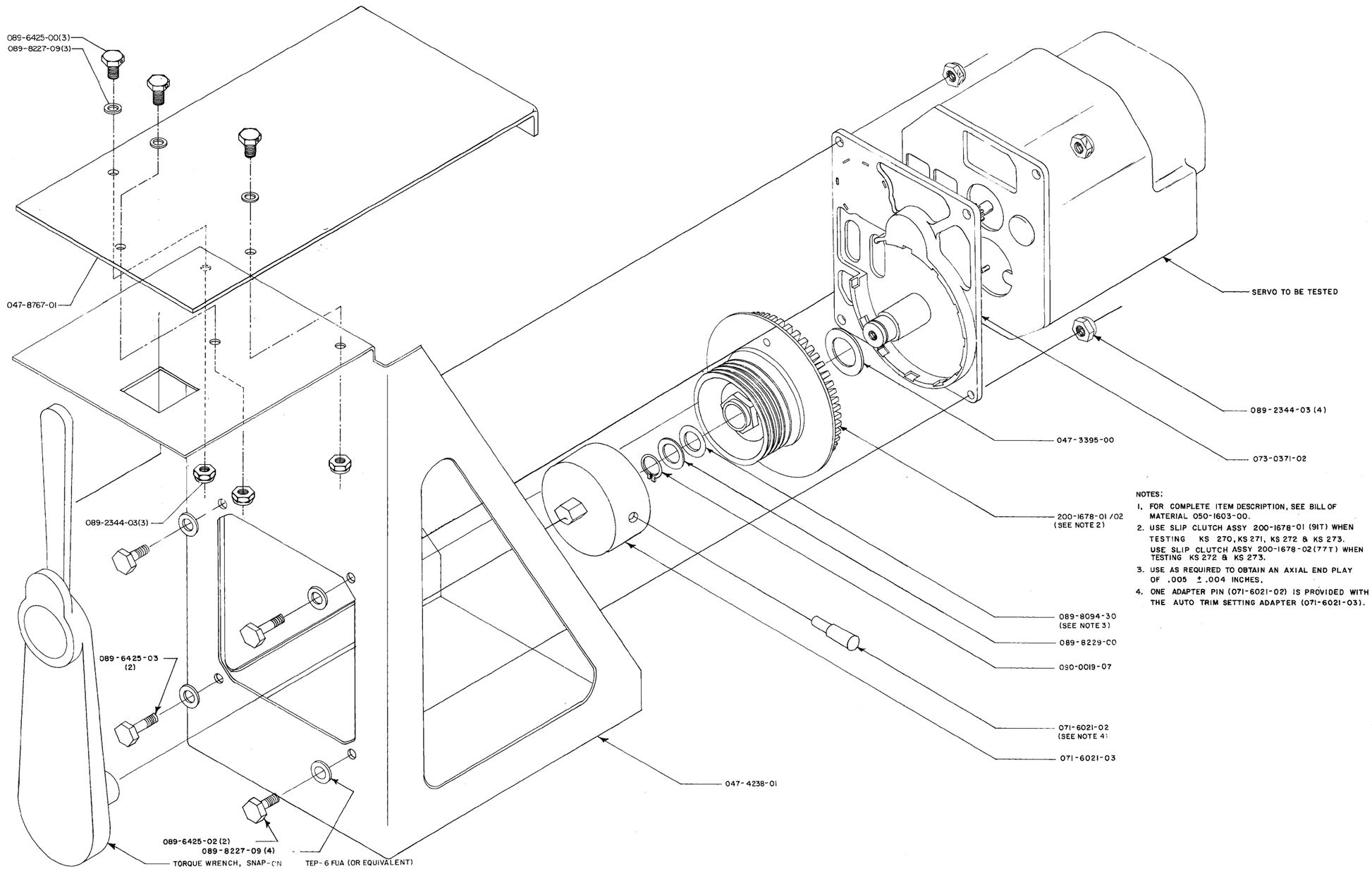


NOTES:

1. FOR COMPLETE ITEM DESCRIPTION, SEE BILL OF MATERIAL 050-1603-00.
2. USE SLIP CLUTCH ASSY 200-1678-01 (91T) WHEN TESTING KS 270, KS 271, KS 272 & KS 273. USE SLIP CLUTCH ASSY 200-1678-02(77T) WHEN TESTING KS 272 & KS 273.
3. USE AS REQUIRED TO OBTAIN AN AXIAL END PLAY OF .005 ± .004 INCHES.
4. ONE ADAPTER PIN (071-6021-02) IS PROVIDED WITH THE AUTO TRIM SETTING ADAPTER (071-6021-03).

FIGURE 5-4 TEST STAND SETUP
(Dwg No 300-02268-0000, Rev 2, Sheet 1 of 1)

5.2.6.7 Continued

CAUTION
DO NOT RUN THE SERVO IN A STALLED CONDITION. IF THE SERVO STOPS ROTATING, REMOVE POWER IMMEDIATELY.

B. Wrap the cable around the Clutch and secure to Load Cell or use Torque Wrench.
C. Clutch may be adjusted during test for nominal setting.
D. Set the TEST SELECT switch to "CAPSTAN DRIVE" position.
E. Adjust CAPSTAN DRIVE COMMAND potentiometer for +9.50 ± 0.3 Vdc on DMM.
F. Set the SERVO CLUTCH PWR switch to the "ON" position.

The solenoid should engage without hesitation.

G. Set the CAPSTAN DRIVE ON/OFF switch to "ON"
H. The CAPSTAN should start to turn CW.
I. When the Dillon reaches 80 ± 5 lbs. or torque wrench 70 in-lbs +/-4 or (60 ± 5 lbs. Dillon or 53 in-lbs +/-4 torque wrench for - 0600 flavors) without slipping out of engagement, set the SERVO CLUTCH PWR switch to "OFF".

The solenoid shall disengage within two (2) seconds.

IF OK, MARK SO ON THE DATA SHEET.

J. Set the CAPSTAN DRIVE ON/OFF switch to "OFF"
K. Set the SERVO CLUTCH PWR switch to the "ON" position.

The solenoid should engage without hesitation.

L. Adjust CAPSTAN DRIVE COMMAND potentiometer for -9.50 ± 0.3 Vdc on DMM.
M. Set the CAPSTAN DRIVE ON/OFF switch to "ON"
N. The CAPSTAN should start to turn CCW.

O. When the Dillon reaches 80 ± 5 lbs. or torque wrench 70 in-lbs +/-4 or (60 ± 5 lbs. Dillon or 53 in-lbs +/- 4 (torque wrench) for - 0600 flavors) without slipping out of engagement, set the SERVO CLUTCH PWR switch to "OFF".

The solenoid shall disengage within two (2) seconds.

IF OK, MARK SO ON THE DATA SHEET.

NOTE
(Does not apply for -0600 flavors)

If the Clutch slips out of engagement during the CCW CAPSTAN direction, install a clutch set to slip at 75 - 0/+ 5lbs (Dillon) or 66 in-lbs -0/+4 (torque wrench) and retest in the CCW CAPSTAN direction for at least 10 seconds.

The Clutch must not slip engagement and must disengage normally.

P. Set the SERVO CLUTCH PWR switch to the "OFF" position.

Q. Set the CAPSTAN DRIVE ON/OFF switch to the "OFF" position.

R. Remove the cable or torque wrench from the CAPSTAN.

5.2.6.8 POST PROCEDURE

A. Turn Unit Power Off

B. Turn Panel Power Off.

C. Disconnect the unit from the test cable.

D. Date and test stamp the Test Data Sheet.

E. Place plug cover (088-00578-0003) on the Tail Connector Assembly

5.2.7 TEST UNDER ENVIRONMENTAL CONDITIONS

The KS 271C Pitch Servo Actuator 065-00179-XX00 meets the DO-160C environmental categories identified in Environmental Qualifications Form 004-02038-4800.

A. High/Low Voltage Performance

The unit shall perform as described in 5.2.6 with variations in the DC power supplies from 20 V to 33V.

B. High/Low Temperature Performance

The unit shall perform as described in 5.2.6 under ambient temperature variations from - 55° to + 70° C, unless noted otherwise.

FINAL DATA SHEET FOR FLAVOR -0100
KS 271C

SERIAL #_____

ALL EQUIPMENT HAS CURRENT CALIBRATION _____ OK

Para Step	TEST DESCRIPTION	LIMITS	DATA
5.2.6.1	Ohm Meter Measurement		
C.		(NMT 2 ohms)	_____ OK
5.2.6.2	External Strapping Test		
E.	Input @ 27.5 ± 0.5 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.3	Solenoid Engage - Pulling against gravity		
D.	Input @ 20.5 ± 0.1 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.4	Motor Breakout and Direction		
G.2.	CW Input = NMT +0.20 Vdc	(Positive Tach Voltage)	_____ OK
J.2.	CCW Input = NMT -0.20 Vdc	(Negative Tach Voltage)	_____ OK
5.2.6.5	Speed Characteristics, Phasing & Tach Scale Factor		
F.	CCW Tach Output	(CCW Capstan & Neg Tach Voltage)	_____ OK
G.	CCW Speed -8 Vdc input	(14.5 to 19.5 Seconds)	_____ Sec
H.	CCW Tach Output Voltage	(See TABLE 5-5 TACH SCALE FACTOR)	_____ Vdc
K.	CCW Speed -4 Vdc input	(29 to 39 Seconds)	_____ Sec
L.	CCW Tach Output Voltage (OFF)	(-0.1 to +0.1 Vdc)	_____ OK
P.	CW Tach Output	(CW Capstan & Pos Tach Voltage)	_____ OK
Q.	CW Speed +8 Vdc input	(14.5 to 19.5 Seconds)	_____ Sec
R.	CW Tach Output Voltage	(See TABLE 5-5 TACH SCALE FACTOR)	_____ Vdc
T.	CW Speed +4 Vdc input	(29 to 39 Seconds)	_____ Sec
U.	CW Tach Output Voltage (OFF)	(-0.1 to + 0.1 Vdc)	_____ OK
5.2.6.6	Valid Output		
C.	CCW CAPSTAN DRIVE ON	(Valid-L "ON")	_____ OK
D.	VLDTST LO	(Valid-L "OFF")	_____ OK
H.	CW CAPSTAN DRIVE ON	(Valid-L “ON”)	_____ OK
I.	VLDTST HI	(Valid-L "OFF")	_____ OK
5.2.6.7	Torque Characteristics		
F.	CW	(Solenoid disengages)	_____OK
O.	CCW	(Solenoid disengages)	_____OK

TESTED BY:_____DATE:_____

FINAL DATA SHEET FOR FLAVOR -0200
KS 271C

SERIAL #_____

ALL EQUIPMENT HAS CURRENT CALIBRATION _____ OK

Para Step	TEST DESCRIPTION	LIMITS	DATA
5.2.6.1	Ohm Meter Measurement		
C.		(NMT 2 ohms)	_____ OK
5.2.6.2	External Strapping Test		
E.	Input @ 27.5 ± 0.5 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.3	Solenoid Engage - Pulling against gravity		
D.	Input @ 20.5 ± 0.1 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.4	Motor Breakout and Direction		
G.2.	CW Input = NMT +0.20 Vdc	(Positive Tach Voltage)	_____ OK
J.2.	CCW Input = NMT -0.20 Vdc	(Negative Tach Voltage)	_____ OK
5.2.6.5	Speed Characteristics, Phasing & Tach Scale Factor		
F.	CCW Tach Output	(CCW Capstan & Neg Tach Voltage)	_____ OK
G.	CCW Speed -8 Vdc input	(11 to 15 Seconds)	_____ Sec
H.	CCW Tach Output Voltage	(See TABLE 5-5 TACH SCALE FACTOR)	_____ Vdc
K.	CCW Speed -4 Vdc input	(22 to 30 Seconds)	_____ Sec
L.	CCW Tach Output Voltage (OFF)	(-0.1 to +0.1 Vdc)	_____ OK
P.	CW Tach Output	(CW Capstan & Pos Tach Voltage)	_____ OK
Q.	CW Speed +8 Vdc input	(11 to 15 Seconds)	_____ Sec
R.	CW Tach Output Voltage	(See TABLE 5-5 TACH SCALE FACTOR)	_____ Vdc
T.	CW Speed +4 Vdc input	(22 to 30 Seconds)	_____ Sec
U.	CW Tach Output Voltage (OFF)	(-0.1 to + 0.1 Vdc)	_____ OK
5.2.6.6	Valid Output		
C.	CCW CAPSTAN DRIVE ON	(Valid-L "ON")	_____ OK
D.	VLDTST LO	(Valid-L "OFF")	_____ OK
H.	CW CAPSTAN DRIVE ON	(Valid-L “ON”)	_____ OK
I.	VLDTST HI	(Valid-L "OFF")	_____ OK
5.2.6.7	Torque Characteristics		
F.	CW	(Solenoid disengages)	_____OK
O.	CCW	(Solenoid disengages)	_____OK

TESTED BY:_____DATE:_____

FINAL DATA SHEET FOR FLAVOR -0300
KS 271C

SERIAL #_____

ALL EQUIPMENT HAS CURRENT CALIBRATION _____ OK

Para Step	TEST DESCRIPTION	LIMITS	DATA
5.2.6.1	Ohm Meter Measurement		
C.		(NMT 2 ohms)	_____ OK
5.2.6.2	External Strapping Test		
E.	Input @ 27.5 ± 0.5 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.3	Solenoid Engage - Pulling against gravity		
D.	Input @ 20.5 ± 0.1 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.4	Motor Breakout and Direction		
G.2.	CW Input = NMT +0.20 Vdc	(Positive Tach Voltage)	_____ OK
J.2.	CCW Input = NMT -0.20 Vdc	(Negative Tach Voltage)	_____ OK
5.2.6.5	Speed Characteristics, Phasing & Tach Scale Factor		
F.	CCW Tach Output	(CCW Capstan & Neg Tach Voltage)	_____ OK
G.	CCW Speed -8 Vdc input	(43.5 to 58.5 Seconds)	_____ Sec
H.	CCW Tach Output Voltage	(See TABLE 5-5 TACH SCALE FACTOR)	_____ Vdc
K.	CCW Speed -4 Vdc input	(87 to 1 min. 57 Seconds)	_____ Sec
L.	CCW Tach Output Voltage (OFF)	(-0.1 to +0.1 Vdc)	_____ OK
P.	CW Tach Output	(CW Capstan & Pos Tach Voltage)	_____ OK
Q.	CW Speed +8 Vdc input	(43.5 to 58.5 Seconds)	_____ Sec
R.	CW Tach Output Voltage	(See TABLE 5-5 TACH SCALE FACTOR)	_____ Vdc
T.	CW Speed +4 Vdc input	(87 to 1 min. 57 Seconds)	_____ Sec
U.	CW Tach Output Voltage (OFF)	(-0.1 to + 0.1 Vdc)	_____ OK
5.2.6.6	Valid Output		
C.	CCW CAPSTAN DRIVE ON	(Valid-L "ON")	_____ OK
D.	VLDTST LO	(Valid-L "OFF")	_____ OK
H.	CW CAPSTAN DRIVE ON	(Valid-L “ON”)	_____ OK
I.	VLDTST HI	(Valid-L "OFF")	_____ OK
5.2.6.7	Torque Characteristics		
F.	CW	(Solenoid disengages)	_____OK
O.	CCW	(Solenoid disengages)	_____OK

TESTED BY:_____DATE:_____

FINAL DATA SHEET FOR FLAVOR -0400
KS 271C

SERIAL #_____

ALL EQUIPMENT HAS CURRENT CALIBRATION _____ OK

Para Step	TEST DESCRIPTION	LIMITS	DATA
5.2.6.1	Ohm Meter Measurement		
C.		(NMT 2 ohms)	_____ OK
5.2.6.2	External Strapping Test		
E.	Input @ 27.5 ± 0.5 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.3	Solenoid Engage - Pulling against gravity		
D.	Input @ 20.5 ± 0.1 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.4	Motor Breakout and Direction		
G.2.	CW Input = NMT +0.20 Vdc	(Positive Tach Voltage)	_____ OK
J.2.	CCW Input = NMT -0.20 Vdc	(Negative Tach Voltage)	_____ OK
5.2.6.5	Speed Characteristics, Phasing & Tach Scale Factor		
F.	CCW Tach Output	(CCW Capstan & Neg Tach Voltage)	_____ OK
G.	CCW Speed -8 Vdc input	(3.4 to 5.6 Seconds)	_____ Sec
H.	CCW Tach Output Voltage	(See TABLE 5-5 TACH SCALE FACTOR)	_____ Vdc
K.	CCW Speed -4 Vdc input	(6.8 to 11.2 Seconds)	_____ Sec
L.	CCW Tach Output Voltage (OFF)	(-0.1 to +0.1 Vdc)	_____ OK
P.	CW Tach Output	(CW Capstan & Pos Tach Voltage)	_____ OK
Q.	CW Speed +8 Vdc input	(3.4 to 5.6 Seconds)	_____ Sec
R.	CW Tach Output Voltage	(See TABLE 5-5 TACH SCALE FACTOR)	_____ Vdc
T.	CW Speed +4 Vdc input	(6.8 to 11.2 Seconds)	_____ Sec
U.	CW Tach Output Voltage (OFF)	(-0.1 to + 0.1 Vdc)	_____ OK
5.2.6.6	Valid Output		
C.	CCW CAPSTAN DRIVE ON	(Valid-L "ON")	_____ OK
D.	VLDTST LO	(Valid-L "OFF")	_____ OK
H.	CW CAPSTAN DRIVE ON	(Valid-L “ON”)	_____ OK
I.	VLDTST HI	(Valid-L "OFF")	_____ OK
5.2.6.7	Torque Characteristics		
F.	CW	(Solenoid disengages)	_____OK
O.	CCW	(Solenoid disengages)	_____OK

TESTED BY:_____DATE:_____

FINAL DATA SHEET FOR FLAVOR -0500
KS 271C

SERIAL #_____

ALL EQUIPMENT HAS CURRENT CALIBRATION _____ OK

Para Step	TEST DESCRIPTION	LIMITS	DATA
5.2.6.1	Ohm Meter Measurement		
C.		(NMT 2 ohms)	_____ OK
5.2.6.2	External Strapping Test		
E.	Input @ 27.5 ± 0.5 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.3	Solenoid Engage - Pulling against gravity		
D.	Input @ 20.5 ± 0.1 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.4	Motor Breakout and Direction		
G.2.	CW Input = NMT +0.20 Vdc	(Positive Tach Voltage)	_____ OK
J.2.	CCW Input = NMT -0.20 Vdc	(Negative Tach Voltage)	_____ OK
5.2.6.5	Speed Characteristics, Phasing & Tach Scale Factor		
F.	CCW Tach Output	(CCW Capstan & Neg Tach Voltage)	_____ OK
G.	CCW Speed -8 Vdc input	(14.5 to 19.5 Seconds)	_____ Sec
H.	CCW Tach Output Voltage	(See TABLE 5-5 TACH SCALE FACTOR)	_____ Vdc
K.	CCW Speed -4 Vdc input	(29 to 39 Seconds)	_____ Sec
L.	CCW Tach Output Voltage (OFF)	(-0.1 to +0.1 Vdc)	_____ OK
P.	CW Tach Output	(CW Capstan & Pos Tach Voltage)	_____ OK
Q.	CW Speed +8 Vdc input	(14.5 to 19.5 Seconds)	_____ Sec
R.	CW Tach Output Voltage	(See TABLE 5-5 TACH SCALE FACTOR)	_____ Vdc
T.	CW Speed +4 Vdc input	(29 to 39 Seconds)	_____ Sec
U.	CW Tach Output Voltage (OFF)	(-0.1 to + 0.1 Vdc)	_____ OK
5.2.6.6	Valid Output		
C.	CW CAPSTAN DRIVE ON	(Valid-L "ON")	_____ OK
D.	VLDTST LO	(Valid-L "OFF")	_____ OK
H.	CCW CAPSTAN DRIVE ON	(Valid-L “ON”)	_____ OK
I.	VLDTST HI	(Valid-L "OFF")	_____ OK
5.2.6.7	Torque Characteristics		
F.	CW	(Solenoid disengages)	_____OK
O.	CCW	(Solenoid disengages)	_____OK

TESTED BY:_____DATE:_____

FINAL DATA SHEET FOR FLAVOR -0600
KS 271C

SERIAL #_____

ALL EQUIPMENT HAS CURRENT CALIBRATION _____ OK

Para Step	TEST DESCRIPTION	LIMITS	DATA
5.2.6.1	Ohm Meter Measurement		
C.		(NMT 2 ohms)	_____ OK
5.2.6.2	External Strapping Test		
E.	Input @ 27.5 ± 0.5 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.3	Solenoid Engage - Pulling against gravity		
D.	Input @ 20.5 ± 0.1 Vdc	(Solenoid engages & disengages)	_____ OK
5.2.6.4	Motor Breakout and Direction		
F.	CW Input = NMT +0.30 Vdc	(CCW Pinion Rotation within 10 secs)	_____ OK
I.	CCW Input = NMT -0.30 Vdc	(CW Pinion Rotation within 10 secs)	_____ OK
5.2.6.5	Speed Characteristics, Phasing & Tach Scale Factor		
F.	CCW Rotation	(CCW Capstan)	_____ OK
G.	CCW Speed -8 Vdc input	(17 to 23 Seconds)	_____ Sec
K.	CCW Speed -4 Vdc input	(34 to 39 Seconds)	_____ Sec
P.	CW Rotation	(CW Capstan)	_____ OK
Q.	CW Speed +8 Vdc input	(17 to 23 Seconds)	_____ Sec
T.	CW Speed +4 Vdc input	(34 to 46 Seconds)	_____ Sec
5.2.6.6	Valid Output		
C.	CW CAPSTAN DRIVE ON	(Valid-L "ON")	_____ OK
D.	VLDTST LO	(Valid-L "OFF")	_____ OK
H.	CCW CAPSTAN DRIVE ON	(Valid-L “ON”)	_____ OK
I.	VLDTST HI	(Valid-L "OFF")	_____ OK
5.2.6.7	Torque Characteristics		
F.	CW	(Solenoid disengages)	_____OK
O.	CCW	(Solenoid disengages)	_____OK

TESTED BY:_____DATE:_____

5.2.8 TROUBLESHOOTING PROCEDURES

The troubleshooting procedures are for use as deemed necessary, whenever a unit fails to meet the minimum performance requirements of the test procedures in the testing paragraphs of this section. Alignment procedures are to be used after misalignment has been isolated and to adjust levels to customer specifications.

The correct troubleshooting procedure is determined by the type of failure in the functional test procedure. The technician should use traditional troubleshooting methods to isolate to the component level. Schematics and theory of operation are provided to assist troubleshooting to the component level.

After the faulty area is isolated by the troubleshooting procedure, and the repair is made, the unit should be retested using the functional testing procedure in this manual.

TABLE 5-6 TROUBLESHOOTING describes how to troubleshoot a system with problems that do not generate an error code; these are primarily related to system performance.

Use of this information with the wiring harness diagrams and a multimeter should allow diagnosis of most system problems.

Symptom	Possible Causes	Checks to Perform
All Roll modes “porpoise” or have poor tracking behavior.	Roll servo bridle cable below minimum allowed tension.	Check and adjust bridle cable tension to certified value
	Faulty Roll attitude output from vertical gyro	Replace vertical gyro
	Roll Servo slip clutch set below minimum torque.	Check and adjust slip clutch torque to certified value.
Pinion Shaft will not spin CCW	Q13 shorted	Check or replace Q13.
Pinion Shaft will not spin CW	Q7 or CR4 shorted	Check or replace Q7 or CR4.
Motor Speed is incorrect	Incorrect value of CR5	Check selectable CR5 for proper value

TABLE 5-6 TROUBLESHOOTING

5.3 OVERHAUL

5.3.1 VISUAL INSPECTION

This section contains instructions and information to assist in determining, by visual inspection, the condition of the KS 271C Roll/Yaw Servo's major and subassemblies.These inspection procedures will assist in finding defects resulting from wear, physical damage or other causes. To aid inspection, detailed procedures are arranged in alphabetical order.

A. Capacitors Fixed

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

B. Capacitors, Variable

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

C. Chassis

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

D. Circuit Boards

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

E. Connectors

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

F. Covers and Shields

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

G. Flex Circuits

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

H. Plate

Check that name, serial and any other plates or stickers are secure and hardware is tight.

I. Insulators

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

J. Jacks

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

K. Potentiometers

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

L. Resistors, Fixed

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

M. RF Coils

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

N. Terminal Connections; soldered

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

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

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

(4) Inspect for corrosion at the terminal.

O. Transformers

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

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

P. Wiring/Coaxial Cable

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

5.3.2 DISASSEMBLY

A. General

This section contains information for disassembly of the KS 271C Roll/Yaw Servo. Disassembly procedures are to be accomplished only when repairs or modifications are required, and only to the extent that is required by the repair or as described in the modification service bulletin. This section contains the recommended procedures for the removal of all subassemblies. Refer to the Illustrated Parts List (IPL) for aid in disassembly. Part numbers are used in the IPL drawings to identify specific parts. Complete disassembly should never be undertaken. Provisions have been made in the design of the unit to make complete disassembly unnecessary except to replace a damaged mechanical part that cannot be reached otherwise.

WARNING

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

CAUTION

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

B. Recommended Disassembly Procedures

NOTE

View unit from the Front Plate for determining the left and right sides. Tag, or by some other means, identify all disconnected wires.

(1) Dust Cover Removal (See FIGURE 6-2 KS 271C FINAL ASSEMBLY DWG)

Remove the two 4-40 x 1/4 phillips screws (089-05903-0004), from the back of the unit.

Carefully slide the cover off over the pigtail and connector.

(2) Printed Circuit Board Assembly Removal (See FIGURE 6-4 FRONT PLATE ASSEMBLY DWG)

Remove the two 4-40 x 1/4 flathead phillips screws (089-06008-0004), attaching the Printed Circuit Board Assembly to solenoid and Sub Plate Assemblies.

Remove the three 4-40 x 3/16 phillips screws attaching the Printed Circuit Board assembly to the Front Plate Assembly.

Separate the assemblies.

Unplug P1 from the bottom of the Printed circuit board, noting the orientation of Pin 1, and remove the Printed Circuit Board Assembly from the unit.

(3) Printed Circuit Board Removal (See FIGURE 6-4 FRONT PLATE ASSEMBLY DWG)

The printed circuit board may be removed from the assembly by the following procedures:

Remove the two 4-40 x 1/4 phillips screws (089-05903-0004), attaching Q4 (120-03555-0000) to the Printed Circuit Board Assembly.

Remove the one 4-40 x 1/4 flathead phillips screw (089-06008-0004) from locknut 4-40 (089-02140-0000 and bushing (091-00156-0000) attaching U6 (120-03026-0002) to the Printed Circuit Board Assembly.

Remove the four 4-40 x 1/4 phillips screws (089-05903-0004) attaching the Printed Circuit Board (200-09087-0000) to the Printed Circuit Board Assembly frame.

Separate Q4 and U6 from the assembly and remove the Printed Circuit Board.

CAUTION

OBSERVE ALL ESDS PROCEDURES WHEN HANDLING THE PRINTED CIRCUIT BOARD AND ASSEMBLY.

(4) Front Plate Assembly Removal (See FIGURE 6-4 FRONT PLATE ASSEMBLY DWG)

Remove the one 6-32 x 7/16 flat head phillips screw (089-06012-0007) on the front attaching the Front Plate Assembly (200-05631-0000) to the Sub Plate Assembly (200-05633-000X).

Remove the one 8-32 x 1/4 phillips screw (089-05909-0004) on the front attaching the Front Plate Assembly to the Solenoid Assembly (023-00190-0000).

Remove the one 8-32 x 5/8 phillips screw (089-05905-0010) attaching the Sub Plate Assembly, spacer (076-00301-0000) and Clutch Assembly Spring (078-02103-0002) to the Front Plate Assembly.

Remove the retainer ring (090-00019-0010) which is behind the Sub Plate Assembly, from the Front Plate Pinion Shaft (076-02935-0001).

Remove the two 8-32 x 1/4 phillips screws attaching the Front Plate Assembly to the Subplate Assembly.

Separate the Front Plate Assembly from the Sub Plate Assembly by pulling the assemblies apart.

(5) Sub Plate Assembly Removal (See FIGURE 6-6 SUB PLATE ASSEMBLY DWG)

After the Front Plate Assembly is removed, remove the roll pin (090-00052-0026) from the Motor Pinion Gear (029-00777-0001) and remove the Motor Pinion Gear.

Remove the two 4-40 x 1/4 flathead phillips screws attaching the Spur Motor (148-05188-00XX) to the Sub Plate Assembly.

Remove the Spur Motor from the Sub Plate Assembly.

(6) Clutch Assembly Removal (See FIGURE 6-2 KS 271C FINAL ASSEMBLY DWG)

After the Front Plate Assembly is removed, remove the two 8-32 x 1/4 phillips screws (089-05903-0004) attaching the solenoid Assembly (023-00190-0000) to the Sub Plate Assembly.

NOTE

When re-assembling the solenoid to the Front Plate Assembly and the Sub Plate Assembly, torque the screws to 22.5 in/lbs. Torque driver Cal 3614 Roto Torq may be used. Apply locktite to the screws.

Pull the Solenoid Plunger from the coil. This will allow the Clutch Assembly (200-05634-0000) to separate from the Sub Plate Assembly.

C. Reassembly

Reverse disassembly procedure

5.3.3 REPAIR

A. General

This section contains information required to perform limited repairs on the KS 271C Roll/Yaw Servo unit. The repair or replacement of damaged parts in airborne electronic equipment usually involves standard service techniques. In most cases, examination of drawings and equipment reveal several approaches to perform a repair. However, certain repairs demand following an exact repair sequence to ensure proper operation of the equipment. After correcting a malfunction in any section of the unit, it is recommended that a repetition of the functional test of the unit be performed.

B. Repair Precautions

(1) Refer to paragraph C, 3 for special ESDS and MOS handling precautions.

(2) Perform repairs and replace components with power disconnected from the equipment.

(3) Use a conductive table top for repairs and connect the table to ground conductors of 60Hz and 400Hz power lines.

(4) Replace connectors, coaxial cables, shield conductors and twisted pairs ONLY with identical items.

(5) Reference “Component Side” of a printed circuit board in this manual means the side on which components are located; “Solder Side” refers to the other side.

The standard references are as follows: nearside is the component side; farside is the solder side; On surface mount boards with components on both sides the nearside is the side that has the J#### and P#### connector numbers.

(6) When repairing circuits, carefully observe lead dress and component orientation. Keep leads as short as possible and observe correct repair techniques.

(7) There are certain soldering considerations with surface mount components. The soldering iron tip should not touch the ceramic component body. The iron should be applied only to the termination-solder filet.

(8) Observe cable routing throughout instrument assembly, prior to disassembly, to enable a proper reinstallation of the cabling during reassembly procedures.

CAUTION

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

C. Electrostatic Sensitive Devices (ESDS) Protection

(1) Always discharge static before handling devices by touching something that is grounded.

(2) Use a wrist strap ground through a 1Meg Ohm resistor.

(3) Do not slide anything on the bench. Pick it up and set it down instead.

(4) Keep all parts in protective cartons until ready to insert them into the board.

(5) Never touch the device leads or the circuit paths during assembly.

(6) Use a grounded tip, low wattage soldering station.

(7) Keep the humidity in the work environment as high as feasibly possible.

(8) Use grounded mats on the work station unless the table tops are made of approved anti-static material.

(9) Do not use synthetic carpet on the floor of the shop. If a shop is carpeted, ensure that a grounded mat is placed at each work station.

(10) Keep common plastics out of the work area.

D. MOS Device Protection

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

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

(2) Ground working surfaces on the workbench to protect the MOS devices.

(3) Wear cotton gloves or a conductive wrist strap in series with a 200 Kohm resistor connected to ground.

(4) Do not wear nylon clothing while handling MOS devices.

(5) Do not insert or remove MOS device with power applied. Check all power supplies to be used for testing MOS devices and be sure that there are no voltage transients present.

(6) When straightening MOS leads, provide ground straps for the apparatus for the device.

(7) Ground the soldering iron when soldering a device.

(8) When possible, handle all MOS devices by package or case, not by the leads. Prior to touching the device, touch an electrical ground to displace the static charge that you may have accumulated.

The package and substrate may be electrically common. If so, an electrical discharge to the case would cause the same damage as touching the leads.

(9) Clamping or holding fixtures used during repair should be grounded, as should the circuit board during repair.

(10) Devices should be inserted into the printed circuit boards such that leads on the back side do not contact any material other than the printed circuit board (in particular, do not use any plastic foam as a backing).

(11) Devices should be soldered as soon as possible after assembly. All soldering irons must be grounded.

(12) Boards should not be handled in the area around the devices, but rather by the board edges.

(13) Assembled boards must not be placed in conventional home-type plastic bags. Paper bags or anti-static bags should be used.

(14) Before removing devices from the conductive portion of the device carrier, make certain the conductive portion of the carrier is brought into contact with a well grounded table top.

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

(1) Heat one lead from the component side of the board until the solder flows and lift one lead from the board; Repeat for the other lead and remove the component (note Orientation).

(2) Melt solder into each hole and using a de-soldering tool to remove solder from each hole.

(3) Dress and form leads of the replacement component; insert leads into correct holes.

(4) Insert replacement component observing correct orientation.

F. PC Board, Multi-lead Component Removal (IC's etc.)

(1) Remove the component by clipping each lead along both sides. Clip off leads as close to the component as possible. Discard the component.

(2) Heat the hole from the solder side and remove clipped lead from each hole.

(3) Melt solder in each hole and using a de-soldering suction tool remove solder from each hole.

(4) Insert replacement component observing the correct orientation.

(5) Solder the component in place from the farside of the board. Avoid solder runs. No solder is required on contacts where no tracks exist.

G. Replacement of Power Transistors

(1) Unsolder leads and remove attaching hardware. Remove transistor and hard-coat insulator.

(2) Apply Thermal Joint Compound type 120 (Wakefield Engineering, Inc.) to the mounting surface of the replacement transistor.

(3) Reinstall the transistor insulator and the power transistor using the hardware removed in step (1).

(4) After installing the replacement transistor, but before making any electrical connections, measure the resistance between the case of the transistor and the chassis to ensure that the insulation is effective. The resistance measured should be no less than 10 Megaohms.

(5) Reconnect the leads of the transistor and solder in place.

H. Replacement of Printed Circuit Board Protective Coating

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

(1) Clean repaired area of the printed circuit board per the instructions in the Cleaning Section of this manual.

(2) Apply Conformal Coating Humiseal #1B-31 HYSOL PC20-35M-01 (Humiseal Division, Columbia Chase Corp., 24-60 Brooklyn Queens Expressway West, Woodside, NY, 11377) P/N 016-01040-0000.

(3) Shake container well before using.

(4) Spray or brush surfaces with smooth, even strokes; If spraying, hold the nozzle 10-15 inches from the work surface.

(5) Cure time is ten minutes at room temperature.

5.3.4 REPLACEMENT OF COMPONENTS

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

A. Connectors

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

B. Crystal

The use of any other than a Bendix/King crystal is considered an unauthorized modification.

C. Diodes

Diodes used are silicon and germanium. Use long nose pliers as a heat sink under normal soldering conditions. NOTE the diodes polarity before removal.

D. Integrated Circuits

Refer to Appendix A for removal and replacement instructions.

E. Wiring/Coaxial Cable

When repairing a wire that has broken from it's terminal, remove all the old solder and pieces of wire from the terminal, restrip the wire to the necessary length and resolder the wire to the terminal. Replace a damaged wire or coax with one of the same type, size and length.

5.3.5 CLEANING

A. General

This section contains information to aid in the cleaning of the component parts and subassemblies of the KS 271C Roll/Yaw Servo Unit.

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

WARNING
OPERATIONS INVOLVING THE USE OF A CLEANING SOLVENT SHOULD BE PERFORMED UNDER A VENTILATED HOOD. AVOID BREATHING SOLVENT VAPOR AND FUMES; AVOID CONTINOUS CONTACT WITH THE SOLVENT.

B. TABLE 5-7 RECOMMENDED CLEANING AGENTS lists the recommended cleaning agents to be used during the overhaul of the KS 271C.

NOTE
Equivalent substitutes may be used for the listed cleaning agents.

TYPE	USED TO CLEAN
Denatured Alcohol	Exterior Surfaces
Isopropyl Alcohol	Interior Surfaces

TABLE 5-7 RECOMMENDED CLEANING AGENTS

C. Recommended Cleaning Procedures

(1) Exterior

Wipe dust cover with a lint-free cloth dampened with denatured alcohol.

Use a clean camel-hair brush saturated with denatured alcohol to remove any foreign matter from the connector.

(2) Interior

CAUTION

ALUMINUM ELECTROLYTIC CAPACITORS CAN BE DAMAGED BY HALOGENATED HYDROCARBON SOLVENTS. HONEYWELL RECOMMENDS "ISOPROPYL ALCOHOL" AS A SAFE CLEANING SOLVENT FOR PRINTED CIRCUIT BOARDS CONTAINING ALUMINUM ELECTROLYTIC CAPACITORS. OTHER SOLVENTS WHICH MAY BE USED ARE AS FOLLOWS:

SAFE SOLVENTS

XYLENE
ETHYL ALCOHOL
BUTYL ALCOHOL
MENTHYL ALCOHOL
PROPYL ALCOHOL
CALGONITE (DETERGENT)

PRINTED CIRCUIT BOARDS CONTAINING ALUMINUM ELECTROLYTIC CAPACITORS SHALL NOT BE CLEANED WITH THE FOLLOWING SOLVENTS:

FREON TF,IMC
CARBON TETRACHLORIDE
CHLOROFORM
TRICHLOROETHYLENE
TRICHLOROETHANE
ALL ™ (DETERGENT)
METHYLENE CHLORIDE

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

(a) Casting covers and shields should be cleaned as follows:

1 Remove surface grease with a lint free cloth.

2 Blow dust from surfaces, holes and recesses using an air stream.

3 If necessary use a solvent. Scrub until clean, working over all surfaces and into all holes and recesses with a suitable non-metallic brush.

4 Position the part to dry so that the solvent is not trapped in holes or recesses. Use an air stream to blow out any trapped solvent.

5 When thoroughly clean, touch up any minor damage to the finish.

(b) Assemblies containing resistors, capacitors, RF coils, inductors, transformers and other wired parts should be cleaned as follows:

CAUTION

AVOID AIR-BLASTING DELICATE PARTS

(c) Remove dust and dirt from all surfaces, including all parts and wiring, using soft-bristled brushes in conjunction with air stream.

CAUTION

SOLVENT SHOULD NOT BE USED TO CLEAN COMPONENTS, COUPLERS, BUSHINGS OF NYLON OR RUBBER GROMMETS. CLEAN THESE ITEMS USING A WASHING BATH OF LIQUID DETERGENT AND WATER.

EXCESS CLEANING SOLVENT MUST NOT BE PERMITTED TO ACCUMULATE IN ANY OF THE ADJUSTMENT SCREW CREVICES AND THUS SOFTEN OR DISSOLVE THE ADJUSTMENT SCREW OR IT"S SEALANT.

(d) Any dirt that cannot be removed in this way should be removed with a brush (not synthetic) saturated with an approved solvent such as mentioned above. Use of a clean, dry, compressed air stream (25 to 35 psi) is recommended to remove any excess solvent.

SECTION VI
ILLUSTRATED PARTS LIST

6.1 GENERAL

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

Parts identified in this IPL by Honeywell part number meet design specifications for this equipment and are the recommended replacement parts. For warranty information concerning Honeywell replacement parts refer to www.bendixking.com.

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

6.2 REVISION SERVICE

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

6.3 LIST OF ABBREVIATIONS

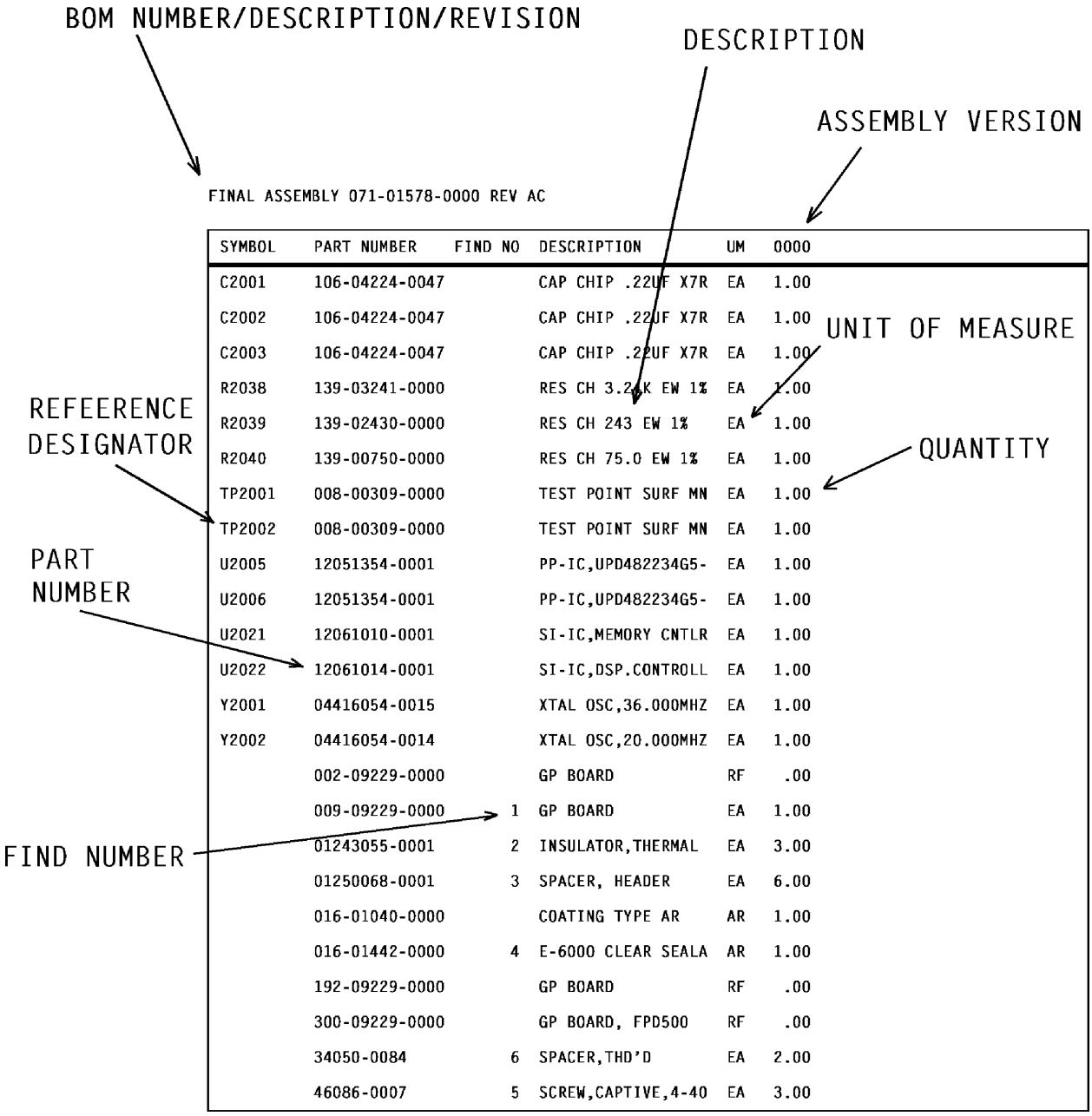
Abbreviation	Name
B	Motor or Synchro
C	Capacitor
CJ	Circuit Jumper
CR	Diode
DS	Lamp
E	Voltage or Signal Connect Point
F	Fuse
FL	Filter
FT	Feedthru
I	Integrated Circuit
J	Jack or Fixed Connector
L	Inductor
M	Meter
P	Plug
Q	Transistor
R	Resistor
RT	Thermistor

TABLE 6-1 ABBREVIATIONS

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

TABLE 6-1 ABBREVIATIONS

6.4 SAMPLE PARTS LIST



FINAL ASSEMBLY 071-01578-0000 REV AC

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

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

FIGURE 6-1 SAMPLE PARTS LIST

THIS PAGE IS RESERVED

6.5 FINAL ASSEMBLY

PN	DESCRIPTION	REV
065-00179-0100	KS 271C ROLL SERVO	AE
065-00179-0099	COMMON BOM KS 271C	AJ

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0100	-0099
ASY1	200-05631-0001		FRONT PLATE ASSEMBLY	EA	.	1.00
ASY2	200-05632-0009		CIRCUIT ASSEMBLY, KS 271C	EA	1.00	.
ASY3	200-05633-0107		SUB PLATE ASSY	EA	1.00	.
ASY4	200-05634-0000		CLUTCH ASSY	EA	.	1.00
ITM1	023-00190-0000		SOLENOID 24 V	EA	.	1.00
ITM10	089-05853-0006		SCR SET 2-56X3/16	EA	.	2.00
ITM11	089-05899-0004		SCR PHP 2-56X1/4	EA	.	2.00
ITM12	089-05903-0003		SCR PHP 4-40X3/16	EA	.	3.00
ITM13	089-05909-0004		SCR PHP 8-32X1/4	EA	.	5.00
ITM14	089-05909-0010		SCR PHP 8-32X5/8	EA	.	1.00
ITM15	089-06008-0004		SCR FHP 4-40X1/4	EA	.	2.00
ITM16	089-06012-0007		SCR FHP 6-32X7/16	EA	.	1.00
ITM17	089-06642-0004		SCR METRIC FHS M1.6 X 4	EA	.	2.00
ITM19	090-00019-0010		RING RTNR .312	EA	.	1.00
ITM2	029-00779-0002		GEAR 53T64DP W/HUB	EA	.	1.00
ITM20	148-05142-0000		DC MOTOR	EA	.	1.00
ITM21	155-02838-0003		CABLE ASSY, KS 272C	EA	.	1.00
ITM22	076-00301-0000		SPACER .250	EA	.	1.00
ITM23	150-00049-0010		SHRINK TUBING WHT	IN	.	.50
ITM24	030-02205-0005		TERM 22-26	EA	.	4.00
ITM25	088-00578-0003		CONN COVER 0.936	EA	.	1.00
ITM26	089-05903-0004		SCR PHP 4-40X1/4	EA	.	2.00
ITM27	025-00018-0066		WIRE 26 BLU	IN	.	4.25
ITM28	025-00018-0024		WIRE 26 RD/YL	IN	.	4.25
ITM29	057-03511-0001		DECAL, CAUTION	EA	.	1.00
ITM3	029-00780-0002		GEAR 66T64DP W/ HOB	EA	.	1.00
ITM30	091-00109-0003		CABLE TIE	EA	.	2.00
ITM31	200-02598-0006		HARNESS ASSY KS 271C	EA	1.00	.
ITM32	091-00007-0002		BSHG STRN RELIEF	EA	.	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0100	-0099
ITM33	025-00029-0000		WIRE 24 BLK	IN	.	12.00
ITM34	025-00029-0002		WIRE 24 RED	IN	.	12.00
ITM39	089-08256-0002		SPRING, WASHER	EA	.	1.00
ITM4	047-10987-0001		TACH BRKT	EA	.	1.00
ITM40	091-00109-0000		CABLE TIE	EA	.	1.00
ITM5	057-02203-0000		FLAVOR STCKR	EA	.	1.00
ITM6	057-02203-0001		FLAVOR STCKR	EA	1.00	.
ITM7	057-05812-0001		S/N TAG KS271C	EA	.	1.00
ITM8	088-00537-0000		ENCLOSURE	EA	.	1.00
ITM9	089-05853-0004		SCR SET 2-56X1/8	EA	.	2.00
L1	013-00040-0000		TWO HOLE BALUN	EA	.	1.00
R46	139-02492-0000		RES CH 24.9K EW 1%	EA	.05	.
R46	139-02552-0000		RES CH 25.5K EW 1%	EA	.05	.
R46	139-02612-0000		RES CH 26.1K EW 1%	EA	.25	.
R46	139-02672-0000		RES CHIP 26.7KEW1%	EA	.05	.
R46	139-02742-0000		RES CHIP 27.4KEW1%	EA	.05	.
R46	139-02802-0000		RES CH 28K EW 1%	EA	.05	.
R46	139-02872-0000		RES CH 28.7K EW 1%	EA	.05	.
R46	139-02942-0000		RES CH 29.4K EW 1%	EA	.05	.
R46	139-03012-0000		RES CHIP 30.1KEW1%	EA	.30	.
R46	139-03092-0000		RES CH 30.9K EW 1%	EA	.05	.
R46	139-03162-0000		RES CHIP 31.6KEW1%	EA	.05	.
R47	139-02492-0000		RES CH 24.9K EW 1%	EA	.05	.
R47	139-02552-0000		RES CH 25.5K EW 1%	EA	.05	.
R47	139-02612-0000		RES CH 26.1K EW 1%	EA	.25	.
R47	139-02672-0000		RES CHIP 26.7KEW1%	EA	.05	.
R47	139-02742-0000		RES CHIP 27.4KEW1%	EA	.05	.
R47	139-02802-0000		RES CH 28K EW 1%	EA	.05	.
R47	139-02872-0000		RES CH 28.7K EW 1%	EA	.05	.
R47	139-02942-0000		RES CH 29.4K EW 1%	EA	.05	.
R47	139-03012-0000		RES CHIP 30.1KEW1%	EA	.30	.
R47	139-03092-0000		RES CH 30.9K EW 1%	EA	.05	.
R47	139-03162-0000		RES CHIP 31.6KEW1%	EA	.05	.
REF1	300-05681-0000		FINAL ASSY ROLL SERVO KS 271C	RF	.	.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0100	-0099
REF100	000-00978-0000		PRODUCT STRUCTURE DIAGRAM KS 271C	RF	.	.00
REF4	004-02038-4000		KS 271C ROLL SERVO ACTUATOR (MPS)	RF	.	.00
	065-00179-0099		COMMON BOM KS 271C	EA	1.00	.

PN	DESCRIPTION	REV
065-00179-0200	KS 271C ROLL SERVO	AD
065-00179-0099	COMMON BOM KS 271C	AJ

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0200	-0099
ASY1	200-05631-0001		FRONT PLATE ASSEMBLY	EA	.	1.00
ASY2	200-05632-0009		CIRCUIT ASSEMBLY, KS 271C	EA	1.00	.
ASY3	200-05633-0105		SUB PLATE ASSY	EA	1.00	.
ASY4	200-05634-0000		CLUTCH ASSY	EA	.	1.00
ITM1	023-00190-0000		SOLENOID 24 V	EA	.	1.00
ITM10	089-05853-0006		SCR SET 2-56X3/16	EA	.	2.00
ITM11	089-05899-0004		SCR PHP 2-56X1/4	EA	.	2.00
ITM12	089-05903-0003		SCR PHP 4-40X3/16	EA	.	3.00
ITM13	089-05909-0004		SCR PHP 8-32X1/4	EA	.	5.00
ITM14	089-05909-0010		SCR PHP 8-32X5/8	EA	.	1.00
ITM15	089-06008-0004		SCR FHP 4-40X1/4	EA	.	2.00
ITM16	089-06012-0007		SCR FHP 6-32X7/16	EA	.	1.00
ITM17	089-06642-0004		SCR METRIC FHS M1.6 X 4	EA	.	2.00
ITM19	090-00019-0010		RING RTNR .312	EA	.	1.00
ITM2	029-00779-0002		GEAR 53T64DP W/HUB	EA	.	1.00
ITM20	148-05142-0000		DC MOTOR	EA	.	1.00
ITM21	155-02838-0003		CABLE ASSY, KS 272C	EA	.	1.00
ITM22	076-00301-0000		SPACER .250	EA	.	1.00
ITM23	150-00049-0010		SHRINK TUBING WHT	IN	.	.50
ITM24	030-02205-0005		TERM 22-26	EA	.	4.00
ITM25	088-00578-0003		CONN COVER 0.936	EA	.	1.00
ITM26	089-05903-0004		SCR PHP 4-40X1/4	EA	.	2.00
ITM27	025-00018-0066		WIRE 26 BLU	IN	.	4.25
ITM28	025-00018-0024		WIRE 26 RD/YL	IN	.	4.25
ITM29	057-03511-0001		DECAL, CAUTION	EA	.	1.00
ITM3	029-00780-0002		GEAR 66T64DP W/ HOB	EA	.	1.00
ITM30	091-00109-0003		CABLE TIE	EA	.	2.00
ITM31	200-02598-0006		HARNESS ASSY KS 271C	EA	1.00	.
ITM32	091-00007-0002		BSHG STRN RELIEF	EA	.	1.00
ITM33	025-00029-0000		WIRE 24 BLK	IN	.	12.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0200	-0099
ITM34	025-00029-0002		WIRE 24 RED	IN	.	12.00
ITM39	089-08256-0002		SPRING, WASHER	EA	.	1.00
ITM4	047-10987-0001		TACH BRKT	EA	.	1.00
ITM40	091-00109-0000		CABLE TIE	EA	.	1.00
ITM5	057-02203-0000		FLAVOR STCKR	EA	.	1.00
ITM6	057-02203-0002		FLAVOR STCKR	EA	1.00	.
ITM7	057-05812-0001		S/N TAG KS271C	EA	.	1.00
ITM8	088-00537-0000		ENCLOSURE	EA	.	1.00
ITM9	089-05853-0004		SCR SET 2-56X1/8	EA	.	2.00
L1	013-00040-0000		TWO HOLE BALUN	EA	.	1.00
R46	139-03922-0000		RES CH 39.2K EW 1%	EA	1.00	.
R47	139-03922-0000		RES CH 39.2K EW 1%	EA	1.00	.
REF1	300-05681-0000		FINAL ASSY ROLL SERVO KS 271C	RF	.	.00
REF100	000-00978-0000		PRODUCT STRUCTURE DIAGRAM KS 271C	RF	.	.00
REF4	004-02038-4000		KS 271C ROLL SERVO ACTUATOR (MPS)	RF	.	.00
	065-00179-0099		COMMON BOM KS 271C	EA	1.00	.

PN	DESCRIPTION	REV
065-00179-0300	KS 271C ROLL SERVO	AD
065-00179-0099	COMMON BOM KS 271C	AJ

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0300	-0099
ASY1	200-05631-0001		FRONT PLATE ASSEMBLY	EA	.	1.00
ASY2	200-05632-0009		CIRCUIT ASSEMBLY, KS 271C	EA	1.00	.
ASY3	200-05633-0111		SUB PLATE ASSY	EA	1.00	.
ASY4	200-05634-0000		CLUTCH ASSY	EA	.	1.00
ITM1	023-00190-0000		SOLENOID 24 V	EA	.	1.00
ITM10	089-05853-0006		SCR SET 2-56X3/16	EA	.	2.00
ITM11	089-05899-0004		SCR PHP 2-56X1/4	EA	.	2.00
ITM12	089-05903-0003		SCR PHP 4-40X3/16	EA	.	3.00
ITM13	089-05909-0004		SCR PHP 8-32X1/4	EA	.	5.00
ITM14	089-05909-0010		SCR PHP 8-32X5/8	EA	.	1.00
ITM15	089-06008-0004		SCR FHP 4-40X1/4	EA	.	2.00
ITM16	089-06012-0007		SCR FHP 6-32X7/16	EA	.	1.00
ITM17	089-06642-0004		SCR METRIC FHS M1.6 X 4	EA	.	2.00
ITM19	090-00019-0010		RING RTNR .312	EA	.	1.00
ITM2	029-00779-0002		GEAR 53T64DP W/HUB	EA	.	1.00
ITM20	148-05142-0000		DC MOTOR	EA	.	1.00
ITM21	155-02838-0003		CABLE ASSY, KS 272C	EA	.	1.00
ITM22	076-00301-0000		SPACER .250	EA	.	1.00
ITM23	150-00049-0010		SHRINK TUBING WHT	IN	.	.50
ITM24	030-02205-0005		TERM 22-26	EA	.	4.00
ITM25	088-00578-0003		CONN COVER 0.936	EA	.	1.00
ITM26	089-05903-0004		SCR PHP 4-40X1/4	EA	.	2.00
ITM27	025-00018-0066		WIRE 26 BLU	IN	.	4.25
ITM28	025-00018-0024		WIRE 26 RD/YL	IN	.	4.25
ITM29	057-03511-0001		DECAL, CAUTION	EA	.	1.00
ITM3	029-00780-0002		GEAR 66T64DP W/ HOB	EA	.	1.00
ITM30	091-00109-0003		CABLE TIE	EA	.	2.00
ITM31	200-02598-0006		HARNESS ASSY KS 271C	EA	1.00	.
ITM32	091-00007-0002		BSHG STRN RELIEF	EA	.	1.00
ITM33	025-00029-0000		WIRE 24 BLK	IN	.	12.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0300	-0099
ITM34	025-00029-0002		WIRE 24 RED	IN	.	12.00
ITM39	089-08256-0002		SPRING, WASHER	EA	.	1.00
ITM4	047-10987-0001		TACH BRKT	EA	.	1.00
ITM40	091-00109-0000		CABLE TIE	EA	.	1.00
ITM5	057-02203-0000		FLAVOR STCKR	EA	.	1.00
ITM6	057-02203-0003		FLAVOR STCKR	EA	1.00	.
ITM7	057-05812-0001		S/N TAG KS271C	EA	.	1.00
ITM8	088-00537-0000		ENCLOSURE	EA	.	1.00
ITM9	089-05853-0004		SCR SET 2-56X1/8	EA	.	2.00
L1	013-00040-0000		TWO HOLE BALUN	EA	.	1.00
R46	139-03012-0000		RES CHIP 30.1KEW1%	EA	1.00	.
R47	139-03012-0000		RES CHIP 30.1KEW1%	EA	1.00	.
REF1	300-05681-0000		FINAL ASSY ROLL SERVO KS 271C	RF	.	.00
REF100	000-00978-0000		PRODUCT STRUCTURE DIAGRAM KS 271C	RF	.	.00
REF4	004-02038-4000		KS 271C ROLL SERVO ACTUATOR (MPS)	RF	.	.00
	065-00179-0099		COMMON BOM KS 271C	EA	1.00	.

PN	DESCRIPTION	REV
065-00179-0400	KS 271C ROLL SERVO	AD
065-00179-0099	COMMON BOM KS 271C	AJ

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0400	-0099
ASY1	200-05631-0001		FRONT PLATE ASSEMBLY	EA	.	1.00
ASY2	200-05632-0009		CIRCUIT ASSEMBLY, KS 271C	EA	1.00	.
ASY3	200-05633-0104		SUB PLATE ASSY	EA	1.00	.
ASY4	200-05634-0000		CLUTCH ASSY	EA	.	1.00
ITM1	023-00190-0000		SOLENOID 24 V	EA	.	1.00
ITM10	089-05853-0006		SCR SET 2-56X3/16	EA	.	2.00
ITM11	089-05899-0004		SCR PHP 2-56X1/4	EA	.	2.00
ITM12	089-05903-0003		SCR PHP 4-40X3/16	EA	.	3.00
ITM13	089-05909-0004		SCR PHP 8-32X1/4	EA	.	5.00
ITM14	089-05909-0010		SCR PHP 8-32X5/8	EA	.	1.00
ITM15	089-06008-0004		SCR FHP 4-40X1/4	EA	.	2.00
ITM16	089-06012-0007		SCR FHP 6-32X7/16	EA	.	1.00
ITM17	089-06642-0004		SCR METRIC FHS M1.6 X 4	EA	.	2.00
ITM19	090-00019-0010		RING RTNR .312	EA	.	1.00
ITM2	029-00779-0002		GEAR 53T64DP W/HUB	EA	.	1.00
ITM20	148-05142-0000		DC MOTOR	EA	.	1.00
ITM21	155-02838-0003		CABLE ASSY, KS 272C	EA	.	1.00
ITM22	076-00301-0000		SPACER .250	EA	.	1.00
ITM23	150-00049-0010		SHRINK TUBING WHT	IN	.	.50
ITM24	030-02205-0005		TERM 22-26	EA	.	4.00
ITM25	088-00578-0003		CONN COVER 0.936	EA	.	1.00
ITM26	089-05903-0004		SCR PHP 4-40X1/4	EA	.	2.00
ITM27	025-00018-0066		WIRE 26 BLU	IN	.	4.25
ITM28	025-00018-0024		WIRE 26 RD/YL	IN	.	4.25
ITM29	057-03511-0001		DECAL, CAUTION	EA	.	1.00
ITM3	029-00780-0002		GEAR 66T64DP W/ HOB	EA	.	1.00
ITM30	091-00109-0003		CABLE TIE	EA	.	2.00
ITM31	200-02598-0006		HARNESS ASSY KS 271C	EA	1.00	.
ITM32	091-00007-0002		BSHG STRN RELIEF	EA	.	1.00
ITM33	025-00029-0000		WIRE 24 BLK	IN	.	12.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0400	-0099
ITM34	025-00029-0002		WIRE 24 RED	IN	.	12.00
ITM39	089-08256-0002		SPRING, WASHER	EA	.	1.00
ITM4	047-10987-0001		TACH BRKT	EA	.	1.00
ITM40	091-00109-0000		CABLE TIE	EA	.	1.00
ITM5	057-02203-0000		FLAVOR STCKR	EA	.	1.00
ITM6	057-02203-0004		FLAVOR STCKR	EA	1.00	.
ITM7	057-05812-0001		S/N TAG KS271C	EA	.	1.00
ITM8	088-00537-0000		ENCLOSURE	EA	.	1.00
ITM9	089-05853-0004		SCR SET 2-56X1/8	EA	.	2.00
L1	013-00040-0000		TWO HOLE BALUN	EA	.	1.00
R46	139-06042-0000		RES CHIP 60.4KEW1%	EA	1.00	.
R47	139-06042-0000		RES CHIP 60.4KEW1%	EA	1.00	.
REF1	300-05681-0000		FINAL ASSY ROLL SERVO KS 271C	RF	.	.00
REF100	000-00978-0000		PRODUCT STRUCTURE DIAGRAM KS 271C	RF	.	.00
REF4	004-02038-4000		KS 271C ROLL SERVO ACTUATOR (MPS)	RF	.	.00
	065-00179-0099		COMMON BOM KS 271C	EA	1.00	.

PN	DESCRIPTION	REV
065-00179-0500	KS 271C ROLL SERVO	AD
065-00179-0099	COMMON BOM KS 271C	AJ

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0500	-0099
ASY1	200-05631-0001		FRONT PLATE ASSEMBLY	EA	.	1.00
ASY2	200-05632-0009		CIRCUIT ASSEMBLY, KS 271C	EA	1.00	.
ASY3	200-05633-0106		SUB PLATE ASSY	EA	1.00	.
ASY4	200-05634-0000		CLUTCH ASSY	EA	.	1.00
ITM1	023-00190-0000		SOLENOID 24 V	EA	.	1.00
ITM10	089-05853-0006		SCR SET 2-56X3/16	EA	.	2.00
ITM11	089-05899-0004		SCR PHP 2-56X1/4	EA	.	2.00
ITM12	089-05903-0003		SCR PHP 4-40X3/16	EA	.	3.00
ITM13	089-05909-0004		SCR PHP 8-32X1/4	EA	.	5.00
ITM14	089-05909-0010		SCR PHP 8-32X5/8	EA	.	1.00
ITM15	089-06008-0004		SCR FHP 4-40X1/4	EA	.	2.00
ITM16	089-06012-0007		SCR FHP 6-32X7/16	EA	.	1.00
ITM17	089-06642-0004		SCR METRIC FHS M1.6 X 4	EA	.	2.00
ITM19	090-00019-0010		RING RTNR .312	EA	.	1.00
ITM2	029-00779-0002		GEAR 53T64DP W/HUB	EA	.	1.00
ITM20	148-05142-0000		DC MOTOR	EA	.	1.00
ITM21	155-02838-0003		CABLE ASSY, KS 272C	EA	.	1.00
ITM22	076-00301-0000		SPACER .250	EA	.	1.00
ITM23	150-00049-0010		SHRINK TUBING WHT	IN	.	.50
ITM24	030-02205-0005		TERM 22-26	EA	.	4.00
ITM25	088-00578-0003		CONN COVER 0.936	EA	.	1.00
ITM26	089-05903-0004		SCR PHP 4-40X1/4	EA	.	2.00
ITM27	025-00018-0066		WIRE 26 BLU	IN	.	4.25
ITM28	025-00018-0024		WIRE 26 RD/YL	IN	.	4.25
ITM29	057-03511-0001		DECAL, CAUTION	EA	.	1.00
ITM3	029-00780-0002		GEAR 66T64DP W/ HOB	EA	.	1.00
ITM30	091-00109-0003		CABLE TIE	EA	.	2.00
ITM31	200-02598-0006		HARNESS ASSY KS 271C	EA	1.00	.
ITM32	091-00007-0002		BSHG STRN RELIEF	EA	.	1.00
ITM33	025-00029-0000		WIRE 24 BLK	IN	.	12.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0500	-0099
ITM34	025-00029-0002		WIRE 24 RED	IN	.	12.00
ITM39	089-08256-0002		SPRING, WASHER	EA	.	1.00
ITM4	047-10987-0001		TACH BRKT	EA	.	1.00
ITM40	091-00109-0000		CABLE TIE	EA	.	1.00
ITM5	057-02203-0000		FLAVOR STCKR	EA	.	1.00
ITM6	057-02203-0005		FLAVOR STCKR	EA	1.00	.
ITM7	057-05812-0001		S/N TAG KS271C	EA	.	1.00
ITM8	088-00537-0000		ENCLOSURE	EA	.	1.00
ITM9	089-05853-0004		SCR SET 2-56X1/8	EA	.	2.00
L1	013-00040-0000		TWO HOLE BALUN	EA	.	1.00
R46	139-03162-0000		RES CHIP 31.6KEW1%	EA	1.00	.
R47	139-03162-0000		RES CHIP 31.6KEW1%	EA	1.00	.
REF1	300-05681-0000		FINAL ASSY ROLL SERVO KS 271C	RF	.	.00
REF100	000-00978-0000		PRODUCT STRUCTURE DIAGRAM KS 271C	RF	.	.00
REF4	004-02038-4000		KS 271C ROLL SERVO ACTUATOR (MPS)	RF	.	.00
	065-00179-0099		COMMON BOM KS 271C	EA	1.00	.

PN	DESCRIPTION	REV
065-00179-0600	KS 271C ROLL SERVO NO TACK	G
065-00179-0099	COMMON BOM KS 271C	AJ

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0600	-0099
ASY1	200-05631-0001		FRONT PLATE ASSEMBLY	EA	1.00	1.00
ASY2	200-05632-0016		P.C BOARD ASSEMBLY	EA	1.00	.
ASY3	200-05633-0104		SUB PLATE ASSY	EA	1.00	.
ASY4	200-05634-0000		CLUTCH ASSY	EA	1.00	1.00
ITM1	023-00190-0000		SOLENOID 24 V	EA	1.00	1.00
ITM10	089-05853-0006		SCR SET 2-56X3/16	EA	.	2.00
ITM11	089-05899-0004		SCR PHP 2-56X1/4	EA	1.00	2.00
ITM12	089-05903-0003		SCR PHP 4-40X3/16	EA	3.00	3.00
ITM13	089-05909-0004		SCR PHP 8-32X1/4	EA	5.00	5.00
ITM14	089-05909-0010		SCR PHP 8-32X5/8	EA	1.00	1.00
ITM15	089-06008-0004		SCR FHP 4-40X1/4	EA	2.00	2.00
ITM16	089-06012-0007		SCR FHP 6-32X7/16	EA	1.00	1.00
ITM17	089-06642-0004		SCR METRIC FHS M1.6 X 4	EA	.	2.00
ITM19	090-00019-0010		RING RTNR .312	EA	1.00	1.00
ITM2	029-00779-0002		GEAR 53T64DP W/HUB	EA	.	1.00
ITM20	148-05142-0000		DC MOTOR	EA	.	1.00
ITM21	155-02838-0003		CABLE ASSY, KS 272C	EA	1.00	1.00
ITM22	076-00301-0000		SPACER .250	EA	1.00	1.00
ITM23	150-00049-0010		SHRINK TUBING WHT	IN	.50	.50
ITM24	030-02205-0005		TERM 22-26	EA	2.00	4.00
ITM25	088-00578-0003		CONN COVER 0.936	EA	1.00	1.00
ITM26	089-05903-0004		SCR PHP 4-40X1/4	EA	2.00	2.00
ITM27	025-00018-0066		WIRE 26 BLU	IN	.	4.25
ITM28	025-00018-0024		WIRE 26 RD/YL	IN	.	4.25
ITM29	057-03511-0001		DECAL, CAUTION	EA	1.00	1.00
ITM3	029-00780-0002		GEAR 66T64DP W/ HOB	EA	.	1.00
ITM30	091-00109-0003		CABLE TIE	EA	2.00	2.00
ITM31	200-02598-0006		HARNESS ASSY KS 271C	EA	1.00	.
ITM32	091-00007-0002		BSHG STRN RELIEF	EA	1.00	1.00
ITM33	025-00029-0000		WIRE 24 BLK	IN	12.00	12.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0600	-0099
ITM34	025-00029-0002		WIRE 24 RED	IN	12.00	12.00
ITM35	134-01077-0001		10K NTC SENSOR	EA	1.00	.
ITM36	047-12583-0001		THERMISTOR RETAINER	EA	1.00	.
ITM37	016-01082-0000		DC RTV 3145	AR	1.00	.
ITM38	030-02205-0005		TERM 22-26	EA	2.00	.
ITM39	089-08256-0002		SPRING, WASHER	EA	1.00	1.00
ITM4	047-10987-0001		TACH BRKT	EA	.	1.00
ITM40	091-00109-0000		CABLE TIE	EA	1.00	1.00
ITM5	057-02203-0000		FLAVOR STCKR	EA	1.00	1.00
ITM6	057-02203-0006		FLAVOR STCKR	EA	1.00	.
ITM7	057-05812-0001		S/N TAG KS271C	EA	1.00	1.00
ITM8	088-00537-0000		ENCLOSURE	EA	1.00	1.00
ITM9	089-05853-0004		SCR SET 2-56X1/8	EA	.	2.00
L1	013-00040-0000		TWO HOLE BALUN	EA	1.00	1.00
R46	139-05112-0003		RES CH51.1K EW0.1%	EA	1.00	.
R47	139-05112-0003		RES CH51.1K EW0.1%	EA	1.00	.
REF1	300-05631-0000		FRONT PLATE ASSY	RF	.00	.
REF1	300-05632-0000		PC BOARD ASSEMBLY	RF	.00	.
REF1	300-05634-0000		CLUTCH ASSY	RF	.00	.
REF1	300-05681-0000		FINAL ASSY ROLL SERVO KS 271C	RF	.00	.00
REF100	000-00978-0000		PRODUCT STRUCTURE DIAGRAM KS 271C	RF	.00	.00
REF4	004-02038-4000		KS 271C ROLL SERVO ACTUATOR (MPS)	RF	.00	.00

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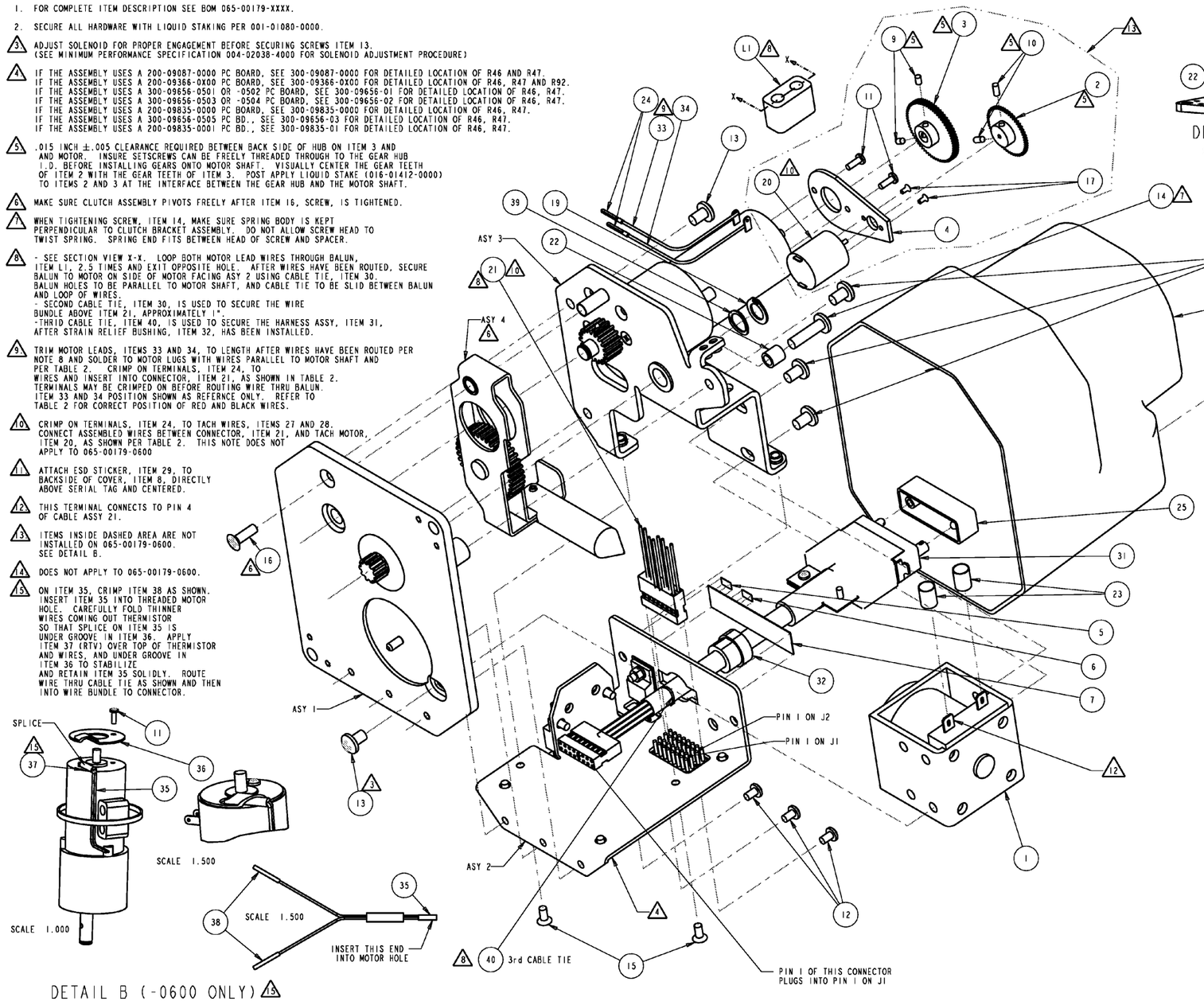
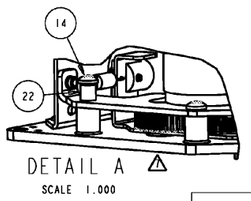
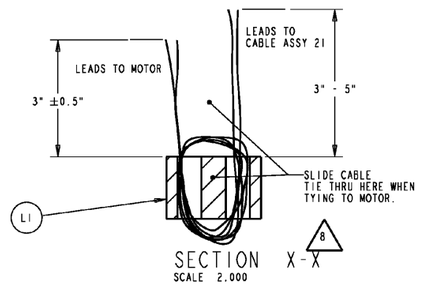
NOTES:

1. FOR COMPLETE ITEM DESCRIPTION SEE BOM 065-00179-XXXX.
2. SECURE ALL HARDWARE WITH LIQUID STAKING PER 001-01080-0000.
3. ADJUST SOLENOID FOR PROPER ENGAGEMENT BEFORE SECURING SCREWS ITEM 13. (SEE MINIMUM PERFORMANCE SPECIFICATION 004-02038-4000 FOR SOLENOID ADJUSTMENT PROCEDURE)
4. IF THE ASSEMBLY USES A 200-09087-0000 PC BOARD, SEE 300-09087-0000 FOR DETAILED LOCATION OF R46 AND R47.
   IF THE ASSEMBLY USES A 200-09366-0X00 PC BOARD, SEE 300-09366-0X00 FOR DETAILED LOCATION OF R46, R47 AND R92.
   IF THE ASSEMBLY USES A 300-09656-0501 OR -0502 PC BOARD, SEE 300-09656-01 FOR DETAILED LOCATION OF R46, R47.
   IF THE ASSEMBLY USES A 300-09656-0503 OR -0504 PC BOARD, SEE 300-09656-02 FOR DETAILED LOCATION OF R46, R47.
   IF THE ASSEMBLY USES A 200-09835-0000 PC BOARD, SEE 300-09835-0000 FOR DETAILED LOCATION OF R46, R47.
   IF THE ASSEMBLY USES A 300-09656-0505 PC BD., SEE 300-09656-03 FOR DETAILED LOCATION OF R46, R47.
   IF THE ASSEMBLY USES A 200-09835-0001 PC BD., SEE 300-09835-01 FOR DETAILED LOCATION OF R46, R47.
5. .015 INCH ±.005 CLEARANCE REQUIRED BETWEEN BACK SIDE OF HUB ON ITEM 3 AND AND MOTOR. INSURE SETSCREWS CAN BE FREELY THREADED THROUGH TO THE GEAR HUB I.D. BEFORE INSTALLING GEARS ONTO MOTOR SHAFT. VISUALLY CENTER THE GEAR TEETH OF ITEM 2 WITH THE GEAR TEETH OF ITEM 3. POST APPLY LIQUID STAKE (016-01412-0000) TO ITEMS 2 AND 3 AT THE INTERFACE BETWEEN THE GEAR HUB AND THE MOTOR SHAFT.
6. MAKE SURE CLUTCH ASSEMBLY PIVOTS FREELY AFTER ITEM 16, SCREW, IS TIGHTENED.
7. WHEN TIGHTENING SCREW, ITEM 14, MAKE SURE SPRING BODY IS KEPT PERPENDICULAR TO CLUTCH BRACKET ASSEMBLY. DO NOT ALLOW SCREW HEAD TO TWIST SPRING. SPRING END FITS BETWEEN HEAD OF SCREW AND SPACER.
8. - SEE SECTION VIEW X-X. LOOP BOTH MOTOR LEAD WIRES THROUGH BALUN, ITEM L1, 2.5 TIMES AND EXIT OPPOSITE HOLE. AFTER WIRES HAVE BEEN ROUTED, SECURE BALUN TO MOTOR ON SIDE OF MOTOR FACING ASY 2 USING CABLE TIE, ITEM 30. BALUN HOLES TO BE PARALLEL TO MOTOR SHAFT, AND CABLE TIE TO BE SLID BETWEEN BALUN AND LOOP OF WIRES.
   - SECOND CABLE TIE, ITEM 30, IS USED TO SECURE THE WIRE BUNDLE ABOVE ITEM 21, APPROXIMATELY 1".
   -THRID CABLE TIE, ITEM 40, IS USED TO SECURE THE HARNESS ASSY, ITEM 31, AFTER STRAIN RELIEF BUSHING, ITEM 32, HAS BEEN INSTALLED.
9. TRIM MOTOR LEADS, ITEMS 33 AND 34, TO LENGTH AFTER WIRES HAVE BEEN ROUTED PER NOTE 8 AND SOLDER TO MOTOR LUGS WITH WIRES PARALLEL TO MOTOR SHAFT AND PER TABLE 2. CRIMP ON TERMINALS, ITEM 24, TO WIRES AND INSERT INTO CONNECTOR, ITEM 21, AS SHOWN IN TABLE 2. TERMINALS MAY BE CRIMPED ON BEFORE ROUTING WIRE THRU BALUN. ITEM 33 AND 34 POSITION SHOWN AS REFERNCE ONLY. REFER TO TABLE 2 FOR CORRECT POSITION OF RED AND BLACK WIRES.
10. CRIMP ON TERMINALS, ITEM 24, TO TACH WIRES, ITEMS 27 AND 28. CONNECT ASSEMBLED WIRES BETWEEN CONNECTOR, ITEM 21, AND TACH MOTOR, ITEM 20, AS SHOWN PER TABLE 2. THIS NOTE DOES NOT APPLY TO 065-00179-0600
11. ATTACH ESD STICKER, ITEM 29, TO BACKSIDE OF COVER, ITEM 8, DIRECTLY ABOVE SERIAL TAG AND CENTERED.
12. THIS TERMINAL CONNECTS TO PIN 4 OF CABLE ASSY 21.
13. ITEMS INSIDE DASHED AREA ARE NOT INSTALLED ON 065-00179-0600. SEE DETAIL B.
14. DOES NOT APPLY TO 065-00179-0600.
15. ON ITEM 35, CRIMP ITEM 38 AS SHOWN. INSERT ITEM 35 INTO THREADED MOTOR HOLE. CAREFULLY FOLD THINNER WIRES COMING OUT THERMISTOR SO THAT SPLICE ON ITEM 35 IS UNDER GROOVE IN ITEM 36. APPLY ITEM 37 (RTV) OVER TOP OF THERMISTOR AND WIRES, AND UNDER GROOVE IN ITEM 36 TO STABILIZE AND RETAIN ITEM 35 SOLIDLY. ROUTE WIRE THRU CABLE TIE AS SHOWN AND THEN INTO WIRE BUNDLE TO CONNECTOR.







REVISIONS

REV	CO/PRN	DATE	BY
1	117226	8/96	GMS
2	117527	8/96	GMS
3	120732	11/96	GMS
4	124607	2/18/97	GMS
5	124703	2/21/97	GMS
6	126094	4/29/97	GMS
AA	135884	2/24/98	BSM
AB	136720	3/31/98	BSM
AC	138433	4/15/98	GJI
AD	150072	11/20/98	GJI
AE	170023	5/00	GJI
AF	177329	10/00	GJI
AG	702388	6/01	GJI
AH	718958	9/02	E T
AJ	727708	6/03	E T

TABLE 1

FROM CABLE ASSY 21 PIN #	TO	COLOR
1	THISTOR ITEM 35	BLACK
2	THISTOR ITEM 35	BLACK
3	SPARE	
4	SOLENOID	RED
5	SPARE	
6	SOLENOID	BLACK
7	SPARE	
8	SPARE	
9	SEE TABLE 2	SEE TABLE 2
10	SPARE	
11	SPARE	
12	SEE TABLE 2	SEE TABLE 2
13	SPARE	
14	SPARE	
15	SEE TABLE 2	SEE TABLE 2
16	SEE TABLE 2	SEE TABLE 2

TABLE 2

ASY 3	MOTOR + PIN 9 RED	MOTOR - PIN 15 BLACK	MOTOR + PIN 15 RED	MOTOR - PIN 9 BLACK	TACH + PIN 12 RED/YEL	TACH - PIN 16 BLUE	TACH + PIN 16 RED/YEL	TACH - PIN 12 BLUE
200-05633-0100			X	X	X	X		
200-05633-0101	X	X					X	X
200-05633-0102			X	X	X	X		
200-05633-0103			X	X	X	X		
200-05633-0104			X	X	X	X		
200-05633-0105			X	X	X[4]	X[4]		
200-05633-0106	X	X					X	X
200-05633-0107			X	X	X	X		
200-05633-0108	X	X					X	X
200-05633-0109	X	X					X	X
200-05633-0110			X	X	X	X		
200-05633-0111	X	X					X	X
200-05633-0112	X	X					X	X
200-05633-0113	X	X					X	X

FIGURE 6-2 KS 271C FINAL ASSEMBLY DWG
(Dwg No 300-05681-0000, Rev AJ, Sheet 1 of 1)

6.6 HARNESS ASSY

200-02598-0006 HARNESS ASSY KS 271C AE

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0006
ITM1	025-00003-0000		WIRE 22 BLK	IN	14.25
ITM1	025-00003-0001		WIRE 22 BRN	IN	14.25
ITM1	025-00003-0002		WIRE 22 RED	IN	14.25
ITM1	025-00018-0033		WIRE 26 ORG	IN	14.25
ITM1	025-00018-0035		WIRE 26 OR/GN	IN	14.25
ITM1	025-00018-0052		WIRE 26 GN/RD	IN	14.25
ITM1	025-00018-0053		WIRE 26 GN/OR	IN	14.25
ITM1	025-00018-0068		WIRE 26 BU/GY	IN	14.25
ITM1	025-00018-0096		WIRE 26 WH/BU	IN	14.25
ITM1	025-00029-0004		WIRE 24 YEL	IN	14.25
ITM1	025-00029-0010		WIRE 24 BK/WH	IN	14.25
ITM1	025-00029-0012		WIRE 24 RD/WH	IN	14.25
ITM10	013-00006-0002		FERR BEAD	EA	12.00
ITM11	150-00049-0010		SHRINK TUBING WHT	IN	8.00
ITM2	030-01007-0000		TAB LOCKING	EA	2.00
ITM3	030-01009-0000		HOOD CONN	EA	1.00
ITM4	030-02001-0000		CONN 14 PIN MALE	EA	1.00
ITM5	030-02204-0007		CONN HSG 16 CAV	EA	1.00
ITM6	030-02248-0001		TERMINALS	EA	12.00
ITM8	150-00064-0000		TUBING TFLN 2G BLK	IN	12.00
ITM9	150-00084-0000		TUBING PLSTC .312	IN	.88
REF1	300-02598-0001		HARNESS ASSY, 270B	RF	.00

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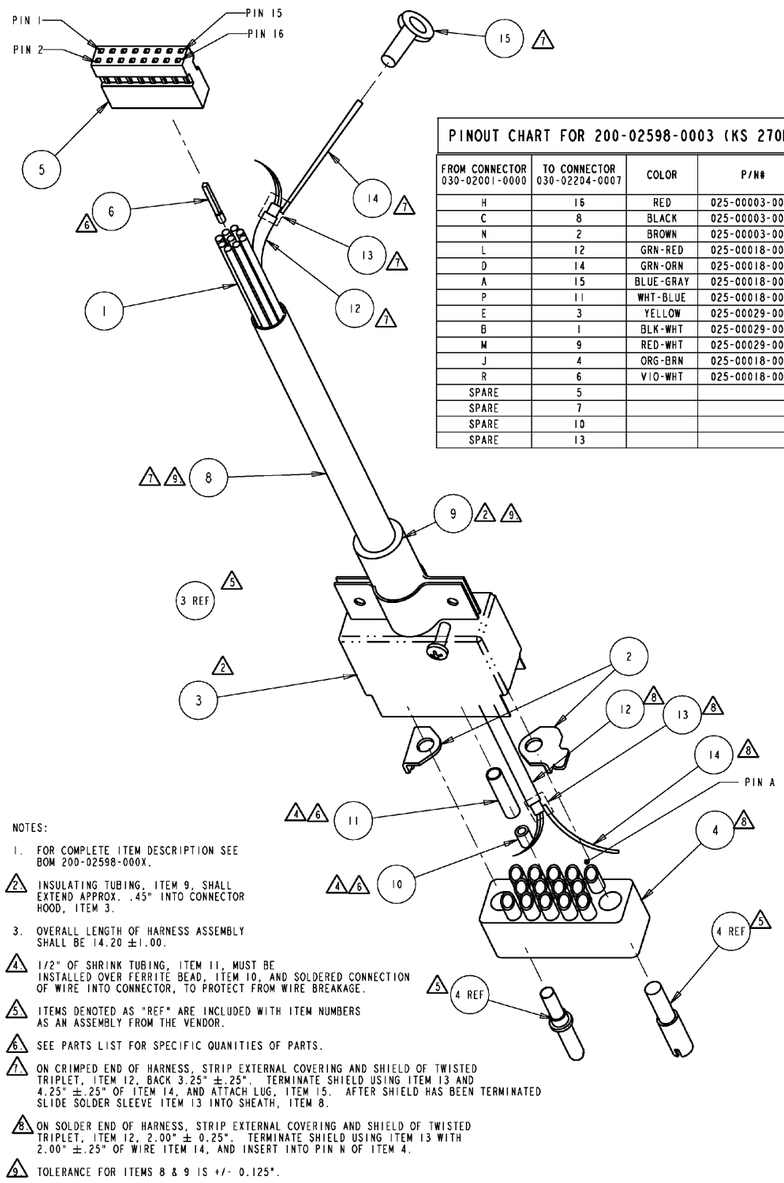

NOTES:

1. FOR COMPLETE ITEM DESCRIPTION SEE BOM 200-02598-000X.
2. INSULATING TUBING, ITEM 9, SHALL EXTEND APPROX. .45" INTO CONNECTOR HOOD, ITEM 3.
3. OVERALL LENGTH OF HARNESS ASSEMBLY SHALL BE 14.20 ±1.00.
4. 1/2" OF SHRINK TUBING, ITEM 11, MUST BE INSTALLED OVER FERRITE BEAD, ITEM 10, AND SOLDERED CONNECTION OF WIRE INTO CONNECTOR, TO PROTECT FROM WIRE BREAKAGE.
5. ITEMS DENOTED AS "REF" ARE INCLUDED WITH ITEM NUMBERS AS AN ASSEMBLY FROM THE VENDOR.
6. SEE PARTS LIST FOR SPECIFIC QUANITIES OF PARTS.
7. ON CRIMPED END OF HARNESS, STRIP EXTERNAL COVERING AND SHIELD OF TWISTED TRIPLET, ITEM 12, BACK 3.25" ±.25". TERMINATE SHIELD USING ITEM 13 AND 4.25" ±.25" OF ITEM 14, AND ATTACH LUG, ITEM 15. AFTER SHIELD HAS BEEN TERMINATED SLIDE SOLDER SLEEVE ITEM 13 INTO SHEATH, ITEM 8.
8. ON SOLDER END OF HARNESS, STRIP EXTERNAL COVERING AND SHIELD OF TWISTED TRIPLET, ITEM 12, 2.00" ± 0.25". TERMINATE SHIELD USING ITEM 13 WITH 2.00" ±.25" OF WIRE ITEM 14, AND INSERT INTO PIN N OF ITEM 4.
9. TOLERANCE FOR ITEMS 8 & 9 IS +/- 0.125".

PINOUT CHART FOR 200-02598-0003 (KS 270B)

FROM CONNECTOR 030-02001-0000	TO CONNECTOR 030-02204-0007	COLOR	P/N#
H	16	RED	025-00003-0002
C	8	BLACK	025-00003-0000
N	2	BROWN	025-00003-0001
L	12	GRN-RED	025-00018-0052
D	14	GRN-ORN	025-00018-0053
A	15	BLUE-GRAY	025-00018-0068
P	11	WHT-BLUE	025-00018-0096
E	3	YELLOW	025-00029-0004
B	1	BLK-WHT	025-00029-0010
M	9	RED-WHT	025-00029-0012
J	4	ORG-BRN	025-00018-0031
R	6	VIO-WHT	025-00018-0079
SPARE	5		
SPARE	7		
SPARE	10		
SPARE	13		

PINOUT CHART FOR 200-02598-0004 (KS 271B)

FROM CONNECTOR 030-02001-0000	TO CONNECTOR 030-02204-0007	COLOR	P/N#
H	16	RED	025-00003-0002
C	8	BLACK	025-00003-0000
N	2	BROWN	025-00003-0001
L	12	GRN-RED	025-00018-0052
D	14	GRN-ORN	025-00018-0053
A	15	BLUE-GRAY	025-00018-0068
P	11	WHT-BLUE	025-00018-0096
E	3	YELLOW	025-00029-0004
B	1	BLK-WHT	025-00029-0010
M	9	RED-WHT	025-00029-0012
SPARE	4		
SPARE	6		
SPARE	5		
SPARE	7		
SPARE	10		
SPARE	13		

PINOUT CHART FOR 200-02598-0007 (KS 270C)
-2X00 FLAVORS

FROM CONNECTOR 030-02001-0000	TO CONNECTOR 030-02204-0007	COLOR	P/N#
H	16	RED	025-00003-0002
C	8	BLACK	025-00003-0000
N	2	BROWN	025-00003-0001
L	12	GRN-RED	025-00018-0052
D	14	GRN-ORN	025-00018-0053
A	13	BLUE-GRAY	025-00018-0068
P	10	WHT-BLUE	025-00018-0096
E	3	YELLOW	025-00029-0004
B	1	BLK-WHT	025-00029-0010
M	9	RED	025-05006-0000
J	4	BLACK	025-05006-0000
R	6	WHT	025-05006-0000
F	5	ORANGE	025-00018-0033
SPARE	7		
SPARE	11		
K	15	OR-GRN	025-00018-0035
N		GRN	025-00018-0055

PINOUT CHART FOR 200-02598-0005 (KS 270C)
-0X00 FLAVORS

FROM CONNECTOR 030-02001-0000	TO CONNECTOR 030-02204-0007	COLOR	P/N#
H	16	RED	025-00003-0002
C	8	BLACK	025-00003-0000
N	2	BROWN	025-00003-0001
L	12	GRN-RED	025-00018-0052
D	14	GRN-ORN	025-00018-0053
A	13	BLUE-GRAY	025-00018-0068
P	10	WHT-BLUE	025-00018-0096
E	3	YELLOW	025-00029-0004
B	1	BLK-WHT	025-00029-0010
M	9	RED-WHT	025-00029-0012
J	4	GREEN	025-00018-0055
R	6	BLUE	025-00018-0066
F	5	ORANGE	025-00018-0033
SPARE	7		
SPARE	11		
K	15	OR-GRN	025-00018-0035

PINOUT CHART FOR 200-02598-0006 (KS 271C)

FROM CONNECTOR 030-02001-0000	TO CONNECTOR 030-02204-0007	COLOR	P/N#
H	16	RED	025-00003-0002
C	8	BLACK	025-00003-0000
N	2	BROWN	025-00003-0001
L	12	GRN-RED	025-00018-0052
D	14	GRN-ORN	025-00018-0053
A	13	BLUE-GRAY	025-00018-0068
P	10	WHT-BLUE	025-00018-0096
E	3	YELLOW	025-00029-0004
B	1	BLK-WHT	025-00029-0010
M	9	RED-WHT	025-00029-0012
SPARE	4		
SPARE	6		
F	5	ORANGE	025-00018-0033
SPARE	7		
SPARE	11		
K	15	OR-GRN	025-00018-0035

THIS DRAWING IS NOT COMPLETE WITHOUT PART LIST 200-02598-00XX.

FIGURE 6-3 HARNESS ASSEMBLY DWG
(Dwg No 300-02598-0001, Rev AH, Sheet 1 of 1)

6.7 FRONT PLATE ASSY

200-05631-0001 FRONT PLATE ASSEMBLY A

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0001
ITM1	029-00774-0001		GEAR: FINAL DRIVE	EA	1.00
ITM2	073-00988-0014		BASE PLATE W/HARDW	EA	1.00
ITM3	076-02935-0011		PINNON GEAR	EA	1.00
ITM4	089-08104-0030		WASHER FLAT .005	EA	1.00
ITM5	090-00096-0000		PIN DOW, .0938D X	EA	1.00
ITM6	147-05180-0000		BALL BEARING	EA	1.00
ITM7	147-05180-0003		BALL BEARING	EA	1.00
ITM8	016-01007-0013		LOCTITE 680	AR	1.00
ITM9	016-01160-0001		ADHESIVE PRIMER N	AR	1.00
REF1	300-05631-0001		FRONT PLATE ASSEMB	RF	.00

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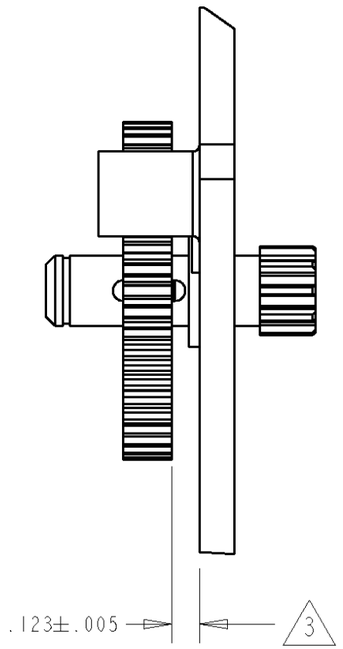
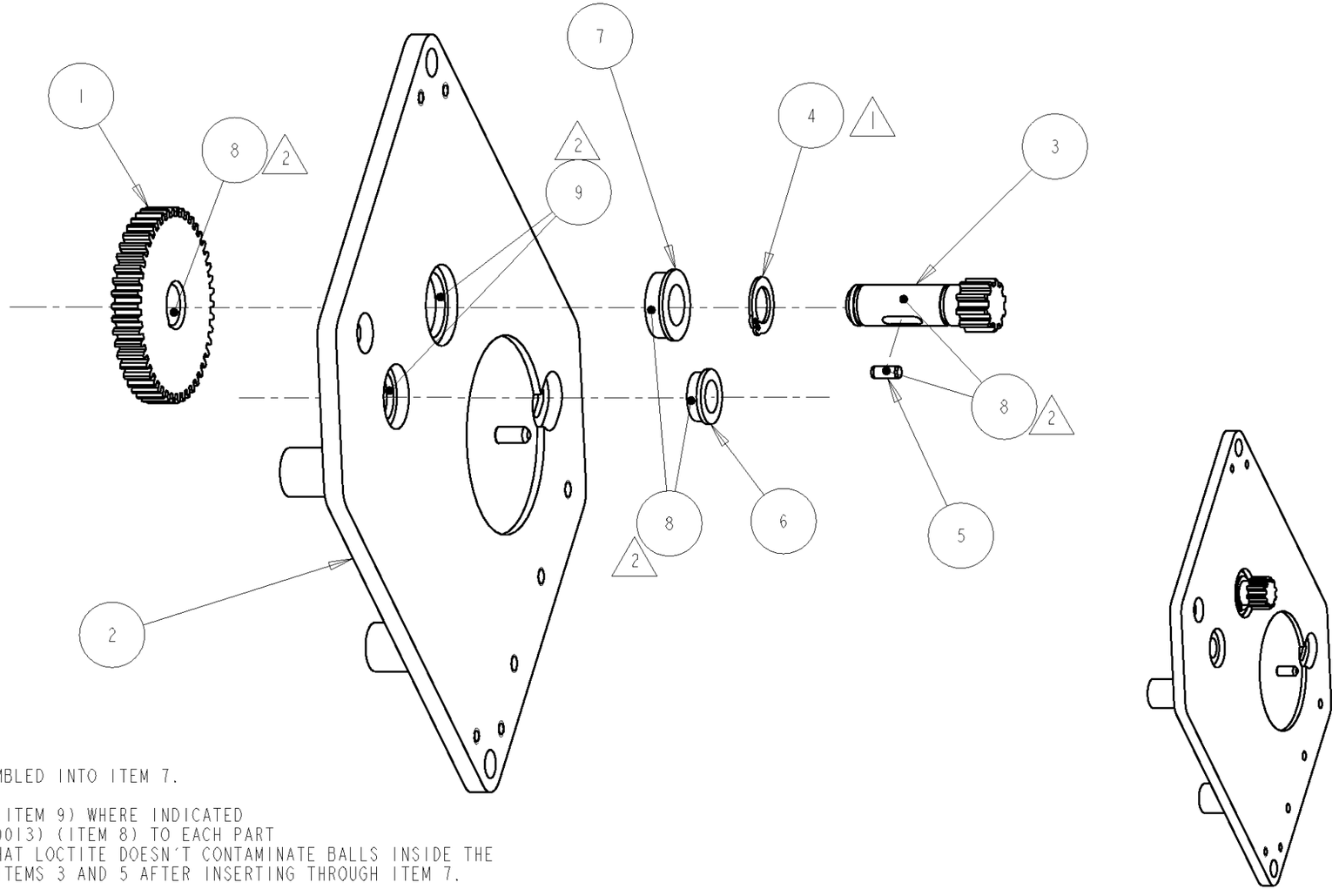


DETAIL A
SCALE 1.500



NOTES:

1. ITEM 4 MUST BE INSTALLED BEFORE ITEM 3 IS ASSEMBLED INTO ITEM 7.
2. APPLY LOCTITE 7649 (PRIMER N), 016-01160-0001 (ITEM 9) WHERE INDICATED & ALLOW TO DRY. INSTALL LOCTITE 680 (016-01007-0013) (ITEM 8) TO EACH PART INDICATED BEFORE FINAL ASSEMBLY, MAKING SURE THAT LOCTITE DOESN'T CONTAMINATE BALLS INSIDE THE BEARINGS AND CAUSE BINDING. APPLY LOCTITE TO ITEMS 3 AND 5 AFTER INSERTING THROUGH ITEM 7.
3. THIS DIMENSION SHOULD BE OBTAINED WITH PINION SHAFT SNAP RING PRESSED FULLY AGAINST FRONT OF BALL BEARING SURFACE.

FIGURE 6-4 FRONT PLATE ASSEMBLY DWG
(Dwg No 300-05631-0000, Rev AD, Sheet 1 of 1)

6.8 PC BOARD ASSEMBLY

200-05632-0009 CIRCUIT ASSEMBLY, KS 271C D
200-05632-0016 P.C BOARD ASSEMBLY A

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0009	-0016
ASY1	200-09835-0001		KS 271C SERVO BOAR	EA	.	1.00
ASY1	300-09656-0505		KS 271C SERVO BOAR	EA	1.00	.
ITM1	047-12255-0002		PCB BRACKET, KS 27	EA	1.00	1.00
ITM11	089-05903-0005		SCR PHP 4-40X5/16	EA	2.00	1.00
ITM2	089-02140-0000		NUT LOCK 4-40	EA	.	1.00
ITM3	089-05903-0004		SCR PHP 4-40X1/4	EA	4.00	4.00
ITM4	089-06008-0004		SCR FHP 4-40X1/4	EA	.	1.00
Q10	007-01074-0001		POWER MOSFET 100V	EA	1.00	1.00
Q11	007-01074-0001		POWER MOSFET 100V	EA	1.00	1.00
REF	300-05632-0000		PC BOARD ASSEMBLY	RF	.	.00
REF1	300-05632-0000		PC BOARD ASSEMBLY	RF	.00	.

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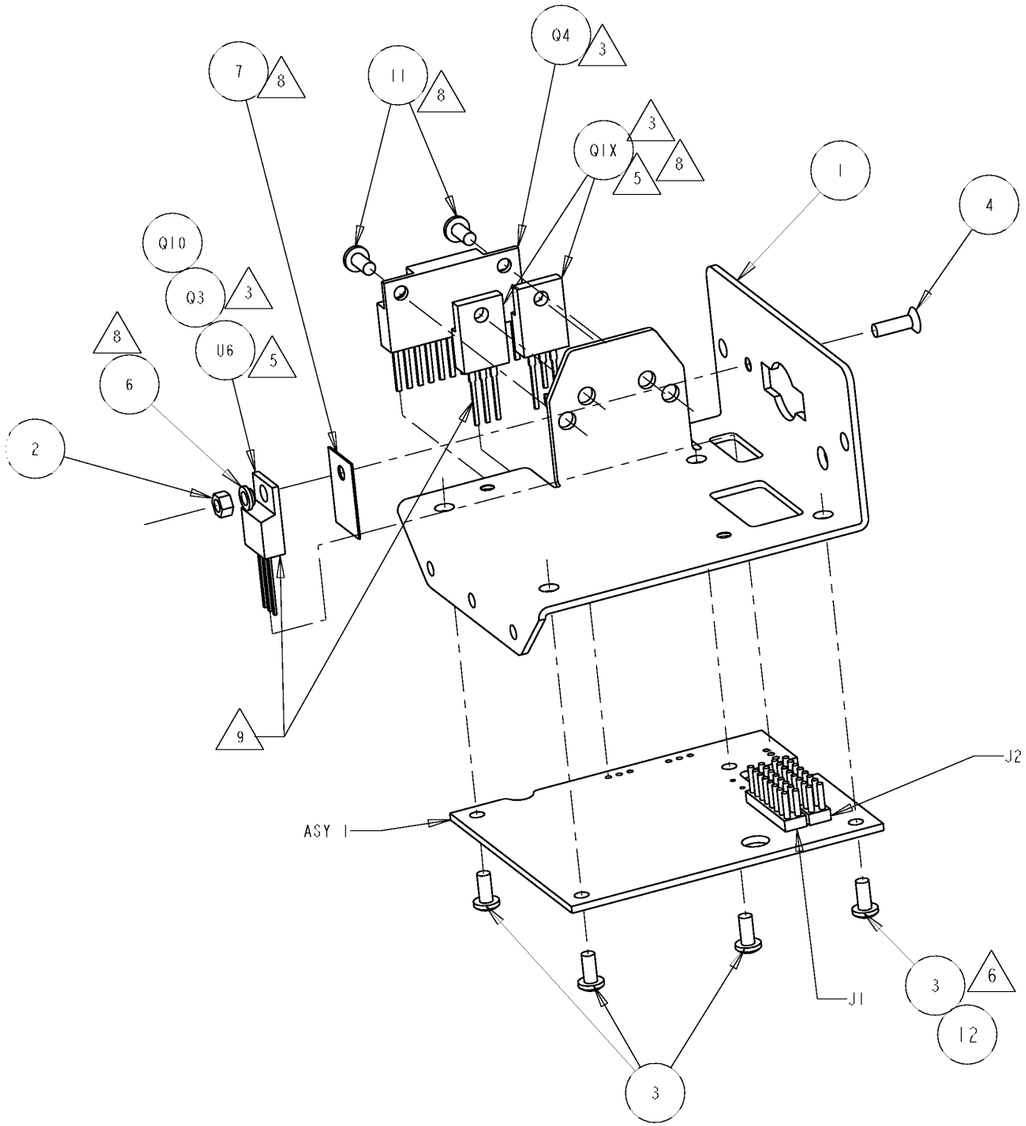
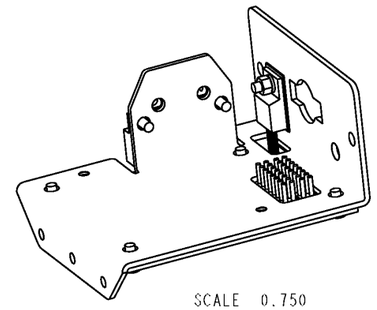




SCALE 0.750

ASSEMBLED VIEW

NOTES:

1. FOR COMPLETE ITEM DESCRIPTION SEE BOM 200-05632-0XXX.
2. SECURE ALL HARDWARE WITH LIQUID STAKING PER 001-01080-0000.
3. TRIM LEADS ON ITEMS Q3, Q4, QIX, U6 AFTER SOLDERING TO PC BOARD.
5. SEE PARTS LIST FOR SPECIFIC REFERENCE DESIGNATOR CALLOUT.
6. ITEM 12 IS INSTALLED ON ASSEMBLY 200-05632-0007 ONLY. ALL OTHER ASSEMBLIES REQUIRE ITEM 3. SEE PARTS LIST.
7. SEE 300-09013-0000, 300-09014-0000, 300-09087-0000, 300-09089-0000, 300-09366-0X00, 300-09448-0X00, 300-09653-0X, 300-09656-0X, 300-09720-0X 300-09835-0000 FOR DETAILED LOCATION OF Q3, Q4, QIX, U6.
8. ITEM NOT USED ON ALL FLAVORS, REFER TO SPECIFIC 200-05632-XXXX.
9. FOR 200-05632-0016, Q10 AND Q11 ARE MOUNTED IN THESE POSITIONS.

FIGURE 6-5 PC BOARD ASSEMBLY DWG
(Dwg No 300-05632-0000, Rev AG, Sheet 1 of 1)

6.9 SUB PLATE ASSEMBLY

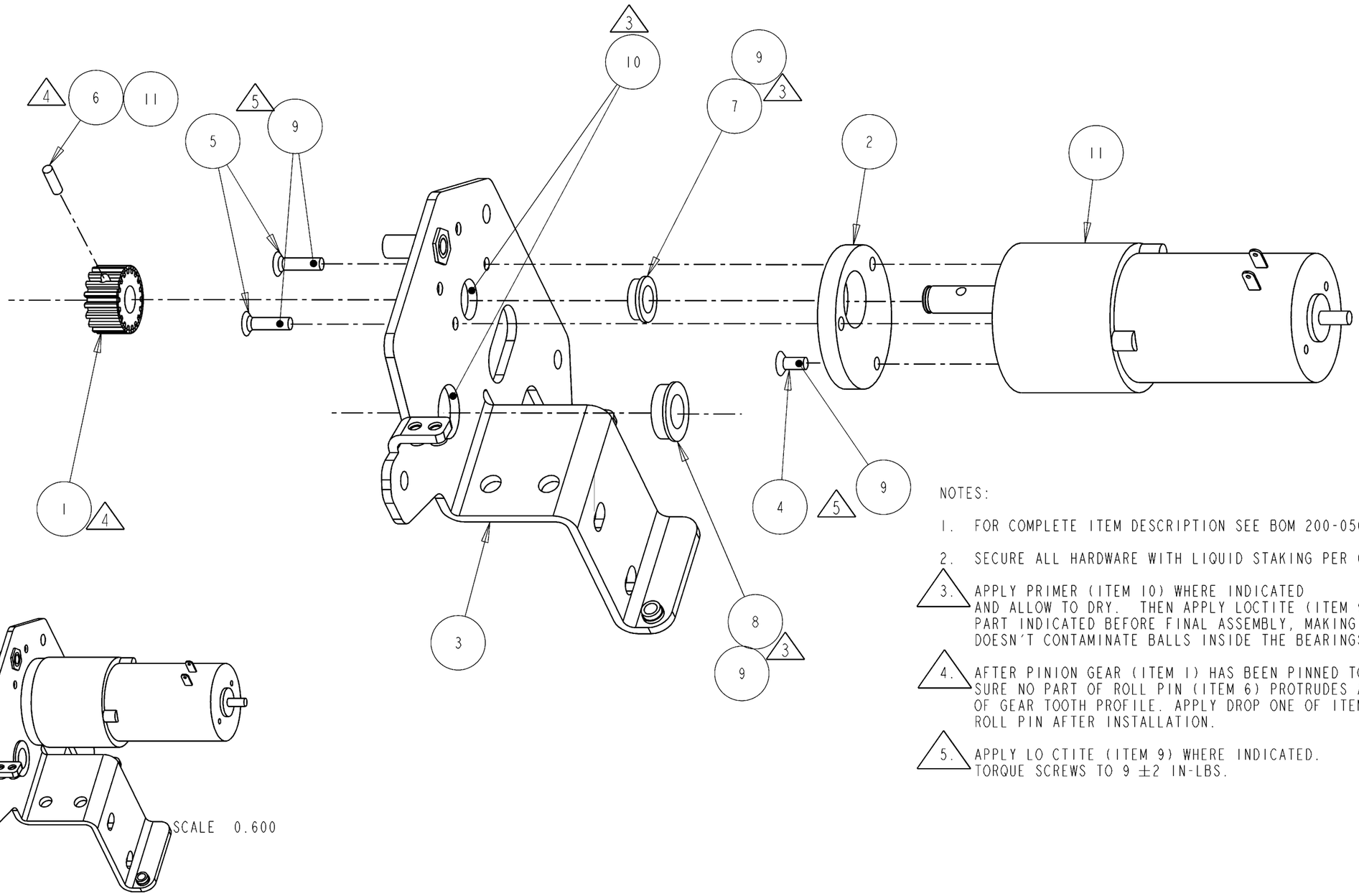
200-05633-0104 SUB PLATE ASSY 1
200-05633-0105 SUB PLATE ASSY 1
200-05633-0106 SUB PLATE ASSY 1
200-05633-0199 COM BOM 271,272B AD

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0104	-0105	-0106	-0199
ITM1	029-00777-0001		PINION MOTOR H.T.	EA	.	.	.	1.00
ITM10	016-01160-0001		ADHESIVE PRIMER N	AR	.	.	.	1.00
ITM11	016-01412-0000		LOCTITE 425	AR	.	.	.	1.00
ITM11	148-05188-0004		MOTOR SPUR	EA	1.00	.	.	.
ITM11	148-05188-0005		MOTOR SPUR	EA	.	1.00	.	.
ITM11	148-05188-0006		MOTOR SPUR	EA	.	.	1.00	.
ITM2	047-10874-0001		MOTOR BRKT	EA	.	.	.	1.00
ITM3	047-10989-0002		SUB PLATE	EA	.	.	.	1.00
ITM4	089-06008-0006		SCR FHP 4-40X3/8	EA	.	.	.	1.00
ITM5	089-06008-0007		SCR FHP 4-40X7/16	EA	.	.	.	2.00
ITM6	090-00052-0026		ROLL PIN .437LX .0	EA	.	.	.	1.00
ITM7	147-05180-0000		BALL BEARING	EA	.	.	.	1.00
ITM8	147-05180-0002		BALL BEARING	EA	.	.	.	1.00
ITM9	016-01007-0013		LOCTITE 680	AR	.	.	.	1.00
REF1	300-05633-0001		SUB PLT ASSY-ROLL,	RF	.	.	.	.00
	200-05633-0199		COM BOM 271,272B	EA	1.00	1.00	1.00	.

200-05633-0107 SUB PLATE ASSY 1
200-05633-0111 SUB PLATE ASSY 1
200-05633-0199 COM BOM 271,272B AD

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0107	-0111	-0199
ITM1	029-00777-0001		PINION MOTOR H.T.	EA	.	.	1.00
ITM10	016-01160-0001		ADHESIVE PRIMER N	AR	.	.	1.00
ITM11	016-01412-0000		LOCTITE 425	AR	.	.	1.00
ITM11	148-05188-0007		MOTOR SPUR	EA	1.00	.	.
ITM11	148-05188-0011		MOTOR SPUR	EA	.	1.00	.
ITM2	047-10874-0001		MOTOR BRKT	EA	.	.	1.00
ITM3	047-10989-0002		SUB PLATE	EA	.	.	1.00
ITM4	089-06008-0006		SCR FHP 4-40X3/8	EA	.	.	1.00
ITM5	089-06008-0007		SCR FHP 4-40X7/16	EA	.	.	2.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0107	-0111	-0199
ITM6	090-00052-0026		ROLL PIN .437LX .0	EA	.	.	1.00
ITM7	147-05180-0000		BALL BEARING	EA	.	.	1.00
ITM8	147-05180-0002		BALL BEARING	EA	.	.	1.00
ITM9	016-01007-0013		LOCTITE 680	AR	.	.	1.00
REF1	300-05633-0001		SUB PLT ASSY-ROLL,	RF	.	.	.00
	200-05633-0199		COM BOM 271,272B	EA	1.00	1.00	.



NOTES:

1. FOR COMPLETE ITEM DESCRIPTION SEE BOM 200-05633-01XX.
2. SECURE ALL HARDWARE WITH LIQUID STAKING PER 001-01080-0000.
3. APPLY PRIMER (ITEM 10) WHERE INDICATED AND ALLOW TO DRY. THEN APPLY LOCTITE (ITEM 9) TO EACH PART INDICATED BEFORE FINAL ASSEMBLY, MAKING SURE THAT LOCTITE DOESN'T CONTAMINATE BALLS INSIDE THE BEARINGS AND CAUSE BINDING.
4. AFTER PINION GEAR (ITEM 1) HAS BEEN PINNED TO MOTOR SHAFT, MAKE SURE NO PART OF ROLL PIN (ITEM 6) PROTRUDES ABOVE LOWEST SURFACE OF GEAR TOOTH PROFILE. APPLY DROP ONE OF ITEM 11 ON BOTH ENDS OF ROLL PIN AFTER INSTALLATION.
5. APPLY LO CTITE (ITEM 9) WHERE INDICATED. TORQUE SCREWS TO 9 ±2 IN-LBS.

FIGURE 6-6 SUB PLATE ASSEMBLY DWG
(Dwg No 300-05633-0001, Rev AD, Sheet 1 of 1)

6.11 CLUTCH BRAKET ASSEMBLY

200-05634-0000 CLUTCH ASSY AB

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0000
ITM1	029-00778-0001		GEAR INTERMED T	EA	1.00
ITM10	016-01007-0013		LOCTITE 680	AR	1.00
ITM2	047-10872-0002		CLUTCH BRACKET	EA	1.00
ITM3	076-03072-0001		CLUTCH SHAFT	EA	1.00
ITM4	078-02103-0002		SPRING, EXT- .625	EA	1.00
ITM6	090-00052-0003		PIN ROL .099X.500	EA	1.00
ITM7	147-05178-0001		BEARING - CLUTCH P	EA	1.00
ITM8	147-05179-0001		BEARING - CLUTCH G	EA	1.00
REF1	300-05634-0000		CLUTCH ASSY	RF	.00

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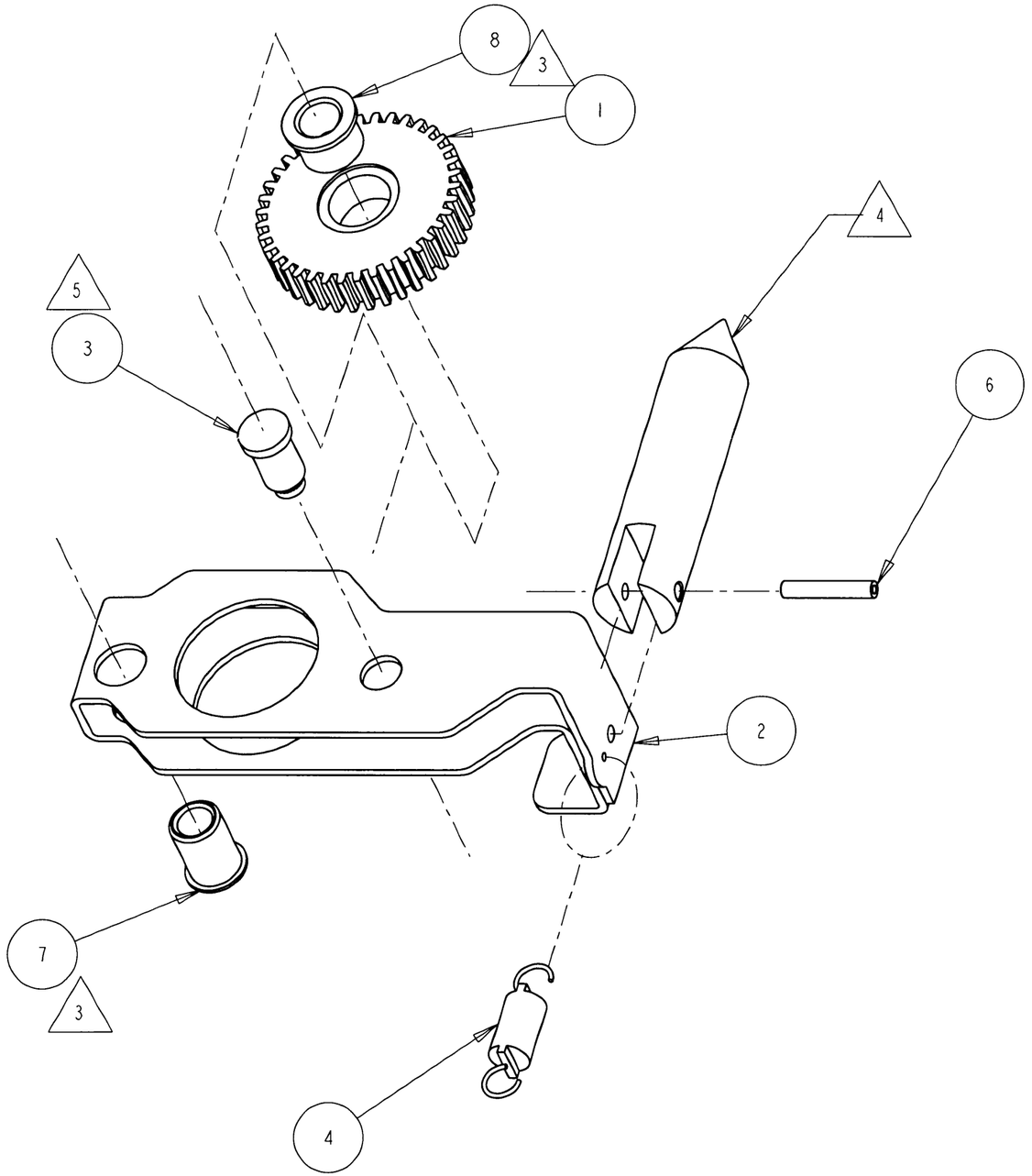
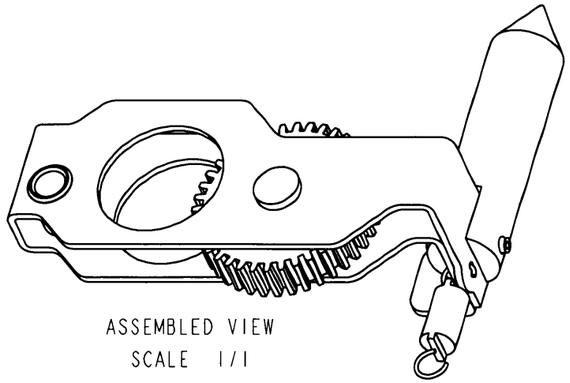




ASSEMBLED VIEW
SCALE 1/1

NOTES:

1. FOR COMPLETE ITEM DESCRIPTION SEE B/M 200-05634-0000.

2. SECURE ALL HARDWARE WITH LIQUID STAKING PER 001-01080-0000.

3. APPLY ITEM 10 (LOCTITE 680, 016-01007-0013) TO OUTSIDE BEARING SURFACE OF ITEMS 7 & 8, AND TO INNER SURFACE OF BEARING MOUNT HOLES IN ITEMS 1 & 2. INSURE LOCTITE IS DISTRIBUTED OVER MATING SURFACES BETWEEN BEARINGS AND GEAR OR BRACKET WHILE ASSEMBLING. MAKE SURE NO LOCTITE GETS ON INNER BEARING SURFACE WHICH COULD CAUSE BINDING.

4. SOLENOID PLUNGER IS PART OF SOLENOID ASSY 023-0019X-000X AND IS PURCHASED AS AN ASSEMBLY. FOR PN# CALL OUT SEE B/M 065-0017X-0099 AND 065-00180-0099.

5. INSERT AND ROLL OVER TUBULAR END OF ITEM 5 TO RETAIN IT IN ITEM 2. ITEM 5 MUST BE HELD TIGHTLY IN ITEM 2. GEAR AND BEARING ASSEMBLY (ITEM 1 AND 8) MUST SPIN FREELY AFTER ASSEMBLY.

FIGURE 6-7 CLUTCH BRACKET ASSEMBLY DWG
(Dwg No 300-05634-0000, Rev AD, Sheet 1 of 1)

6.12 PC BOARD ASSEMBLY

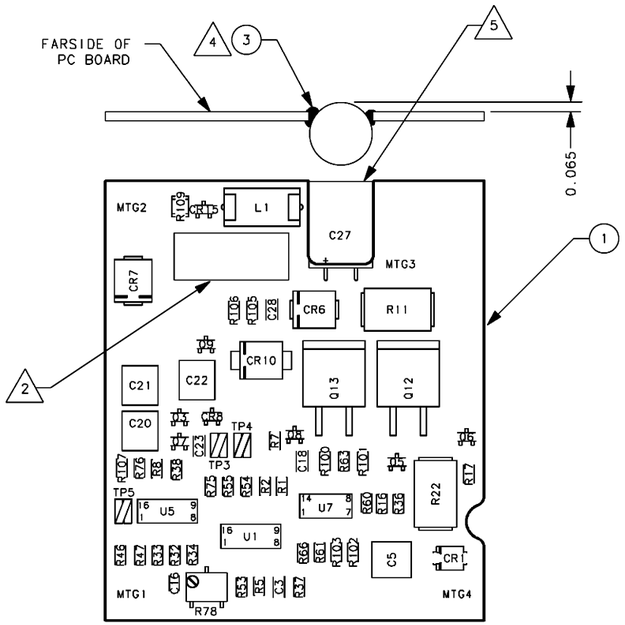
200-09835-0001 KS 271C SERVO BOARD -

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0001
C1	106-04182-0016		CAPCH1800PFNPO/50V	EA	1.00
C13	106-04103-0047		CH 10K X7R/50V	EA	1.00
C15	106-05392-0047		CAP CH3900PFX7R/50	EA	1.00
C16	106-05153-0047		CAP CH 15K X7R/50V	EA	1.00
C17	106-05153-0047		CAP CH 15K X7R/50V	EA	1.00
C18	106-04104-0047		CH 100KX7R/50V	EA	1.00
C20	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C21	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C22	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C23	106-04562-0057		CAPCH5600PFX7R/100	EA	1.00
C25	106-04104-0047		CH 100KX7R/50V	EA	1.00
C26	106-04104-0047		CH 100KX7R/50V	EA	1.00
C27	097-00214-0017		CAP AL 82UF 50V	EA	1.00
C28	106-00134-0001		CAP CH CR .01 200	EA	1.00
C3	106-04182-0016		CAPCH1800PFNPO/50V	EA	1.00
C5	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
CR1	007-05245-0024		DIO Z 33V SMD	EA	1.00
CR10	007-05240-0000		36V TRANSORB SO	EA	1.00
CR14	007-06184-0000		DIO DUAL SWITCHING	EA	1.00
CR15	007-05117-0012		DIO Z 10V SOT	EA	1.00
CR2	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR3	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR4	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR5	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR6	007-05247-0001		TRANSIENT VOLTAGE	EA	1.00
CR7	007-06437-0007		DIO 3A 600V SMD	EA	1.00
CR8	007-06177-0000		SMD DIO SI MMBD914	EA	1.00
CR9	007-06177-0000		SMD DIO SI MMBD914	EA	1.00
ITM1	009-09835-0002		KS 271C SERVO BOAR	EA	1.00
ITM2	016-01040-0000		COATING TYPE AR	AR	1.00
ITM3	016-01082-0000		DC RTV 3145	AR	1.00
J1	030-02453-0008		CONN, HDR, PLG,.1	EA	1.00
J2	030-02453-0008		CONN, HDR, PLG,.1	EA	1.00

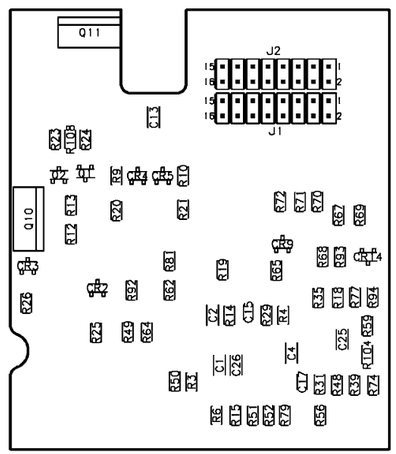
SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0001
L1	019-02752-0100		IND SM 10UH 15%	EA	1.00
Q1	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q10	007-01074-0001		POWER MOSFET 100V	RF	.00
Q11	007-01074-0001		POWER MOSFET 100V	RF	.00
Q12	007-01072-0001		POWER MOSFET	EA	1.00
Q13	007-01072-0001		POWER MOSFET	EA	1.00
Q2	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q3	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q5	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q6	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q7	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q8	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q9	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
R1	139-03483-0000		RES CH 348K EW 1%	EA	1.00
R10	139-01003-0000		RES CHIP 100KEW1%	EA	1.00
R100	139-04991-0000		RES CHIP 4.99KEW1%	EA	1.00
R101	139-04991-0000		RES CHIP 4.99KEW1%	EA	1.00
R102	139-04223-0000		RES CH 422K EW 1%	EA	1.00
R103	139-04223-0000		RES CH 422K EW 1%	EA	1.00
R104	139-04993-0000		RES CHIP 499K EW1%	EA	1.00
R105	139-00000-0004		RES CH 0 EW	EA	1.00
R106	139-00000-0004		RES CH 0 EW	EA	1.00
R108	139-00332-0000		RES CH 33.2 EW 1%	EA	1.00
R109	139-01001-0020		RES CH 1000 QW 1%	EA	1.00
R11	132-05145-0330		RES SM WW .33 5%	EA	1.00
R12	139-02002-0003		RES CH 20.0K EW.1%	EA	1.00
R13	139-02002-0003		RES CH 20.0K EW.1%	EA	1.00
R14	139-03573-0000		RES CHIP 357KEW1%	EA	1.00
R15	139-03573-0000		RES CHIP 357KEW1%	EA	1.00
R16	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R17	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R18	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R19	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R2	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R20	139-02802-0000		RES CH 28K EW 1%	EA	1.00
R21	139-02802-0000		RES CH 28K EW 1%	EA	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0001
R22	132-05145-0103		RES SM 100 2W 5%	EA	1.00
R23	139-00200-0000		RES CH 20.0 EW 1%	EA	1.00
R24	139-00200-0000		RES CH 20.0 EW 1%	EA	1.00
R25	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R26	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R29	139-03013-0000		RES CHIP 301K EW1%	EA	1.00
R3	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R31	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R32	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R33	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R34	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R35	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R36	139-02001-0000		RES CHIP 2K EW 1%	EA	1.00
R37	139-02001-0000		RES CHIP 2K EW 1%	EA	1.00
R38	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R39	139-02002-0003		RES CH 20.0K EW.1%	EA	1.00
R4	139-03483-0000		RES CH 348K EW 1%	EA	1.00
R48	139-02002-0003		RES CH 20.0K EW.1%	EA	1.00
R49	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R5	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R50	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R51	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R52	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R53	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R54	139-01822-0000		RES CHIP 18.2KEW1%	EA	1.00
R55	139-07321-0000		RES CH 7.32K EW 1%	EA	1.00
R56	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R59	139-01182-0000		RES CH 11.8K EW1	EA	1.00
R6	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R60	139-07323-0000		RES CH 732K EW 1%	EA	1.00
R61	139-07323-0000		RES CH 732K EW 1%	EA	1.00
R62	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R63	139-04221-0000		RES CH 4.22K EW 1%	EA	1.00
R64	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R65	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00
R66	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00

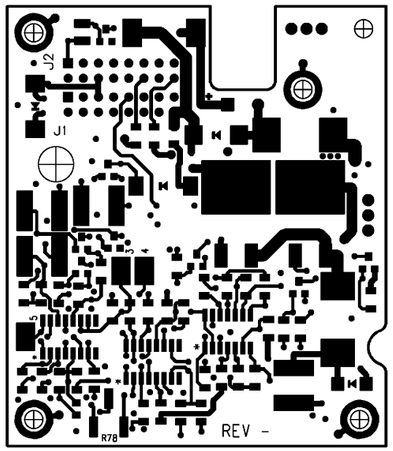
SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0001
R67	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00
R68	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R69	139-01181-0000		RES CHIP 1.18KEW1%	EA	1.00
R7	139-01212-0000		RES CHIP 12.1K1%EW	EA	1.00
R70	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R71	139-01181-0000		RES CHIP 1.18KEW1%	EA	1.00
R72	139-20100-0000		RES CH 1 EW 1%	EA	1.00
R75	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R76	139-04993-0000		RES CHIP 499K EW1%	EA	1.00
R77	139-02553-0000		RES CH 255K EW 1%	EA	1.00
R78	133-00562-3104		RES VAR 12/15T100K	EA	1.00
R79	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R8	139-01212-0000		RES CHIP 12.1K1%EW	EA	1.00
R81	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R9	139-01003-0000		RES CHIP 100KEW1%	EA	1.00
R92	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R93	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R94	139-08451-0000		RES CH 8.45K EW 1%	EA	1.00
REF	192-09835-0001		KS 271C SERVO BOAR	EA	1.00
REF1	300-09835-01		KS 271C SERVO BOAR	RF	.00
REF2	002-09835-0000		KS 271C YAW SERVO	RF	.00
TP3	008-00309-0000		TEST POINT SURF MN	EA	1.00
TP4	008-00309-0000		TEST POINT SURF MN	EA	1.00
TP5	008-00309-0000		TEST POINT SURF MN	EA	1.00
U1	120-03552-0000		QUAD OP AMP	EA	1.00
U5	120-03552-0000		QUAD OP AMP	EA	1.00
U7	120-03163-0001		LM2901 SO-14 COMP	EA	1.00

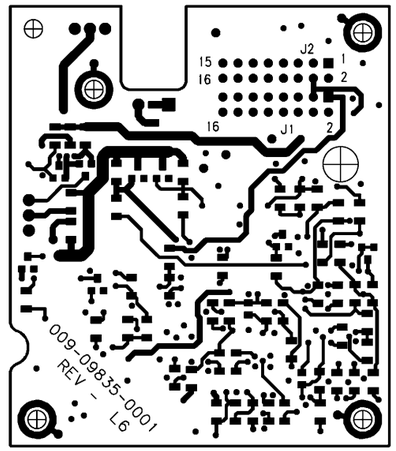


NEARSIDE VIEW OF PC BOARD



FARSIDE VIEW OF PC BOARD





NOTES:

1. POST COAT BOTH SIDES OF P.C. BOARD WITH PN 016-01040-0000. THE FOLLOWING SHOULD BE FREE OF POST COATING: J1-J2, MTG1-MTG4, R78, TP3-TP5
2. PRINTED CIRCUIT ASSEMBLY IDENTIFICATION MUST BE IN ACCORDANCE WITH SPEC. 001-01101-0000.
3. WHERE APPLICABLE, LIQUID STAKE ALL FASTENERS PER SPEC. 001-01080-0000.
4. APPLY ITEM 3 AS SHOWN TO FILL GAP BETWEEN COMPONENT OUTER DIAMETER AND BOARD EDGE.
5. C27 TOP MUST BE FLUSH OR BELOW EDGE OF BOARD.

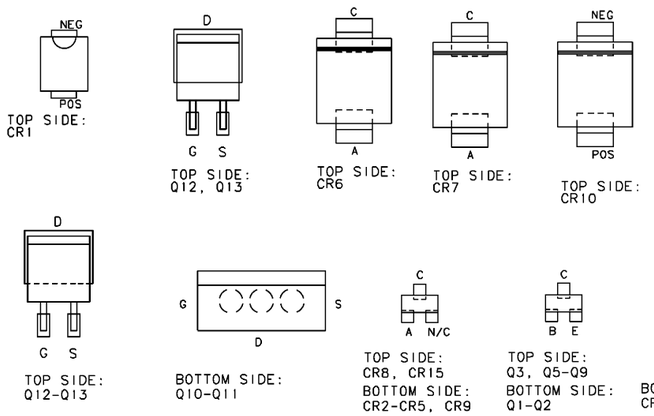
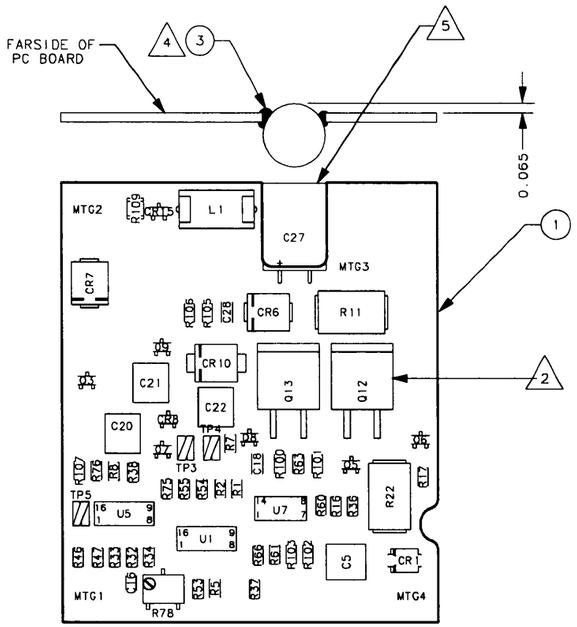
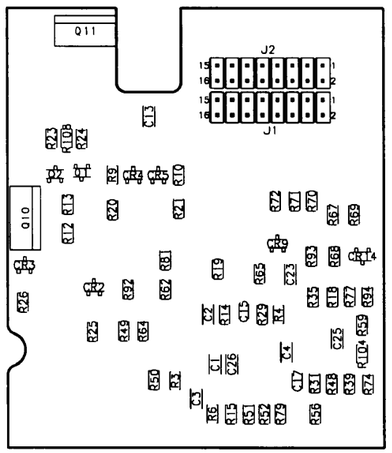


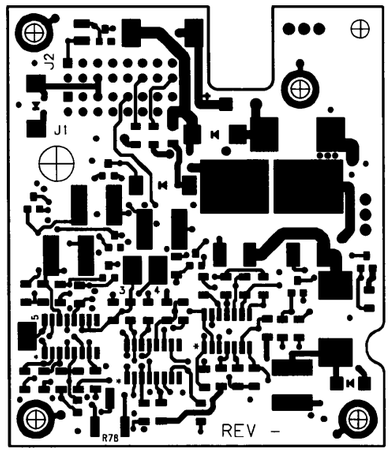
FIGURE 6-8 SERVO BOARD ASSEMBLY DWG 300-09835-0000
(Dwg No 300-09835-0000, Rev -, Sheet 1 of 1)

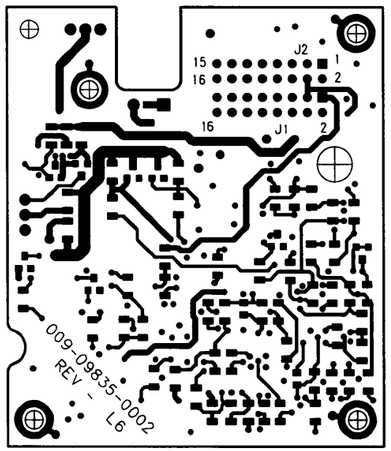


NEARSIDE VIEW OF PC BOARD



FARSIDE VIEW OF PC BOARD





NOTES:

1. POST COAT BOTH SIDES OF P.C. BOARD WITH PN 016-01040-0000. THE FOLLOWING SHOULD BE FREE OF POST COATING: MTG1-MTG4, R78, TP3-TP5 FARSIDE ONLY OF J1 & J2.
2. PRINTED CIRCUIT ASSEMBLY IDENTIFICATION MUST BE IN ACCORDANCE WITH SPEC. 001-01101-0000, ACROSS Q12 & Q13.
3. WHERE APPLICABLE, LIQUID STAKE ALL FASTENERS PER SPEC. 001-01080-0000.
4. APPLY ITEM 3 AS SHOWN TO FILL GAP BETWEEN COMPONENT OUTER DIAMETER AND BOARD EDGE.
5. C27 TOP MUST BE FLUSH OR BELOW EDGE OF BOARD.

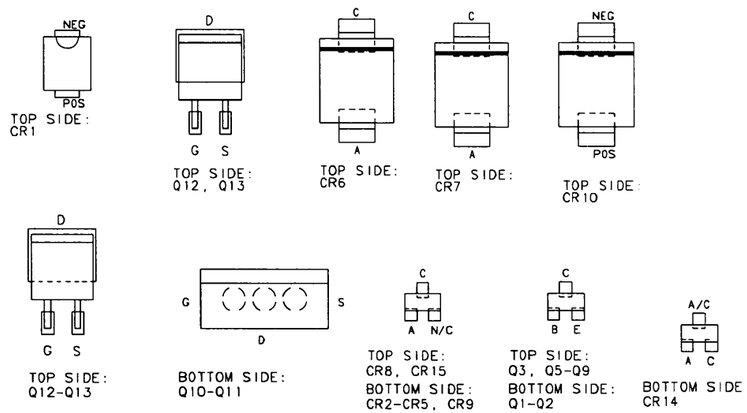


FIGURE 6-9 SERVO BOARD ASSEMBLY DWG 300-09835-01
(Dwg No 300-09835-01, Rev A, Sheet 1 of 1)

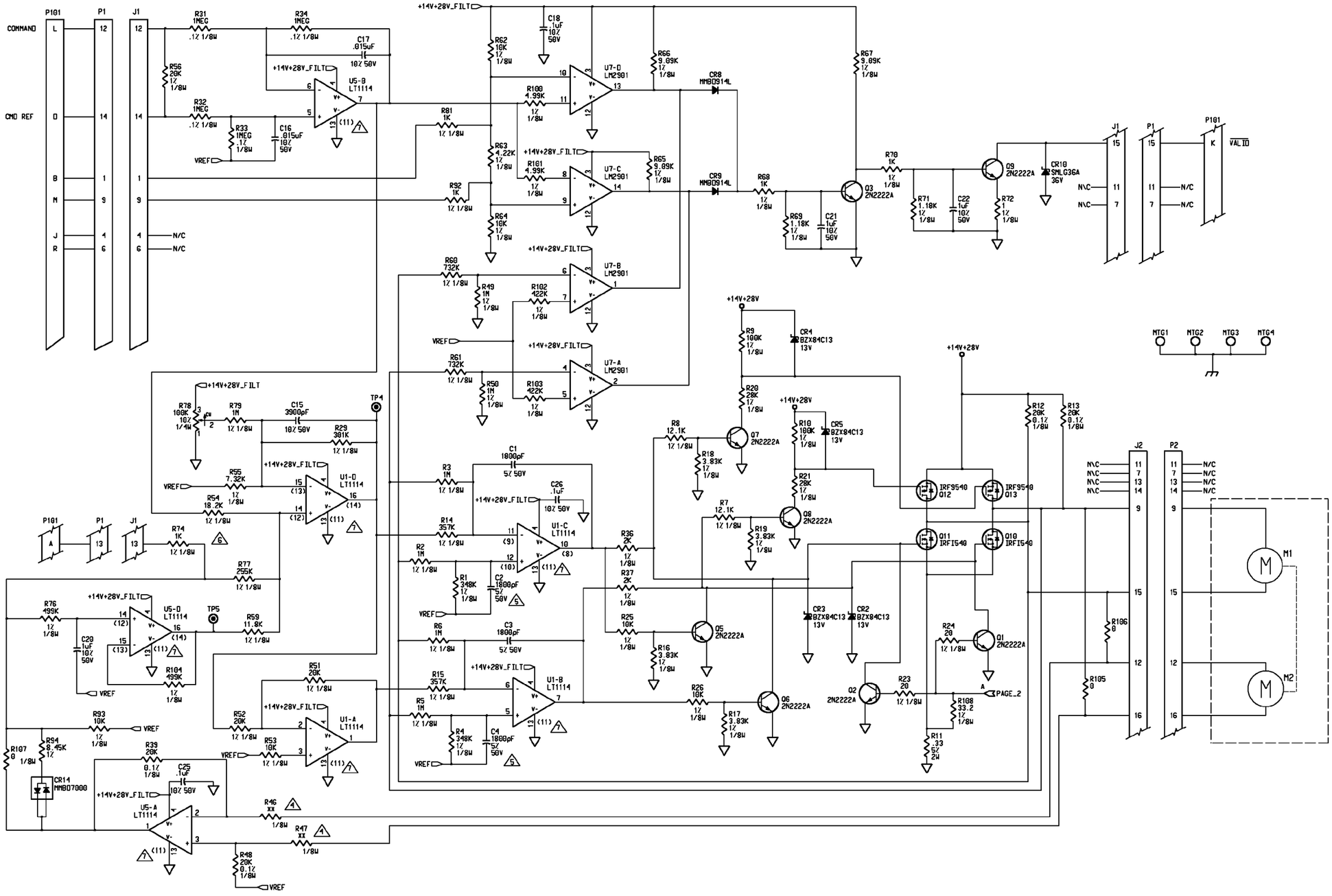
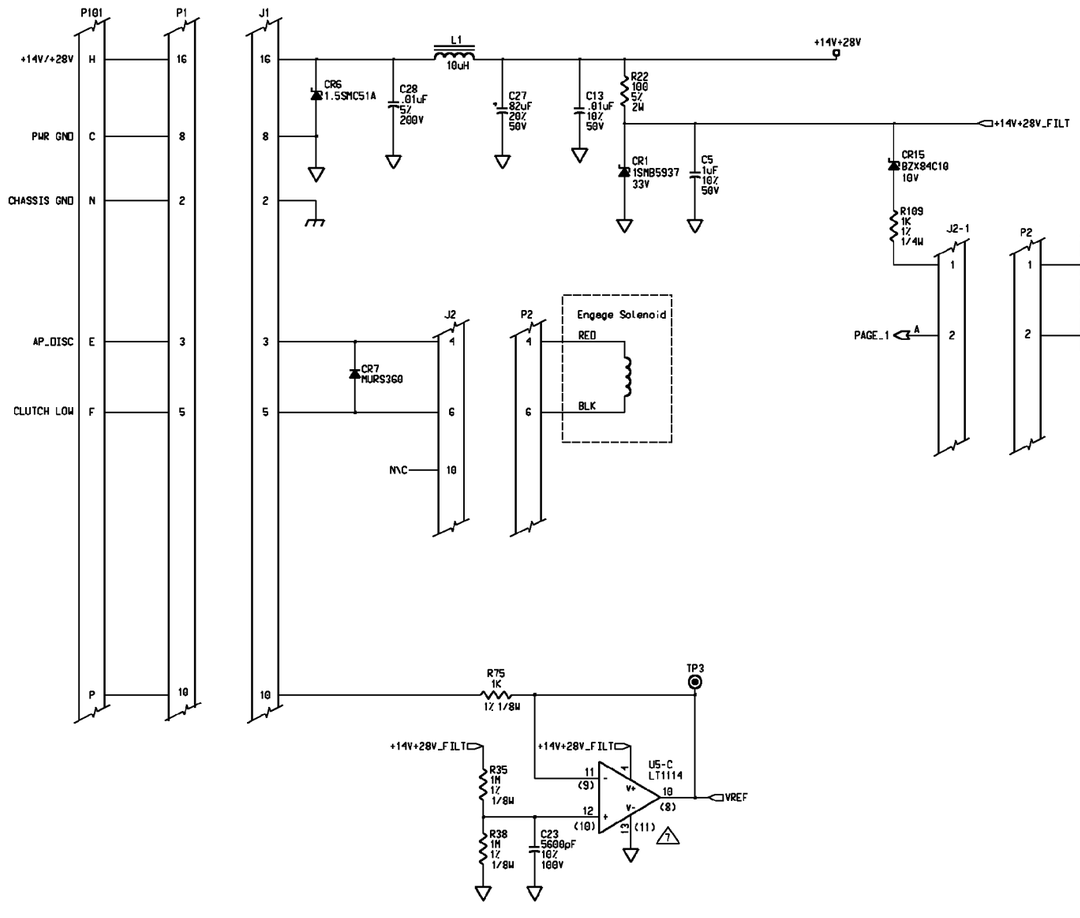


FIGURE 6-10 SERVO BOARD ASSEMBLY SCHEMATIC 002-09835-0000
(Dwg No 002-09835-0000, Rev -, Sheet 1 of 2)



NOTES:

1. P101 is a harness connector external to the P.C. board.
2. Symbols located inside of deshed boxes denote components external to the P.C. boe
3. P1 and P2 mate to J1 and J2 respectively.
4. R46 and R47 are specified on 065-00179-XX00 BOM.
5. C2 and C4 not installed.

NOTE 6 APPLYS TO 065-00179-0600 FLAVOR ONLY.

6. R74, R107, AND M2 ARE NOT INSTALLED ON 065-00179-0600 FLAVOR.
7. WHEN A 14 PIN MC33074 IC IS USED IN PLACE OF A 16 PIN LT1114 IC THE NUMBERS IN ( ) SHALL BE USED.

FIGURE 6-10 SERVO BOARD ASSEMBLY SCHEMATIC 002-09835-0000 (Sheet 2 of 2)

6.13 SERVO BOARD 300-09656-XXXX

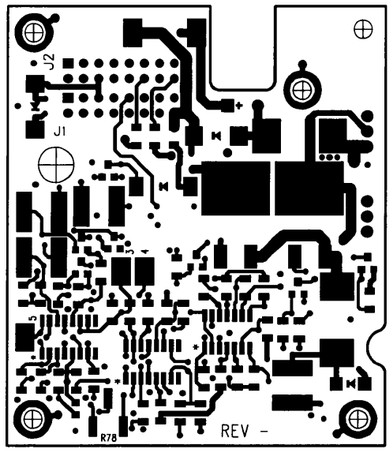
300-09656-0505 KS 271C SERVO BOARD -

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0505
C1	106-04182-0016		CAPCH1800PFNPO/50V	EA	1.00
C13	106-04103-0047		CH 10K X7R/50V	EA	1.00
C15	106-05392-0047		CAP CH3900PFX7R/50	EA	1.00
C16	106-05153-0047		CAP CH 15K X7R/50V	EA	1.00
C17	106-05153-0047		CAP CH 15K X7R/50V	EA	1.00
C18	106-04104-0047		CH 100KX7R/50V	EA	1.00
C20	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C21	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C22	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C23	106-04562-0057		CAPCH5600PFX7R/100	EA	1.00
C25	106-04104-0047		CH 100KX7R/50V	EA	1.00
C26	106-04104-0047		CH 100KX7R/50V	EA	1.00
C27	097-00214-0017		CAP AL 82UF 50V	EA	1.00
C28	106-00134-0001		CAP CH CR .01 5% 2	EA	1.00
C3	106-04182-0016		CAPCH1800PFNPO/50V	EA	1.00
C5	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
CR1	007-05245-0024		DIO Z 33V SMD	EA	1.00
CR10	007-05240-0000		36V TRANSORB SO	EA	1.00
CR2	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR3	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR4	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR5	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR6	007-05247-0001		TRANSIENT VOLTAGE	EA	1.00
CR7	007-06437-0007		DIO 3A 600V SMD	EA	1.00
CR8	007-06177-0000		SMD DIO SI MMBD914	EA	1.00
CR9	007-06177-0000		SMD DIO SI MMBD914	EA	1.00
ITM1	009-09656-0003		KS 271C SERVO BOAR	EA	1.00
ITM2	016-01040-0000		COATING TYPE AR	AR	1.00
ITM3	016-01082-0000		DC RTV 3145	AR	1.00
J1	030-02453-0008		CONN, HDR, PLG,.1	EA	1.00
J2	030-02453-0008		CONN, HDR, PLG,.1	EA	1.00
L1	019-02752-0100		IND SM 10UH 15%	EA	1.00
Q1	007-00383-0004		SOT-23 2N2222A XST	EA	1.00

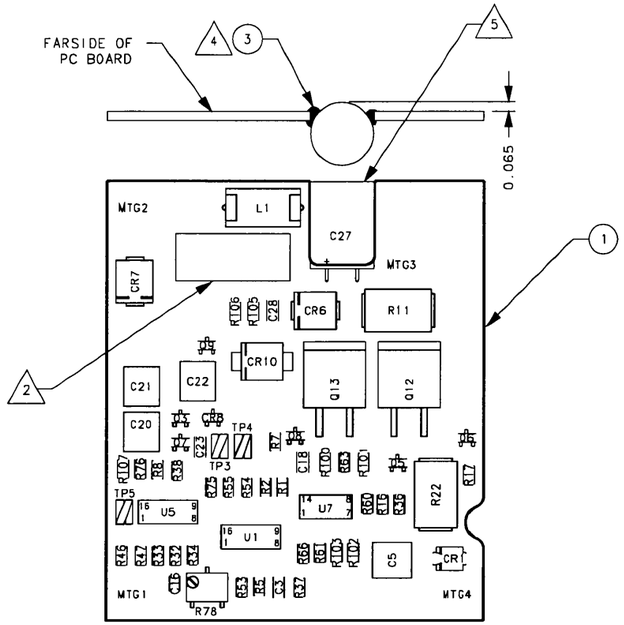
SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0505
Q10	007-01074-0001		POWER MOSFET 100V	RF	.00
Q11	007-01074-0001		POWER MOSFET 100V	RF	.00
Q12	007-01072-0001		POWER MOSFET	EA	1.00
Q13	007-01072-0001		POWER MOSFET	EA	1.00
Q2	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q3	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q5	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q6	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q7	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q8	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q9	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
R1	139-03483-0000		RES CH 348K EW 1%	EA	1.00
R10	139-01003-0000		RES CHIP 100KEW1%	EA	1.00
R100	139-04991-0000		RES CHIP 4.99KEW1%	EA	1.00
R101	139-04991-0000		RES CHIP 4.99KEW1%	EA	1.00
R102	139-04223-0000		RES CH 422K EW 1%	EA	1.00
R103	139-04223-0000		RES CH 422K EW 1%	EA	1.00
R104	139-04993-0000		RES CHIP 499K EW1%	EA	1.00
R107	139-00000-0004		RES CH 0 EW	EA	1.00
R11	132-05145-0330		RES SM WW .33 5%	EA	1.00
R12	139-02002-0003		RES CH 20.0K EW.1%	EA	1.00
R13	139-02002-0003		RES CH 20.0K EW.1%	EA	1.00
R14	139-03573-0000		RES CHIP 357KEW1%	EA	1.00
R15	139-03573-0000		RES CHIP 357KEW1%	EA	1.00
R16	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R17	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R18	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R19	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R2	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R20	139-02802-0000		RES CH 28K EW 1%	EA	1.00
R21	139-02802-0000		RES CH 28K EW 1%	EA	1.00
R22	132-05145-0103		RES SM 100 2W 5%	EA	1.00
R23	139-00200-0000		RES CH 20.0 EW 1%	EA	1.00
R24	139-00200-0000		RES CH 20.0 EW 1%	EA	1.00
R25	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R26	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0505
R29	139-02053-0000		RES CH 205K EW 1%	EA	1.00
R3	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R31	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R32	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R33	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R34	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R35	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R36	139-02001-0000		RES CHIP 2K EW 1%	EA	1.00
R37	139-02001-0000		RES CHIP 2K EW 1%	EA	1.00
R38	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R39	139-02002-0003		RES CH 20.0K EW.1%	EA	1.00
R4	139-03483-0000		RES CH 348K EW 1%	EA	1.00
R48	139-02002-0003		RES CH 20.0K EW.1%	EA	1.00
R49	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R5	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R50	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R51	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R52	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R53	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R54	139-01822-0000		RES CHIP 18.2KEW1%	EA	1.00
R55	139-04991-0000		RES CHIP 4.99KEW1%	EA	1.00
R56	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R59	139-01182-0000		RES CH 11.8K EW1	EA	1.00
R6	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R60	139-07323-0000		RES CH 732K EW 1%	EA	1.00
R61	139-07323-0000		RES CH 732K EW 1%	EA	1.00
R62	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R63	139-04221-0000		RES CH 4.22K EW 1%	EA	1.00
R64	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R65	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00
R66	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00
R67	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00
R68	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R69	139-01181-0000		RES CHIP 1.18KEW1%	EA	1.00
R7	139-01212-0000		RES CHIP 12.1K1%EW	EA	1.00
R70	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0505
R71	139-01181-0000		RES CHIP 1.18KEW1%	EA	1.00
R72	139-20100-0000		RES CH 1 EW 1%	EA	1.00
R74	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R75	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R76	139-04993-0000		RES CHIP 499K EW1%	EA	1.00
R77	139-02553-0000		RES CH 255K EW 1%	EA	1.00
R78	133-00562-3104		RES VAR 12/15T100K	EA	1.00
R79	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R8	139-01212-0000		RES CHIP 12.1K1%EW	EA	1.00
R81	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R9	139-01003-0000		RES CHIP 100KEW1%	EA	1.00
R92	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
REF1	300-09656-03		KS 271C SERVO BOAR	RF	.00
REF2	002-09656-02		KS 271C ROLL SERV	RF	.00
REF3	300-09656-0405		KS 271C SERVO BOAR	EA	1.00
TP3	008-00309-0000		TEST POINT SURF MN	EA	1.00
TP4	008-00309-0000		TEST POINT SURF MN	EA	1.00
TP5	008-00309-0000		TEST POINT SURF MN	EA	1.00
U1	120-03552-0000		QUAD OP AMP	EA	1.00
U5	120-03552-0000		QUAD OP AMP	EA	1.00
U7	120-03163-0001		LM2901 SO-14 COMP	EA	1.00

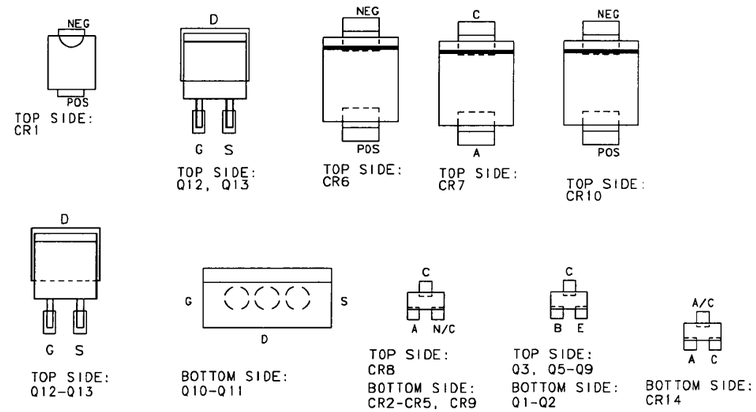


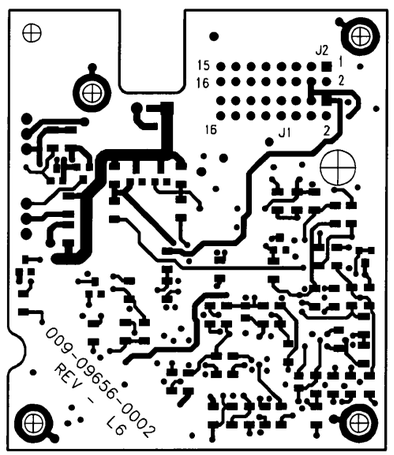
NEARSIDE VIEW OF PC BOARD

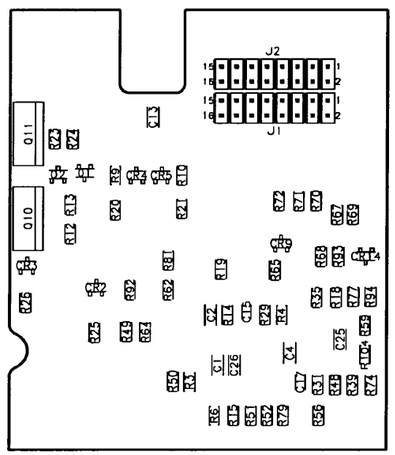


NOTES:

1. PRIOR TO POST COATING BOTH SIDES OF P.C. BOARD WITH ITEM 2, MASK OFF ALL MOUNTING AREAS AND REFERENCE DESIGNATORS: J1-J2, MTG1-MTG4, R78, TP3-TP5
2. PRINTED CIRCUIT ASSEMBLY IDENTIFICATION MUST BE IN ACCORDANCE WITH SPEC. 001-01101-0000.
3. WHERE APPLICABLE, LIQUID STAKE ALL FASTENERS PER SPEC. 001-01080-0000.
4. APPLY ITEM 3 AS SHOWN TO FILL GAP BETWEEN COMPONENT OUTER DIAMETER AND BOARD EDGE.
5. C27 TOP MUST BE FLUSH OR BELOW EDGE OF BOARD.

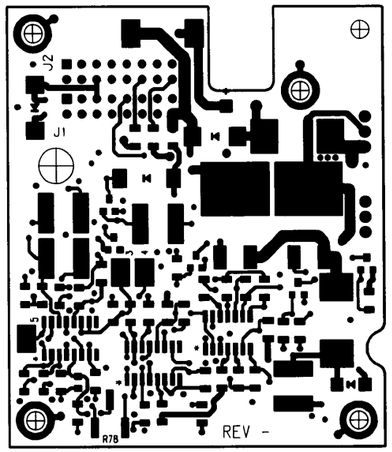




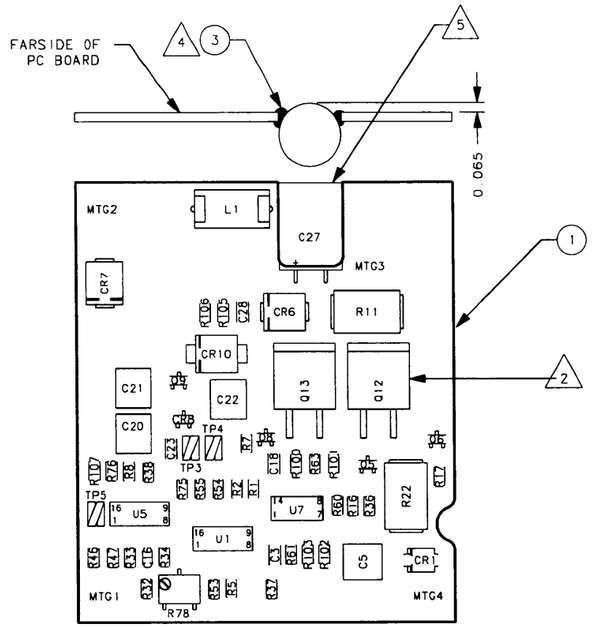


FARSIDE VIEW OF PC BOARD

FIGURE 6-11 SERVO BOARD ASSEMBLY DWG 300-09656-02
(Dwg No 300-09656-02, Rev A, Sheet 1 of 1)

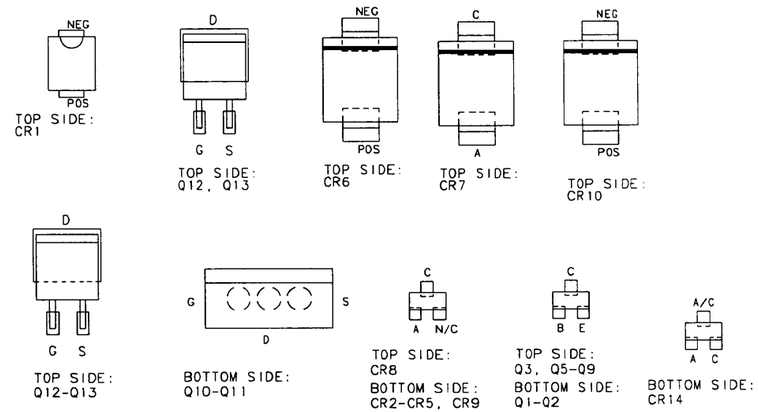


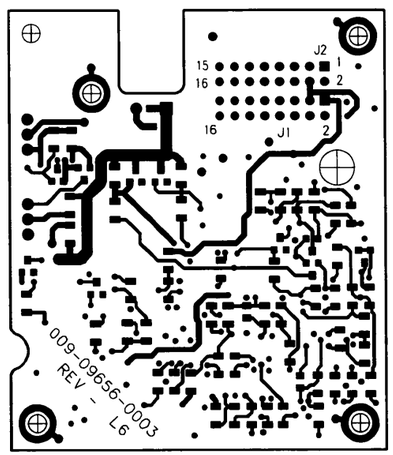
NEARSIDE VIEW OF PC BOARD

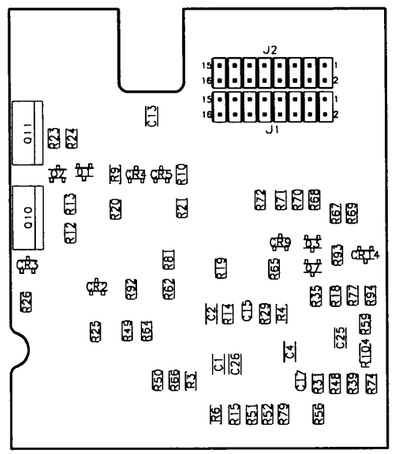


NOTES:

1. PRIOR TO POST COATING BOTH SIDES OF P.C. BOARD WITH ITEM 2, MASK OFF ALL MOUNTING AREAS AND REFERENCE DESIGNATORS: MTG1-MTG4, R78, TP3-TP5 FARSIDE ONLY OF J1 & J2.
2. PRINTED CIRCUIT ASSEMBLY IDENTIFICATION MUST BE IN ACCORDANCE WITH SPEC. 001-01101-0000, ACROSS Q12 & Q13.
3. WHERE APPLICABLE, LIQUID STAKE ALL FASTENERS PER SPEC. 001-01080-0000.
4. APPLY ITEM 3 AS SHOWN TO FILL GAP BETWEEN COMPONENT OUTER DIAMETER AND BOARD EDGE.
5. C27 TOP MUST BE FLUSH OR BELOW EDGE OF BOARD.







FARSIDE VIEW OF PC BOARD

FIGURE 6-12 SERVO BOARD ASSEMBLY DWG 300-09656-03
(Dwg No 300-09656-03, Rev A, Sheet 1 of 1)

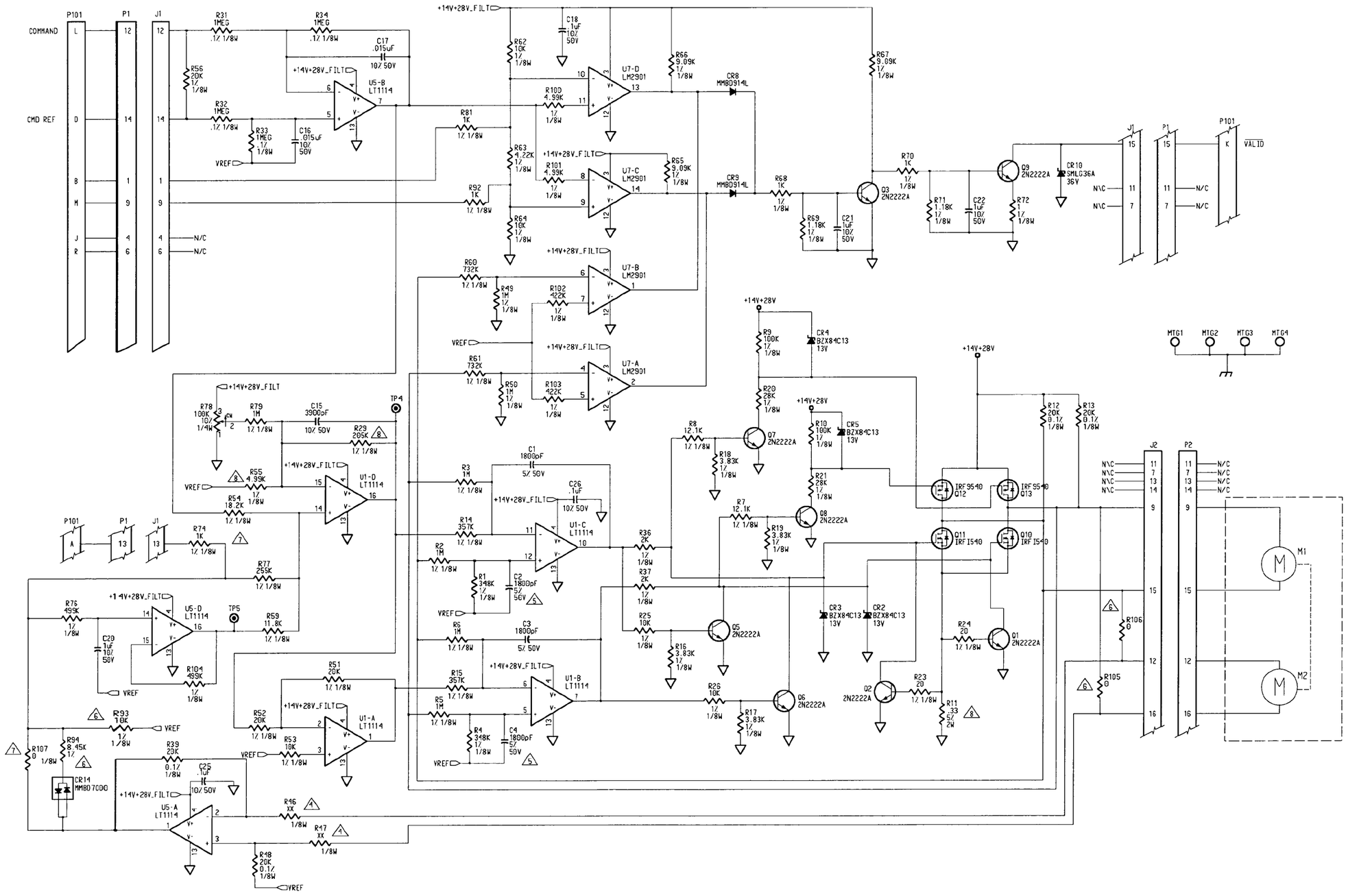
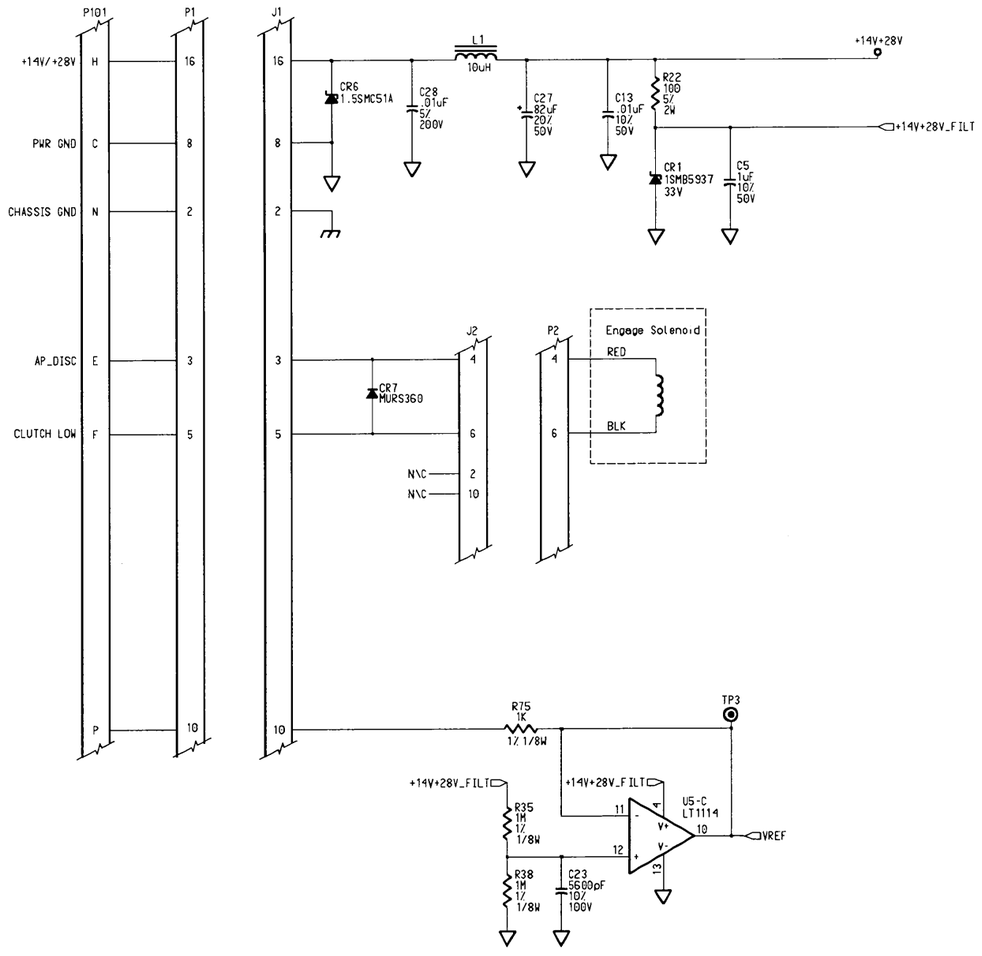


FIGURE 6-13 SERVO BOARD SCHEMATIC 002-09656-02
(Dwg No 002-09656-02, Rev -, Sheet 1 of 2)



NOTES:

1. P101 is a harness connector external to the P.C. board.
2. Symbols located inside of dashed boxes denote components external to the f
3. P1 and P2 mate to J1 and J2 respectively.
4. R46 and R47 are specified on 065-00179-XX00 BOM.
5. C2 and C4 not installed.

NOTES 6 THRU 8 APPLY TO 065-00179-0600 FLAVOR ONLY.

6. CR14, R93, R94, R105, AND R106 INSTALLED ON 065-00179-0600 FLAVOR ONLY.
7. R74, R107, AND M2 ARE NOT INSTALLED ON 065-00179-0600 FLAVOR.
8. FOR 065-00179-0600, R29 IS 301K, R55 IS 7.32K AND R11 IS 0.43 OHM.

FIGURE 6-13 SERVO BOARD SCHEMATIC 002-09656-02
(Sheet 2 of 2)

6.14 SERVO BOARD 200-09807-XXXX

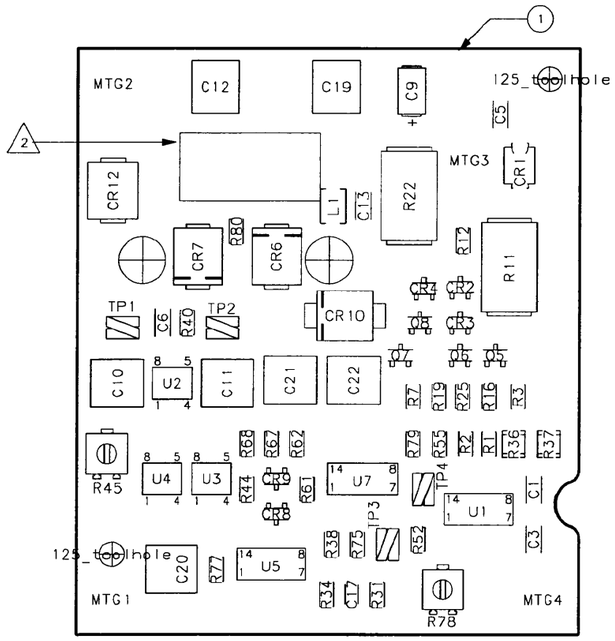
200-09087-0000 KFC 140 SERVO - PC BOARD AA

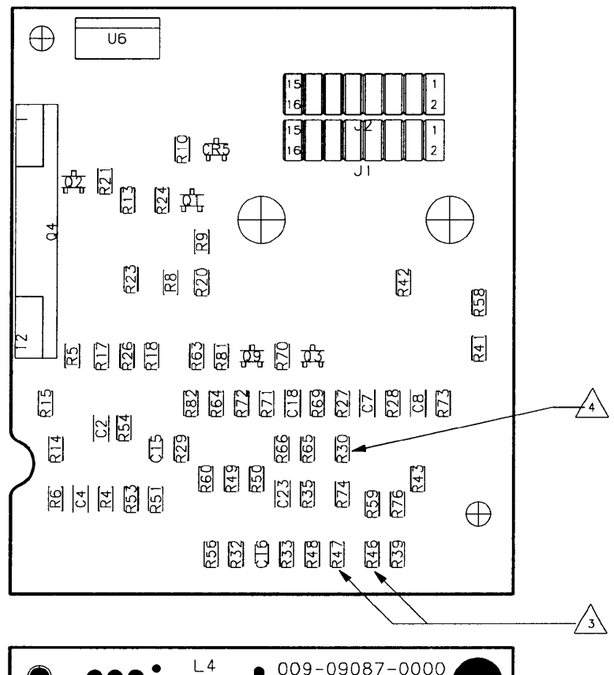
SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0000
C1	106-04473-0057		CAP CH 47K X7R/100	EA	1.00
C10	106-00129-0001		CAP CH .68UF 50V 2	EA	1.00
C11	106-00129-0001		CAP CH .68UF 50V 2	EA	1.00
C12	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C13	106-04103-0047		CH 10K X7R/50V	EA	1.00
C15	106-05392-0047		CAP CH3900PFX7R/50	EA	1.00
C16	106-05150-0026		CAP CH15PFNPO/100V	EA	1.00
C17	106-05150-0026		CAP CH15PFNPO/100V	EA	1.00
C18	106-04104-0047		CH 100KX7R/50V	EA	1.00
C19	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C2	106-04473-0057		CAP CH 47K X7R/100	EA	1.00
C20	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C21	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C22	106-00129-0000		CAP CH 1UF X7R/50V	EA	1.00
C23	106-04562-0057		CAPCH5600PFX7R/100	EA	1.00
C3	106-04473-0057		CAP CH 47K X7R/100	EA	1.00
C4	106-04473-0057		CAP CH 47K X7R/100	EA	1.00
C5	106-04104-0047		CH 100KX7R/50V	EA	1.00
C6	106-04104-0047		CH 100KX7R/50V	EA	1.00
C7	106-04104-0047		CH 100KX7R/50V	EA	1.00
C8	106-04104-0047		CH 100KX7R/50V	EA	1.00
C9	096-01186-0014		CAP 10.0UF 16V 10%	EA	1.00
CR1	007-05245-0024		DIO Z 33V SMD	EA	1.00
CR10	007-05240-0000		36V TRANSORB SO	EA	1.00
CR12	007-05241-0203		TRNSRB 1500W 15V	EA	1.00
CR2	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR3	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR4	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR5	007-05117-0015		DIO Z 13V SOT	EA	1.00
CR6	007-05247-0001		TRANSIENT VOLTAGE	EA	1.00
CR7	007-06437-0007		DIO 3A 600V SMD	EA	1.00
CR8	007-06177-0000		SMD DIO SI MMBD914	EA	1.00
CR9	007-06177-0000		SMD DIO SI MMBD914	EA	1.00

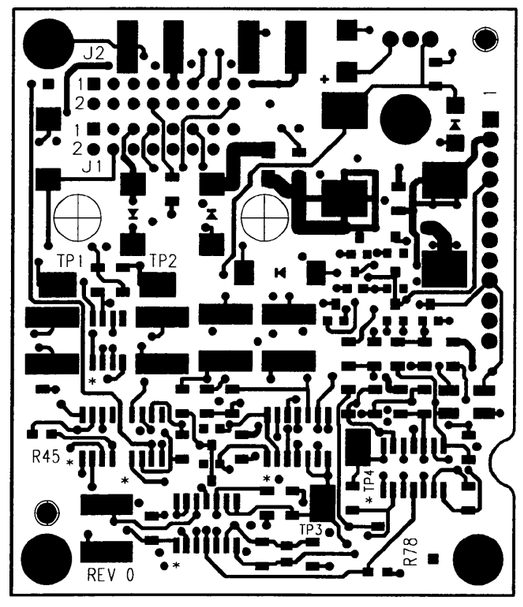
SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0000
ITM1	009-09087-0000		KFC 140 SERVO- PC	EA	1.00
J1	030-02453-0008		CONN, HDR, PLG,.1	EA	1.00
J2	030-02453-0008		CONN, HDR, PLG,.1	EA	1.00
L1	013-00172-0000		FERRITE BEAD, SURF	EA	1.00
Q1	007-00261-0003		XSTR 2N2907A (SOT)	EA	1.00
Q2	007-00261-0003		XSTR 2N2907A (SOT)	EA	1.00
Q3	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q4	120-03555-0000		MOS H-BRIDGE	RF	.00
Q5	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q6	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q7	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q8	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
Q9	007-00383-0004		SOT-23 2N2222A XST	EA	1.00
R1	139-03483-0000		RES CH 348K EW 1%	EA	1.00
R10	139-01003-0000		RES CHIP 100KEW1%	EA	1.00
R11	132-05145-0150		RES SM .15 2W 5%	EA	1.00
R12	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R13	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R14	139-03573-0000		RES CHIP 357KEW1%	EA	1.00
R15	139-03573-0000		RES CHIP 357KEW1%	EA	1.00
R16	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R17	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R18	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R19	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00
R2	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R20	139-02802-0000		RES CH 28K EW 1%	EA	1.00
R21	139-02802-0000		RES CH 28K EW 1%	EA	1.00
R22	132-05145-0103		RES SM 100 2W 5%	EA	1.00
R23	139-00200-0000		RES CH 20.0 EW 1%	EA	1.00
R24	139-00200-0000		RES CH 20.0 EW 1%	EA	1.00
R25	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R26	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R27	139-07681-0000		RES CH 7.68K EW 1%	EA	1.00
R28	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R29	139-02053-0000		RES CH 205K EW 1%	EA	1.00
R3	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0000
R30	139-02672-0000		RES CHIP 26.7KEW1%	EA	1.00
R30	139-03012-0000		RES CHIP 30.1KEW1%	EA	1.00
R30	139-03322-0000		RES CH 33.2K EW 1%	EA	1.00
R31	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R32	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R33	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R34	139-01004-0003		RES CH 1M .1% EW	EA	1.00
R35	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R36	139-02001-0020		RES CH 2000 QW 1%	EA	1.00
R37	139-02001-0020		RES CH 2000 QW 1%	EA	1.00
R38	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R39	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R4	139-03483-0000		RES CH 348K EW 1%	EA	1.00
R40	139-04021-0000		RES CH 4.02K EW 1%	EA	1.00
R41	139-03242-0000		RES CH 32.4K EW 1%	EA	1.00
R42	139-04021-0000		RES CH 4.02K EW 1%	EA	1.00
R43	139-04993-0000		RES CHIP 499K EW1%	EA	1.00
R44	139-04993-0000		RES CHIP 499K EW1%	EA	1.00
R45	133-00560-0012		RES VA SMD 100K QW	EA	1.00
R48	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R49	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R5	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R50	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R51	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R52	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R53	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R54	139-01822-0000		RES CHIP 18.2KEW1%	EA	1.00
R55	139-04991-0000		RES CHIP 4.99KEW1%	EA	1.00
R56	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00
R58	139-02001-0000		RES CHIP 2K EW 1%	EA	1.00
R59	139-01182-0000		RES CH 11.8K EW1	EA	1.00
R6	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R60	139-07323-0000		RES CH 732K EW 1%	EA	1.00
R61	139-07323-0000		RES CH 732K EW 1%	EA	1.00
R62	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R63	139-04221-0000		RES CH 4.22K EW 1%	EA	1.00

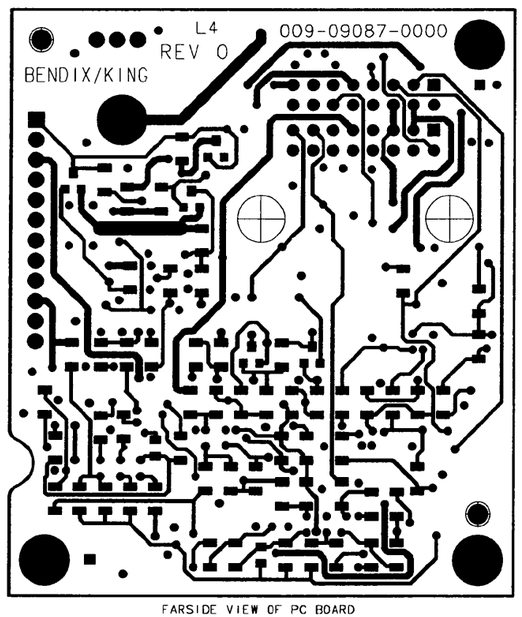
SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0000
R64	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00
R65	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00
R66	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00
R67	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00
R68	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R69	139-01181-0000		RES CHIP 1.18KEW1%	EA	1.00
R7	139-01212-0000		RES CHIP 12.1K1%EW	EA	1.00
R70	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R71	139-01181-0000		RES CHIP 1.18KEW1%	EA	1.00
R72	139-20100-0000		RES CH 1 EW 1%	EA	1.00
R73	139-04022-0000		RES CHIP 40.2KEW1%	EA	1.00
R74	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R75	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R76	139-04993-0000		RES CHIP 499K EW1%	EA	1.00
R77	139-02553-0000		RES CH 255K EW 1%	EA	1.00
R78	133-00560-0012		RES VA SMD 100K QW	EA	1.00
R79	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00
R8	139-01212-0000		RES CHIP 12.1K1%EW	EA	1.00
R80	139-00000-0004		RES CH 0 EW	EA	1.00
R81	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R82	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00
R9	139-01003-0000		RES CHIP 100KEW1%	EA	1.00
REF	002-09087-0000		KS 270C.KS 271C PI	RF	.00
REF	300-09087-0000		KFC 140 SERVO - PC	RF	.00
TP1	008-00309-0000		TEST POINT SURF MN	EA	1.00
TP2	008-00309-0000		TEST POINT SURF MN	EA	1.00
TP3	008-00309-0000		TEST POINT SURF MN	EA	1.00
TP4	008-00309-0000		TEST POINT SURF MN	EA	1.00
U1	120-03552-0000		QUAD OP AMP	EA	1.00
U2	120-03504-0000		OP07 OP AMP SO PK	EA	1.00
U3	120-03504-0000		OP07 OP AMP SO PK	EA	1.00
U4	120-03504-0000		OP07 OP AMP SO PK	EA	1.00
U5	120-03552-0000		QUAD OP AMP	EA	1.00
U6	120-03026-0002		IC MC7806CT	RF	.00
U7	120-03163-0001		LM2901 SO-14 COMP	EA	1.00





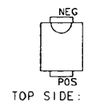


NEARSIDE VIEW OF PC BOARD



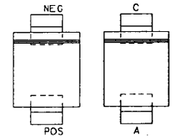
FARSIDE VIEW OF PC BOARD

NOTES:
1. PRIOR TO POST COATING BOTH SIDES OF P.C. BOARD WITH KPN 016-01040-0000, MASK OFF ALL MOUNTING AREAS AND REFERENCE DESIGNATORS: R45, R78, TP1-TP4, J1, J2, R46, R47, Q4, U6.
2. PRINTED CIRCUIT ASSEMBLY IDENTIFICATION MUST BE IN ACCORDANCE WITH SPEC. 001-01101-0000.
3. R46 AND R47 WILL BE INSTALLED ON FINAL ASSEMBLY.
4. R30 IS TEST SELECTABLE. SEE 200-09087-0000 BOM FOR OPTIONS.



TOP SIDE: CR1

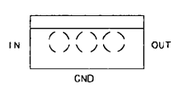
TOP SIDE: CR2-CR4, CR8-CR9
BOTTOM SIDE: CR5



TOP SIDE: CR6, CR10

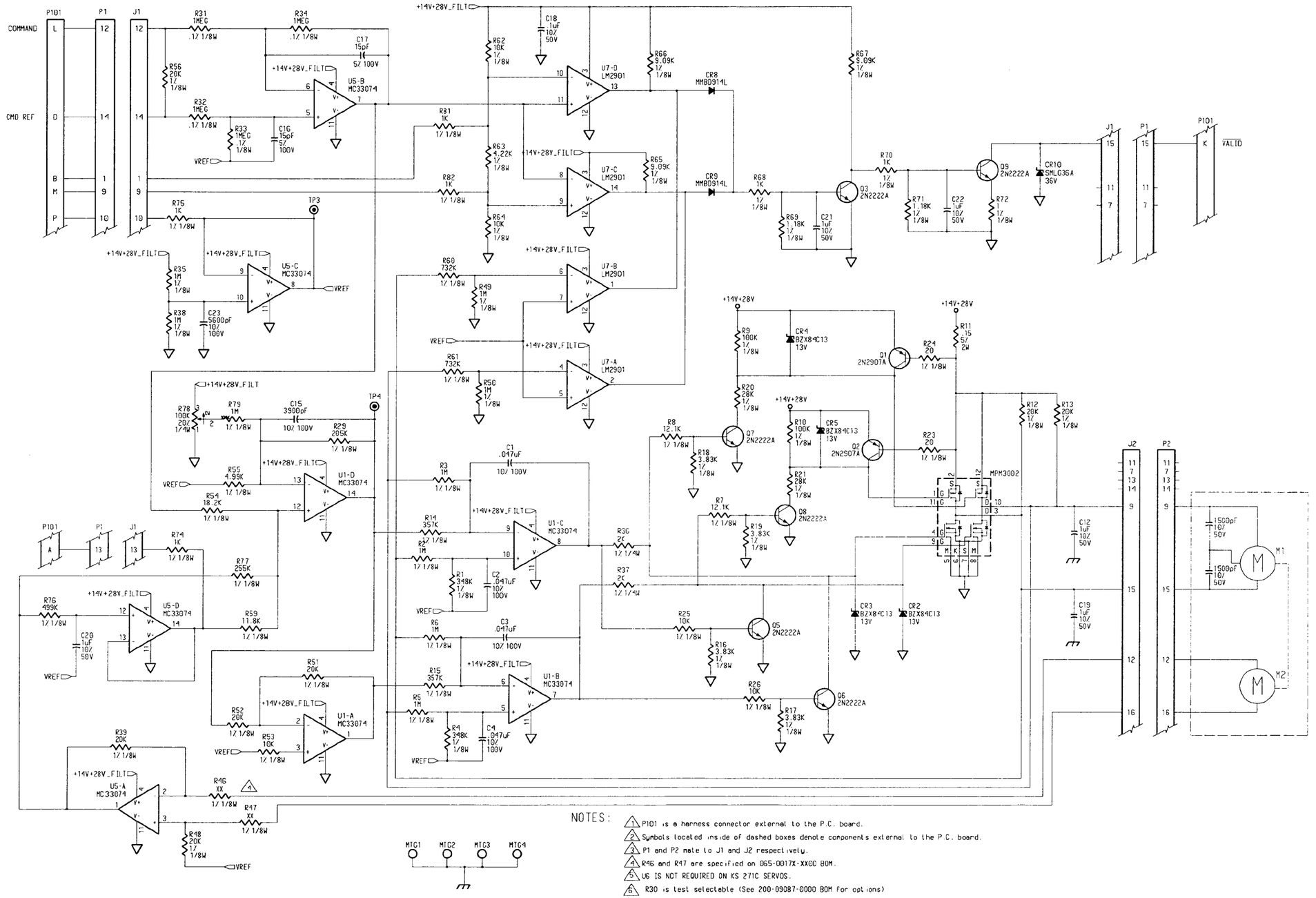
TOP SIDE: CR7

TOP SIDE: 05-08
BOTTOM SIDE: 01-03, 09



BOTTOM SIDE: U6

FIGURE 6-14 SERVO BOARD ASSEMBLY DWG 300-09087-0000
(Dwg No 300-09087-0000, Rev AA, Sheet 1 of 1)



NOTES:

1. P101 is a harness connector external to the P.C. board.
2. Symbols located inside of dashed boxes denote components external to the P.C. board.
3. P1 and P2 mate to J1 and J2 respectively.
4. R46 and R47 are specified on 065-0017X-XX00 BOM.
5. U6 IS NOT REQUIRED ON KS 271C SERVOS.
6. R30 is test selectable (See 200-09087-0000 BOM for options)

FIGURE 6-15 SERVO BOARD SCHEMATIC 002-09087-0000
(Dwg No 002-09087-0000, Rev AA, Sheet 1 of 2)

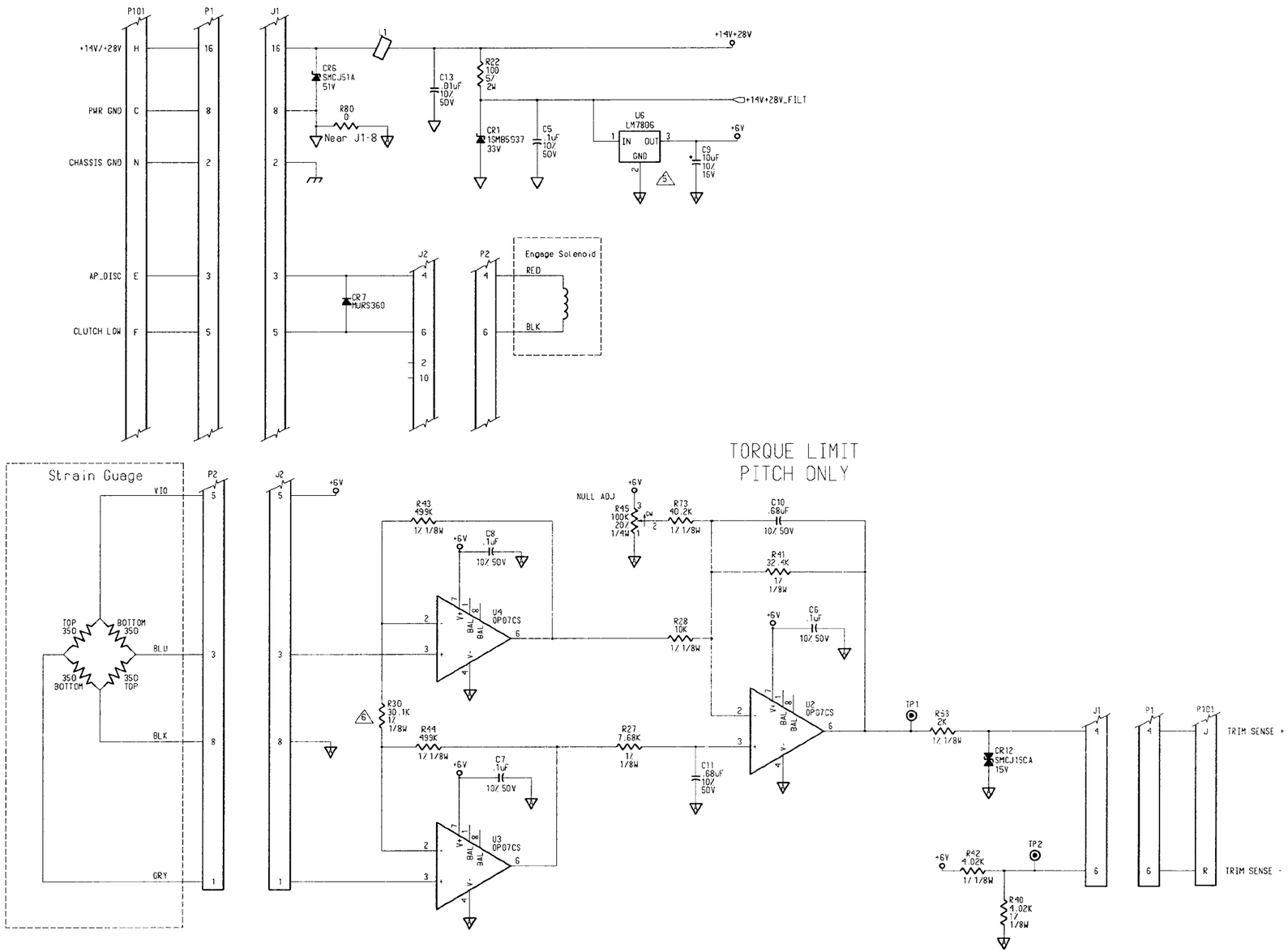


FIGURE 6-15 SERVO BOARD SCHEMATIC 002-09087-0000 (Sheet 2 of 2)

6.15 SERVO BOARD 200-09366-XXXX

PN	DESCRIPTION	REV
200-09366-0000	PITCH/ROLL SERVO PC BOARD	AG
200-09366-0100	PRIMARY SERVO YAW AXIS	A

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0000	-0100
C1	106-04182-0016		CAPCH1800PFNPO/50V	EA	1.00	1.00
C12	106-00129-0000		CAP CH 1UF X7R/50V 2225	EA	.	1.00
C13	106-04103-0047		CH 10K X7R/50V	EA	1.00	1.00
C15	106-05392-0047		CAP CH3900PFX7R/50	EA	1.00	1.00
C16	106-05150-0026		CAP CH15PFNPO/100V	EA	1.00	1.00
C17	106-05150-0026		CAP CH15PFNPO/100V	EA	1.00	1.00
C18	106-04104-0047		CH 100KX7R/50V	EA	1.00	1.00
C19	106-00129-0000		CAP CH 1UF X7R/50V 2225	EA	.	1.00
C20	106-00129-0000		CAP CH 1UF X7R/50V 2225	EA	1.00	1.00
C21	106-00129-0000		CAP CH 1UF X7R/50V 2225	EA	1.00	1.00
C22	106-00129-0000		CAP CH 1UF X7R/50V 2225	EA	1.00	1.00
C23	106-04562-0057		CAPCH5600PFX7R/100	EA	1.00	1.00
C24	111-00001-0008		CAP CR 100PF 200V	EA	1.00	.
C25	111-00001-0008		CAP CR 100PF 200V	EA	1.00	.
C3	106-04182-0016		CAPCH1800PFNPO/50V	EA	1.00	1.00
C5	106-00129-0000		CAP CH 1UF X7R/50V 2225	EA	1.00	1.00
C7	106-04104-0047		CH 100KX7R/50V	EA	1.00	1.00
C8	106-04104-0047		CH 100KX7R/50V	EA	1.00	1.00
C9	096-01186-0014		CAP 10.0UF 16V 10%	EA	1.00	1.00
CR1	007-05245-0024		DIO Z 33V SMD	EA	1.00	1.00
CR10	007-05240-0000		36V TRANSORB SO	EA	1.00	1.00
CR12	007-05241-0203		TRNSRB 1500W 15V	EA	1.00	1.00
CR13	007-05241-0203		TRNSRB 1500W 15V	EA	1.00	1.00
CR14	007-06184-0000		DIO DUAL SWITCHING	EA	.	1.00
CR2	007-05117-0015		DIO Z 13V SOT	EA	1.00	1.00
CR3	007-05117-0015		DIO Z 13V SOT	EA	1.00	1.00
CR4	007-05117-0015		DIO Z 13V SOT	EA	1.00	1.00
CR5	007-05117-0015		DIO Z 13V SOT	EA	1.00	1.00
CR6	007-05247-0001		TRANSIENT VOLTAGE SUPPRESSOR	EA	1.00	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0000	-0100
CR7	007-06437-0007		DIO 3A 600V SMD	EA	1.00	1.00
CR8	007-06177-0000		SMD DIO SI MMBD914	EA	1.00	1.00
CR9	007-06177-0000		SMD DIO SI MMBD914	EA	1.00	1.00
ITM1	009-09366-0000		RITCH/ROLL SERVO PC BOARD	EA	1.00	1.00
ITM2	012-01005-0002		TAPE MYLAR .500 W	IN	.	2.00
J1	030-02453-0008		CONN, HDR, PLG,.1 CTR, 2X8, .230 POST HT	EA	1.00	1.00
J2	030-02453-0008		CONN, HDR, PLG,.1 CTR, 2X8, .230 POST HT	EA	1.00	1.00
L1	013-00172-0000		FERRITE BEAD, SURFACE MOUNT	EA	1.00	1.00
Q1	007-00261-0003		XSTR 2N2907A (SOT)	EA	1.00	1.00
Q10	007-01074-0001		POWER MOSFET 100V ISOLATED	RF	.00	.00
Q11	007-01074-0001		POWER MOSFET 100V ISOLATED	RF	.00	.00
Q12	007-01072-0001		POWER MOSFET	EA	1.00	1.00
Q13	007-01072-0001		POWER MOSFET	EA	1.00	1.00
Q2	007-00261-0003		XSTR 2N2907A (SOT)	EA	1.00	1.00
Q3	007-00383-0004		SOT-23 2N2222A XST	EA	1.00	1.00
Q5	007-00383-0004		SOT-23 2N2222A XST	EA	1.00	1.00
Q6	007-00383-0004		SOT-23 2N2222A XST	EA	1.00	1.00
Q7	007-00383-0004		SOT-23 2N2222A XST	EA	1.00	1.00
Q8	007-00383-0004		SOT-23 2N2222A XST	EA	1.00	1.00
Q9	007-00383-0004		SOT-23 2N2222A XST	EA	1.00	1.00
R1	139-03483-0000		RES CH 348K EW 1%	EA	1.00	1.00
R10	139-01003-0000		RES CHIP 100KEW1%	EA	1.00	1.00
R11	132-05145-0150		RES SM .15 2W 5%	EA	1.00	1.00
R12	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00	.
R12	139-02002-0003		RES CH 20.0K EW.1%	EA	.	1.00
R13	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00	.
R13	139-02002-0003		RES CH 20.0K EW.1%	EA	.	1.00
R14	139-03573-0000		RES CHIP 357KEW1%	EA	1.00	1.00
R15	139-03573-0000		RES CHIP 357KEW1%	EA	1.00	1.00
R16	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00	1.00
R17	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00	1.00
R18	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00	1.00
R19	139-03831-0000		RES CHIP3.83KEW1%	EA	1.00	1.00
R2	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0000	-0100
R20	139-02802-0000		RES CH 28K EW 1%	EA	1.00	1.00
R21	139-02802-0000		RES CH 28K EW 1%	EA	1.00	1.00
R22	132-05145-0103		RES SM 100 2W 5%	EA	1.00	1.00
R23	139-00200-0000		RES CH 20.0 EW 1%	EA	1.00	1.00
R24	139-00200-0000		RES CH 20.0 EW 1%	EA	1.00	1.00
R25	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00	1.00
R26	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00	1.00
R27	139-02001-0000		RES CHIP 2K EW 1%	EA	1.00	1.00
R29	139-02053-0000		RES CH 205K EW 1%	EA	1.00	1.00
R3	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00	1.00
R31	139-01004-0003		RES CH 1M .1% EW	EA	1.00	1.00
R32	139-01004-0003		RES CH 1M .1% EW	EA	1.00	1.00
R33	139-01004-0003		RES CH 1M .1% EW	EA	1.00	1.00
R34	139-01004-0003		RES CH 1M .1% EW	EA	1.00	1.00
R35	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00	1.00
R36	139-02001-0000		RES CHIP 2K EW 1%	EA	1.00	1.00
R37	139-02001-0000		RES CHIP 2K EW 1%	EA	1.00	1.00
R38	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00	1.00
R39	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00	.
R39	139-02002-0003		RES CH 20.0K EW.1%	EA	.	1.00
R4	139-03483-0000		RES CH 348K EW 1%	EA	1.00	1.00
R40	139-04021-0000		RES CH 4.02K EW 1%	EA	1.00	.
R42	139-04021-0000		RES CH 4.02K EW 1%	EA	1.00	.
R48	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00	.
R48	139-02002-0003		RES CH 20.0K EW.1%	EA	.	1.00
R49	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00	1.00
R5	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00	1.00
R50	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00	1.00
R51	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00	1.00
R52	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00	1.00
R53	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00	1.00
R54	139-01822-0000		RES CHIP 18.2KEW1%	EA	1.00	1.00
R55	139-04991-0000		RES CHIP 4.99KEW1%	EA	1.00	1.00
R56	139-02002-0000		RES CHIP 20.0KEW1%	EA	1.00	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0000	-0100
R58	139-02001-0000		RES CHIP 2K EW 1%	EA	1.00	1.00
R59	139-01182-0000		RES CH 11.8K EW1	EA	1.00	1.00
R6	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00	1.00
R60	139-07323-0000		RES CH 732K EW 1%	EA	1.00	1.00
R61	139-07323-0000		RES CH 732K EW 1%	EA	1.00	1.00
R62	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00	1.00
R63	139-04221-0000		RES CH 4.22K EW 1%	EA	1.00	1.00
R64	139-01002-0000		RES CHIP 10K EW 1%	EA	1.00	1.00
R65	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00	1.00
R66	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00	1.00
R67	139-09091-0000		RES CH 9.09K EW 1%	EA	1.00	1.00
R68	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00	1.00
R69	139-01181-0000		RES CHIP 1.18KEW1%	EA	1.00	1.00
R7	139-01212-0000		RES CHIP 12.1K1%EW	EA	1.00	1.00
R70	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00	1.00
R71	139-01181-0000		RES CHIP 1.18KEW1%	EA	1.00	1.00
R72	139-20100-0000		RES CH 1 EW 1%	EA	1.00	1.00
R74	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00	.
R75	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00	1.00
R76	139-04993-0000		RES CHIP 499K EW1%	EA	1.00	1.00
R77	139-02553-0000		RES CH 255K EW 1%	EA	1.00	1.00
R78	133-00562-3104		RES VAR 12/15T100K	EA	1.00	1.00
R79	139-01004-0000		RES CHIP 1M EW 1%	EA	1.00	1.00
R8	139-01212-0000		RES CHIP 12.1K1%EW	EA	1.00	1.00
R80	139-00000-0004		RES CH 0 EW	EA	1.00	1.00
R81	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00	1.00
R82	139-01001-0003		RES CH 1K EW 1%	EA	1.00	1.00
R83	139-01001-0003		RES CH 1K EW 1%	EA	1.00	1.00
R84	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00	1.00
R85	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00	1.00
R86	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00	1.00
R87	139-01001-0000		RES CHIP 1K EW 1%	EA	1.00	1.00
R88	139-03010-0000		RES CHIP 301 EW 1%	EA	.25	.
R88	139-03320-0000		RES CHIP 332 EW 1%	EA	.90	1.00

SYMBOL	PART NUMBER	FIND NO	DESCRIPTION	UM	-0000	-0100
R88	139-03650-0000		RES CH 365 EW 1%	EA	.25	.
R89	139-03010-0000		RES CHIP 301 EW 1%	EA	.25	.
R89	139-03320-0000		RES CHIP 332 EW 1%	EA	.90	1.00
R89	139-03650-0000		RES CH 365 EW 1%	EA	.25	.
R9	139-01003-0000		RES CHIP 100KEW1%	EA	1.00	1.00
R90	133-00562-3102		RES VAR 12-15T 1K	EA	1.00	1.00
R91	133-00562-3102		RES VAR 12-15T 1K	EA	1.00	1.00
R93	139-01002-0000		RES CHIP 10K EW 1%	EA	.	1.00
R94	139-08451-0000		RES CH 8.45K EW 1%	EA	.	1.00
REF1	300-09366-0000		PITCH/ROLL SERVO	RF	.00	.
REF1	300-09366-0100		PRIMARY SERVO	RF	.	.00
REF2	002-09366-0000		PITCH/ROLL SERVO KS 270C/KS 271C	RF	.00	.00
REF3	192-09366-0000		KS 270C PITCH/ROLL SERVO	RF	.00	.
REF3	192-09366-0100		PRIMARY SERVO BOARD ASSY KS 271C	RF	.	.00
TP3	008-00309-0000		TEST POINT SURF MNT	EA	1.00	1.00
TP4	008-00309-0000		TEST POINT SURF MNT	EA	1.00	1.00
TP5	008-00309-0000		TEST POINT SURF MNT	EA	1.00	1.00
U1	120-03552-0000		QUAD OP AMP	EA	1.00	1.00
U5	120-03552-0000		QUAD OP AMP	EA	1.00	1.00
U6	120-03026-0002		IC MC7806CT	RF	.00	.00
U7	120-03163-0001		LM2901 SO-14 COMP	EA	1.00	1.00
U8	120-03696-0001		AMP, INST, LOW PWR	EA	1.00	1.00
U9	120-03696-0001		AMP, INST, LOW PWR	EA	1.00	1.00

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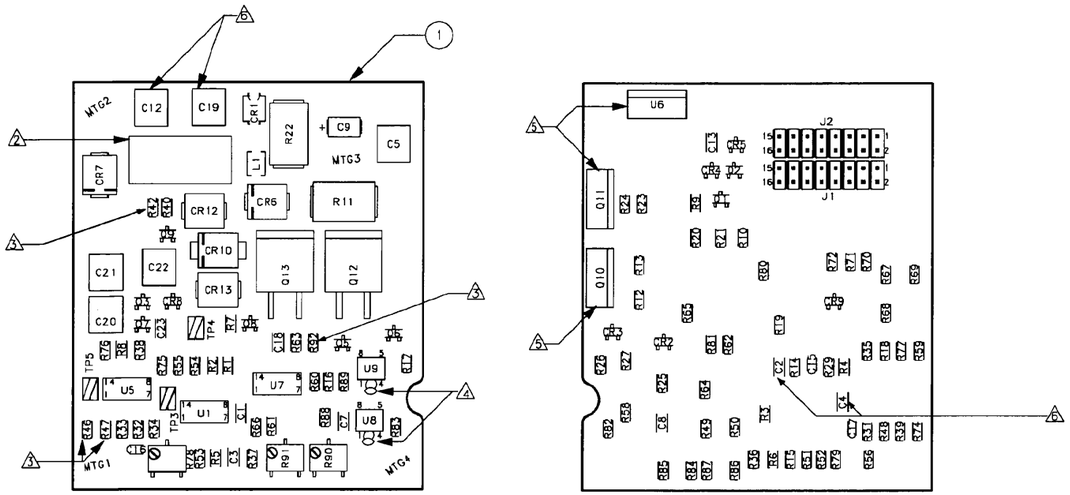
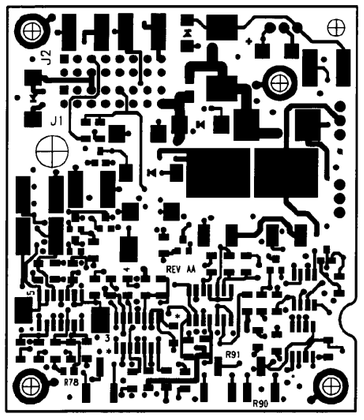
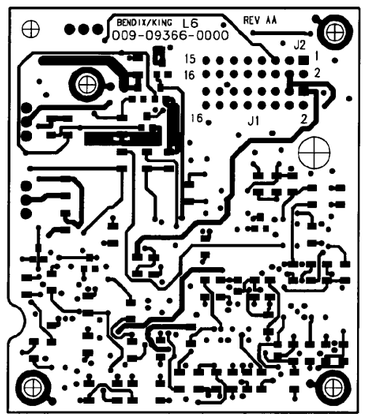




NEARSIDE VIEW OF PC BOARD



FARSIDE VIEW OF PC BOARD

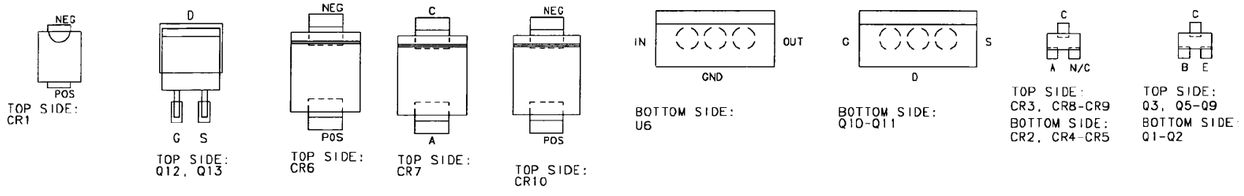


FIGURE 6-16 SERVO BOARD ASSEMBLY DWG 300-09366-0000
(Dwg No 300-09366-0000, Rev AD, Sheet 1 of 1)

NOTES:
1. PRIOR TO POST COATING BOTH SIDES OF P.C. BOARD WITH KPN 016-01040-0000, MASK OFF ALL MOUNTING AREAS AND REFERENCE DESIGNATORS: J1-J2, MTG1-MTG4, R78, R90-R91 TP3-TP5

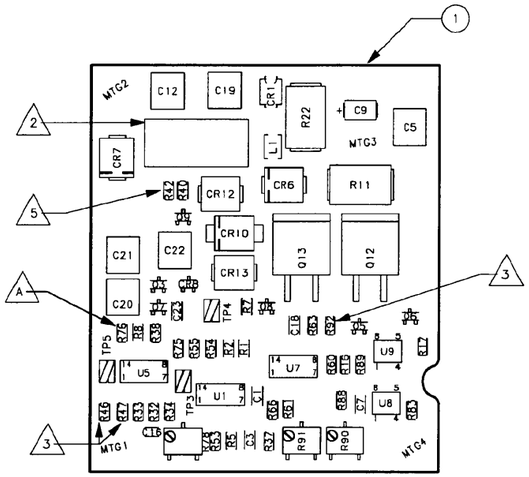
2. PRINTED CIRCUIT ASSEMBLY IDENTIFICATION MUST BE IN ACCORDANCE WITH SPEC. 001-01101-0000.

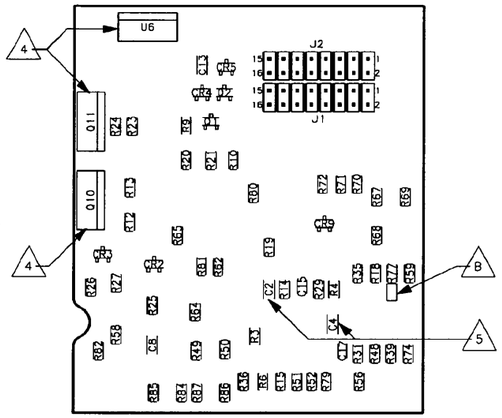
3. R40, R42, R46, R47, AND R92, WILL BE INSTALLED (IF REQUIRED) AS PER FINAL ASSEMBLY BILL OF MATERIAL.

4. SOLDER CAPACITORS C24 (111-00001-000B) ACROSS PINS 2 AND 3 OF U8 AND C25 ACROSS PINS 2 AND 3 OF U9.

5. Q10, Q11 AND U6 WILL BE INSTALLED ON 200-05632-00XX.

6. C2,C4, C12 AND C19 ARE NOT INSTALLED.





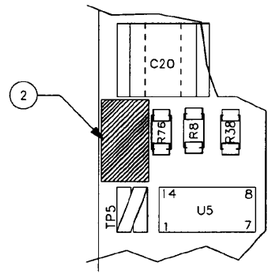


FIGURE 1

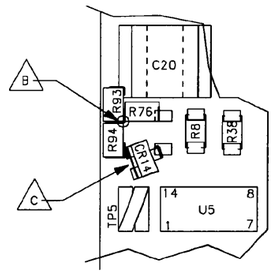
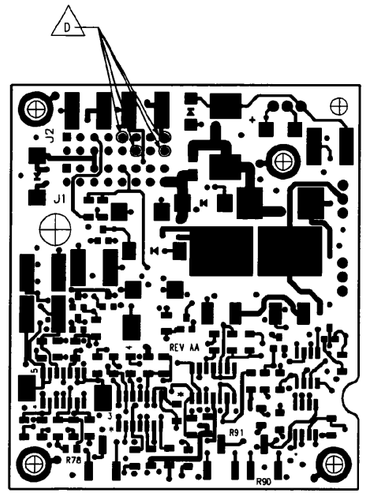
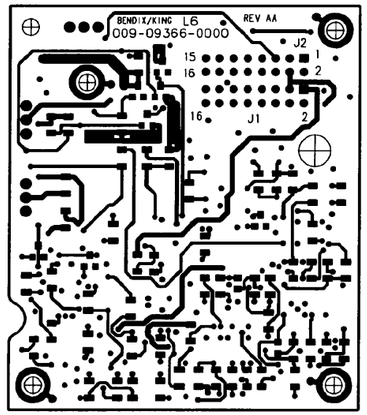


FIGURE 2



NEARSIDE VIEW OF PC BOARD



FARSIDE VIEW OF PC BOARD

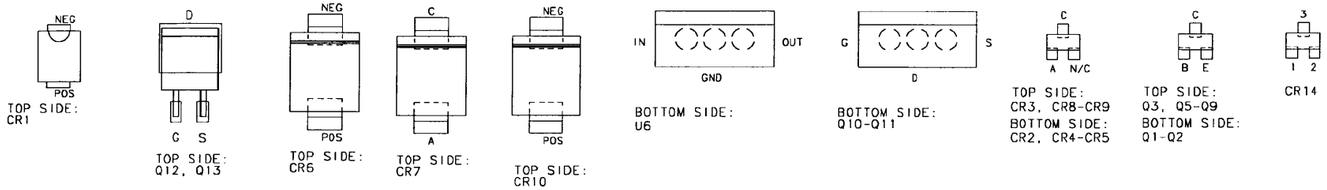


FIGURE 6-17 SERVO BOARD ASSEMBLY DWG 300-09366-0100
(Dwg No 300-09366-0100, Rev A, Sheet 1 of 1)

NOTES:

1. PRIOR TO POST COATING BOTH SIDES OF P.C. BOARD WITH KPN 016-01040-0000, MASK OFF ALL MOUNTING AREAS AND REFERENCE DESIGNATORS: J1-J2, MTG1-MTG4, R78, R90-R91 TP3-TP5

2. PRINTED CIRCUIT ASSEMBLY IDENTIFICATION MUST BE IN ACCORDANCE WITH SPEC. 001-01101-0000.

3. R46, R47 AND R92 WILL BE INSTALLED AS PER FINAL ASSEMBLY BILL OF MATERIAL.

4. Q10, Q11 AND U6 WILL BE INSTALLED ON 200-05632-00XX.

5. C2, C4, R40, R42 ARE NOT INSTALLED.

REWORK NOTES: 009-09366-0000 REV AA

A. REMOVE R76 (IF INSTALLED). CUT AND PLACE A PIECE OF MYLAR (ITEM 2) OVER SHADED REGION (AS SHOWN IN FIGURE 1).
PLACE AND GLUE (TAC PAC 016-01144-0000 IS USED WITH ACCELERATOR 016-01144-0001) R76, R93, R94, CR14, AS SHOWN IN FIGURE 2.
SOLDER BETWEEN R93 AND C20.
SOLDER ONE END OF R76 TO THE PAD OF ORIGINAL R76 CLOSEST TO C20.
SOLDER BETWEEN R93, R94, AND R76, AS SHOWN.
SOLDER PIN 3 OF CR14 TO ORIGINAL PAD OF R76 CLOSEST TO U5.
SOLDER BETWEEN R94 AND CR14 AS SHOWN.

B. LIFT AND REPOSITION R77 (FARSIDE). PLACE AND GLUE ONE END OF R77 ON ORIGINAL PAD CLOSEST TO R39. SOLDER IN PLACE.
SOLDER MAG WIRE TO THE OTHER END OF R77 AND ROUTE THRU DRILL HOLE BELOW J1 AND SOLDER TO NODE BETWEEN R76, R93, AND R94 (NEARSIDE).
GLUE MAG WIRE ON BOTH SIDES OF BOARD NEAR DRILL HOLE.

C. CONNECT PINS 1 AND 2 OF CR14 USING MAG WIRE.

D. MAG WIRE J2 PIN 9 TO J2 PIN 16 ON NEARSIDE.
MAG WIRE J2 PIN 12 TO J2 PIN 15 ON NEARSIDE.

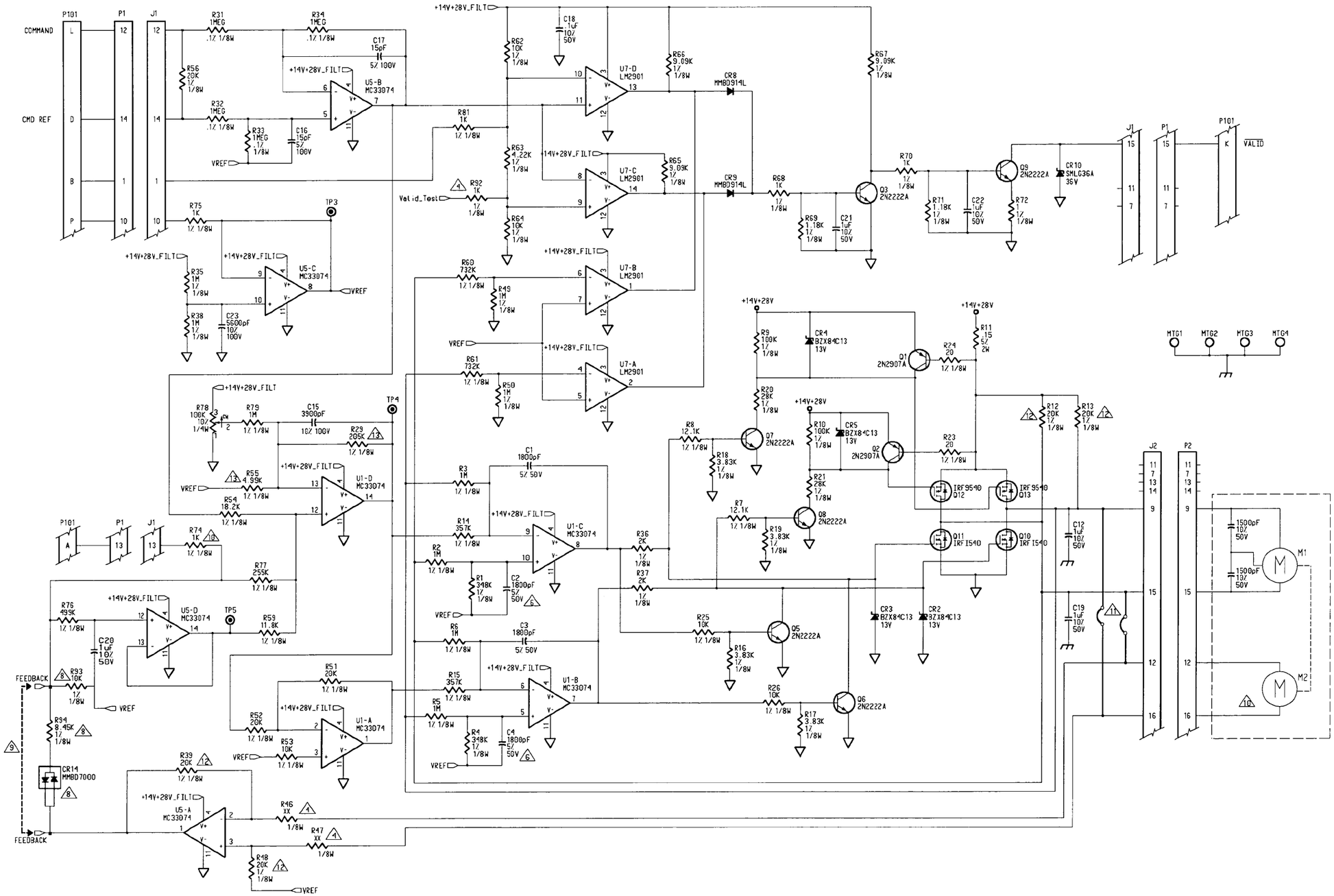
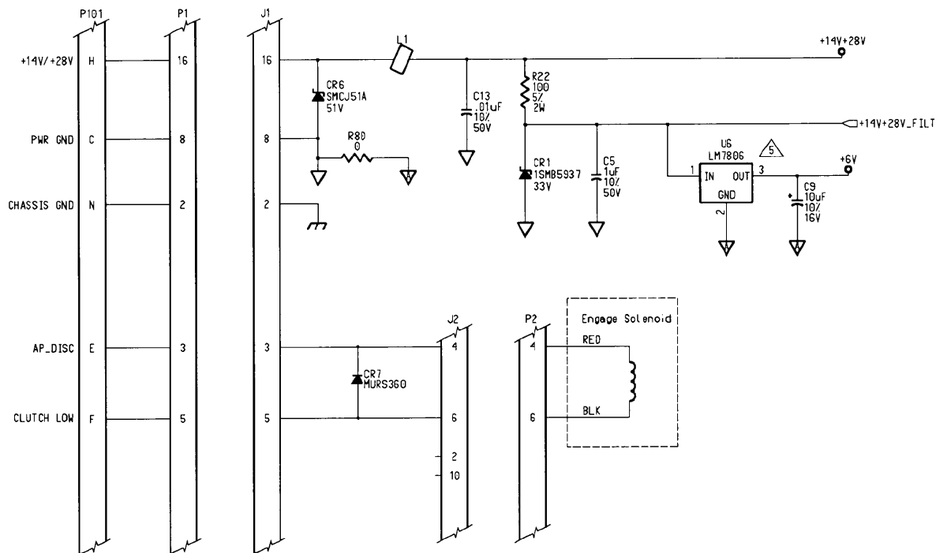


FIGURE 6-18 SERVO BOARD SCHEMATIC 002-09366-0000
(Dwg No 002-09366-0000, Rev AF, Sheet 1 of 2)



TORQUE SENSE
PITCH ONLY

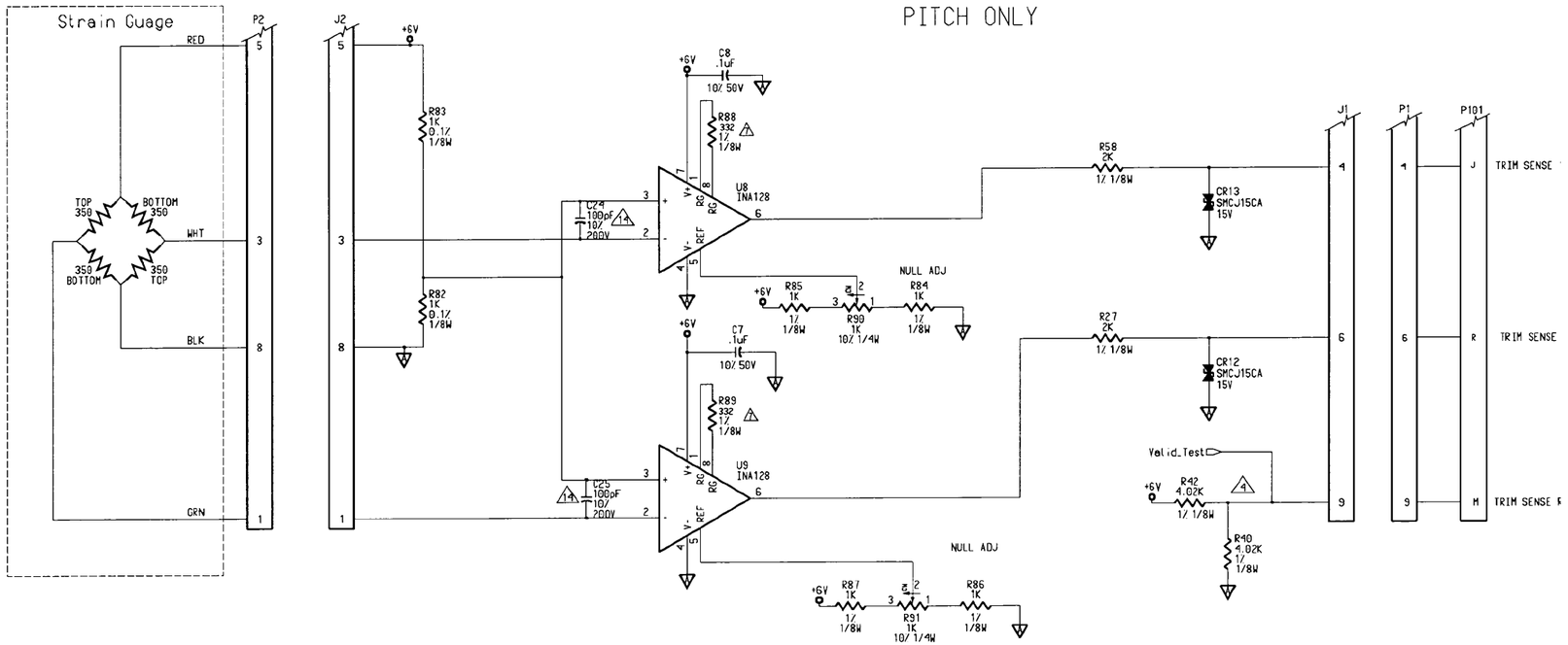


FIGURE 6-18 SERVO BOARD SCHEMATIC 002-09366-0000 (Sheet 2 of 2)

NOTES:

1. P101 is a harness connector external to the P.C. board.
2. Symbols located inside of dashed boxes denote components external to the P.C. board.
3. P1 and P2 mate to J1 and J2 respectively.
4. R40 R42 R92 R46 R47 are specified (if required) on 065-0017X-XX00 BOM.
5. U6 is not required on Roll Servos (KS 271C)
6. C2,C4, C12 AND C19 ARE NOT INSTALLED.
7. R88 AND R89 ARE TEST SELECTABLE. (SEE 200-09366-0000 BOM FOR OPTIONS)

NOTES 8 THRU 14 APPLY TO 065-00179-0600 FLAVOR ONLY.

8. CR14, R93, R94 INSTALLED ON 065-00179-0600 FLAVOR ONLY.
9. FEEDBACK NODES ARE SHORTED ON ALL FLAVORS EXCEPT 065-00179-0600.
10. M2 AND R74 ARE NOT INSTALLED ON 065-00179-0600.
11. ON 065-00179-0600 FLAVOR, PIN 12 OF J2 IS CONNECTED PIN 15 OF J2, AND PIN 16 OF J2 IS CONNECTED TO PIN 9 OF J2.
12. R12, R13, R39, AND R48, ARE 0.1% TOL ON 065-00179-0600. (SEE BOM 200-09366-0100)
13. FOR 065-00179-0600, R29 IS 301K AND R55 IS 7.32K. (SEE BOM 200-09366-0100)
14. C24 AND C25 ARE NOT INSTALLED ON 065-00179-0600.