Serial #95J604A-329

AUTOMATION & CONTROL TECHNOLOGIES

AUTOMATION & CONTROL TECHNOLOGIES

Your Single Source Solution For Industrial Repair

28210 CEDAR PARK BLVD., PERRYSBURG, OHIO 43551

PHONE (419) 661-6400 FAX (419) 661-6410

3/7/12

Sophia Cuevas
ARECIBO OBSERVATORY (UNIV. METROPOLITAN)
625 ST FINAL BO ESPERANZA
ARECIBO, PR 00612
Phone: (787) 878-2612
e-mail: scuevas@naic.edu

Hi Sophia,

I examined the brake on this motor and found that the inner disk teeth had become jammed against the brake assembly- probably got bumped during shipping. I disassembled the brake and readjusted it so that it should not happen again. I tested it multiple times and it seems to work perfectly now. I also included a repair form as per your request. If you need anything else feel free to contact either me or Jennifer DeGroff. Sorry for the inconvenience.

Sincerely,

Greg Woodward

1203091
Repair Job Number

Repair Service Report

Date Received: **3/6/2012**

Date Completed: **3/7/2012**

Customer: **ARECIBO OBSERVATORY (UNIV. METROPOLITAN)**

Ship to: **625 ST FINAL BO ESPERANZA ARECIBO, PR 00612**

Contact: **SOFIA/WANDA**

Shipper Number: **NONE**

P.O. Number: **P0056000**

Final Status:
Warranty Servo Motor

Item:

Manufacturer: KOLLMORGEN
Item: SERVO MOTOR
Model: B-604-A-B2-B95-095
Serial Number: 95J604A-329
Customer Stock Number:
ACT Bar Code:

Failure Complaint:
None given, No packing list enclosed with unit

Repair Performed:
Brake Assembly Repaired

Possible Cause of Failure:
Physical Damage Incurred

Special Notes:
Repaired brake assembly

Printed: **3/9/2012**

Automation & Control Technologies, Ltd.
28210 Cedar Park Blvd.
Perrysburg, Ohio 43551

Customer Service
(419) 873-6134
24-Hour Support Hotline
(888) 655-3955

Servo Motor Evaluation and Repair Form

Automation & Control Technologies
28210 Cedar Park Blvd.
Perrysburg, Ohio 43551

Job Number:	1203091: KOLLMOGEN B-604-A-B2-B9S-095
Customer:	ARECIBO OBSERVATORY

By:	G. Woodward	Date:	3/6/12

.Stator winding checks:

1. Insulation to frame check 500 Megohms at 250 volts
2. Winding resistance: A-B .6 ohms/B-C .6 ohms/C-A .6 ohms

Brake tests:

1. Brake release voltage: 16vdc **2.** Specified release voltage: 24vdc
3. Brake torque: EXCEEDS SPECIFICATION
4. Specified torque: 48 NM

Tach/Tachogenerator checks: N/A

1. Measured output AC: A-B VAC/ B-C VAC/ C-A VAC @ 1000 RPM
2. Measured output DC: VDC @ 1000 RPM
3. Ripple/Spikes Y/N? Percent of total output:

Encoder checks: N/A

1. Counts per turn OK? **2.** Continuous count OK?
3. Phase offset OK? **4.** Symmetry OK?
5. Voltage levels OK? **6.** TI5000EX printouts included Y/N? N

Resolver checks:

1. Winding resistance checks:
Sine 16.5 ohms/ Cosine 16.5 ohms/ Excitation 37.6 ohms

Static (Stall) torque check:

1. Specified stall amps: 19 rms **2.** Specified stall torque: 30.1 Nm
3. Applied DC amps: 6.0 **4.** Measured stall torque: 11.2 Nm
5. Output within permissible levels Y/N? Y

Dynamic (Rated/Continuous) torque check:

1. Specified Ke (VAC/1000 RPM): 101.1
2. Measured output: A-B 102.3 VAC/ B-C 102.2 VAC/ C-A 102.3 VAC @ 1000 RPM
3: Percent of Specified Output: 100% **4:** Output within permissible levels Y/N? Y

Servo Motor Evaluation and Repair Form

Motor nameplate information:
Mfg.: KOLLMORRGEN
Model: B-604-A-B2-B9S-095
Type:
Feedback nameplate information:
Mfg.: HAROWE
Model: 21BRCX-500-J12
Type: single speed resolver

Feedback 3 nameplate information:
Mfg.:
Model:
Type:

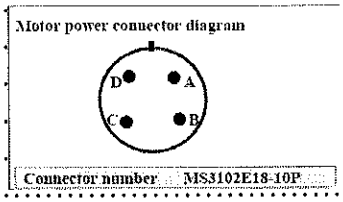
Motor forward rotation:	CCW
Resolver forward rotation:	CW
Encoder rotation:	

Feedback 2 nameplate information:
Mfg.:
Model:
Type:

Commutation out signal Y/N:	N/A
Motor number of poles:	6
Resolver number of speeds:	1
Encoder count:	

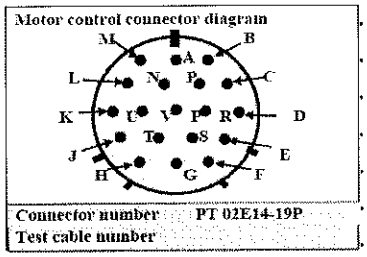
Mfg. reference number:	Gen.Resolver
Test cable number:	User fabricated

Power Connector Pin-outs



.....A...=...PH...A.....
.....B...=...PH...B.....
.....C...=...PH...C.....
.....D...=...FRAME...GROUND.....

Control Connector Pin-outs



.....A...=...SINE.....
.....B...=...SINE-.....
.....C...=...COS-
.....D...=...COS.....
.....E...=...EXC-
.....F...=...EXC.....
.....N...=...BRAKE.....
.....P...=...BRAKE.....
.....T...=...THERM.....
.....U...=...THERM.....

Commutation signal states:

H1	H2	H3	H4	H5	H6

Static lock-up position:

Polarity of DC voltage applied to the leads

Phase U	Phase V	Phase W
N/A	B -	C +

Resolver angle	0
Encoder angle	
Electrical angle U to V	20

Servo Motor Evaluation and Repair Form

Motor Condition on Arrival:

1. Exterior Surface: Motor was freshly painted.

2. Connectors:

a. Power- repair Y/N? N	Replace Y/N?	Type: MS3102E18-10P
b. Brake- repair Y/N? N	Replace Y/N?	Type:
c. Feedback- repair Y/N? N	Replace Y/N?	Type:

3. Oil Seal Y/N? Y — ReplaceY/N? N — Size: 34x48x 8mm
4. Stator Condition: OK
5. Rotor Condition: OK
6. Brake Condition: Not Working
7. Feedback Device(s) Condition: OK

Shaft:

1. Condition: GOOD	RepairableY/N?
2. Keyway: GOOD	RepairableY/N?
3. Shaft run out: .0005"	Repairable Y/N?

Bearings:

1. Size D.E. 6007	Size O.D.E. 6007
2. Fit- Shaft End: Good Y/N? Y	Repairable Y/N?
3. Fit -Drive End: Good Y/N?Y	Repairable Y/N?

Thermal Protection: Y/N? Y — Measured: 0.8 — Ohms Replace Y/N? N

Gear Reduction Unit: Y/N? N

1. Condition:	Repairable Y/N?
2. Bearings Y/N?	Replace Y/N?
3. Gears condition:	Repairable Y/N?

Fan Unit: Y/N? N — Replace Y/N?

Other:

Servo Motor Evaluation and Repair Form

Dynamic commutation alignment check using an oscilloscope:

(With motor being driven in forward direction of rotation)

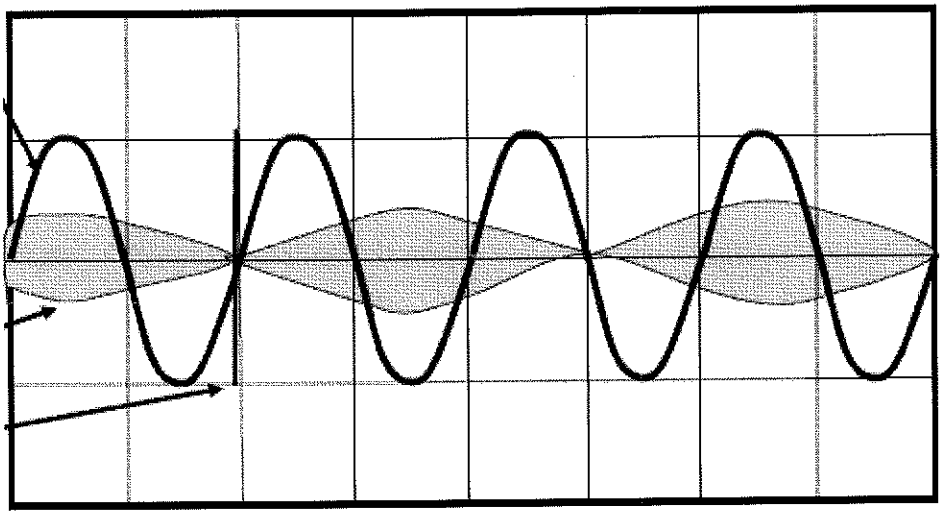
Input 1 Oscilloscope channel A connected to the following motor stator leads:

Scope Probe to	PH C	**Reference lead to**	PH A

Input 2 Oscilloscope channel B connected to feedback signal:

Scope probe to	SINE	**Reference lead to**	0 VOLTS

Oscilloscope traces as found with the above signals:



Motor Failure Analysis and Repair Procedure:

3/6/12 Warranty. Brake failure. Must have got jostled during shipping. Tore down and repaired. Reinstalled and tested. Worked great. Tested motor and ran great. GW