



Electrical Equipment Company

Raleigh Repair Facility
1440 Diggs Dr, Raleigh, NC, 27603
Phone: (919) 828-5411 Fax: (919) 832-6306
www.eecoonline.com

DELIVERY REPORT

EECO Repair # 9999999
Sample Customer
Tuesday, November 05, 2013

Sample Customer

100 SAMPLE ROAD, RALEIGH, NC, 27603

Attention:

Reference: **PLANT ID# 00789**

Job PO: **12345 - AB07**

Regarding: **TOSHIBA, HP-34.9, RPM-239, Volts-355, Amps-77, 60Hz**

Model: BPC026K5S052 Serial # 990702522 Enclosure: TENV Frame: 315LL, 3 Phase AC Motor

Weight=689 Number of Bars=67 Number of Slots=72

Hub/Flange Position: In, Hub/Flange Placement: Off Shaft, Dimension: .125"

Received with Accessories: Coupling / Hub, Eye Bolt(s)

EECO IMS Repair # 9999999

Received by EECO on 02/01/08; Began Work on 02/04/08; Completed on 02/21/08; Sent to you on 02/27/08

We would like to thank you for entrusting us with this repair. Our goal is to provide you with the best repair solution possible and the information you need to manage your maintenance and reliability programs.

This report is automatically generated and being provided to help you ensure that a thorough work scope was completed to both our and your applicable standards. You will find before and after photos, an overview of recorded failures (also including photos), and a table containing all collected data and test results. The final section details quality steps as they were recorded by our technicians. Quality steps reinforce our procedures, which are based on IEEE, NEMA, and EASA standards. If you have provided us a specification for your repair, then you will denote quality steps highlighted in green, reflecting any area which differs from our specification.

We hope this record provides an added benefit to you, as we strive to better serve your business. Please let us know if we can improve this report or our service to you in any way by calling our facilities directly.

We look forward to serving you in the future, and thank you again for your support.

Upon inspection, our technicians noted the following recommendations:

Rewind

DE Shaft Ext, DE Housing, DE Keyway, ODE Housing, Straighten shaft

Our technical staff provided the following services:

- 1) TEST, DISASSEMBLE, CLEAN AND INSPECT UNIT.
- 2) Clean and strip stator, complete class-H rewind to stator.
- 3) DIP AND BAKE (2) TIMES
- 4) TEST SHAFT FOR RUN-OUT, INSPECT ALL BEARING FITS.
- 5) CLEAN, INSPECT AND PAINT ALL PARTS.
- 6) REPAIR DE SHAFT EXTENSION AND KEYWAY
- 7) BORE AND SLEEVE DE AND ODE HOUSINGS
- 8) STRAIGHTEN SHAFT
- 9) FABRICATE NEW SS SHAFT SLINGER
- 10) DYNAMICALLY BALANCE ROTOR.
- 11) BORE ENDBELL FOR INPRO SEAL
- 12) FURNISH AND INSTALL:
- 13) 2-NEW BALL BEARINGS
- 14) 2-NEW HOUSING SLEEVES
- 15) 1- NEW INPRO SEAL
- 16) ASSEMBLE, TEST, PAINT.

Motor Specifications

**TOSHIBA, HP-34.9, RPM-239, Volts-355,
Amps-77, 60Hz Model: BPC026K5S052 Serial
990702522 Enclosure: TENV Frame:
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Visual Overview

Before

After

**ODE
View**



**DE
View**



**Terminal
Box
View**



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Failure Analysis

Component, Mode and Stress Identified

The most likely Causes are shaded.

Sleeve Bearing, Seizures, Mechanical

Most Likely	Probable Cause1	Probable Cause2	Prevention Tips
<input checked="" type="checkbox"/>	Excessive axial loading	Defective coupling	Repair/replace coupling.
<input checked="" type="checkbox"/>	Excessive axial loading	Motor not mounted level	Level motor and realign with machine.
<input checked="" type="checkbox"/>	Excessive axial loading	Thrust being transferred from driven machine	Use a coupling that will not transfer the thrust.



Analysis Picture 1



Analysis Picture 2



Analysis Picture 3



Analysis Picture 4



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Motor Specifications

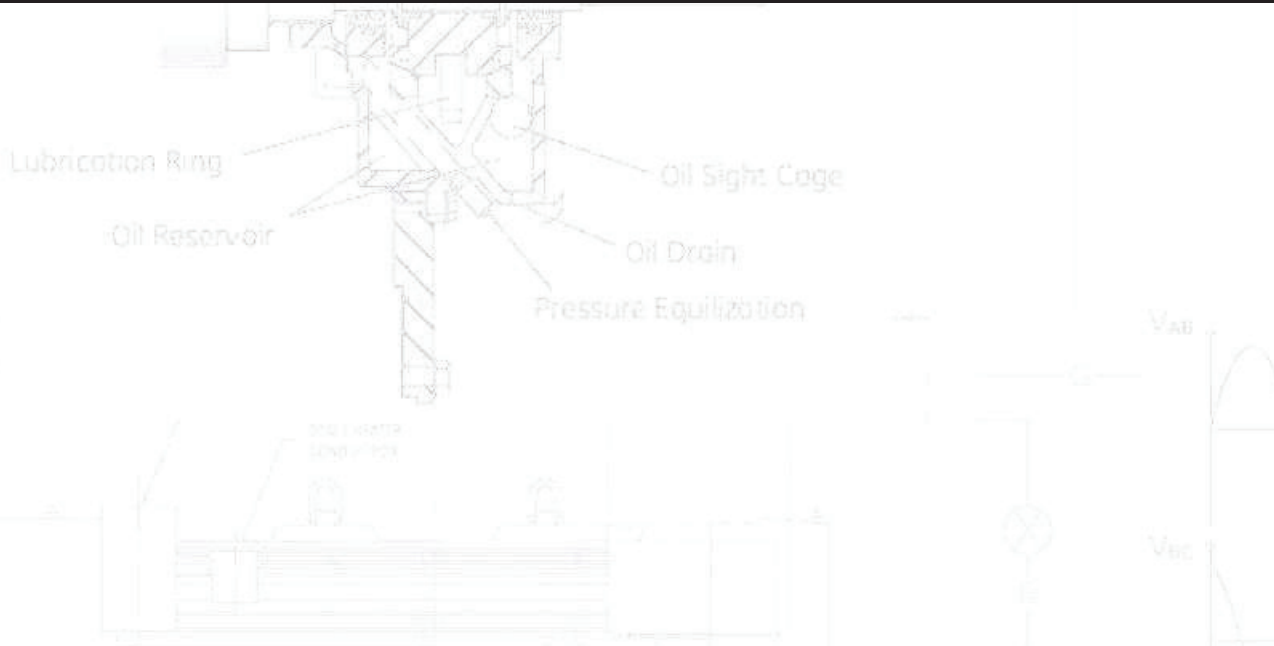
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Test Results

	Test	Measurement	As Received	As Shipped
Electrical Note: MΩ reading was taken at Temp °C shown. "Corrected" entry shows the MΩ reading corrected to 40°C as per IEEE 43 Standard Requirements.	HI-POT / PI	Test Voltage Leakage	1,000	1960 0.3
	Surge	Test V A->B B->C C->A	986 Fail Fail Fail	986 Pass Pass Pass
	Testing Results	Megger Test HI-POT Surge Balance Amperage Single Phase Rotor Test	Fail Fail Fail N/A N/A N/A	Pass Pass Pass Pass Pass N/A
	No Load Test Run	Using Test Voltage Phase A Amps Phase B Amps Phase C Amps	c.not run	355 21.2 21.4 21.3
	Balancing Results	ISO Balance Rotor Weight Unbalance Limit Test Speed Drive End Opposite End	G2.5 185 lbs 0.08 oz/in 600 rpm 1.99 oz/in 1.57 oz/in	
	Load Test Results	HP Amperage (Full Load) Torque RPM		34.9 kw 77 200 239
	Core Loss Test w/lbs	Burnoff (Before-After)	3.50	3.60
	Insulation Resistance Results	Test Voltage	500	500
			MΩ @ Temp °C Corrected	MΩ @ Temp °C Corrected
		Stator	0 @ 40 0.0	4000 @ 28 1741.1
	Rotor	N/A @ 40	N/A @ 40	





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Bearing Data (In Inches)	DE Bearing	# Manufacturer	6320 ZZ SKF	6320 ZZ SKF
	DE Bearing Journal	Min Size Max Size Actual Within Spec ? Out By	3.9371 3.9377 3.9375 Yes 0.0000	3.9371 3.9377 3.9375 Yes 0.0000
	DE Housing Bore	Min Size Max Size Actual Within Spec ? Out By	8.4646 8.4657 8.468 No 0.0023	8.4646 8.4657 8.465 Yes 0.0000
	DE Shaft Runout	Within Spec ? Actual	Yes 0.0012	Yes 0.0012
	DE Shaft Ext Diameter	Within Spec ? Actual	Yes 3.489	Yes 3.489
	ODE Bearing	# Manufacturer	6318 ZZ SKF	6318 ZZ SKF
	ODE Bearing Journal	Min Size Max Size Actual Within Spec ? Out By	3.5434 3.5440 3.5431 No -0.0003	3.5434 3.5440 3.5436 Yes 0.0000
	ODE Housing Bore	Min Size Max Size Actual Within Spec ? Out By	7.4803 7.4814 7.483 No 0.0016	7.4803 7.4814 7.481 Yes 0.0000
	ODE Shaft Runout	Within Spec ? Actual	Yes 0.0015	Yes 0.0015
	ODE Shaft Ext Diamete	Within Spec ? Actual	N/A	N/A





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Quality Steps

Checked	Task	Quality Step	Customer Specific Requirements (are shaded)
<input checked="" type="checkbox"/>	Disassemble	Bearing replacement not automatic on large vertical or 17 frame motors.	
<input checked="" type="checkbox"/>	Disassemble	Complete and review software data entry.	
<input checked="" type="checkbox"/>	Disassemble	Complete comparative surge test per P2.8/Baker	
<input checked="" type="checkbox"/>	Disassemble	Complete high potential ground wall test per P2.8/IEEE-43	
<input checked="" type="checkbox"/>	Disassemble	Complete polarization index test per P2.8/IEEE-43	
<input checked="" type="checkbox"/>	Disassemble	Match Mark parts, stamp rotor & stator, and record notes for assembly.	
<input checked="" type="checkbox"/>	Disassemble	Measure and record Shaft Run-out per P2.7, ensuring tolerance.	
<input checked="" type="checkbox"/>	Disassemble	Perform Insulation Resistance Test per P2.2/IEEE-43	
<input checked="" type="checkbox"/>	Disassemble	Record ANY parts or material to be replaced or ordered.	
<input checked="" type="checkbox"/>	Disassemble	Record core loss test results per P2.8	
<input checked="" type="checkbox"/>	Disassemble	Record failure analysis, entering description and required photos.	
<input checked="" type="checkbox"/>	Disassemble	Record original grease type.	
<input checked="" type="checkbox"/>	Disassemble	Record results of test run and AC single phase rotor test.	
<input checked="" type="checkbox"/>	Disassemble	Remove ALL Lubrication fittings, tubes, plugs for replacement per P2.6	
<input checked="" type="checkbox"/>	Disassemble	Store job components per P2.6 and record bin location.	
<input checked="" type="checkbox"/>	Burnout Stator	Maximum part temperature 650 degrees Farenheit.	
<input checked="" type="checkbox"/>	Rewind Stator	All motors 0-600 Volt are to be 3 leads, 480 volt only.	
<input checked="" type="checkbox"/>	Machine Work	No welding or flame spray on shafts.	
<input checked="" type="checkbox"/>	Assemble	17 Frame bearing housings must be measured per customer specification.	
<input checked="" type="checkbox"/>	Assemble	Crusher motor couplings to be mounted per customer specification.	
<input checked="" type="checkbox"/>	Assemble	Furnish & install fine mesh expanded metal rock screens on open & drip proof motors. Furnish & install	
<input checked="" type="checkbox"/>	Assemble	Pre NEMA frame crusher motors are to have two nameplates per customer specification.	
<input checked="" type="checkbox"/>	Assemble	Tapered shaft motor couplings to be mounted per customer specification.	
<input checked="" type="checkbox"/>	Paint	Finish paint coat shall be Vulcan Gray.	
<input checked="" type="checkbox"/>	Paint	Nameplates properly installed, legible, and abrasive free.	
<input checked="" type="checkbox"/>	Paint	Non-painted areas, including fittings/valves/holes, are masked free of overspray.	
<input checked="" type="checkbox"/>	Paint	Paint is smooth and uniform, free of runs and defects.	
<input checked="" type="checkbox"/>	Paint	Record Drive End, Opposite Drive End, and Junction Box angle photos.	
<input checked="" type="checkbox"/>	Paint	Return motor same color as received if not specified by customer	
<input checked="" type="checkbox"/>	Paint	Review Customer's specifications / requirements.	
<input checked="" type="checkbox"/>	Paint	Shafts and mounting surfaces properly blued.	
<input checked="" type="checkbox"/>	Paint	Surface properly prepared, free of scale, rust, excess epoxy, or moisture.	
<input checked="" type="checkbox"/>	Paint	Verify paint and color meet Customer requirements.	