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— EVERY DAY SINCE 1946 —

LR Motor Shop Repairs

Job Number 100084

Prepared for Reynolds Metals company

1333 highway 270
Malvern AR 72104

Table of Contents



Hi-Speed Industrial Service
7030 Ryburn Dr
Millington, Tn 38053
901-873-5300

AC Recondition As Found

Reynolds Metals company

1333 highway 270
Malvern, AR 72104

FolderID: 100084
FormID: 14178076

AC Recondition - Rev. 2

Location: Shop
Serial Number: 02250106-270R01
Description: 200HP TOSHIBA 1800RPM 445TS

Hi-Speed Job Number:	100084
Manufacturer:	Toshiba
Product Number:	TKKH
Serial Number:	02250106-270R01
HP/kW:	200 (HP)
RPM:	1785 (RPM)
Frame:	445TS
Voltage:	230 / 460
Current:	462/231
Phase:	Three
Hz:	60 (Hz)
Service Factor:	1.15
Enclosure:	ODP
J-box Included:	None
Coupling/Sheave:	None
Bearing RTDs:	No
Stator RTDs:	No
Repair Stage:	Final
Heaters:	No
Winding Type :	Random Wound
Bearing Type:	Rolling Element

Priorities Found: ● 2 - High ● 4 - Good

Overall Condition

1. Report Date
2. Nameplate Picture
3. Photos of all six sides of the machine.



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4. Describe the Overall Condition of the Equipment as Received

Dirty

Initial Mechanical/Electrical

5. Does Shaft Turn Freely?	(Yes) Yes
6. Does Shaft Have Visible Damage?	(No) No
7. Assembled Shaft Runout	
8. Assembled Shaft End Play	
9. Air Gap Variation <10%	
10. Lead Condition	(P) Pass
11. Lead Length	14 Inches
12. Frame Condition	good
13. Fan Condition	(N) NA
14. Broken or Missing Components	connection box

Initial Electrical Inspection

15. Insulation Resistance/Megger

16. Winding Resistance

1-2

1-3

2-3



17. Perform Surge Test

18. Stator Condition

Mechanical Inspection





19. Drive End Bearing Number-	6313
20. Drive End Bearing Qty.	1
21. Drive End Bearing Type	(Ball) Ball Bearing
22. Drive End Lubrication Type	(Grease) Grease Lubricated
23. Drive End Bearing Insulation or Grounding Device?	na
24. Drive End Wavy Washer/Snap-Ring Other Retention Device?	na
25. Drive End Bearing Condition	contamination and mixed grease
26. Opposite Drive End Bearing Number-	6313
27. Opposite Drive End Bearing Qty.	1
28. Opposite Drive End Bearing Type	(Ball) Ball Bearing
29. Opposite Drive End Lubrication Type	(Grease) Grease Lubricated
30. Opposite Drive End Bearing Insulation or Grounding Device?	na
31. Opposite Drive End Wavy Washer/Snap-Ring Other Retention Device?	na

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32. Opposite Drive End Bearing Condition	contamination and mixed grease	
33. Drive End Seal	na	
34. Opposite Drive End Seal	na	
Rotor Inspection		
35. Rotor Type/Material	(Squirrel Aluminum) Squirrel Cage Aluminum Die Cast	
36. Growler Test	(Pass) Pass	
37. Number of Rotor Bars		
38. Rotor Condition	pass	
39. List the Parts needed for the Repair Below 6313x2		
40. Signature of Technician that Disassembled Motor	Cw	
		
Mechanical Fits- Rotor		
41. Shaft Runout		
42. Rotor Runout		
Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
43. Coupling Fit Closest to Bearing Housing		
0 Degrees	90 Degrees	120 Degrees
44. Coupling Fit Closest to the end of the Shaft		
0 Degrees	60 Degrees	120 Degrees
45. Drive End Bearing Shaft Fit		
0 Degrees	60 Degrees	120 Degrees
 Pass		
46. Drive End Bearing Shaft Fit Condition	(P) Pass	
47. Opposite Drive End Bearing Shaft Fit		
0 Degrees	60 Degrees	120 Degrees
 Pass		
48. Opposite Drive End Bearing Shaft Fit Condition	(P) Pass	
49. Shaft Air Seal Fits		
Drive End Air Seal	Opposite Drive End Air Seal	
Mechanical Fits- Bearing Housings		

50. Drive End - Endbell Bearing Fit		
0 Degrees	60 Degrees	120 Degrees
<div>Failed worn lip</div>		



	51. Drive End - Endbell Bearing Fit Condition	(F) Fail	
	52. Opposite Drive End - Endbell Bearing Fit		
	0 Degrees	60 Degrees	120 Degrees
	Failed		
	53. Opposite Drive End - Endbell Bearing Fit Condition	(F) Fail	
	54. Bearing Cap Condition		
	Drive End Bearing Cap	Opposite Drive End Bearing Cap	
	Pass		



55. End Bell Air Seal Fits		
Drive End Air Seal	Opposite Drive End Air Seal	
56. List Machine Work Needed Below	Both end bell bearing fits	
57. Technician	Cw	



Dynamic Balance Report

58. Rotor Weight and Balance Grade

Rotor Weight

Balance Grade

59. Initial Balance Readings

Drive End

Opposite Drive End

60. Final Balance Readings

Drive End

Opposite Drive End

61. Technician

Rewind

62. Core Test Results - Watts loss per Pound

Pre-Burnout

Post Burnout

63. Core Hot Spot Test

Pre-Burnout

Post-Burnout

64. Post Rewind Electrical Test- Insulation Resistance

65. Post Rewind Polarization Index

66. Post Rewind Winding Resistance

1-2

1-3

2-3

67. Post Rewind Surge Test

68. Post Rewind Hi-Pot

69. Technician

Root Cause of Failure

70. Failure locations

Bearings

71. Root cause of failure

Mixed grease

Mechanical Fits- Rotor - Post Repair

72. Shaft Runout Post Repair

73. Rotor Runout Post Repair

Drive End Bearing Fit

Rotor Body

Opposite Drive End Bearing

74. Coupling Fit Closest to Bearing Housing Post Repair

0 Degrees

90 Degrees

120 Degrees

75. Coupling Fit Closest to the end of the Shaft Post Repair

0 Degrees

60 Degrees

120 Degrees

76.	Drive End Bearing Shaft Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
77.	Opposite Drive End Bearing Shaft Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
78.	Shaft Air Seal Fits Post Repair		
	Drive End Air Seal	Opposite Drive End Air Seal	
79.	Shaft Repair Sign-off		
Mechanical Fits- Bearing Housings - Post Repair			
80.	Drive End - Endbell Bearing Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
	5.5123	5.5124	5.5124



81. Opposite Drive End - Endbell Bearing Fit Post Repair		
0 Degrees	60 Degrees	120 Degrees
5.5122	5.5122	5.5121



82. Bearing Cap Condition Post Repair		
Drive End Bearing Cap		Opposite Drive End Bearing Cap
83. End Bell Air Seal Fits Post Repair		
Drive End Air Seal		Opposite Drive End Air Seal

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84. End Bell Repair Sign-off			
Assembly			
85. Photograph All Major Components prior to assembly			
86. Final Insulation Resistance Test			
87. Assembled Shaft Endplay			
88. Assembled Shaft Runout			
89. Test Run Voltage			
Volts	Volts	Volts	
90. Test Run Amperage			
Amps	Amps	Amps	
91. Drive End Vibration Readings - Inches Per Second			
Horizontal	Vertical	Axial	
92. Opposite Drive End Vibration Readings - Inches Per Second			
Horizontal	Vertical	Axial	
93. Ambient Temperature - Fahrenheit			
94. Drive End Bearing Temps - Fahrenheit			
5 Minutes	10 Minutes	15 Minutes	
95. Opposite Drive End Bearing Temps - Fahrenheit			
5 Minutes	10 Minutes	15 Minutes	
96. Final Test Run Sign-off			
97. Document Final Condition with Pictures after paint			





98. Final Pics and QC Review

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5. **DELIVERY OF GOODS AND/OR SERVICES.** Unless otherwise identified in the quotation, all shipments are F.O.B. Hi-Speed's warehouse and the title to and all risk of loss with respect to any goods shipped shall pass to Buyer when such goods are delivered to the carrier at Hi-Speed's warehouse. Hi-Speed will use its best efforts to affect delivery by the date or dates specified in the quotation. However, Hi-Speed shall not be liable for delay in or failure to make shipment, or to perform services, by any identified date for any reason whatsoever, including but not limited to, causes beyond its reasonable control, such as strikes, fires, floods, epidemics, quarantines, restrictions, severe weather, embargos, acts of God, or public enemy, war, riot, delays in transportation or the inability to obtain necessary labor, materials or manufacturing facilities.
6. **DELIVERY SITE AND TIME FOR PERFORMANCE.** Hi-Speed and Buyer agree that time is of the essence for the purchase order and that Buyer shall fully cooperate with Hi-Speed in order to allow Hi-Speed full access to prosecute its work diligently and in an orderly manner. Buyer shall assist Hi-Speed in every way possible to avoid delaying, disrupting or interfering with the progress of Hi-Speed's work at the project site. In the event Hi-Speed's work is delayed, hindered, suspended, disrupted, re-sequenced or interfered with or rendered less efficient or more costly or adversely affected in any way as a result of acts or omissions of Buyer or other contractors or employees of Buyer or by any other reason beyond Hi-Speed's control and without the fault of Hi-Speed, then, in such event, Buyer shall be liable to Hi-Speed for any damages, additional costs, expenses, labor, materials, man hours, acceleration costs, overtime, additional jobsite overhead, extended home office overhead, and any and all other direct and indirect expenses of whatsoever nature or kind, caused in whole or in part, as a result of any of the above-referenced occurrences. Hi-Speed's project records will be the basis for computing the additional costs and damages of Hi-Speed's labor, materials, expenses and overhead related to such changes. BUYER WARRANTS THAT THE SITE FOR DELIVERY OR INSTALLATION OF ANY GOODS AND/OR FOR THE PERFORMANCE OF ANY SERVICES SHALL BE READY AND ADEQUATE FOR HI-SPEED'S DELIVERY OF GOODS AND/OR PERFORMANCE OF SERVICES AND THAT HI-SPEED SHALL HAVE FULL ACCESS THERETO, FREE OF ALL OBSTRUCTIONS. BUYER SHALL ASSUME ALL EXTRA COSTS ASSOCIATED WITH HI-SPEED'S INABILITY TO INSTALL ANY GOODS OR PERFORM ANY SERVICES AS A RESULT OF BUYER'S FAILURE TO COMPLY WITH THIS PROVISION. HI-SPEED MAY NOT INSPECT THE SITE PRIOR TO DELIVERY AND/OR INSTALLATION OF GOODS AND/OR PERFORMANCE OF SERVICES AND MAKES NO WARRANTY AS TO THE SUFFICIENCY OF THE SITE FOR THE DELIVERY AND/OR INSTALLATION OF GOODS AND/OR THE PERFORMANCE OF SERVICES AT SUCH SITE.
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8. **WARRANTIES.** Hi-Speed warrants that all goods shall conform in all material aspects to the goods identified in the quotation to Buyer and/or purchase order, and Hi-Speed makes to Buyer the manufacturer's express warranty for any goods sold to Buyer, which is offered by the manufacturer at the time of acceptance of any quotation by Buyer. This warranty is conditioned upon the installation, operation, and maintenance of the goods in accordance with the manufacturer's recommendations and/or standard industry practice and the goods at all times being operated or used under normal operating conditions for which they were designed. Hi-Speed, at its sole option, will repair or

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