

## 

## LR Motor Shop Repairs

## **Job Number 102114**

Prepared for 3M-Main Plant (10001)

310 Walter Road Little Rock AR 72216

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AC Inspection - Rev. 2

1.0





#### **AC Inspection as Found** 3M-Main Plant (10001)

310 Walter Road Little Rock, AR 72216

FolderID: 102114 FormID: 18505953

#### AC Inspection - Rev. 2

MOTOR SHOP LR Location:

Serial Number:

Description:100 HP

Hi-Speed Job Number:	102114
Manufacturer:	GE
Product Number:	5KG509SN600P
Serial Number:	OFG082035
HP/kW:	100 (HP)
RPM:	595 (RPM)
Frame:	509Z
Voltage:	460
Current:	134
Phase:	Three
Hz:	60 (Hz)
Service Factor:	1.15
Enclosure:	TEFC
# of Leads:	3
J-box Included:	None
Coupling/Sheave:	None
Date Received:	11/17/2023
Repair Stage:	Final

Priorities Found: 2 - High

6 - Good

#### **Overall Condition**

- 1. Report Date
- Nameplate Picture





Photos of all six sides of the machine.















1 12 2000		
4.	Describe the Overall Condition of the Equipment as Received	
Initia	l Mechanical/Electrical	
<b>5</b> .	Does Shaft Turn Freely?	(No) No
-	Shaft broken	
6.	Does Shaft Have Visible Damage?	(Yes) Yes
-	Broken	
7.	Assembled Shaft Runout	Inches
-	Na	
8.	Assembled Shaft End Play	inches
-	Na	
9.	Air Gap Variation <10%	na
• 10	Lead Condition	(P) Pass



11. Lead Length		12 Inches	
12. Lead Numbers		1-3	
<ol><li>Stator Temperature Det</li></ol>	ector Rating and Function		
Quantity	Rating	Quantity Passed	
<ol><li>Bearing Temperature D</li></ol>	etector Rating and Function		
Quantity	Rating	Quantity Passed	
<ol><li>Frame Condition</li></ol>		pass	







17. Heater Quantity, Ratings

Quantity Volts/Watts Pass/Fail

18. Broken or Missing Components DE shaft broke off

#### **Initial Electrical Inspection**

19. Insulation Resistance/Megger

Megohms



20. Winding Resistance

1-2 1-3 2-3





22. Number of Stator Slots	84
23. Stator Condition	rewind
24. Stator Thermistors/Ohms	
25. Stator Overloads/Ohms	
Mechanical Inspection	
26. Drive End Bearing Brand	SKF

#### 27. Drive End Bearing Number-

Bearing race stuck on shaft.





28. Drive End Bearing Qty.	1
29. Drive End Bearing Type	(Roller) Roller Bearing
30. Drive End Lubrication Type	(Grease) Grease Lubricated
31. Drive End Bearing Insulation or Grounding Device?	none
32. Drive End Wavy Washer/Snap-Ring Other Retention Device?	none
33. Drive End Bearing Condition	replace
34. Opposite Drive End Bearing Brand	Skf
35. Opposite Drive End Bearing Number-	6315 2Z/ C3





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36.	Opposite Drive End Bearing Qty.		1
37.	Opposite Drive End Bearing Type		(Ball) Ball Bearing
38.	Opposite Drive End Lubrication Type		(Grease) Grease Lubricated
39.	Opposite Drive End Bearing Insulation	or Grounding Device?	none
40.	Opposite Drive End Wavy Washer/Sn	ap-Ring Other Retention Device?	snap ring
41.	Opposite Drive End Bearing Condition	1	replace
42.	Drive End Seal		none
43.	Opposite Drive End Seal		none
44.	DE Sleeve Bearing Inside Diameter		
	0 degrees	120 degrees	240 degrees
	DE 01 D 1 D 1 D 1		
45.	DE Sleeve Bearing Outside Diameter	400 1	242.1
	0 degrees	120 degrees	240 degrees
46.	DE Sleeve Bearing Housing Inside Dia	ameter	
10.	0 degrees	120 degrees	240 degrees
	0 dog.000	120 dog1000	2 10 4091000
47.	DE Sleeve Bearing to Housing Cleara	nce	
	0 degrees	120 degrees	240 degrees
48.	ODE Sleeve Bearing Inside Diameter		
	0 degrees	120 degrees	240 degrees
40	ODE Sleeve Bearing Outside Diameter	or.	
49.	0 degrees	120 degrees	240 degrees
	0 degrees	120 degrees	240 degrees
50.	ODE Sleeve Bearing Housing Inside I	Diameter	
	0 degrees	120 degrees	240 degrees
	3	3	3.5.5
51.	ODE Sleeve Bearing to Housing Clea	rance	
	0 degrees	120 degrees	240 degrees
	Inspection		
52.	Rotor Type/Material		(Squirrel Aluminum) Squirrel Cage Aluminum Die Cast
53.	Growler Test		(Pass) Pass

54. Number of Rotor Bars 105 55. Rotor Condition Passed growl test but needs new shaft. 56. List the Parts needed for the Repair Below New shaft, sleeve D.E housing. **Terrence Holland** 57. Signature of Technician that Disassembled Motor **Mechanical Fits- Rotor** 58. Shaft Runout inches Shaft broken off. 59. Rotor Runout Drive End Bearing Fit Rotor Body Opposite Drive End Bearing 60. Coupling Fit Closest to Bearing Housing 90 Degrees 120 Degrees 0 Degrees 61. Coupling Fit Closest to the end of the Shaft 0 Degrees 60 Degrees 120 Degrees 62. Drive End Bearing Shaft Fit 0 Degrees 60 Degrees 120 Degrees Needs new shaft 63. Drive End Bearing Shaft Fit Condition (NA) Not Applicable 64. Opposite Drive End Bearing Shaft Fit 0 Degrees 60 Degrees 120 Degrees New shaft needed. 65. Opposite Drive End Bearing Shaft Fit Condition New shaft needed.

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#### 66. Shaft Air Seal Fits

Drive End Air Seal

Opposite Drive End Air Seal

excessive wear



#### **Mechanical Fits- Bearing Housings**

67. Drive End - Endbell Bearing Fit

0 Degrees 60 Degrees 120 Degrees

8.4702 8.4703 8.4703

Re-sleeve fit. Excessive wear.



68. Drive End - Endbell Bearing Fit Condition

(F) Fail



69.	Opposite Drive End - Endbell Bearing	Fit		
	0 Degrees	60 Degrees	120 Degrees	
	6.2995	6.2996	6.2997	
70.	Opposite Drive End - Endbell Bearing	Fit Condition		(P) Pass
71.	Bearing Cap Condition			
	Drive End Bearing Cap	Opposite Drive End Bearing Cap		
	pass	pass		





72. End Bell Air Seal Fits

Drive End Air Seal Opposite Drive End Air Seal

73. List Machine Work Needed Below Sleeve DE house fit and machine new shaft.

74. Technician Terrence Holland

**Root Cause of Failure** 

75. Failure locations

D.E shaft broken off.

76. Root cause of failure

#### **Dynamic Balance Report**

77. Rotor Weight and Balance Grade

Rotor Weight Balance Grade

na na

# 78. Initial Balance Readings Drive End Opposite Drive End 4.79





79.	Final Balance Readings			
	Drive End	Opposite Drive End		
	.41	.47		
80.	Technician			Terrence Holland
Rewin	nd			
81.	Core Test Results - Watts loss per Po	und		
	Pre-Burnout	Post Burnout		
	na	na		
82.	Core Hot Spot Test			
	Pre-Burnout	Post-Burnout		
	na	na		
83.	Post Rewind Electrical Test- Insulation	n Resistance		0 Megohms
84.	Post Rewind Polarization Index			0 Polarization Index
85.	Post Rewind Winding Resistance			
	1-2	1-3	2-3	
	0	0	0	







87. Post Rewind Hi-Pot

88. Technician

Zach Whatley Robert Roberson

Mechanical Fits- Rotor - Post Repair

Machined new shaft.



90.	Rotor Runout Post Repair		
	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
	0	0	0
91.	Coupling Fit Closest to Bearing Housi	ng Post Repair	
	0 Degrees	90 Degrees	120 Degrees
	0	0	0
92.	Coupling Fit Closest to the end of the	Shaft Post Repair	
	0 Degrees	60 Degrees	120 Degrees
	0	0	0
93.	Drive End Bearing Shaft Fit Post Repa	air	
	0 Degrees	60 Degrees	120 Degrees
	0	0	0
94.	Opposite Drive End Bearing Shaft Fit	Post Repair	
	0 Degrees	60 Degrees	120 Degrees
	0	0	0
95.	Shaft Air Seal Fits Post Repair		
	Drive End Air Seal	Opposite Drive End Air Seal	
	ok	ok	
96.	Shaft Repair Sign-off		Gary

Mechanical Fits- Bearing Housings - Post Repair

97. Drive End - Endbell Beari	ng Fit Post Repair		
0 Degrees	60 Degrees	120 Degrees	
8.465	8.46519999999999	8.4651	



98	Opposite Drive End - Endbell Bearing	Fit Post Repair	
50.	0 Degrees	60 Degrees	120 Degrees
	0 Degrees	0	0
99	Bearing Cap Condition Post Repair	0	0
99.	<u> </u>	Opposite Drive End Bearing Cap	
	Drive End Bearing Cap ok	ok	
100		OK .	
100.	End Bell Air Seal Fits Post Repair	Onnesite Drive Ford Air Cool	
	Drive End Air Seal	Opposite Drive End Air Seal	
404	ok	ok	
101.	DE Sleeve Bearing Inside ID Post Rep		Mara and O
	Measure 1	Measure 2	Measure 3
	0	0	0
102.	DE Sleeve Bearing Outside ID Post R	-	
	Measure 1	Measure 2	Measure 3
	0	0	0
103.	DE Sleeve Bearing Inside OD Post Re		
	Measure 1	Measure 2	Measure 3
	0	0	0
104.	DE Sleeve Bearing Outside OD Post I	-	
	Measure 1	Measure 2	Measure 3
	0	0	0
105.	End Bell Repair Sign-off		Gary
	In In		
106.	ODE Sleeve Bearing Inside ID Post R	epair	
	Measure 1	Measure 2	Measure 3
	0	0	0

107. ODE Sleeve B	earing Outside ID Post Repair	
Measure 1	Measure 2	Measure 3
0	0	0
108. ODE Sleeve B	earing Inside OD Post Repair	
Measure 1	Measure 2	Measure 3
Mododio		
0	0	0
0		
0	0	
0 109. ODE Sleeve B	<b>0</b> earing Outside OD Post Repair	0

#### **Assembly**

110. QC Check All Parts for Cleanliness Prior to Assembly

**David Maclin** 



111. Photograph All Major Components prior to assembly

(Complete) Complete









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112. Final Insulation Resistar	nce Test	2	2000 Megohms
113. Assembled Shaft Endpla	ау		0 inches
114. Assembled Shaft Runou	ıt		0 inches
115. Test Run Voltage			
Volts	Volts	Volts	
456	462	458	
Witnessed by David Willia	ams		



116.	Test Run Amperage				
	Amps	Amps	Amps		
	75.8	76.8	71.2		
117.	Drive End Vibration Readings - Inches	Per Second			
	Horizontal	Vertical	Axial		
	0.0522	0.0318	0.0196		
118.	. Opposite Drive End Vibration Readings - Inches Per Second				
	Horizontal	Vertical	Axial		
	0.0364	0.0244	0.0265		
119.	Ambient Temperature - Fahrenheit			70	
120.	0. Drive End Bearing Temps - Fahrenheit				
	5 Minutes	10 Minutes	15 Minutes		
	70	70	70		
121.	Drive End Bearing Temps - Fahrenhei	t 20-30 Minutes			
	20 Minutes	25 Minutes	30 Minutes		

70	70	70		
122. Drive End Bearing Temps -	Drive End Bearing Temps - Fahrenheit 35-45 Minutes			
35 Minutes	40 Minutes	45 Minutes		
70	70	70		
123. Drive End Bearing Temps -	Drive End Bearing Temps - Fahrenheit 50-60 Minutes			
50 Minutes	55 Minutes	60 Minutes		
70	70	70		
124. Opposite Drive End Bearin	g Temps - Fahrenheit			
5 Minutes	10 Minutes	15 Minutes		
70	70	70		
125. Opposite Drive End Bearing	Opposite Drive End Bearing Temps - Fahrenheit 20-30 Minutes			
20 Minutes	25 Minutes	30 Minutes		
70	70	70		
126. Opposite Drive End Bearing	g Temps - Fahrenheit 35-45 Minutes			
35 Minutes	40 Minutes	45 Minutes		
70	70	70		
127. Opposite Drive End Bearing	Opposite Drive End Bearing Temps - Fahrenheit 50-60 Minutes			
50 Minutes	55 Minutes	60 Minutes		
70	70	70		
128. Stator Temperatures- Fahr	Stator Temperatures- Fahrenheit			
5 Minutes	10 Minutes	15 Minutes		
70	70	70		
129. Stator Temperatures- Fahr	Stator Temperatures- Fahrenheit 20-30 Minutes			
20 Minutes	25 Minutes	30 Minutes		
70	70	70		
130. Stator Temperatures- Fahr	Stator Temperatures- Fahrenheit 35-45 Minutes			
35 Minutes	40 Minutes	45 Minutes		
70	70	70		
131. Stator Temperatures- Fahr	Stator Temperatures- Fahrenheit 50-60 Minutes			
50 Minutes	55 Minutes	60 Minutes		
70	70	70		
132. Document Final Condition	with Pictures after paint	looks good		
133. Final Pics and QC Review		David Maclin		

(1)









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