



**KEEPING YOUR FACILITY UP TO SPEED**  
— EVERY DAY SINCE 1946 —

LR Motor Shop Repairs

**Job Number 100712**

Prepared for Reynolds Metals company

1333 highway 270  
Malvern AR 72104

# Table of Contents



Hi-Speed Industrial Service  
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## DC Repair Report

Reynolds Metals company  
1333 highway 270  
Malvern, AR 72104

FolderID: 100712  
FormID: 15538264

### DC Repair Report Rev. 2

Location: Shop  
Job Number: 100712  
Serial Number: JR-1-539 KR  
Status: In For Repair  
Description: 16HP GE 400/1800RPM CD409AT

Hi-Speed Job Number: 100712  
Manufacturer: GE  
Product Number : 5CD284KA855A801  
Serial Number: JR-1-539 JR  
HP/KW: 16 (HP)  
RPM: 400  
Frame: CD409AT  
Armature Voltage: 240 (Volts)  
Armature Current: 55 (Amps)  
Field Voltage: 240 (Volts)  
Field Current : 2.94 (Amps)  
J-Box Included: No  
Bearing RTDS: No  
Winding RTDS: No  
Mounting Orientation : Horizontal

Priorities Found: ● 2 - High ● 7 - Good

### Overall Condition

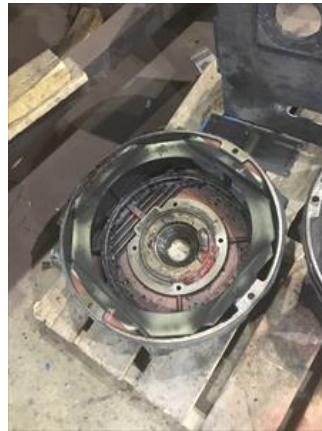
- Describe the Overall Condition of the Equipment as Received  
*Dirty*



- Nameplate Picture

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*Mixed grease*



3. Distance From the End of the Shaft to the end of the Face of the Sheave/Coupling

#### Initial Mechanical/Electrical

●	4. Does the Shaft Turn Freely?	(Y) Yes
●	5. Does Shaft Have Visible Damage?	(No) No
	6. Assembled Shaft Runout	
	7. Assembled Shaft End Play	
	8. Air Gap Variation <10%	
●	9. Lead Condition	(F) Fail
	Needs new lead's	



10. Lead Length 8 Inches

●	11. Frame Condition	(P) Pass
	Dirty	

●	12. Fan Condition	(NA) Not Applicable
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### 13. Brush Information

Brush Number	Quantity	Condition
<b>RY -10</b>	<b>4</b>	<b>dirty</b>



### 14. Brush Holder Condition - Verify proper gap to Commutator

**dirty needs to be cleaned**



### Incoming Electrical Test

15. General Condition of the Armature/Commutator	<b>dirty</b>
16. Armature Insulation Resistance to Ground	<b>23000 Megohms</b>



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## 17. Field Circuit Insulation Resistance to Ground

30180 Megohms



## 18. Interpole Circuit Insulation Resistance to Ground

76500 Megohms



## 19. Field Drop Test Fields 1&amp;2

Total AC Voltage

Field #1

Field #2

0.478

0.479

## 20. Field Drop Test Fields 3&amp;4

Field #3

Field #4

Field #2

0.478

0.478

## 21. Field Drop Test Fields 5&amp;6

Field #5

Field #6

Field #2

## 22. Field Drop Test Fields 7&amp;8

Field #7

Field #8

Field #2

## 23. Interpole Drop Test 1&amp;2

Total AC Voltage

Interpole #1

Interpole #2

0.028

0.028

## 24. Interpole Drop Test 3&amp;4

Interpole #3

Interpole #4

Field #2

0.028

0.027

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25. Interpole Drop Test 5&6		
Interpole #5	Interpole #6	Field #2
26. Interpole Drop Test 7&8		
Interpole #7	Interpole #8	Field #2
27. Armature Number of Bars - Bar to Bar Test		
Number of Bars	Bar to Bar Test	



### Mechanical Inspection

28. Shaft Runout Drive End		
29. Shaft Runout Armature		
Drive End Bearing Journal	Armature Core	ODE Bearing Journal
30. Drive End Bearing Number		6214
Ageis ring shaft size 3.1265		



31. Drive End Bearing Quantity	1
32. Drive End Bearing Type	(Ball) Ball Bearing

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33. Drive End Lubrication Type

(Grease) Grease Lubricated



34. Drive End Bearing Insulation or Grounding Device?

(NA)

35. Drive End Wavy Washer/Snap-Ring Other Retention Device?

no

36. Drive End Bearing Condition

Fluting



37. Opposite Drive End Bearing Number

6213



38. Opposite Drive End Bearing Quantity

1

39. Opposite Drive End Bearing Type

(Ball) Ball Bearing

40. Opposite Drive End Lubrication Type


(Grease) Grease Lubricated

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41. Opposite Drive End Bearing Insulation or Grounding Device?	(NA)
42. Opposite Drive End Wavy Washer/Snap-Ring Other Retention Device?	no
43. Opposite Drive End Bearing Condition	
Fluting	



44. Signature of Technician who Performed Teardown	RW		
			
45. List Parts Needed Prior to Reassembly			
Mechanical Fits - Armature			
46. Coupling Fit Closest to Bearing Housing			
0 Degrees	60 degrees	120 degrees	
47. Coupling Fit Closest to the End of the Shaft			
0 Degrees	60 degrees	120 degrees	
48. Drive End Bearing Shaft Fit			
0 Degrees	60 Degrees	120 Degrees	
2.7565	2.7565	2.7565	

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49. Drive End Bearing Shaft Fit Condition

(P) Pass



50. Opposite Drive End Bearing Shaft Fit

0 Degrees

60 Degrees

120 Degrees

2.5595

2.5595

2.5595

51. Opposite Drive End Bearing Shaft Fit Condition

(P) Pass



52. Shaft Air Seal Fits

Drive End Air Seal

Opposite Drive End Air Seal

### Mechanical Fits- Bearing Housings

53. Drive End - End Bell Bearing Fit

0 Degrees

60 Degrees

120 Degrees

4.9223

4.9223

4.9223

54. Drive End - Endbell Bearing Fit Condition

(P) Pass

55. Opposite Drive End - End Bell Bearing Fit

0 Degrees

60 Degrees

120 Degrees

4.7257

4.7257

4.7254

56. Opposite Drive End - Endbell Bearing Fit Condition

(F) Fail

Resleeve with a insulated sleeve

57. Bearing Cap Condition	
Drive End	Opposite Drive End
pass	pass



58. End Bell Air Seal Fits	
Drive End Air Seal	Opposite Drive End Air Seal

59. List any Machine work Needed Below	<b>ODE END BELL HOUSING FIT BAD</b>
60. Signature of Technician Performing Measurements	<b>RW</b>

*Handwritten signature: RW*

#### Root Cause of Failure

61. Failure Locations

62. Root Cause of Failure

*Both bearings had fluting and motor was full of carbon and grease also motor needs new leads*

#### Commutator Data

63. Total Copper Segment Length

64. Number of Bars

65. Number of Wires Per Copper Bar and Size

Number of Wires per Bar	Wire Size
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66. Equalizers per Copper Bar and Equalizer Wire Size

Equalizers per Bar	Wire Size
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67. Document Commutator Diameter, Minimum and Max

Current Comm Diameter	Minimum Comm Diameter	Maximum Comm Diameter
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68. Commutator Shaft Diameter

Front Shaft Diameter	Back Shaft Diameter
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69. Commutator Type

70. Commutator Bore

71. Signature of Technician Recording Data

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<b>Dynamic Balance Report</b>			
72. Rotor Weight and Balance Grade			
Rotor Weight		Balance Grade	
73. Initial Balance Readings			
Drive End Readings		Opposite Drive End Readings	
74. Final Balance Readings			
Drive End Readings		Opposite Drive End Readings	
75. Signature of the Balance Technician			
<b>Post Armature Rewind Testing</b>			
76. Post Rewind Armature Insulation Resistance to Ground			
77. Post Rewind Field Circuit Measure the Insulation Resistance to Ground			
78. Post Rewind Armature Number of Bars - Bar to Bar Test			
Number of Bars		Bar to Bar Test	
79. Post Rewind Field Circuit Insulation Resistance to Ground			
80. Post Rewind Interpole Circuit Insulation Resistance to Ground			
81. Post Rewind Field Drop Test Fields 1&2			
Total AC Voltage	Field #1	Field #2	
82. Post Rewind Field Drop Test Fields 3&4			
Field #3	Field #4	Field #2	
83. Post Rewind Field Drop Test Fields 5&6			
Field #5	Field #6	Field #2	
84. Post Rewind Field Drop Test Fields 7&8			
Field #7	Field #8	Field #2	
85. Post Rewind Interpole Drop Test 1&2			
Total AC Voltage	Interpole #1	Interpole #2	
86. Post Rewind Interpole Drop Test 3&4			
Interpole #3	Interpole #4	Field #2	
87. Post Rewind Interpole Drop Test 5&6			
Interpole #5	Interpole #6	Field #2	
88. Post Rewind Interpole Drop Test 7&8			
Interpole #7	Interpole #8	Field #2	
<b>Post Mechanical Repair</b>			
89. Post Repair Coupling Fit Closest to Bearing Housing			
0 Degrees	60 degrees	120 degrees	



90. Post Repair Coupling Fit Closest to the End of the Shaft		
0 Degrees	60 degrees	120 degrees
91. Post Repair Drive End Bearing Shaft Fit		
0 Degrees	60 Degrees	120 Degrees
92. Post Repair Drive End Bearing Shaft Fit Condition		
93. Post Repair Drive End Opposite Drive End Bearing Shaft Fit		
0 Degrees	60 Degrees	120 Degrees
94. Post Repair Drive End Opposite Drive End Bearing Shaft Fit Condition		
95. Post Repair Drive End - End Bell Bearing Fit		
0 Degrees	60 Degrees	120 Degrees
96. Post Repair Drive End - Endbell Bearing Fit Condition		
97. Post Repair Opposite Drive End - End Bell Bearing Fit		
0 Degrees	60 Degrees	120 Degrees
98. Post Repair Opposite Drive End - Endbell Bearing Fit Condition		
99. Post Repair Bearing Cap Condition		
Drive End	Opposite Drive End	
100. Post Repair End Bell Air Seal Fits		
Drive End Air Seal	Opposite Drive End Air Seal	
101. Signature of Tech Performing Mechanical Repairs		
<b>Assembly</b>		
102. Take Pictures of all Major Components Prior to Reassembly		
103. Verify Brush Box Holders Have the Proper Clearance, and Brushes have been Seated Properly		
104. Assembled Shaft End Play and Runout		
Shaft Endplay	Shaft Runout	
105. Perform No-Load Test Run, Record Armature Voltage and Current		
Voltage	Current	
106. Perform No-Load Test Run, Record Field Voltage and Current		
Voltage	Current	
107. Document Vibration Readings Drive End		
Horizontal	Vertical	Axial
108. Document Vibration Readings Opposite Drive End		
Horizontal	Vertical	Axial
109. Perform Full-Load Test Run, Record Armature Voltage and Current		
Voltage	Current	

110. Perform Full-Load Test Run, Record Field Voltage and Current			
Voltage		Current	
111. Document Vibration Readings Under Full Load Drive End			
Horizontal		Vertical	Axial
112. Document Vibration Readings Under Full Load Opposite Drive End			
Horizontal		Vertical	Axial
113. Ambient Temperature			
114. Drive End Bearing Temps Under Full Load			
5 Minutes		10 Minutes	15 Minutes
115. Opposite Drive End Bearing Temps Under Full Load			
5 Minutes		10 Minutes	15 Minutes
116. Final Test Run Sign-Off			
117. Document Final Condition With Pictures			
118. Final QC Sign-Off			



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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.
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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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