

# LR Motor Shop Repairs

# **Job Number 101478**

Prepared for Process And Power (002964)

1721 Corporate Ave Memphis Tn TN 38132

# **Table of Contents**

AC Inspection as Found - Shop

AC Inspection - Rev. 2: A2007172081

1.0



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

> FolderID: 101478 FormID: 16996772

### **AC Inspection as Found** Process And Power (002964)

1721 Corporate Ave Memphis Tn, TN 38132

#### AC Inspection - Rev. 2

Location:

Shop

Serial Number: A2007172081

Description: 200HP BALDOR 3600RPM 445TDZ FOR INGERSOLL RAND

Hi-Speed Job Number:	101478
Manufacturer:	Baldor
Product Number:	39303458
Spec/ID #:	A44-5000-5304
Serial Number:	A2007172081
HP/kW:	200 (HP)
RPM:	3575 (RPM)
Frame:	445TDZ
Voltage:	460
Current:	233
Phase:	Three
Hz:	60 (Hz)
Service Factor:	1.25
Enclosure:	TEFC
J-box Included:	Complete
Bearing RTDs:	No
Stator RTDs:	No
Repair Stage:	Final
Heaters:	No
Winding Type :	Random Wound
Bearing Type:	Rolling Element

Priorities Found: 1 - High



🦱 7 - Good

### **Overall Condition**

- 1. Report Date
- Nameplate Picture



Photos of all six sides of the machine.

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4	4.	Describe the Overall Condition of the Equipment as Received  Dirty	
5	5.	Distance from the end of the shaft to the Coupling/Sheave	
Initi	ial	Mechanical/Electrical	
• 6	6.	Does Shaft Turn Freely?	(Yes) Yes
7	7.	Does Shaft Have Visible Damage?	(No) No
8	8.	Assembled Shaft Runout	
9	9.	Assembled Shaft End Play	
1	0.	Air Gap Variation <10%	
1	1.	Lead Condition	(P) Pass
1:	2.	Lead Length	96 Inches
1	3.	Frame Condition	pass
1-	4.	Fan Condition	(P) Pass



15.	Broken or Missing Components			na
Initial	Electrical Inspection			
16.	Insulation Resistance/Megger			
17.	Winding Resistance			
	1-2	1-3	2-3	





19.	Number of Stator Slots	
20.	Stator Condition	
21.	Stator Thermistors/Ohms	
22.	Stator Overloads/Ohms	
Mecha	anical Inspection	
23.	Drive End Bearing Brand	nachi
24.	Drive End Bearing Number-	6313
25.	Drive End Bearing Qty.	1
26.	Drive End Bearing Type	(Ball) Ball Bearing
27.	Drive End Lubrication Type	(Grease) Grease Lubricated
28.	Drive End Bearing Insulation or Grounding Device?	
-	Na	
29.	Drive End Wavy Washer/Snap-Ring Other Retention Device?	na
30.	Drive End Bearing Condition	



31. Opposite Drive End Bearing Brand	nachi
32. Opposite Drive End Bearing Number-	6313
33. Opposite Drive End Bearing Qty.	1
34. Opposite Drive End Bearing Type	(Ball) Ball Bearing
35. Opposite Drive End Lubrication Type	(Grease) Grease Lubricated
36. Opposite Drive End Bearing Insulation or Grounding Device?	na

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(P) Pass

38. Opposite Drive End Bearing Condition



39.	Drive End Seal	na
40.	Opposite Drive End Seal	na
Rotor	Inspection	
41.	Rotor Type/Material	(Squirrel Aluminum) Squirrel Cage Aluminum Die Cast
42.	Growler Test	(Pass) Pass
43.	Number of Rotor Bars	
44.	Rotor Condition	pass
45.	List the Parts needed for the Repair Below	
	2 6313 bearings	
46.	Signature of Technician that Disassembled Motor	Cw

MU

Mechanical F	Fits- Rotor
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48.	Rotor	Runout

Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing

# 49. Coupling Fit Closest to Bearing Housing

U Degrees 90 Deg	grees 120 Degr	ees
------------------	----------------	-----

# 50. Coupling Fit Closest to the end of the Shaft

U Degrees	60 Degrees	120 Degrees
-----------	------------	-------------

#### 51. Drive End Bearing Shaft Fit

0 Degrees	60 Degrees	120 Degrees
0 2 09.000	00 = 09.000	c _ cg.ccc

## 52. Drive End Bearing Shaft Fit Condition

# 53. Opposite Drive End Bearing Shaft Fit

0 Degrees	60 Degrees	120 Degrees
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54. Opposite Drive End Bearing Shaft Fit Condition (P) Pass  55. Shaft Air Seal Fits Drive End Air Seal Opposite Drive End Air Seal  echanical Fits- Bearing Housings  56. Drive End - Endbell Bearing Fit 0 Degrees 60 Degrees 120 Degrees  57. Drive End - Endbell Bearing Fit Condition (P) Pass  58. Opposite Drive End - Endbell Bearing Fit 0 Degrees 60 Degrees 120 Degrees  59. Opposite Drive End - Endbell Bearing Fit Condition (P) Pass  59. Opposite Drive End - Endbell Bearing Fit Condition (P) Pass  59. Opposite Drive End - Endbell Bearing Fit Condition (P) Pass  50. Drive End Bearing Cap Opposite Drive End Bearing Cap					
Drive End Air Seal  Opposite Drive End - Endbell Bearing Fit  Opposite Drive End - Endbell Bearing Fit Condition  Opposite Drive End - Endbell Bearing Fit  Opposite Drive End - Endbell Bearing Fit  Opposite Drive End - Endbell Bearing Fit  Opposite Drive End - Endbell Bearing Fit Condition  Opposite Drive End - Endbell Bearing Fit Condition  Opposite Drive End - Endbell Bearing Fit Condition  Opposite Drive End Bearing Cap  Opposite Drive End Bearing Cap	54.	Opposite Drive End Bearing Shaft Fi	t Condition		(P) Pass
echanical Fits- Bearing Housings  56. Drive End - Endbell Bearing Fit  0 Degrees  60 Degrees  120 Degrees  57. Drive End - Endbell Bearing Fit Condition  (P) Pass  58. Opposite Drive End - Endbell Bearing Fit  0 Degrees  60 Degrees  120 Degrees  (P) Pass  59. Opposite Drive End - Endbell Bearing Fit Condition  (P) Pass  60. Bearing Cap Condition  Drive End Bearing Cap  Opposite Drive End Bearing Cap	55.	Shaft Air Seal Fits			
56. Drive End - Endbell Bearing Fit  0 Degrees 60 Degrees 120 Degrees  57. Drive End - Endbell Bearing Fit Condition (P) Pass 58. Opposite Drive End - Endbell Bearing Fit 0 Degrees 60 Degrees 120 Degrees  59. Opposite Drive End - Endbell Bearing Fit Condition (P) Pass 60. Bearing Cap Condition Drive End Bearing Cap Opposite Drive End Bearing Cap		Drive End Air Seal	Opposite Drive End Air Seal		
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59. Opposite Drive End - Endbell Bearing Fit Condition (P) Pass  60. Bearing Cap Condition  Drive End Bearing Cap Opposite Drive End Bearing Cap	58.	3. Opposite Drive End - Endbell Bearing Fit			
60. Bearing Cap Condition  Drive End Bearing Cap Opposite Drive End Bearing Cap		0 Degrees	60 Degrees	120 Degrees	
60. Bearing Cap Condition  Drive End Bearing Cap Opposite Drive End Bearing Cap					
Drive End Bearing Cap Opposite Drive End Bearing Cap	59.	Opposite Drive End - Endbell Bearing	g Fit Condition		(P) Pass
	60.	Bearing Cap Condition			
■ Pass		Drive End Bearing Cap	Opposite Drive End Bearing Cap		
Pass Pass					
	-	Pass			



61.	61. End Bell Air Seal Fits		
	Drive End Air Seal	Opposite Drive End Air Seal	
62.	List Machine Work Needed Below		
	Na		
63.	Technician		Cw
Dynar	nic Balance Report		
64.	Rotor Weight and Balance Grade		
	Rotor Weight	Balance Grade	
65.	Initial Balance Readings		
	Drive End	Opposite Drive End	

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66	Final Palance Poodings		
00.	Final Balance Readings	On a site Daire Ford	
	Drive End	Opposite Drive End	
67	Technician		
Rewir			
	Core Test Results - Watts loss per Po	aund	
00.	Pre-Burnout	Post Burnout	
	Fie-Buillout	FOST BUILDUT	
69.	Core Hot Spot Test		
	Pre-Burnout Pre-Burnout	Post-Burnout	
	To Barriout	1 doc Barrioux	
70.	Post Rewind Electrical Test- Insulatio	n Resistance	
71.	Post Rewind Polarization Index		
72.	Post Rewind Winding Resistance		
	1-2	1-3	2-3
73.	Post Rewind Surge Test		
74.	Post Rewind Hi-Pot		
	Technician		
Root	Cause of Failure		
76.	Failure locations		
	Windings		
	Root cause of failure		
Mech	anical Fits- Rotor - Post Repair		
78.	Shaft Runout Post Repair		
78.	Rotor Runout Post Repair		
78.	·	Rotor Body	Opposite Drive End Bearing
78. 79.	Rotor Runout Post Repair Drive End Bearing Fit	·	Opposite Drive End Bearing
78.	Rotor Runout Post Repair Drive End Bearing Fit Coupling Fit Closest to Bearing Housi	ing Post Repair	
78. 79.	Rotor Runout Post Repair Drive End Bearing Fit	·	Opposite Drive End Bearing  120 Degrees
78. 79. 80.	Rotor Runout Post Repair  Drive End Bearing Fit  Coupling Fit Closest to Bearing Housi 0 Degrees	ing Post Repair 90 Degrees	
78. 79. 80.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing Housi 0 Degrees  Coupling Fit Closest to the end of the	ing Post Repair 90 Degrees Shaft Post Repair	120 Degrees
78. 79. 80.	Rotor Runout Post Repair  Drive End Bearing Fit  Coupling Fit Closest to Bearing Housi 0 Degrees	ing Post Repair 90 Degrees	
78. 79. 80.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees	ing Post Repair 90 Degrees Shaft Post Repair 60 Degrees	120 Degrees
78. 79. 80.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees	ing Post Repair 90 Degrees Shaft Post Repair 60 Degrees	120 Degrees
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78. 79. 80.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees  Drive End Bearing Shaft Fit Post Rep 0 Degrees  Opposite Drive End Bearing Shaft Fit	ing Post Repair 90 Degrees Shaft Post Repair 60 Degrees air 60 Degrees Post Repair	120 Degrees  120 Degrees  120 Degrees
78. 79. 80. 81.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees  Drive End Bearing Shaft Fit Post Rep 0 Degrees	ing Post Repair 90 Degrees Shaft Post Repair 60 Degrees air 60 Degrees	120 Degrees 120 Degrees
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78. 79. 80. 81.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees  Drive End Bearing Shaft Fit Post Rep 0 Degrees  Opposite Drive End Bearing Shaft Fit 0 Degrees  Shaft Air Seal Fits Post Repair	ing Post Repair 90 Degrees  Shaft Post Repair 60 Degrees  air 60 Degrees  Post Repair 60 Degrees	120 Degrees  120 Degrees  120 Degrees
78. 79. 80. 81.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees  Drive End Bearing Shaft Fit Post Rep 0 Degrees  Opposite Drive End Bearing Shaft Fit 0 Degrees	ing Post Repair 90 Degrees Shaft Post Repair 60 Degrees air 60 Degrees Post Repair	120 Degrees  120 Degrees  120 Degrees
78. 79. 80. 81. 82.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees  Drive End Bearing Shaft Fit Post Rep 0 Degrees  Opposite Drive End Bearing Shaft Fit 0 Degrees  Shaft Air Seal Fits Post Repair	ing Post Repair 90 Degrees  Shaft Post Repair 60 Degrees  air 60 Degrees  Post Repair 60 Degrees	120 Degrees  120 Degrees  120 Degrees
78. 79. 80. 81. 82. 83.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees  Drive End Bearing Shaft Fit Post Rep 0 Degrees  Opposite Drive End Bearing Shaft Fit 0 Degrees  Shaft Air Seal Fits Post Repair Drive End Air Seal	ing Post Repair 90 Degrees  Shaft Post Repair 60 Degrees  air 60 Degrees  Post Repair 60 Degrees  Opposite Drive End Air Seal	120 Degrees  120 Degrees  120 Degrees
78. 79. 80. 81. 82. 83. 84.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees  Drive End Bearing Shaft Fit Post Rep 0 Degrees  Opposite Drive End Bearing Shaft Fit 0 Degrees  Shaft Air Seal Fits Post Repair Drive End Air Seal  Shaft Repair Sign-off	ing Post Repair 90 Degrees  Shaft Post Repair 60 Degrees  air 60 Degrees  Post Repair 60 Degrees  Opposite Drive End Air Seal	120 Degrees  120 Degrees  120 Degrees
78. 79. 80. 81. 82. 83. 84.	Rotor Runout Post Repair Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees  Drive End Bearing Shaft Fit Post Rep 0 Degrees  Opposite Drive End Bearing Shaft Fit 0 Degrees  Shaft Air Seal Fits Post Repair Drive End Air Seal  Shaft Repair Sign-off  anical Fits- Bearing Housings - P	ing Post Repair 90 Degrees  Shaft Post Repair 60 Degrees  air 60 Degrees  Post Repair 60 Degrees  Opposite Drive End Air Seal	120 Degrees  120 Degrees  120 Degrees

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87.	Opposite Drive End - Endbell Bearing Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
88.	Bearing Cap Condition Post Repair		
	Drive End Bearing Cap	Opposite Drive End Bearing Cap	
80	End Bell Air Seal Fits Post Repair		
09.	Drive End Air Seal	Opposite Drive End Air Seal	
	Drive Life All Seal	Opposite Drive Life All Seal	
90.	End Bell Repair Sign-off		
Assen	nbly		
91.	QC Check All Parts for Cleanliness Pr	ior to Assembly	
92.	Photograph All Major Components pri	or to assembly	
93.	Final Insulation Resistance Test		
94.	Assembled Shaft Endplay		
95.	Assembled Shaft Runout		
96.	Test Run Voltage		
	Volts	Volts	Volts
07	Test Run Amperage		
97.		Amps	Amps
	Amps	Amps	Amps
98.	Drive End Vibration Readings - Inches	s Per Second	
	Horizontal	Vertical	Axial
99.	Opposite Drive End Vibration Reading	s - Inches Per Second	
	Horizontal	Vertical	Axial
100	Ambient Temperature - Fahrenheit		
	. Drive End Bearing Temps - Fahrenheit		
101.	5 Minutes	10 Minutes	15 Minutes
	3 Milliates	10 Militates	13 Millutes
102.	Opposite Drive End Bearing Temps -	Fahrenheit	
	5 Minutes	10 Minutes	15 Minutes
	Document Final Condition with Picture	es after paint	
104.	Final Pics and QC Review		

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- 9. <u>LIMITATION OF DAMAGES.</u> HI-SPEED SHALL HAVE NO LIABILITY TO BUYER WITH RESPECT TO THE SALE OR DELIVERY OF ANY GOODS OR THE REPAIR THEREOF OR WITH RESPECT TO THE SALE OR PERFORMANCE OF ANY SERVICES, FOR LOST PROFITS, SPECIAL, CONSEQUENTIAL, EXEMPLARY, PUNITIVE OR INCIDENTAL DAMAGES OF ANY KIND OR NATURE WHETHER ARISING IN CONTRACT, TORT, GOODS LIABILITY OR OTHERWISE, EVEN IF HI-SPEED WAS ADVISED OF THE POSSIBILITY OF SUCH LOSS OR DAMAGES. HI-SPEED SHALL NOT BE LIABLE FOR ANY DAMAGES OR DELAYS CAUSED BY ANY FAILURE TO MAKE ANY DELIVERY OF GOODS BY ANY EXPECTED TIME OR DATE OR THE FAILURE TO PROVIDE OR COMPLETE ANY SERVICES BY ANY EXPECTED DATE OR TIME. IN NO EVENT SHALL HI-SPEED BE LIABLE TO BUYER FOR ANY DAMAGES WHATSOEVER IN EXCESS OF THE TOTAL PRICE PAID FOR ALL GOODS AND/OR SERVICES HEREUNDER OR REFERENCED IN ANY QUOTATION OR THE PURCHASE ORDER.
- 10. <u>SEVERABILITY.</u> The partial or complete invalidity of any provision of these Standard Terms and Conditions shall not affect the enforceability of the remainder of these Standard Terms and Conditions. If any provision is found to be invalid or unenforceable, that portion shall be modified to make it enforceable or shall be stricken and the remainder of these Standard Terms and Conditions shall enforced.
- 11. **GOVERNING LAW AND JURISDICTION.** Any controversy arising out of any quotation, the purchase order, the goods sold or delivered, repair or replacement thereof, or any services provided pursuant to any quotation or any purchase order, or these Standard Terms and Conditions shall be governed by the laws of the state of Tennessee without regard to any choice of law provisions and any cause of action related in any manner thereto shall be brought only in the state or federal courts of Shelby County, Tennessee.
- 12. ABANDONED EQUIPMENT. Hi-Speed requires that Buyer promptly pick up or provide shipment instructions for Buyer equipment or other Buyer property in Hi-Speed's possession. If equipment or other Buyer property is left with Hi-Speed and not picked up within six (6) months after Hi-Speed's final action related to the applicable property (e.g. evaluation, teardown, estimate, completion of services), Hi-Speed will consider such property abandoned and may dispose of it in accordance with applicable law. Buyer agrees to hold Hi-Speed harmless for any damage or claim for such abandoned property and acknowledges that Hi-Speed may discard or recycle it at Hi-Speed's sole and absolute discretion. Specifically, Hi-Speed may sell Buyer's abandoned property at a private or public sale and retain the proceeds to offset Hi-Speed's storage, inspection and servicing costs. For the avoidance of doubt, Hi-Speed reserves its statutory and other lawful liens for unpaid charges related to abandoned property.
- 13. FORCE MAJEURE. Neither party shall be responsible for any delay or failure in performance of any party of the quotation, purchase order or these Standard Terms and Conditions to the extent that such delays or failures are caused by fire, flood, earth quake, explosion, war, embargo, government requirement, civil or military authority, acts of God, or any other circumstances beyond its reasonable control and not involving any fault or negligence on the party affected ("Condition"). If any such Condition occurs, the party delayed or unable to perform shall promptly give written notice to the other party and, if such Condition remains at the end of thirty (30) days, the party affected by the other party's delay and inability to perform may elect to (i) terminate such order or part thereof, or (ii) suspend the order for the duration of the Condition, if the Buyer is the suspending party, buy elsewhere comparable material to be sold under the order and apply to any commitment the purchase price of such purchase, and resume performance of the order once the Condition ceases, with an option in the affected party to extend the period of this order up to the length of the time the Condition endures.
- 14. <u>NONWAIVER.</u> No course of dealing or failure of either party to strictly enforce any term, right, or condition of these Standard Terms and Conditions will be construed as a waiver of such term, right or condition. Any waiver by Hi-Speed will only be in writing and will waive no succeeding breach of a term, right or condition.
- 15. **ASSIGNMENT.** The rights and obligations of the parties shall neither be assigned nor delegated without the prior written consent of the other party. However, any party may assign or delegate its respective rights and obligations, in whole or in part, (i) to any subsidiary, (ii) pursuant to other financing, merger or reorganization or (iii) pursuant to any sale or transfer of substantially all of the assets of the assigning party. These Standard Terms and Conditions shall bind the heirs, successors and assigns of the parties hereto.
- 16. NO INDIVIDUAL LIABILITY. Notwithstanding any other agreement to the contrary, the Buyer agrees that in no event will the Buyer hold and HI-Speed owner, director, officer or employee personally liable for unintentional tortious conduct or conduct that constitutes the breach of any contract between HI-Speed and the Buyer, even if the HI-Speed owner, director, officer or employee is or could be construed to be a party to such contract.