

# LR Motor Shop Repairs

## **Job Number 102026**

Prepared for LAYNE (10766)

2015 S Main Street STUTTGART AR 72160

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AC Inspection as Found - Motor Shop

AC Inspection - Rev. 2

1.0





#### **AC Inspection as Found** LAYNE (10766)

2015 S Main Street STUTTGART, AR 72160

FolderID: 102026 FormID: 18247376

AC II	nspec	tion -	Rev.	2
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Location: Motor Shop

Serial Number:

Description:300 HP VERTICAL

Hi-Speed Job Number:	102026
Manufacturer:	US Motors/Nidec
Spec/ID #:	T0120112293-0001R0
HP/kW:	300 (HP)
RPM:	1785 (RPM)
Frame:	447VP
Voltage:	460
Current:	338
Phase:	Three
Hz:	60 (Hz)
Service Factor:	1.15
Enclosure:	WPI
# of Leads:	6
J-box Included:	None
Date Received:	10/24/2023
Repair Stage:	Final

Priorities Found: **3 - High** 

5 - Good

#### **Overall Condition**

Report Date 10/27/2023

Nameplate Picture





Photos of all six sides of the machine.























	4.	Describe the Overall Condition of the Equipment as Received	
		Dirty	
	5.	Distance from the end of the shaft to the Coupling/Sheave	0 inches
In	itial	Mechanical/Electrical	
	6.	Does Shaft Turn Freely?	(Yes) Yes
	7.	Does Shaft Have Visible Damage?	(No) No
	8.	Assembled Shaft Runout	0 Inches

9.	Assembled Shaft End Play			0 inches
	Air Gap Variation <10%			ok
11.	Lead Condition			(P) Pass
12.	Lead Length			24 Inches
13.	Lead Numbers			1-3 1-3
14.	Stator Temperature Detector Rating a	nd Function		
	Quantity	Rating	Quantity Passed	
	0	0	0	
15.	Bearing Temperature Detector Rating	and Function		
	Quantity	Rating	Quantity Passed	
	0	0	0	
16.	Frame Condition			good
17.	Fan Condition			(N) NA
18.	Heater Quantity, Ratings			
	Quantity	Volts/Watts	Pass/Fail	
	0	0	0	
	Broken or Missing Components			none
	Electrical Inspection			
	Insulation Resistance/Megger		0	Megohms
21.	Winding Resistance			
	1-2	1-3	2-3	
	0	0	0	
22.	<b>U</b>			(F) Fail
23.	Number of Stator Slots			72
	Stator Condition			rewind
25.				na
	Stator Overloads/Ohms			na
	anical Inspection			
	Drive End Bearing Brand			koyo
	Drive End Bearing Number-			73228
	Drive End Bearing Qty.		/****	1
	Drive End Bearing Type		(ſhru	st) Thrust
21	Angular contact		(Oil) Oil I	ubricatad
31.	71	oding Davige?	(OII) OII L	ubricated
32. 33.	Drive End Bearing Insulation or Ground Drive End Wavy Washer/Snap-Ring Control of the Control of	•		none
34.	Drive End Bearing Condition	VITEL METERITION DEVICE!	el	ight wear
35.	Opposite Drive End Bearing Brand		51	koyo
36.	Opposite Drive End Bearing Number-			6215
37.				1
38.	Opposite Drive End Bearing Type		(Ball) Ba	II Bearing
39.	Opposite Drive End Lubrication Type		(Grease) Grease L	
40.	Opposite Drive End Bearing Insulation	n or Groundina Device?	(5.555) 5.5665 2	none
41.	Opposite Drive End Wavy Washer/Sn	-	snap ring ar	
42.	Opposite Drive End Bearing Condition	· ·		ight wear
43.	Drive End Seal		<u>.</u>	none
44.	Opposite Drive End Seal			slinger
				J 90.

45	DE Sleeve Bearing Inside Diameter		
43.		420 dagraga	240 doggo
	0 degrees	120 degrees	240 degrees
40	O	0	0
46.	DE Sleeve Bearing Outside Diameter	100	
	0 degrees	120 degrees	240 degrees
	0	0	0
47.	DE Sleeve Bearing Housing Inside Dia		
	0 degrees	120 degrees	240 degrees
	0	0	0
48.	DE Sleeve Bearing to Housing Cleara	nce	
	0 degrees	120 degrees	240 degrees
	0	0	0
49.	ODE Sleeve Bearing Inside Diameter		
	0 degrees	120 degrees	240 degrees
	0	0	0
50.	ODE Sleeve Bearing Outside Diameter	er	
	0 degrees	120 degrees	240 degrees
	0	0	0
51.	ODE Sleeve Bearing Housing Inside [	Diameter	
	0 degrees	120 degrees	240 degrees
	0	0	0
52.	ODE Sleeve Bearing to Housing Clea	rance	
	0 degrees	120 degrees	240 degrees
	0	0	0
Rotor	Inspection		
53.	Rotor Type/Material		(Squirrel Aluminum) Squirrel Cage Aluminum Die Cast
54.	Growler Test		(Pass) Pass
55.	Number of Rotor Bars		58
56.	Rotor Condition		good
57.	List the Parts needed for the Repair B	elow	
	Rewind, 73228, 6215		
58.	Signature of Technician that Disassen	abled Motor	David Maclin
Mecha	anical Fits- Rotor		
	Shaft Runout		0 inches
	Rotor Runout		
	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
	0	0	0
61.		•	
J.,	0 Degrees	90 Degrees	120 Degrees
	0	0	0
	•	•	•

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6	32	Coupling Fit Closest to the end of the	Shaft		
	,	0 Degrees	60 Degrees	120 Degrees	
		0	0	0	
6	33.	Drive End Bearing Shaft Fit			
		0 Degrees	60 Degrees	120 Degrees	
		4.3313	4.3315	4.3317	
• 6	64.	Drive End Bearing Shaft Fit Condition			(P) Pass
		Opposite Drive End Bearing Shaft Fit			( )
		0 Degrees	60 Degrees	120 Degrees	
		2.9529	2.9531	2.953	
• 6	66.	Opposite Drive End Bearing Shaft Fit			(P) Pass
		Shaft Air Seal Fits			,
		Drive End Air Seal	Opposite Drive End Air Seal		
		ok	ok		
Med	cha	nical Fits- Bearing Housings			
		Drive End - Endbell Bearing Fit			
		0 Degrees	60 Degrees	120 Degrees	
		0	0	0	
• 6	89.	Drive End - Endbell Bearing Fit Condi	tion		(P) Pass
		Opposite Drive End - Endbell Bearing			. ,
		0 Degrees	60 Degrees	120 Degrees	
		5.1195	5.1196	5.1196	
• 7	<b>7</b> 1.	Opposite Drive End - Endbell Bearing	Fit Condition		(F) Fail
7	<b>7</b> 2.	Bearing Cap Condition			
		Drive End Bearing Cap	Opposite Drive End Bearing Cap		
		na	ok		
7	<b>7</b> 3.	End Bell Air Seal Fits			
		Drive End Air Seal	Opposite Drive End Air Seal		
		ok	ok		
7	<b>7</b> 4.	List Machine Work Needed Below			
		Sleeve ode			
7	<b>7</b> 5.	Technician			David Mackin
	1				
Roc	ot (	Cause of Failure			
7	76.	Failure locations			
7	7.	Root cause of failure			
Dyr	nan	nic Balance Report			
7	78.	Rotor Weight and Balance Grade			
		Rotor Weight	Balance Grade		
7	79.	Initial Balance Readings			
		Drive End	Opposite Drive End		

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90	Final Palance Poodings		
OU.	Final Balance Readings	Onnanita Driva Ford	
	Drive End	Opposite Drive End	
81.	Technician		
Rewir	ıd		
82.	Core Test Results - Watts loss per Po	ound	
	Pre-Burnout	Post Burnout	
83.	Core Hot Spot Test		
	Pre-Burnout	Post-Burnout	
0.4	B (B )	B : /	
	Post Rewind Electrical Test- Insulation	n Resistance	
	Post Rewind Polarization Index		
00.	Post Rewind Winding Resistance	4.0	2.2
	1-2	1-3	2-3
87.	Post Rewind Surge Test		
88.			
89.	Technician		
-	RHR-RW		
Mecha	anical Fits- Rotor - Post Repair		
90.	Shaft Runout Post Repair		
91.	Rotor Runout Post Repair		
	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
92.	Coupling Fit Closest to Bearing Housi	•	
	0 Degrees	90 Degrees	120 Degrees
93	Coupling Fit Closest to the end of the	Shaft Post Renair	
55.	0 Degrees	60 Degrees	120 Degrees
	o Degrees	00 Degrees	120 Degrees
94.	Drive End Bearing Shaft Fit Post Repa	air	
	0 Degrees	60 Degrees	120 Degrees
95.	Opposite Drive End Bearing Shaft Fit	·	
	0 Degrees	60 Degrees	120 Degrees
06	Shaft Air Seal Fits Post Repair		
90.	Drive End Air Seal	Opposite Drive End Air Seel	
	DIIVE EIIU AII SEAI	Opposite Drive End Air Seal	
97.	Shaft Repair Sign-off		
	anical Fits- Bearing Housings - P	ost Repair	
	Drive End - Endbell Bearing Fit Post F	-	
	0 Degrees	60 Degrees	120 Degrees
	-	-	J

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100. Bearing Cap Condition Post Repair Drive End Bearing Cap  Opposite Drive End Bearing Cap  101. End Bell Air Seal Fits Post Repair Drive End Air Seal  Opposite Drive End Bearing Cap  Measure 3  Measure 1  Measure 2  Measure 3  Measure 3  Opposite Drive End Bearing Cap  Measure 3  Measure 3  Measure 3  Opposite Drive End Bearing Cap  Measure 3  Opposite Drive End Bearing Cap  Measure 3	Gary
101. End Bell Air Seal Fits Post Repair Drive End Air Seal  Opposite Drive End Air Seal  102. DE Sleeve Bearing Inside ID Post Repair Measure 1  Measure 2  Measure 3  103. DE Sleeve Bearing Outside ID Post Repair Measure 1  Measure 2  Measure 3  104. DE Sleeve Bearing Inside OD Post Repair Measure 1  Measure 2  Measure 3  105. DE Sleeve Bearing Outside OD Post Repair Measure 1  Measure 2  Measure 3  106. End Bell Repair Sign-off  Measure 3	Gary
Drive End Air Seal  Opposite Drive End Air Seal  102. DE Sleeve Bearing Inside ID Post Repair Measure 1  Measure 2  Measure 3  103. DE Sleeve Bearing Outside ID Post Repair Measure 1  Measure 2  Measure 3  104. DE Sleeve Bearing Inside OD Post Repair Measure 1  Measure 2  Measure 3  105. DE Sleeve Bearing Outside OD Post Repair Measure 1  Measure 2  Measure 3  106. End Bell Repair Sign-off  ODE Sleeve Bearing Inside ID Post Repair	Gary
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Measure 1 Measure 2 Measure 3  106. End Bell Repair Sign-off  107. ODE Sleeve Bearing Inside ID Post Repair	Gary
106. End Bell Repair Sign-off  107. ODE Sleeve Bearing Inside ID Post Repair	Gary
107. ODE Sleeve Bearing Inside ID Post Repair	Gary
Mara as A	
Measure 1 Measure 2 Measure 3	
108. ODE Sleeve Bearing Outside ID Post Repair	
Measure 1 Measure 2 Measure 3	
ivicasure i ivicasure z ivicasure s	
109. ODE Sleeve Bearing Inside OD Post Repair	
Measure 1 Measure 2 Measure 3	

#### **Assembly**

- 111. QC Check All Parts for Cleanliness Prior to Assembly
- 112. Photograph All Major Components prior to assembly











113. Final Insulation Resistance Test

Megohms



- 114. Assembled Shaft Endplay
- 115. Assembled Shaft Runout
- 116. Test Run Voltage

Volts

In picture



#### 117. Test Run Amperage

Amps Amps Amps

Volts

Volts

In picture



118.	Drive End Vibration Readings - Inches	Per Second	
	Horizontal	Vertical	Axial
	0.008	0.007	0.007
119.	Opposite Drive End Vibration Reading		
	Horizontal	Vertical	Axial
	0.008999999999999999	0.008	0.008
120.	Ambient Temperature - Fahrenheit		
-	Na		
121.	Drive End Bearing Temps - Fahrenhei	t	
	5 Minutes	10 Minutes	15 Minutes
7	Na		
122.	Drive End Bearing Temps - Fahrenhei	t 20-30 Minutes	
	20 Minutes	25 Minutes	30 Minutes
_	No		
122	Na Drive End Bearing Temps - Fahrenhei	t 25 45 Minutos	
123.	· ·	40 Minutes	45 Minutes
	35 Minutes	40 Minutes	45 Minutes
-	Na		
124.	Drive End Bearing Temps - Fahrenhei	t 50-60 Minutes	
	50 Minutes	55 Minutes	60 Minutes
-	Na		
125.	Opposite Drive End Bearing Temps -		
	5 Minutes	10 Minutes	15 Minutes
	Na		
	Opposite Drive End Bearing Temps -	Fahrenheit 20-30 Minutes	
120.	20 Minutes	25 Minutes	30 Minutes
	20 Millates	25 Milliates	30 Williates
-	Na		
127.	Opposite Drive End Bearing Temps -	Fahrenheit 35-45 Minutes	
	35 Minutes	40 Minutes	45 Minutes
100	Na	- 1 1 2 - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
128.	Opposite Drive End Bearing Temps -		00 M
	50 Minutes	55 Minutes	60 Minutes
-	Na		
129.	Stator Temperatures- Fahrenheit		
	5 Minutes	10 Minutes	15 Minutes
-	Na		
130.	Stator Temperatures- Fahrenheit 20-3	0 Minutes	
	20 Minutes	25 Minutes	30 Minutes
_			
-	Na		

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131	Stator Temperatures- Fahrenheit 35-4	45 Minutes	
	35 Minutes	40 Minutes	45 Minutes
-	Na		
132	Stator Temperatures- Fahrenheit 50-6	60 Minutes	
	50 Minutes	55 Minutes	60 Minutes







134. Final Pics and QC Review Cw

Co sign: RRW



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- 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.