

# LR Motor Shop Repairs

# **Job Number 100585**

Prepared for MEC (011337)

P.O. Box 1680 Heber Springs AR 72543

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AC Recondition As Found - Shop

AC Recondition - Rev. 2: 5509

1.0





## **AC Recondition As Found**

MEC (011337)

P.O. Box 1680 Heber Springs, AR 72543

FolderID: 100585 FormID: 15216244

#### AC Recondition - Rev. 2

Location: Shop Serial Number: 5509

Description: 3HP WESTINGHOUSE 900RPM

254U

Hi-Speed Job Number:	100585
Manufacturer:	TECO Westinghouse
Product Number:	177805
Serial Number:	5509
HP/kW:	3 (HP)
RPM:	875 (RPM)
Frame:	254U
Voltage:	208-230/460
Current:	11.2/5.6
Phase:	Three
Hz:	60 (Hz)
Service Factor:	1.15
Enclosure:	ODP
Coupling/Sheave:	Sheave
Bearing RTDs:	No
Stator RTDs:	No
Repair Stage:	Teardown Inspection
Heaters:	No
Winding Type :	Random Wound
Bearing Type:	Rolling Element

Priorities Found: 2 - High



5 - Good

### **Overall Condition**

- Report Date
- Nameplate Picture



Photos of all six sides of the machine.

































	4.	Describe the Overall Condition of the Dirty	Equipment as Received		
	5.	Distance from the end of the shaft to t	he Coupling/Sheave		2 inches
In	itial	Mechanical/Electrical			
	6.	Does Shaft Turn Freely?			(Yes) Yes
	7.	Does Shaft Have Visible Damage?			(No) No
	8.	Assembled Shaft Runout			
	9.	Assembled Shaft End Play			
	10.	Air Gap Variation <10%			
	11.	Lead Condition			(P) Pass
	12.	Lead Length			5 Inches
	13.	Stator Temperature Detector Rating a	nd Function		
		Quantity	Rating	Quantity Passed	
	-	Na			
	14.	Bearing Temperature Detector Rating	and Function		
		Quantity	Rating	Quantity Passed	
	-	Na			
	15.	Frame Condition			pass
	16.	Fan Condition			(N) NA

17.	Heater Quantity, Ratings		
	Quantity	Volts/Watts	Pass/Fail
-	Na		
18.	Broken or Missing Components		
-	J-box cover		
Initial	Electrical Inspection		
19.	Insulation Resistance/Megger		
20.	Winding Resistance		
	1-2	1-3	2-3
<b>21.</b>	Perform Surge Test		(P) Pass



22.	Number of Stator Slots			
23.	Stator Condition			
Mecha	anical Inspection			
24.	Drive End Bearing Number-		5208-DWSR	
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 Groun	nding Device?	na	
29.	Drive End Wavy Washer/Snap-Ring C	Other Retention Device?	na	
30.	Drive End Bearing Condition		wear	
31.	Opposite Drive End Bearing Number-		5208-DWSR	
32.	Opposite Drive End Bearing Qty.		1	
33.	Opposite Drive End Bearing Type (Ball) Ball Bearing			
34.	Opposite Drive End Lubrication Type (Grease) Grease Lubricated			
35.	5. Opposite Drive End Bearing Insulation or Grounding Device?		na	
36.	. Opposite Drive End Wavy Washer/Snap-Ring Other Retention Device?		na	
37.	7. Opposite Drive End Bearing Condition wear			
38.	Drive End Seal		na	
39.	Opposite Drive End Seal		na	
40.	DE Sleeve Bearing Inside Diameter			
	0 degrees	120 degrees	240 degrees	

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41.	DE Sleeve Bearing Outside Diameter			
	0 degrees	120 degrees	240 degrees	
40	DE Ole sure Papring Heuring to haide Disperture			
42.	DE Sleeve Bearing Housing Inside Di		0.40	
	0 degrees	120 degrees	240 degrees	
13	DE Sleeve Bearing to Housing Cleara	inco		
40.	0 degrees	120 degrees	240 degrees	
	o degrees	120 degrees	240 degrees	
44.	ODE Sleeve Bearing Inside Diameter			
	0 degrees	120 degrees	240 degrees	
			<b>3</b>	
45.	ODE Sleeve Bearing Outside Diameter	er		
	0 degrees	120 degrees	240 degrees	
46.	ODE Sleeve Bearing Housing Inside			
	0 degrees	120 degrees	240 degrees	
47				
47.	ODE Sleeve Bearing to Housing Clea		0.40	
	0 degrees	120 degrees	240 degrees	
Potor	Inspection			
	Rotor Type/Material		(Squirrel Aluminum) Squirrel	
40.	Kotor Type/Material		Cage Aluminum Die Cast	
49.	Growler Test		(Pass) Pass	
			40	
50.	Number of Rotor Bars		40	
	Rotor Condition		pass	
51.		selow		
51.	Rotor Condition	elow		
51. 52.	Rotor Condition List the Parts needed for the Repair B			
51. 52.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser		pass	
51. 52.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser		pass	
51. 52.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser		pass	
51. 52.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser		pass	
51. 52. 53.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser		pass	
51. 52. 53.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser  anical Fits- Rotor		pass	
51. 52. 53. <b>Mecha</b> 54.	Rotor Condition  List the Parts needed for the Repair E  5208-DWSR x2  Signature of Technician that Disasser  anical Fits- Rotor  Shaft Runout		pass	
51. 52. 53. <b>Mecha</b> 54.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser  anical Fits- Rotor  Shaft Runout  Rotor Runout	nbled Motor	pass	
51. 52. 53. <b>Mecha</b> 54.	Rotor Condition  List the Parts needed for the Repair E  5208-DWSR x2  Signature of Technician that Disasser  anical Fits- Rotor  Shaft Runout		pass	
51. 52. 53. <b>Mecha</b> 54. 55.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser  anical Fits- Rotor  Shaft Runout  Rotor Runout	nbled Motor  Rotor Body	pass	
51. 52. 53. <b>Mecha</b> 54. 55.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser  Anical Fits- Rotor  Shaft Runout  Rotor Runout  Drive End Bearing Fit	nbled Motor  Rotor Body	pass	
51. 52. 53. <b>Mecha</b> 54. 55.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser  anical Fits- Rotor  Shaft Runout Rotor Runout Drive End Bearing Fit  Coupling Fit Closest to Bearing Housi	Rotor Body	pass  Cw  Opposite Drive End Bearing	
51. 52. 53. <b>Mecha</b> 54. 55.	Rotor Condition  List the Parts needed for the Repair E  5208-DWSR x2  Signature of Technician that Disasser  anical Fits- Rotor  Shaft Runout  Rotor Runout  Drive End Bearing Fit  Coupling Fit Closest to Bearing House 0 Degrees	Rotor Body ng 90 Degrees	pass  Cw  Opposite Drive End Bearing	
51. 52. 53. <b>Mecha</b> 54. 55.	Rotor Condition  List the Parts needed for the Repair E  5208-DWSR x2  Signature of Technician that Disasser  anical Fits- Rotor  Shaft Runout  Rotor Runout  Drive End Bearing Fit  Coupling Fit Closest to Bearing Housi  0 Degrees	Rotor Body ng 90 Degrees	pass  Cw  Opposite Drive End Bearing	
51. 52. 53. <b>Mecha</b> 54. 55.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser  Anical Fits- Rotor  Shaft Runout  Rotor Runout  Drive End Bearing Fit  Coupling Fit Closest to Bearing Housi 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees	Rotor Body ng 90 Degrees Shaft	Cw  Opposite Drive End Bearing  120 Degrees	
51. 52. 53. <b>Mecha</b> 54. 55.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser  Anical Fits- Rotor  Shaft Runout  Rotor Runout  Drive End Bearing Fit  Coupling Fit Closest to Bearing Housi 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees	Rotor Body  ng 90 Degrees  Shaft 60 Degrees	pass  Cw  Opposite Drive End Bearing  120 Degrees  120 Degrees	
51. 52. 53.  Mecha 54. 55.  56.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser  Anical Fits- Rotor  Shaft Runout  Rotor Runout  Drive End Bearing Fit  Coupling Fit Closest to Bearing Housi 0 Degrees  Coupling Fit Closest to the end of the 0 Degrees	Rotor Body ng 90 Degrees Shaft	pass  Cw  Opposite Drive End Bearing  120 Degrees	
51. 52. 53.  Mecha 54. 55.  56.	Rotor Condition  List the Parts needed for the Repair E 5208-DWSR x2  Signature of Technician that Disasser  Anical Fits- Rotor  Shaft Runout  Rotor Runout  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	Rotor Body  ng 90 Degrees  Shaft 60 Degrees	pass  Cw  Opposite Drive End Bearing  120 Degrees  120 Degrees	

. 50	D: E ID : 01 ((E) 0 10)			(E) E . II
	Drive End Bearing Shaft Fit Condition			(F) Fail
60	. Opposite Drive End Bearing Shaft Fit			
	0 Degrees	60 Degrees	120 Degrees	
-	1.5746 1.5745x2			
61	. Opposite Drive End Bearing Shaft Fit	Condition		(F) Fail
62	. Shaft Air Seal Fits			
	Drive End Air Seal	Opposite Drive End Air Seal		
	nanical Fits- Bearing Housings			
63	. Drive End - Endbell Bearing Fit			
	0 Degrees	60 Degrees	120 Degrees	
-	3.1503x2 3.1504			
<b>6</b> 4	. Drive End - Endbell Bearing Fit Cond	ition		(P) Pass
65	. Opposite Drive End - Endbell Bearing	ı Fit		
	0 Degrees	60 Degrees	120 Degrees	
-	3.1501x3			
66	11	Fit Condition		(P) Pass
67	<b>5</b> 1			
	Drive End Bearing Cap	Opposite Drive End Bearing Cap		
	Na			
	. End Bell Air Seal Fits			
00	Drive End Air Seal	Opposite Drive End Air Seal		
	Drive Erid Ali Seai	Opposite Drive End All Seal		
69	. List Machine Work Needed Below			
	Both shaft bearings fits			
70	. Technician			Cw
Dyna	amic Balance Report			
71	. Rotor Weight and Balance Grade			
	Rotor Weight	Balance Grade		
72	<b>3</b> -			
	Drive End	Opposite Drive End		
73	. Final Balance Readings			
73	Drive End	Opposite Drive End		
	DIIVO LIIG	Opposite Drive Lilu		
74	. Technician			
Rew	ind			

75.	Core Test Results - Watts loss per Po	und	
70.	Pre-Burnout	Post Burnout	
	To Bullout	1 oot Barriout	
76.	Core Hot Spot Test		
	Pre-Burnout	Post-Burnout	
	Post Rewind Electrical Test- Insulation	Resistance	
	Post Rewind Polarization Index		
79.	Post Rewind Winding Resistance		
	1-2	1-3	2-3
80	Post Rewind Surge Test		
	Post Rewind Hi-Pot		
	Technician		
	Cause of Failure		
	Failure locations		
	Bearings and bearing shaft fits		
84.	Root cause of failure		
	Wear		
Mecha	anical Fits- Rotor - Post Repair		
85.	Shaft Runout Post Repair		
86.	Rotor Runout Post Repair		
	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
87.	1 0		400 5
	0 Degrees	90 Degrees	120 Degrees
88.	Coupling Fit Closest to the end of the	Shaft Post Repair	
	0 Degrees	60 Degrees	120 Degrees
	0 2 0 9.000	30 2 3g. 333	0 _ 0 _ 0
89.	Drive End Bearing Shaft Fit Post Repa	air	
	0 Degrees	60 Degrees	120 Degrees
	0 5 . 5 . 5 . 6 . 6 . 6 . 6 . 6 . 6 .	- · -	
90.	Opposite Drive End Bearing Shaft Fit	•	100 B
	0 Degrees	60 Degrees	120 Degrees
91.	Shaft Air Seal Fits Post Repair		
3.1	Drive End Air Seal	Opposite Drive End Air Seal	
92.	Shaft Repair Sign-off		
	anical Fits- Bearing Housings - P	•	
93.	Drive End - Endbell Bearing Fit Post F	Repair	
	0 Degrees	60 Degrees	120 Degrees
0.4	Opposite Drive Fact. Factle-II D.	Fit Doot Donois	
94.	Opposite Drive End - Endbell Bearing	·	120 Degrees
	0 Degrees	60 Degrees	120 Degrees

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95	Bearing Cap Condition Post Repair		
00.	Drive End Bearing Cap	Opposite Drive End Bearing Cap	
	Drive End Bearing Cap	Opposite Drive Life Bearing Cap	
96.	End Bell Air Seal Fits Post Repair		
	Drive End Air Seal	Opposite Drive End Air Seal	
		••	
97.	DE Sleeve Bearing Inside ID Post Rep	pair	
	Measure 1	Measure 2	Measure 3
98.	DE Sleeve Bearing Outside ID Post R	•	
	Measure 1	Measure 2	Measure 3
00	DE Sleeve Bearing Inside OD Post Re	annir	
99.	Measure 1	Measure 2	Measure 3
	weasure i	Measure 2	Measure 3
100.	DE Sleeve Bearing Outside OD Post F	Repair	
	Measure 1	Measure 2	Measure 3
101.	End Bell Repair Sign-off		
102.	ODE Sleeve Bearing Inside ID Post R	epair	
	Measure 1	Measure 2	Measure 3
103.	ODE Sleeve Bearing Outside ID Post	·	
	Measure 1	Measure 2	Measure 3
104	ODE Sleeve Bearing Inside OD Post F	Renair	
104.	Measure 1	Measure 2	Measure 3
	ivieasure i	Measure 2	ivieasure 3
105.	ODE Sleeve Bearing Outside OD Pos	t Repair	
	Measure 1	Measure 2	Measure 3
Assen	nbly		
106.	Photograph All Major Components price	or to assembly	
	Final Insulation Resistance Test		
	Assembled Shaft Endplay		
	Assembled Shaft Runout		
110.	Test Run Voltage		
	Volts	Volts	Volts
444	Toot Dun Amporage		
111.	Test Run Amperage	Amno	Amno
	Amps	Amps	Amps
112.	Drive End Vibration Readings - Inches	Per Second	
	Horizontal	Vertical	Axial
113.	Opposite Drive End Vibration Reading	s - Inches Per Second	
	Horizontal	Vertical	Axial
114.	Ambient Temperature - Fahrenheit		

115.	Drive End Bearing Temps - Fahrenhe	t	
	5 Minutes	10 Minutes	15 Minutes
110	D: E ID : T	1 00 00 M	
116.	Drive End Bearing Temps - Fahrenhei		20 Minutes
	20 Minutes	25 Minutes	30 Minutes
117.	Drive End Bearing Temps - Fahrenhei	t 35-45 Minutes	
	35 Minutes	40 Minutes	45 Minutes
118.	Drive End Bearing Temps - Fahrenhei	t 50-60 Minutes	
	50 Minutes	55 Minutes	60 Minutes
110	Opposite Drive End Bearing Temps -	- ahranhait	
113.	5 Minutes	10 Minutes	15 Minutes
	o ivilitates	10 Millates	10 Milliates
120.	Opposite Drive End Bearing Temps -	Fahrenheit 20-30 Minutes	
	20 Minutes	25 Minutes	30 Minutes
121.	Opposite Drive End Bearing Temps -		
	35 Minutes	40 Minutes	45 Minutes
122.	Opposite Drive End Bearing Temps -	Fahrenheit 50-60 Minutes	
	50 Minutes	55 Minutes	60 Minutes
123.	Stator Temperatures- Fahrenheit		
	5 Minutes	10 Minutes	15 Minutes
124	Stator Temperatures- Fahrenheit 20-3	0 Minutes	
124.	20 Minutes	25 Minutes	30 Minutes
	20 Millutes	23 Milliates	30 Milliates
125.	Stator Temperatures- Fahrenheit 35-4	5 Minutes	
	35 Minutes	40 Minutes	45 Minutes
126.	Stator Temperatures- Fahrenheit 50-6		00.14
	50 Minutes	55 Minutes	60 Minutes
127.	Final Test Run Sign-off		
	Document Final Condition with Picture	es after paint	
	Final Pics and QC Review	•	

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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. <u>ASSIGNMENT.</u> 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.