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

AC Repair Arkansas Kraft Division

004458 Green Bay Packaging
338 Highway 113 South
Morrillton, AR 72110

FolderID: 149327
FormID: 15693621

AC Recondition - Rev. 2

Location:	Millington Shop
Serial Number:	

Hi-Speed Job Number:	149327
Manufacturer:	TECO Westinghouse
Product Number:	TUDP
Spec/ID #:	77B21022
Serial Number:	7803
HP/kW:	150 (HP)
RPM:	3550 (RPM)
Frame:	405TDZ
Voltage:	460
Current:	169 (Amps)
Phase:	Three
Hz:	60 (Hz)
Service Factor:	1.25
Enclosure:	ODP
# of Leads:	6
J-box Included:	Complete
Coupling/Sheave:	Coupling
Date Received:	01/13/2023
Bearing RTDs:	No
Stator RTDs:	No
Repair Stage:	Final
Rewind:	No
Shaft Machined Fit Repairs Required:	Yes
Bearing Housing Machined Fit Repairs Required:	Yes
Heaters:	No
Winding Type :	Random Wound
Bearing Type:	Rolling Element

Priorities Found: **5 - High** **9 - Good**

Overall Condition

1.	Report Date	**01/13/2023**

2. Nameplate Picture P2

3. Record Green Bay Packaging Motor Tag **M0052** P3

4. Photos of all six sides of the machine. P4

5. Describe the Overall Condition of the Equipment as Received

Windings need to be steamed and baked
Bore and Bush on both endbells
Metallization of both ends of the shaft
New bearings required

6. Distance from the end of the shaft to the Coupling/Sheave **0.1875 inches** P6

Prior to Disassembly

7. Does Shaft Turn Freely? **(Yes) Yes**

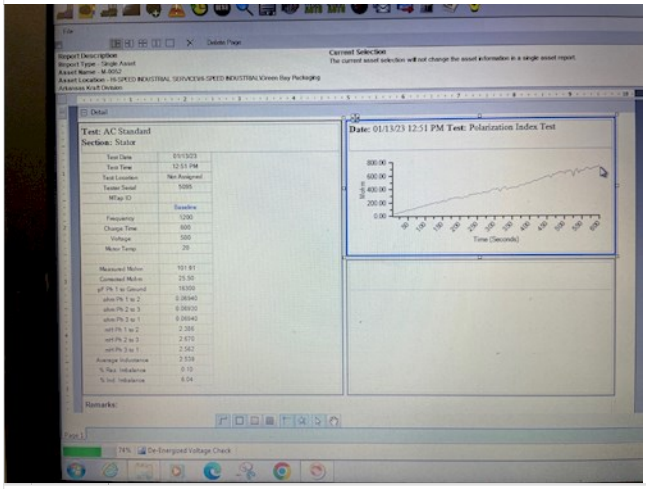
8.	Does Shaft Have Visible Damage?	**(No) No**	P8
	Rusty		

9.	Assembled Shaft Runout	**0.002 Inches**	
10.	Perform Open Rotor Check	**(Pass) Pass**	
11.	Assembled Shaft End Play	**0.008 inches**	
12.	Lead Condition	**(P) Pass**	
13.	Lead Length	**Inches**	P13

14.	Frame Condition	**Good**	
15.	Perform a Foot Flatness Test on the Front Feet		
	General / General		
	0 / **0.003**		
16.	Perform a Foot Flatness Test on the Back Feet		
	General / General		
	0 / **0.002**		
17.	Fan Condition	**(N) NA**	
18.	Is air gap measurement consistent within 10% on all sides?	**(No Provisions) No Provisions available for Measurement**	
19.	Broken or Missing Components	**None**	

Initial Electrical Inspection

20.	Perform PDMA Test			**(P) Pass**	P22



21.	Insulation Resistance			**25.5**	
22.	Polarization Index			**7.14**	
23.	Winding Resistance				
	1-2	1-3	2-3		
	.06940	**.06930**	**.06940**		
24.	Number of Stator Slots			**48**	
25.	Stator Condition			**Good**	
	Needs through cleaning				

Mechanical Inspection

26.	Drive End Bearing Number-			**6314Z C3**	P28

27.	Drive End Bearing Qty.			**1**	
28.	Drive End Bearing Type			**(Ball) Ball Bearing**	
29.	Drive End Lubrication Type			**(Grease) Grease Lubricated**	
30.	Drive End Bearing Insulation or Grounding Device?			**None**	

31.	Drive End Wavy Washer/Snap-Ring Other Retention Device?	**Snap Ring**	P33

Spacer behind snap ring

32.	Drive End Bearing Condition	**Good**
33.	Opposite Drive End Bearing Number-	**6312Z C3**
34.	Opposite Drive End Bearing Qty.	**1**
35.	Opposite Drive End Bearing Type	**(Ball) Ball Bearing**
36.	Opposite Drive End Lubrication Type	**(Grease) Grease Lubricated**
37.	Opposite Drive End Bearing Insulation or Grounding Device?	**None**
38.	Opposite Drive End Wavy Washer/Snap-Ring Other Retention Device?	**None**
39.	Opposite Drive End Bearing Condition	**Good**
40.	Drive End Seal	**Present** P42

41.	Opposite Drive End Seal	**None**

Rotor Inspection

42.	Rotor Type/Material	**(Aluminum Bar) Aluminum Barred Rotor**
43.	Growler Test	**(Pass) Pass**
44.	Number of Rotor Bars	**38**
45.	Rotor Condition	**Good**

46. List the Parts needed for the Repair Below

Grease tubes NPT
1/8" x 4 1/2".
1/8" x 3".
2- 1/8" x 3/4" coupling
6314Z
6312z
314 bushing
312 bushing
Drive end inpro seal. See picture for part number.

47. Signature of Technician that Disassembled Motor **Brandon Woodard**

Mechanical Fits- Rotor

48. Shaft Runout **0.001 inches**

49. Rotor Runout

Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
0.001	**0.002**	**0.001**

50. Coupling Fit Closest to Bearing Housing

0 Degrees	90 Degrees	120 Degrees
2.124	**2.124**	**2.124**

51. Coupling Fit Closest to the end of the Shaft

0 Degrees	60 Degrees	120 Degrees
2.123	**2.123**	**2.123**

52. Drive End Bearing Shaft Fit P54

0 Degrees	60 Degrees	120 Degrees
2.7558	**2.7558**	**2.7558**

70mm=2.7559. Tolerance is 2.7560-2.7565. Outside of tolerance and requires machining. Shows signs of previous repair.

53. Drive End Bearing Shaft Fit Condition **(F) Fail**

54. Opposite Drive End Bearing Shaft Fit

0 Degrees	60 Degrees	120 Degrees
3.3621	**3.3621**	**3.3621**

60mm=2.3622. Tolerance is 3.3626-3.3634. Outside of tolerance and requires machining. Shows signs of previous repair.

55. Opposite Drive End Bearing Shaft Fit Condition **(F) Fail**

56. Shaft Air Seal Fits

Drive End Air Seal	Opposite Drive End Air Seal
N/A	**N/A**

Mechanical Fits- Bearing Housings

57. Drive End - Endbell Bearing Fit

0 Degrees	60 Degrees	120 Degrees
5.9072	**5.9072**	**5.9074**

150mm=5.9055. Tolerance is 5.9055-5.9065. Outside of tolerance and requires bore and bush

58. Drive End - Endbell Bearing Fit Condition **(F) Fail**

59. Opposite Drive End - Endbell Bearing Fit

0 Degrees	60 Degrees	120 Degrees
5.1198	**5.1198**	**5.1198**

130mm=5.1181. Tolerance is 5.1181-5.1191. Outside of tolerance and requires bore and bush

60. Opposite Drive End - Endbell Bearing Fit Condition **(F) Fail**

61. Bearing Cap Condition

Drive End Bearing Cap	Opposite Drive End Bearing Cap
Good	

DE has bushing.

DE

62. End Bell Air Seal Fits

Drive End Air Seal	Opposite Drive End Air Seal
N/A	**N/A**

63. List Machine Work Needed Below

Metallize and machine both ends of rotor. Both end bells need bore and bush.

64. Technician **Brandon Woodard**

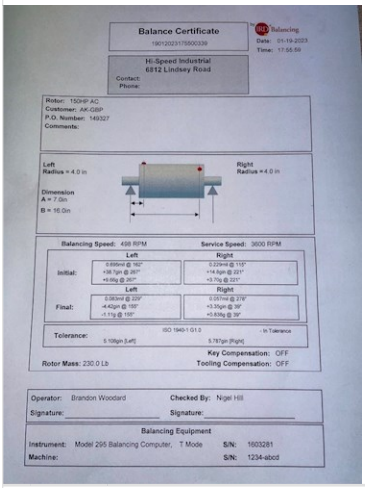
Dynamic Balance Report

65. Rotor Weight and Balance Grade

Rotor Weight	Balance Grade
230	**ISO 1940-1 G 1.0**

66. Initial Balance Readings

Drive End	Opposite Drive End
0.695	**0.229**



67. Final Balance Readings

Drive End	Opposite Drive End
0.083	**0.057**

68. Technician **Brandon Woodard**

Root Cause of Failure

69. Failure locations

Dry Bearings

70. Root cause of failure

Improper bearing lubrication

Mechanical Fits- Rotor - Post Repair

71. Shaft Runout Post Repair **0.0005 inches**

72. Rotor Runout Post Repair

Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
0.001	**0.001**	**0.001**

73. Coupling Fit Closest to Bearing Housing Post Repair

0 Degrees	90 Degrees	120 Degrees

Did not need repair

74. Coupling Fit Closest to the end of the Shaft Post Repair

0 Degrees	60 Degrees	120 Degrees

Did not need repair

75. Drive End Bearing Shaft Fit Post Repair

0 Degrees	60 Degrees	120 Degrees

This fit did not require repair.

76.	Opposite Drive End Bearing Shaft Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
	3.3632	**3.3633**	**3.3632**
77.	Shaft Air Seal Fits Post Repair		
	Drive End Air Seal	Opposite Drive End Air Seal	
	Did not need repair		

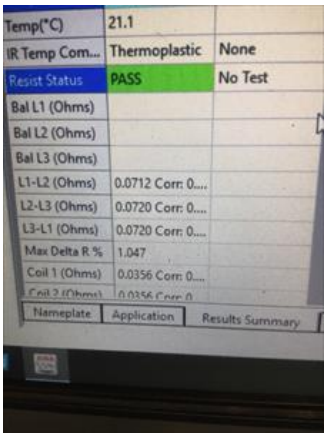
Mechanical Fits- Bearing Housings - Post Repair

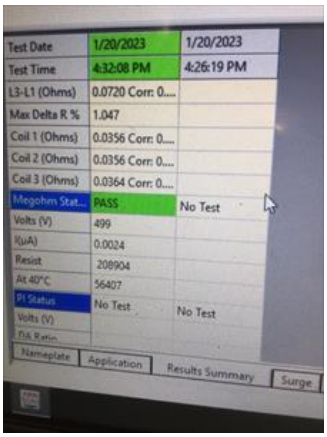
78.	Drive End - Endbell Bearing Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
	5.9064	**5.9064**	**5.9064**
79.	Opposite Drive End - Endbell Bearing Fit Post Repair		
	0 Degrees	60 Degrees	120 Degrees
	5.1182	**5.1182**	**5.1182**
80.	Bearing Cap Condition Post Repair		
	Drive End Bearing Cap	Opposite Drive End Bearing Cap	
81.	End Bell Air Seal Fits Post Repair		
	Drive End Air Seal	Opposite Drive End Air Seal	
	Did not need repair		
82.	End Bell Repair Sign-off		**Roger Ventrini**

Assembly

83. Photograph All Major Components prior to assembly P102

84. Final Insulation Resistance Test **208904 Megohms** P103





85.	Assembled Shaft Endplay		**0.001 inches**
86.	Assembled Shaft Runout		**0.001 inches**

87. Test Run Voltage P106

Volts	Volts	Volts
460.8	**459.5**	**460.1**

88. Test Run Amperage P107

Amps	Amps	Amps
35.57	**33.49**	**34.35**

89. Drive End Vibration Readings - Inches Per Second P108

Horizontal	Vertical	Axial

90. Opposite Drive End Vibration Readings - Inches Per Second

Horizontal	Vertical	Axial

91.	Ambient Temperature - Fahrenheit	**68.90000000000001**

92. Drive End Bearing Temps - Fahrenheit

5 Minutes	10 Minutes	15 Minutes
70	**74**	**80**

93. Drive End Bearing Temps - Fahrenheit 20-30 Minutes

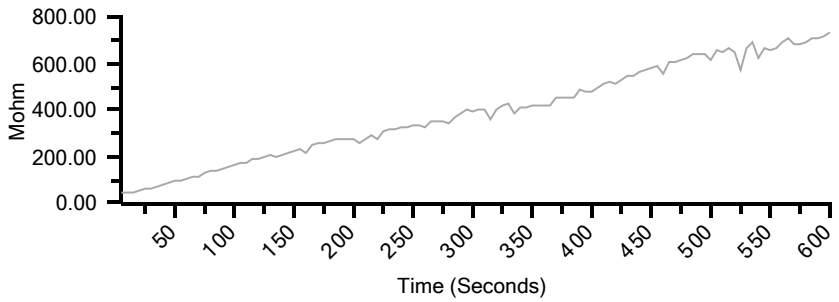
20 Minutes	25 Minutes	30 Minutes
86	**87**	**87**

94.	Drive End Bearing Temps - Fahrenheit 35-45 Minutes		
	35 Minutes	40 Minutes	45 Minutes
	87	**87**	**87**
95.	Drive End Bearing Temps - Fahrenheit 50-60 Minutes		
	50 Minutes	55 Minutes	60 Minutes
	87	**86**	**86**
96.	Opposite Drive End Bearing Temps - Fahrenheit		
	5 Minutes	10 Minutes	15 Minutes
	75	**80**	**85**
97.	Opposite Drive End Bearing Temps - Fahrenheit 20-30 Minutes		
	20 Minutes	25 Minutes	30 Minutes
	87	**87**	**86**
98.	Opposite Drive End Bearing Temps - Fahrenheit 35-45 Minutes		
	35 Minutes	40 Minutes	45 Minutes
	86	**86**	**85**
99.	Opposite Drive End Bearing Temps - Fahrenheit 50-60 Minutes		
	50 Minutes	55 Minutes	60 Minutes
	85	**85**	**84**
100.	Final Test Run Sign-off		**Nigel Hill**
101.	Document Final Condition with Pictures after paint		P124

102.	Final Pics and QC Review	**Nigel Hill**

Report Title M-0052
Submitted By JESS WHITE
Create Date 01/25/23 10:52 AM
Asset Name M-0052
Description 150HP AC Motor

Date: 01/13/23 12:51 PM **Test:** Polarization Index Test



Test: Polarization Index
Section: Stator

Test Date	01/13/23
Test Time	12:51 PM
Test Location	Not Assigned
Tester Serial	5095
MTap ID	
	Baseline
Voltage	500
Duration	600
D/A Ratio	1.605
Polar. Index	7.166

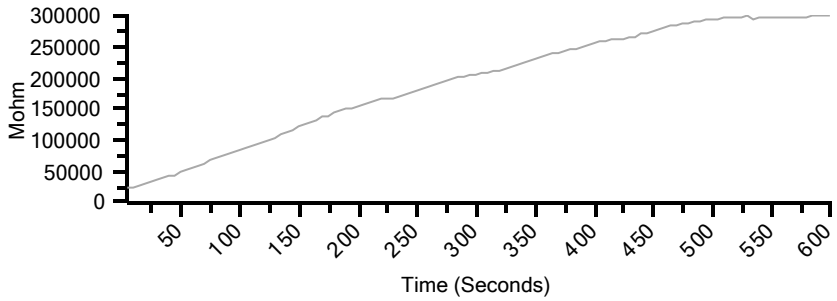
Test: AC Standard
Section: Stator

Test Date	01/13/23	01/13/23	01/13/23
Test Time	12:51 PM	10:03 AM	10:28 AM
Test Location	Not Assigned	Motor Leads	Not Assigned
Tester Serial	5095	5095	5095
MTap ID			
	Baseline		
Frequency	1200	1200	1200
Charge Time	600	600	60
Voltage	500	500	500
Motor Temp	20	20	40
Measured Mohm	101.91	76967.30	76204.48
Corrected Mohm	25.50	19200.00	76204.48
pF Ph 1 to Ground	16300	10800	10700
ohm Ph 1 to 2	0.06940	0.07080	0.07080
ohm Ph 2 to 3	0.06930	0.07070	0.07070
ohm Ph 3 to 1	0.06940	0.07080	0.07080
mH Ph 1 to 2	2.386	2.889	2.792
mH Ph 2 to 3	2.670	2.332	2.517
mH Ph 3 to 1	2.562	2.513	2.571
Average Inductance	2.539	2.511	2.627
% Res. Imbalance	0.10	0.09	0.09
% Ind. Imbalance	6.04	7.23	6.29

Remarks:
THIS TEST WAS PREFORMED PRE-RECONDITION. ALL TESTS PASS

Report Title M-0052
Submitted By JESS WHITE
Create Date 01/25/23 10:52 AM
Asset Name M-0052
Description 150HP AC Motor

Date: 01/25/23 10:03 AM **Test:** Polarization Index Test



Test: Polarization Index
Section: Stator

Test Date	01/13/23	01/25/23
Test Time	12:51 PM	10:03 AM
Test Location	Not Assigned	Motor Leads
Tester Serial	5095	5095
MTap ID		
	Baseline	
Voltage	500	500
Duration	600	600
D/A Ratio	1.605	1.610
Polar. Index	7.166	N/C

Test: AC Standard
Section: Stator

Test Date	01/13/23	01/13/23	01/13/23
Test Time	12:51 PM	10:03 AM	10:28 AM
Test Location	Not Assigned	Motor Leads	Not Assigned
Tester Serial	5095	5095	5095
MTap ID			
	Baseline		
Frequency	1200	1200	1200
Charge Time	600	600	60
Voltage	500	500	500
Motor Temp	20	20	40
Measured Mohm	101.91	76967.30	76204.48
Corrected Mohm	25.50	19200.00	76204.48
pF Ph 1 to Ground	16300	10800	10700
ohm Ph 1 to 2	0.06940	0.07080	0.07080
ohm Ph 2 to 3	0.06930	0.07070	0.07070
ohm Ph 3 to 1	0.06940	0.07080	0.07080
mH Ph 1 to 2	2.386	2.889	2.792
mH Ph 2 to 3	2.670	2.332	2.517
mH Ph 3 to 1	2.562	2.513	2.571
Average Inductance	2.539	2.511	2.627
% Res. Imbalance	0.10	0.09	0.09
% Ind. Imbalance	6.04	7.23	6.29

Remarks:
TEST WAS PREFORMED AFTER RECONDITION AND ASSEMBLY. INCREASED INDUCTIVE IMBALANCE IS DUE TO THE INFLUNCE OF THE INSTALLED ROTOR.