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

# AC Inspection as Found

**ARKANSAS INDUSTRIAL MACHINERY**
**3804 N. NONA ST**
**NORTH LITTLE ROCK, AR 72118**

FolderID: 101876
FormID: 17904569

**AC Inspection - Rev. 2**

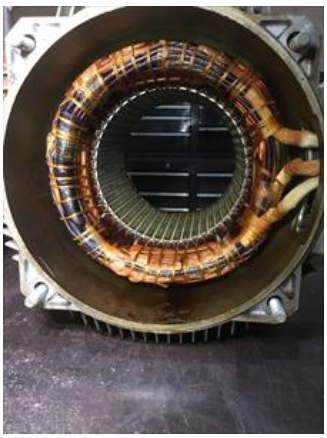
| | |
|---|---|
| **Location:** | Shop |
| **Serial Number:** | E0910/811871 68 003 |
| **Description:** | 37KW SIEMENS 1800RPM 200L |

| | |
|---|---|
| **Hi-Speed Job Number:** | 101876 |
| **Manufacturer:** | Siemens |
| **Product Number:** | 1LA5207-4AA99-ZT00 |
| **Serial Number:** | E0910/811871 68 003 |
| **HP/kW:** | 37 (kW) |
| **RPM:** | 2700 (RPM) |
| **Frame:** | 200L |
| **Voltage:** | 460 |
| **Current:** | 80 |
| **Phase:** | Three |
| **Hz:** | 91 (Hz) |
| **Enclosure:** | TEFC |
| **J-box Included:** | Complete |
| **Coupling/Sheave:** | Gear |
| **Bearing RTDs:** | No |
| **Stator RTDs:** | No |
| **Repair Stage:** | Final |
| **Heaters:** | No |
| **Winding Type :** | Random Wound |
| **Bearing Type:** | Rolling Element |

Priorities Found: **6 - Good**

## Overall Condition

1. Report Date
2. Nameplate Picture
3. Photos of all six sides of the machine. P45



4. Describe the Overall Condition of the Equipment as Received
5. Distance from the end of the shaft to the Coupling/Sheave

**Initial Mechanical/Electrical**

6. Does Shaft Turn Freely?

| | | | | |
|---|---|---|---|---|
| | 7. | Does Shaft Have Visible Damage? | **(No) No** | P20 |

| | | | | |
|---|---|---|---|---|
| | 8. | Assembled Shaft Runout | | |
| | 9. | Assembled Shaft End Play | | |
| | 10. | Air Gap Variation <10% | | |
| ● | 11. | Lead Condition | **(P) Pass** | P55 |

| | | | | |
|---|---|---|---|---|
| | 12. | Lead Length | **84.09999999999999 Inches** | |
| | 13. | Lead Numbers | **u1-v1-w1** | |
| | 14. | Frame Condition | **pass** | |
| ● | 15. | Fan Condition | **(P) Pass** | P96 |

| | | |
|---|---|---|
| 16. | Broken or Missing Components | **none** |

## Initial Electrical Inspection

| | | |
|---|---|---|
| 17. | Insulation Resistance/Megger | |
| 18. | Winding Resistance | |

| 1-2 | 1-3 | 2-3 |
|---|---|---|
| | | |

| | | |
|---|---|---|
| 19. | Perform Surge Test | P57 |

| | | |
|---|---|---|
| 20. | Number of Stator Slots | **48** |
| 21. | Stator Condition | **pass** |
| | ***Pulled even amps under voltage*** | |
| 22. | Stator Thermistors/Ohms | |
| 23. | Stator Overloads/Ohms | |

## Mechanical Inspection

| | | |
|---|---|---|
| 24. | Drive End Bearing Brand | **SKF** |
| 25. | Drive End Bearing Number- | **NU 212** |
| 26. | Drive End Bearing Qty. | **1** |

| | | | |
|---|---|---|---|
| 27. | Drive End Bearing Type | **(Roller) Roller Bearing** | P49 |

| | | | |
|---|---|---|---|
| 28. | Drive End Lubrication Type | **(Oil) Oil Lubricated** | |
| 29. | Drive End Bearing Insulation or Grounding Device? | **none** | |
| 30. | Drive End Wavy Washer/Snap-Ring Other Retention Device? | **snap ring** | |
| 31. | Drive End Bearing Condition | **replace** | |
| 32. | Opposite Drive End Bearing Brand | **SKF** | |
| 33. | Opposite Drive End Bearing Number- | **6212 2Z / C4** | P90 |

| | | | |
|---|---|---|---|
| 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? | **snap ring** | |
| 39. | Opposite Drive End Bearing Condition | **replace** | |
| 40. | Drive End Seal | | P102 |

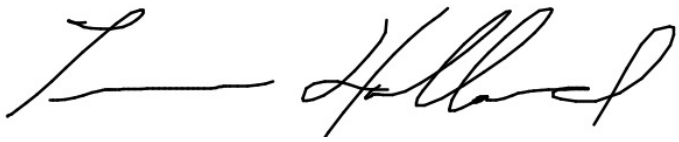
| | | |
|---|---|---|
| 41. | Opposite Drive End Seal | **none** |

## Rotor Inspection

| | | |
|---|---|---|
| 42. | Rotor Type/Material | **(Squirrel Aluminum) Squirrel Cage Aluminum Die Cast** |

P3

| | | |
|---|---|---|
| 43. | Growler Test | **(Pass) Pass** |
| 44. | Number of Rotor Bars | **36** |
| 45. | Rotor Condition | **pass** |
| 46. | List the Parts needed for the Repair Below<br>***Rebuild kit provided by customer.*** | |
| 47. | Signature of Technician that Disassembled Motor | **Terrence Holland** |



## Mechanical Fits- Rotor

| | | |
|---|---|---|
| 48. | Shaft Runout | **0.002 inches** |
| 49. | Rotor Runout | |

| Drive End Bearing Fit | Rotor Body | Opposite Drive End Bearing |
|---|---|---|

| | |
|---|---|
| 50. | Coupling Fit Closest to Bearing Housing |

| 0 Degrees | 90 Degrees | 120 Degrees |
|---|---|---|

51. Coupling Fit Closest to the end of the Shaft

| 0 Degrees | 60 Degrees | 120 Degrees |
|---|---|---|

52. Drive End Bearing Shaft Fit

| 0 Degrees | 60 Degrees | 120 Degrees |
|---|---|---|
| **2.363** | **2.363** | **2.363** |

53. Drive End Bearing Shaft Fit Condition **(P) Pass**

54. Opposite Drive End Bearing Shaft Fit

| 0 Degrees | 60 Degrees | 120 Degrees |
|---|---|---|
| **2.3636** | **2.3625** | **2.3625** |

55. Opposite Drive End Bearing Shaft Fit Condition **(P) Pass**

56. Shaft Air Seal Fits

| Drive End Air Seal | Opposite Drive End Air Seal |
|---|---|

## Mechanical Fits- Bearing Housings

57. Drive End - Endbell Bearing Fit

| 0 Degrees | 60 Degrees | 120 Degrees |
|---|---|---|
| **4.3314** | **4.3315** | **4.3315** |

58. Drive End - Endbell Bearing Fit Condition **(P) Pass**

59. Opposite Drive End - Endbell Bearing Fit

| 0 Degrees | 60 Degrees | 120 Degrees |
|---|---|---|
| **4.3314** | **4.3316** | **4.3317** |

60. Opposite Drive End - Endbell Bearing Fit Condition **(P) Pass**

61. Bearing Cap Condition P51

| Drive End Bearing Cap | Opposite Drive End Bearing Cap |
|---|---|
| **pass** | |

62. End Bell Air Seal Fits

| Drive End Air Seal | Opposite Drive End Air Seal |
|---|---|

63. List Machine Work Needed Below

64. Technician **Terrence. Holland**

## Dynamic Balance Report

65. Rotor Weight and Balance Grade

| Rotor Weight | Balance Grade |
|---|---|
| | |

66. Initial Balance Readings

| Drive End | Opposite Drive End |
|---|---|
| | |

67. Final Balance Readings P27

| Drive End | Opposite Drive End |
|---|---|
| | |

68. Technician **Terrence Holland**

## Rewind

69. Core Test Results - Watts loss per Pound

| Pre-Burnout | Post Burnout |
|---|---|
| | |

70. Core Hot Spot Test

| Pre-Burnout | Post-Burnout |
|---|---|
| | |

71. Post Rewind Electrical Test- Insulation Resistance

72. Post Rewind Polarization Index

73. Post Rewind Winding Resistance

| 1-2 | 1-3 | 2-3 |
|---|---|---|
| | | |

74. Post Rewind Surge Test

75. Post Rewind Hi-Pot

76. Technician

## Root Cause of Failure

77. Failure locations P9

***D.E bearing severely contaminated.***

78. Root cause of failure P16

***Contamination caused by unknown substances. See pictures below.***

## Mechanical Fits- Rotor - Post Repair

79. Shaft Runout Post Repair

80. Rotor Runout Post Repair

| | | |
|---|---|---|
| Drive End Bearing Fit | Rotor Body | Opposite Drive End Bearing |

81. Coupling Fit Closest to Bearing Housing Post Repair

| | | |
|---|---|---|
| 0 Degrees | 90 Degrees | 120 Degrees |

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

| | | |
|---|---|---|
| 0 Degrees | 60 Degrees | 120 Degrees |

83. Drive End Bearing Shaft Fit Post Repair

| | | |
|---|---|---|
| 0 Degrees | 60 Degrees | 120 Degrees |

84. Opposite Drive End Bearing Shaft Fit Post Repair

| 0 Degrees | 60 Degrees | 120 Degrees |
|---|---|---|

85. Shaft Air Seal Fits Post Repair

| Drive End Air Seal | Opposite Drive End Air Seal |
|---|---|

86. Shaft Repair Sign-off

## Mechanical Fits- Bearing Housings - Post Repair

87. Drive End - Endbell Bearing Fit Post Repair

| 0 Degrees | 60 Degrees | 120 Degrees |
|---|---|---|

88. Opposite Drive End - Endbell Bearing Fit Post Repair

| 0 Degrees | 60 Degrees | 120 Degrees |
|---|---|---|

89. Bearing Cap Condition Post Repair

| Drive End Bearing Cap | Opposite Drive End Bearing Cap |
|---|---|

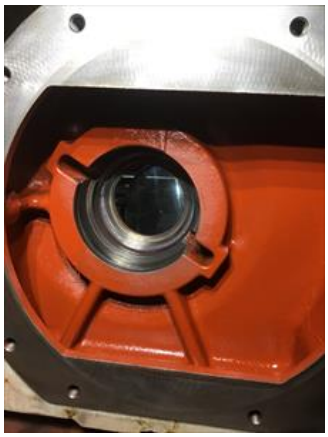
90. End Bell Air Seal Fits Post Repair

| Drive End Air Seal | Opposite Drive End Air Seal |
|---|---|

91. End Bell Repair Sign-off

## Assembly

92. QC Check All Parts for Cleanliness Prior to Assembly P4




| | | | |
|---|---|---|---|
| 93. | Photograph All Major Components prior to assembly | | |
| 94. | Final Insulation Resistance Test | | |
| 95. | Assembled Shaft Endplay | | |
| 96. | Assembled Shaft Runout | | |
| 97. | Test Run Voltage | | |
| | Volts | Volts | Volts |
| 98. | Test Run Amperage | | |
| | Amps | Amps | Amps |
| 99. | Drive End Vibration Readings - Inches Per Second | | |
| | Horizontal | Vertical | Axial |
| 100. | Opposite Drive End Vibration Readings - Inches Per Second | | |
| | Horizontal | Vertical | Axial |
| 101. | Ambient Temperature - Fahrenheit | | |
| 102. | Drive End Bearing Temps - Fahrenheit | | |
| | 5 Minutes | 10 Minutes | 15 Minutes |
| 103. | Opposite Drive End Bearing Temps - Fahrenheit | | |
| | 5 Minutes | 10 Minutes | 15 Minutes |

104. Document Final Condition with Pictures after paint

105. Final Pics and QC Review **Terrence. Holland** P105