

LR Motor Shop Repairs

Job Number 102480

Prepared for Hi-Speed Industrial Service (11369)

6812 Lindsey Road Little Rock AR 72206

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AC Inspection - Rev. 2: 93305633

1.0



FolderID: 102480

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AC Inspection as Found Hi-Speed Industrial Service (11369)

6812 Lindsey Road Little Rock, AR 72206

AC Inspection - Rev. 2

Location: MOTOR SHOP LR

Serial Number: 93305633

Description: 200HP TOSHIBA 1200RPM 505UZ

Hi-Speed Job Number:	102480
Manufacturer:	Toshiba
Product Number:	A2006ELF4BM
Serial Number:	93305633
HP/kW:	200 (HP)
RPM:	1180 (RPM)
Frame:	505UZ
Voltage:	460
Current:	240
Phase:	Three
Hz:	60 (Hz)
Service Factor:	1.15
Enclosure:	TEFC
J-box Included:	None
Coupling/Sheave:	Coupling
Bearing RTDs:	No
Stator RTDs:	No
Repair Stage:	Final

Priorities Found: 4 - High

6 - Good

Overall Condition

1. Report Date

Nameplate Picture



























































Ir	itial	Electrical Inspection			
	19.	Broken or Missing Components			broken fan
		Quantity	Volts/Watts	Pass/Fail	
	10.		\\olto\\\\otto	Doos/Foil	
		Heater Quantity, Ratings			(1)1
	17.				(F) Fail
	16.	Frame Condition			
	15.	Lead Numbers			1-12
	14.	Does it have Lugs?, If so what is the	Stud Size?		(Yes) Yes
	13.	Lead Length			13 Inches
	-	Missing 7 numbers			
	12.	Lead Condition			(P) Pass
	11.	Air Gap Variation <10%			
	10.	Assembled Shaft End Play			
	9.	Assembled Shaft Runout			
	8.	Does Shaft Have Visible Damage?			(No) No
	7.	Does the shaft require T.I.R in Lathe	to identify additional repairs?		(No) No
	6.	Does Shaft Turn Freely?			(No) No
In	nitial	Mechanical/Electrical			
	5.	Distance from the end of the shaft to	he Coupling/Sheave		0.25 inches
	4.	Describe the Overall Condition of the	Equipment as Received		
	3.	Photos of all six sides of the machine			

20.	Insulation Resistance/Megger		2000 Megohms
21.	Winding Resistance		
	1-2	1-3	2-3
2 2.	Perform Surge Test		(P) Pass
23.	Number of Stator Slots		72
24.	Stator Condition		
25.	Stator Thermistors/Ohms		
26.	Stator Overloads/Ohms		
Mech	anical Inspection		
27.	Drive End Bearing Brand		NSK
28.	Drive End Bearing Number-		NU322
29.	Drive End Bearing Qty.		1
30.	Drive End Bearing Type		(Roller) Roller Bearing
31.	Drive End Lubrication Type		(Grease) Grease Lubricated
32.	Drive End Bearing Insulation or Groun	nding Device?	snap ring
33.	Drive End Wavy Washer/Snap-Ring C	Other Retention Device?	
34.	Drive End Bearing Condition		fail
35.	Opposite Drive End Bearing Brand		NSK
36.	Opposite Drive End Bearing Number-		6318
37.	Opposite Drive End Bearing Qty.		1
38.	Opposite Drive End Bearing Type		(Ball) Ball Bearing
39.	Opposite Drive End Lubrication Type		(Grease) Grease Lubricated
40.	Opposite Drive End Bearing Insulation	or Grounding Device?	
41.	Opposite Drive End Wavy Washer/Sn	ap-Ring Other Retention Device?	snap ring
42.	Opposite Drive End Bearing Condition	ı	worn
	11		
43.	Drive End Seal		
43. 44.	Drive End Seal		
	Drive End Seal Opposite Drive End Seal		
44.	Drive End Seal Opposite Drive End Seal	120 degrees	240 degrees
44. 45.	Drive End Seal Opposite Drive End Seal DE Sleeve Bearing Inside Diameter 0 degrees	120 degrees	
44. 45.	Drive End Seal Opposite Drive End Seal DE Sleeve Bearing Inside Diameter 0 degrees DE Sleeve Bearing Outside Diameter	<u>-</u>	240 degrees
44. 45.	Drive End Seal Opposite Drive End Seal DE Sleeve Bearing Inside Diameter 0 degrees	120 degrees 120 degrees	
44. 45. 46.	Drive End Seal Opposite Drive End Seal DE Sleeve Bearing Inside Diameter 0 degrees DE Sleeve Bearing Outside Diameter 0 degrees	120 degrees	240 degrees
44. 45. 46.	Drive End Seal Opposite Drive End Seal DE Sleeve Bearing Inside Diameter 0 degrees DE Sleeve Bearing Outside Diameter 0 degrees DE Sleeve Bearing Housing Inside Diameter	120 degrees	240 degrees 240 degrees
44. 45. 46.	Drive End Seal Opposite Drive End Seal DE Sleeve Bearing Inside Diameter 0 degrees DE Sleeve Bearing Outside Diameter 0 degrees	120 degrees	240 degrees
44. 45. 46.	Drive End Seal Opposite Drive End Seal DE Sleeve Bearing Inside Diameter 0 degrees DE Sleeve Bearing Outside Diameter 0 degrees DE Sleeve Bearing Housing Inside Diameter 0 degrees	120 degrees ameter 120 degrees	240 degrees 240 degrees
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44. 45. 46. 47.	Drive End Seal Opposite Drive End Seal DE Sleeve Bearing Inside Diameter 0 degrees DE Sleeve Bearing Outside Diameter 0 degrees DE Sleeve Bearing Housing Inside Diameter 0 degrees DE Sleeve Bearing Housing Inside Diameter 0 degrees DE Sleeve Bearing to Housing Cleara 0 degrees	120 degrees ameter 120 degrees nce	240 degrees 240 degrees 240 degrees
44. 45. 46. 47.	Drive End Seal Opposite Drive End Seal DE Sleeve Bearing Inside Diameter 0 degrees DE Sleeve Bearing Outside Diameter 0 degrees DE Sleeve Bearing Housing Inside Diameter 0 degrees DE Sleeve Bearing to Housing Cleara 0 degrees ODE Sleeve Bearing Inside Diameter	120 degrees ameter 120 degrees nce 120 degrees	240 degrees 240 degrees 240 degrees 240 degrees
44. 45. 46. 47. 48.	Drive End Seal Opposite Drive End Seal DE Sleeve Bearing Inside Diameter 0 degrees DE Sleeve Bearing Outside Diameter 0 degrees DE Sleeve Bearing Housing Inside Diameter 0 degrees DE Sleeve Bearing to Housing Cleara 0 degrees ODE Sleeve Bearing Inside Diameter	120 degrees ameter 120 degrees nce 120 degrees 120 degrees	240 degrees 240 degrees 240 degrees 240 degrees
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อา	ODE Classic Booring Housing Incide F	Viamatar	
3	ODE Sleeve Bearing Housing Inside D		0.40
	0 degrees	120 degrees	240 degrees
F2	ODE Sleeve Bearing to Housing Clear	ran a a	
52.	•		040 damasa
	0 degrees	120 degrees	240 degrees
Datas	lu au anti au		
	Inspection		(Osselsan I Alesania van) Osselsan I
53.	Rotor Type/Material		(Squirrel Aluminum) Squirrel Cage Aluminum Die Cast
54.	Growler Test		(Pass) Pass
55.	Number of Rotor Bars		60
56.	Rotor Condition		
57.	List the Parts needed for the Repair B	elow	
	NU322 6318		
58.	Signature of Technician that Disassen	nbled Motor	Trevor Hall
	/-/dl		
	anical Fits- Rotor		
	Shaft Runout		0.001 inches
60.	Rotor Runout		
	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
61.	Coupling Fit Closest to Bearing Housing	•	
61.	0 Degrees	90 Degrees	120 Degrees
	0 Degrees 3.9749	90 Degrees 3.8748	120 Degrees 3.8748
	0 Degrees	90 Degrees 3.8748	•
	0 Degrees 3.9749	90 Degrees 3.8748	•
	0 Degrees 3.9749 Coupling Fit Closest to the end of the	90 Degrees 3.8748 Shaft	3.8748
62.	0 Degrees 3.9749 Coupling Fit Closest to the end of the 0 Degrees	90 Degrees 3.8748 Shaft 60 Degrees	3.8748 120 Degrees
62.	0 Degrees 3.9749 Coupling Fit Closest to the end of the 0 Degrees 3.8747	90 Degrees 3.8748 Shaft 60 Degrees	3.8748 120 Degrees
62.	0 Degrees 3.9749 Coupling Fit Closest to the end of the 0 Degrees 3.8747 Drive End Bearing Shaft Fit	90 Degrees 3.8748 Shaft 60 Degrees 3.8747	3.8748 120 Degrees 3.8747
62.	0 Degrees 3.9749 Coupling Fit Closest to the end of the 0 Degrees 3.8747 Drive End Bearing Shaft Fit 0 Degrees 4.3319	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees	3.8748 120 Degrees 3.8747 120 Degrees 4.3318
62. 63.	0 Degrees 3.9749 Coupling Fit Closest to the end of the 0 Degrees 3.8747 Drive End Bearing Shaft Fit 0 Degrees 4.3319 Drive End Bearing Shaft Fit Condition	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees	3.8748 120 Degrees 3.8747 120 Degrees
62. 63.	0 Degrees 3.9749 Coupling Fit Closest to the end of the 0 Degrees 3.8747 Drive End Bearing Shaft Fit 0 Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass
62. 63.	0 Degrees 3.9749 Coupling Fit Closest to the end of the 0 Degrees 3.8747 Drive End Bearing Shaft Fit 0 Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit 0 Degrees	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass
62. 63. • 64. 65.	0 Degrees 3.9749 Coupling Fit Closest to the end of the 0 Degrees 3.8747 Drive End Bearing Shaft Fit 0 Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit 0 Degrees 3.5434	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass
62. 63. • 64. 65.	0 Degrees 3.9749 Coupling Fit Closest to the end of the 0 Degrees 3.8747 Drive End Bearing Shaft Fit 0 Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit 0 Degrees 3.5434 Minimum	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318 60 Degrees 3.5434	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass 120 Degrees 3.5434
62. 63. 64. 65.	O Degrees 3.9749 Coupling Fit Closest to the end of the O Degrees 3.8747 Drive End Bearing Shaft Fit O Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit O Degrees 3.5434 Minimum Opposite Drive End Bearing Shaft Fit	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318 60 Degrees 3.5434	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass
62. 63. 64. 65.	O Degrees 3.9749 Coupling Fit Closest to the end of the O Degrees 3.8747 Drive End Bearing Shaft Fit O Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit O Degrees 3.5434 Minimum Opposite Drive End Bearing Shaft Fit Shaft Air Seal Fits	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318 60 Degrees 3.5434 Condition	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass 120 Degrees 3.5434
62. 63. 64. 65.	O Degrees 3.9749 Coupling Fit Closest to the end of the O Degrees 3.8747 Drive End Bearing Shaft Fit O Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit O Degrees 3.5434 Minimum Opposite Drive End Bearing Shaft Fit	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318 60 Degrees 3.5434	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass 120 Degrees 3.5434
62. 63. 64. 65. 66.	O Degrees 3.9749 Coupling Fit Closest to the end of the O Degrees 3.8747 Drive End Bearing Shaft Fit O Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit O Degrees 3.5434 Minimum Opposite Drive End Bearing Shaft Fit Shaft Air Seal Fits Drive End Air Seal	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318 60 Degrees 3.5434 Condition	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass 120 Degrees 3.5434
62. 63. 64. 65. 66. 67.	O Degrees 3.9749 Coupling Fit Closest to the end of the O Degrees 3.8747 Drive End Bearing Shaft Fit O Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit O Degrees 3.5434 Minimum Opposite Drive End Bearing Shaft Fit Shaft Air Seal Fits Drive End Air Seal	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318 60 Degrees 3.5434 Condition	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass 120 Degrees 3.5434
62. 63. 64. 65. 66. 67.	O Degrees 3.9749 Coupling Fit Closest to the end of the O Degrees 3.8747 Drive End Bearing Shaft Fit O Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit O Degrees 3.5434 Minimum Opposite Drive End Bearing Shaft Fit Shaft Air Seal Fits Drive End Air Seal anical Fits- Bearing Housings Drive End - Endbell Bearing Fit	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318 60 Degrees 3.5434 Condition Opposite Drive End Air Seal	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass 120 Degrees 3.5434 (P) Pass
62. 63. 64. 65. 66. 67.	O Degrees 3.9749 Coupling Fit Closest to the end of the O Degrees 3.8747 Drive End Bearing Shaft Fit O Degrees 4.3319 Drive End Bearing Shaft Fit Condition Opposite Drive End Bearing Shaft Fit O Degrees 3.5434 Minimum Opposite Drive End Bearing Shaft Fit Shaft Air Seal Fits Drive End Air Seal	90 Degrees 3.8748 Shaft 60 Degrees 3.8747 60 Degrees 4.3318 60 Degrees 3.5434 Condition	3.8748 120 Degrees 3.8747 120 Degrees 4.3318 (P) Pass 120 Degrees 3.5434

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6 9.	Drive End - Endbell Bearing Fit Cond	lition		(P) Pass
70.	Opposite Drive End - Endbell Bearing	g Fit		
	0 Degrees	60 Degrees	120 Degrees	
	7.482	7.482	7.482	
71.	Opposite Drive End - Endbell Bearing	g Fit Condition		(F) Fail
72.	Bearing Cap Condition			
	Drive End Bearing Cap	Opposite Drive End Bearing Cap		
	pass	pass		
73.	End Bell Air Seal Fits			
	Drive End Air Seal	Opposite Drive End Air Seal		
74.	List Machine Work Needed Below			
	Sleeve opposite drive endbell			
/5.	Technician			Trevor Hall
		h		Hevol Hall
Root	Cause of Failure	h		nevoi naii
Root		Fan. Coupling is worn		Hevol Hall
Root 976.	Cause of Failure Failure locations	Fan. Coupling is worn		Hevol Hall
Root 76.	Cause of Failure Failure locations Bearings and opposite drive endbell. R Root cause of failure	Fan. Coupling is worn		Trevoi riali
76. 77. Dynai	Cause of Failure Failure locations Bearings and opposite drive endbell. F Root cause of failure Normal wear and lack of lubrication	Fan. Coupling is worn		Hevol Hall
76. 77. Dynai	Cause of Failure Failure locations Bearings and opposite drive endbell. If Root cause of failure Normal wear and lack of lubrication mic Balance Report	Fan. Coupling is worn Balance Grade		Trevoi riali
76. 77. Dynai	Cause of Failure Failure locations Bearings and opposite drive endbell. If Root cause of failure Normal wear and lack of lubrication mic Balance Report Rotor Weight and Balance Grade			Trevoi riali
76. 77. Dynai 78.	Cause of Failure Failure locations Bearings and opposite drive endbell. F Root cause of failure Normal wear and lack of lubrication mic Balance Report Rotor Weight and Balance Grade Rotor Weight			Trevoi riali
76. 77. Dynai 78.	Cause of Failure Failure locations Bearings and opposite drive endbell. R Root cause of failure Normal wear and lack of lubrication mic Balance Report Rotor Weight and Balance Grade Rotor Weight			Trevoi maii

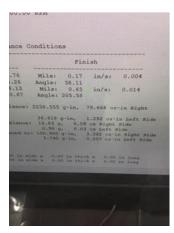


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80. Final Balance Readings

Drive End

Opposite Drive End



81.	Technician		
Rewir	nd		
82.	Core Test Results - Watts loss per Po	und	
	Pre-Burnout	Post Burnout	
83.	Core Hot Spot Test		
	Pre-Burnout	Post-Burnout	
0.1	5 .5 . 15 15	B	
	Post Rewind Electrical Test- Insulatio	n Resistance	
	Post Rewind Polarization Index		
86.	Post Rewind Winding Resistance		
	1-2	1-3	2-3
97	Post Rewind Surge Test		
	Post Rewind Hi-Pot		
	Technician		
	anical Fits- Rotor - Post Repair		
	Shaft Runout Post Repair		
	Rotor Runout Post Repair		
31.	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
	Drive Life Bearing Fit	Notor Body	Opposite Drive Life Bearing
92.	Coupling Fit Closest to Bearing Housi	ng Post Repair	
	0 Degrees	90 Degrees	120 Degrees
	ŭ	<u> </u>	C .
93.	Coupling Fit Closest to the end of the	Shaft Post Repair	
	0 Degrees	60 Degrees	120 Degrees
94.	Drive End Bearing Shaft Fit Post Rep		
	0 Degrees	60 Degrees	120 Degrees
0F	Opposite Drive End Bearing Shaft Fit	Post Popoir	
90.	··· -		120 Dograda
	0 Degrees	60 Degrees	120 Degrees

96.	96. Shaft Air Seal Fits Post Repair				
	Drive End Air Seal	Opposite Drive End Air Seal			
97.	Shaft Repair Sign-off				
Mecha	anical Fits- Bearing Housings - P	ost Repair			
98.	Drive End - Endbell Bearing Fit Post F	Repair			
	0 Degrees	60 Degrees	120 Degrees		
99.	99. Opposite Drive End - Endbell Bearing Fit Post Repair				
	0 Degrees	60 Degrees	120 Degrees		
	7.481	7.481	7.481		



100. Bearing Cap Condition	Post Repair		
Drive End Bearing C	ap Opposite Drive End Bea	aring Cap	
101. End Bell Air Seal Fits F	ost Repair		
Drive End Air Seal	Opposite Drive End Air	Seal	
102. DE Sleeve Bearing Ins	ide ID Post Repair		
Measure 1	Measure 2	Measure 3	
103. DE Sleeve Bearing Out	tside ID Post Repair		
Measure 1	Measure 2	Measure 3	
104. DE Sleeve Bearing Ins	ide OD Post Repair		
Measure 1	Measure 2	Measure 3	
105. DE Sleeve Bearing Out	tside OD Post Repair		
Measure 1	Measure 2	Measure 3	
			_
106. End Bell Repair Sign-o	ff		Gary

107. (107. ODE Sleeve Bearing Inside ID Post Repair				
1	Measure 1	Measure 2	Measure 3		
108. (ODE Sleeve Bearing Outside ID Post	Repair			
I	Measure 1	Measure 2	Measure 3		
109. (ODE Sleeve Bearing Inside OD Post F	Repair			
	ODE Sleeve Bearing Inside OD Post F Measure 1	Repair Measure 2	Measure 3		
		•	Measure 3		
I		Measure 2	Measure 3		
110. (Measure 1	Measure 2	Measure 3 Measure 3		

Assembly

111. QC Check All Parts for Cleanliness Prior to Assembly

nin

Cw









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112. Photograph All Major Compone	ents prior to assembly		(Complete) Complete
113. Final Insulation Resistance Tes	st		Megohms
■ Na			
114. Assembled Shaft Endplay			inches
■ Na			
115. Assembled Shaft Runout			inches
Na			
116. Test Run Voltage			
Volts	Volts	Volts	



117. Test Run Amperage		
Amps	Amps	Amps



118.	Drive End Vibration Readings - Inches	Per Second	
	Horizontal	Vertical	Axial
	0.04	0.02	0.03
119.	Opposite Drive End Vibration Reading	s - Inches Per Second	
	Horizontal	Vertical	Axial
	0.03	0.01	0.02
120.	Ambient Temperature - Fahrenheit		
-	Na		
121.	Drive End Bearing Temps - Fahrenheit		
	5 Minutes	10 Minutes	15 Minutes
-	Na		
122.	Drive End Bearing Temps - Fahrenhei	t 20-30 Minutes	
	20 Minutes	25 Minutes	30 Minutes
-	Na		
123.	Drive End Bearing Temps - Fahrenhei	t 35-45 Minutes	
	35 Minutes	40 Minutes	45 Minutes
-	Na		

	Dilve cho bealing remos - camenne	it 50-60 Minutes	
	50 Minutes	55 Minutes	60 Minutes
-	Na		
125.	Opposite Drive End Bearing Temps - Fahrenheit		
	5 Minutes	10 Minutes	15 Minutes
-	Na		
126.	Opposite Drive End Bearing Temps -	Fahrenheit 20-30 Minutes	
	20 Minutes	25 Minutes	30 Minutes
-	Na		
127.	Opposite Drive End Bearing Temps -	Fahrenheit 35-45 Minutes	
	35 Minutes	40 Minutes	45 Minutes
-	Na		
128.	Opposite Drive End Bearing Temps -	Fahrenheit 50-60 Minutes	
	50 Minutes	55 Minutes	60 Minutes
-	Na		
129.	Stator Temperatures- Fahrenheit		
	Otator remperatures- ramemien		
	5 Minutes	10 Minutes	15 Minutes
-		10 Minutes	15 Minutes
-	5 Minutes		15 Minutes
-	5 Minutes Na		15 Minutes 30 Minutes
-	5 Minutes Na Stator Temperatures- Fahrenheit 20-3	30 Minutes	
130.	5 Minutes Na Stator Temperatures- Fahrenheit 20-20 Minutes	30 Minutes 25 Minutes	
130.	5 Minutes Na Stator Temperatures- Fahrenheit 20-3 20 Minutes Na	30 Minutes 25 Minutes	
130.	5 Minutes Na Stator Temperatures- Fahrenheit 20-20 Minutes Na Stator Temperatures- Fahrenheit 35-4	30 Minutes 25 Minutes 45 Minutes	30 Minutes
130.	5 Minutes Na Stator Temperatures- Fahrenheit 20-2 20 Minutes Na Stator Temperatures- Fahrenheit 35-4 35 Minutes	30 Minutes 25 Minutes 45 Minutes 40 Minutes	30 Minutes
130.	5 Minutes Na Stator Temperatures- Fahrenheit 20-20 Minutes Na Stator Temperatures- Fahrenheit 35-35 Minutes Na	30 Minutes 25 Minutes 45 Minutes 40 Minutes	30 Minutes
130.	5 Minutes Na Stator Temperatures- Fahrenheit 20-22 20 Minutes Na Stator Temperatures- Fahrenheit 35-35 Minutes Na Stator Temperatures- Fahrenheit 50-4	30 Minutes 25 Minutes 45 Minutes 40 Minutes	30 Minutes 45 Minutes

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hun

 Cw

Co Sign: RRW



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- 3. SCOPE OF GOODS AND/OR SERVICES. The goods and/or services provided by Hi-Speed pursuant to any quotation shall be limited exclusively to those goods and/or services expressly identified therein. Hi-Speed does not assume any responsibility and/or liability for the failure to provide any other goods and/or services not identified in any quotation. Modifications, additions or deletions to or from the scope referenced in any quotation shall only bee effective if evidenced in writing and signed by Hi-Speed. The sale of any of all goods and/or services affected by such modification, addition or deletion shall be subject to these same Standard Terms and Conditions whether or not referenced therein.
- 4. <u>BILLING AND PAYMENT TERMS.</u> Hi-Speed shall invoice Buyer for all goods and/or services as same are rendered at the address listed on the quotation. Payments for all goods and/or services shall be due thirty (30) days from the date of the current invoice or as otherwise set forth in the quotation. Late payments are subject to a late fee of 5% of the total invoice amount. Recurring late payments may lead to a deposit requirement on future services or sale of goods. Buyer shall be liable to Hi-Speed for any and all fees and expenses incurred by Hi-Speed to collect any invoices or to enforce these Standard Terms and Conditions, including but not limited to, attorney's fees.
- 5. <u>DELIVERY OF GOODS AND/OR SERVICES.</u> Unless otherwise identified in the quotation, all shipments are F.O.B. Hi-Speed's warehouse and the title to and all risk of loss with respect to any goods shipped shall pass to Buyer when such goods are delivered to the carrier at Hi-Speed's warehouse. Hi-Speed will use its best efforts to affect delivery by the date or dates specified in the quotation. However, Hi-Speed shall not be liable for delay in or failure to make shipment, or to perform services, by any identified date for any reason whatsoever, including but not limited to, causes beyond its reasonable control, such as strikes, fires, floods, epidemics, quarantines, restrictions, severe weather, embargos, acts of God, or public enemy, war, riot, delays in transportation or the inability to obtain necessary labor, materials or manufacturing facilities.
- **DELIVERY SITE AND TIME FOR PERFORMANCE.** Hi-Speed and Buver agree that time is of the essence for the purchase order and that Buyer shall fully cooperate with Hi-Speed in order to allow Hi-Speed full access to prosecute its work diligently and in an orderly manner. Buyer shall assist Hi-Speed in every way possible to avoid delaying, disrupting or interfering with the progress of Hi-Speed's work at the project site. In the event Hi-Speed's work is delayed, hindered, suspended, disrupted, re-sequenced or interfered with or rendered less efficient or more costly or adversely affected in any way as a result of acts or omissions of Buyer or other contractors or employees of Buyer or by any other reason beyond Hi-Speed's control and without the fault of Hi-Speed, then, in such event, Buyer shall be liable to Hi-Speed for any damages, additional costs, expenses, labor, materials, man hours, acceleration costs, overtime, additional jobsite overhead, extended home office overhead, and any and all other direct and indirect expenses of whatsoever nature or kind, caused in whole or in part, as a result of any of the above-referenced occurrences. Hi-Speed's project records will be the basis for computing the additional costs and damages of Hi-Speed's labor, materials, expenses and overhead related to such changes. BUYER WARRANTS THAT THE SITE FOR DELIVERY OR INSTALLATION OF ANY GOODS AND/OR FOR THE PERFORMANCE OF ANY SERVICES SHALL BE READY AND ADEQUATE FOR HI-SPEED'S DELIVERY OF GOODS AND/OR PERFORMANCE OF SERVICES AND THAT HI-SPEED SHALL HAVE FULL ACCESS THERETO, FREE OF ALL OBSTRUCTIONS. BUYER SHALL ASSUME ALL EXTRA COSTS ASSOCIATED WITH HI-SPEED'S INABILITY TO INSTALL ANY GOODS OR PERFORM ANY SERVICES AS A RESULT OF BUYER'S FAILURE TO COMPLY WITH THIS PROVISION. HI-SPEED MAY NOT INSPECT THE SITE PRIOR TO DELIVERY AND/OR INSTALLATION OF GOODS AND/OR PERFORMANCE OF SERVICES AND MAKES NO WARRANTY AS TO THE SUFFICIENCY OF THE SITE FOR THE DELIVERY AND/OR INSTALLATION OF GOODS AND/OR THE PERFORMANCE OF SERVICES AT SUCH SITE.
- 7. INSPECTION/ACCEPTANCE. All goods and services ordered pursuant to any quotation shall be subject to inspection by Buyer after delivery or performance to determine conformity with the quotation and/or purchase order and Hi-Speed's advertised or published specifications. Buyer shall have a period of thirty (30) days from shipment of goods at the delivery destination specified in the quotation within which to inspect the goods for conformity with the quotation, order and/or Hi-Speed's advertised and published specifications and to provide Hi-Speed with written notice of any discrepancy or rejection. Buyer shall have a period of thirty (30) days following completion of any services within which to inspect the services for conformity with the quotation, purchase order and/or Hi-Speed's advertised and published specifications and to provide Hi-Speed with written notice of any discrepancy or rejection. If the goods delivered or services performed do not so conform, upon delivery of notice to Hi-Speed of any discrepancy, nonconformance or rejection, Hi-Speed shall have sixty (60) days to cure the alleged discrepancy and/or nonconformance. If Hi-Speed fails to cure in this time period, Buyer shall have the right to reject such goods or services. After the cure period, goods that have been delivered and rejected, in whole or in part, shall be returned to Hi-Speed. Buyer shall notify Hi-Speed and arrange for the return of the goods as required. Should such non-conforming services be rejected Hi-Speed shall, at its sole cost, re-perform the non-conforming services. Inspection or failure to inspect on any occasion shall not affect Buyer's rights under the warranty provisions herein.
- 8. <u>WARRANTIES.</u> Hi-Speed warrants that all goods shall conform in all material aspects to the goods identified in the quotation to Buyer and/or purchase order, and Hi-Speed makes to Buyer the manufacturer's express warranty for any goods sold to Buyer, which is offered by the manufacturer at the time of acceptance of any quotation by Buyer. This warranty is conditioned upon the installation, operation, and maintenance of the goods in accordance with the manufacturer's recommendations and/or standard industry practice and the goods at all times being operated or used under normal operating conditions for which they were designed. Hi-Speed, at its sole option, will repair or

replace any defective or non-conforming goods in accordance with the applicable manufacturer's warranty. Warranty for any defective or incorrect parts is limited to the repair or replacement of those parts. Hi-Speed warrants that all services will conform in all material respects to the description of services identified in the quotation and will be performed in a good and workmanlike manner in accordance with industry practices and standards. Should the services be reasonably rejected or not conform with the foregoing warranties, Hi-Speed shall, at its sole cost, re-perform the defective or nonconforming services. Notwithstanding the foregoing, these warranties do not extend to goods or services to the extent that such goods have been subject to misuse, neglect or abuse not caused by Hi-Speed or have been used in violation of the approved written instructions furnished to Buyer. THE FOREGOING REPRESENTS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY HI-SPEED WITH RESPECT TO ALL GOODS SOLD AND IS IN LIEU OF ALL OTHER WARRANTIES EITHER EXPRESS OR IMPLIED. HI-SPEED EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICLAR USE OR PURPOSE. BUYER WAIVES ANY CLAIM THAT THESE EXCLUSIONS OR LIMITATIONS DEPRIVE IT OF AN ADEQUATE REMEDY AT EQUITY OR LAW OR CAUSE THIS AGREEMENT TO FAIL IN ITS ESSENTIAL PURPOSE. BUYER SHALL BE ENTITLED TO NO OTHER REMEDY OTHER THAN AS SET FORTH HEREIN, REGARDLESS OF THE CLAIM OR CAUSE OF ACTION, WHETHER BASED IN CONTRACT, TORT, NEGLIGENCE, GOODS LIABILITY, STRICT LIABILITY OR OTHERWISE.

- 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. <u>ABANDONED EQUIPMENT.</u> 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.