

# LR Motor Shop Repairs

## **Job Number 102209**

Prepared for North Little Rock Wastewater (10219)

7400 Baucum Pike N. Little Rock AR 72117

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AC Inspection as Found - MOTOR SHOP LR

AC Inspection - Rev. 2

1.0



FolderID: 102209

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### **AC Inspection as Found**

North Little Rock Wastewater (10219)

7400 Baucum Pike N. Little Rock, AR 72117

AC Inspection - Rev. 2

Location:

MOTOR SHOP LR

Serial Number:

Hi-Speed Job Number:	102209
Manufacturer:	US Motors/Nidec
Product Number:	19/03437-100
Spec/ID #:	A1219703437-0001 M 0
HP/kW:	25 (HP)
RPM:	1190 (RPM)
Frame:	324HPHZ
Voltage:	230 / 460
Current:	62/31
Phase:	Three
Hz:	60 (Hz)
Service Factor:	1.15
Enclosure:	TEFC
J-box Included:	None
Date Received:	12/13/2023
Repair Stage:	Final

Priorities Found: 11 - High

1 - Good

#### **Overall Condition**

- Report Date
- Nameplate Picture



Photos of all six sides of the machine.

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4.	Describe the Overall Condition of the Equipment as Received Broken and dirty	
5.	Distance from the end of the shaft to the Coupling/Sheave	inches
-	Na	
Initial	Mechanical/Electrical	
<ul><li>6.</li></ul>	Does Shaft Turn Freely?	(Yes) Yes
7.	Does Shaft Have Visible Damage?	(Yes) Yes
<b>8</b> .	Assembled Shaft Runout	0.06 Inches
9.	Assembled Shaft End Play	inches
-	Na	
10.	Air Gap Variation <10%	
-	Na	
11.	Lead Condition	(F) Fail

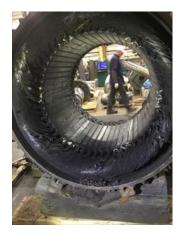


12.	12. Lead Length			8 Inches
13.	Lead Numbers			1-9
14.	Stator Temperature Detector Rating	and Function		
	Quantity	Rating	Quantity Passed	
-	Na			

15.	5. Bearing Temperature Detector Rating and Function			
	Quantity	Rating	Quantity Passed	
-	Na			
16.	Na Frame Condition			pass



	18.	Heater Quantity, Ratings		
		Quantity	Volts/Watts	Pass/Fail
	-	Na		
	19.	Broken or Missing Components		
	•		ox bolts are broke in stator, fan is broke, impelle n cover bolts are broke, and base mount bushin	
Ir	itial	Electrical Inspection		
	20.	Insulation Resistance/Megger		Megohms
	-	Na		
	21.	Winding Resistance		
		1-2	1-3	2-3
	-	Na		
	22.	Perform Surge Test		(NA) Not Applicable
	-	Rewind		



23. Number of Stator Slots 55

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24.	Stator Condition	pass
25.	Stator Thermistors/Ohms	na
26.	Stator Overloads/Ohms	
-	Na	
Mecha	anical Inspection	
27.	Drive End Bearing Brand	
28.	Drive End Bearing Number-	5216





00 Prive Ford Positive Otto	4
29. Drive End Bearing Qty.	1
30. Drive End Bearing Type	(Ball) Ball Bearing
Double ball double roll	
31. Drive End Lubrication Type	(Grease) Grease Lubricated
32. Drive End Bearing Insulation or Grounding Device?	
Na	
33. Drive End Wavy Washer/Snap-Ring Other Retention Device?	
Spanner nut	
34. Drive End Bearing Condition	signs of metal fatigue
35. Opposite Drive End Bearing Brand	skf
36. Opposite Drive End Bearing Number-	6211
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?	na
41. Opposite Drive End Wavy Washer/Snap-Ring Other Retention Device?	na

#### 42. Opposite Drive End Bearing Condition



43.	Drive End Seal		2.9388-3.7500-0.3800
44.	Opposite Drive End Seal		na
45.	DE Sleeve Bearing Inside Diameter		
	0 degrees	120 degrees	240 degrees
-	Na		
46.	DE Sleeve Bearing Outside Diameter		
	0 degrees	120 degrees	240 degrees
	Na		
-	DE Sleeve Bearing Housing Inside Dia	ameter	
71.	0 degrees	120 degrees	240 degrees
	o degrees	120 degrees	240 degrees
-	Na		
48.	DE Sleeve Bearing to Housing Cleara	nce	
	0 degrees	120 degrees	240 degrees
		-	·
-	Na		
49.	ODE Sleeve Bearing Inside Diameter		
	0 degrees	120 degrees	240 degrees
-	Na		
-	ODE Sleeve Bearing Outside Diamete	Ar.	
50.	-		240 dograpa
	0 degrees	120 degrees	240 degrees
-	Na		
51.	ODE Sleeve Bearing Housing Inside [	Diameter	
	0 degrees	120 degrees	240 degrees
	5	· ·	
-	Na		
52.	ODE Sleeve Bearing to Housing Clea	rance	
	0 degrees	120 degrees	240 degrees
	Na		

#### **Rotor Inspection**

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53.	Rotor Type/Material		(Squirrel Aluminum) Squirrel Cage Aluminum Die Cast
54.	Growler Test		(Pass) Pass
55.	Number of Rotor Bars		52
56.	Rotor Condition		pass
57.	List the Parts needed for the Repair Below 5216 6211 New fan New upper fan cover cover New shaft Base mount bushing Base mount bolts new bolts for ode and j-box bolts Lip seal Base mount bushing		
(	Signature of Technician that Disasser		Cw
	anical Fits- Rotor		
_	Shaft Runout		0.06 inches
60.	Rotor Runout		
	Drive End Bearing Fit	Rotor Body	Opposite Drive End Bearing
-	Na		
61.	Coupling Fit Closest to Bearing Housi	ng	
	0 Degrees	90 Degrees	120 Degrees
	Na		
62.		Shaft	
02.	0 Degrees	60 Degrees	120 Degrees
	- Dog. 000	So Dogistos	.20 Dog.000
-	Na		
63.	Drive End Bearing Shaft Fit		
	0 Degrees	60 Degrees	120 Degrees
_	Chaft have made now		
- 64	Shaft bent needs new		(NIA) NIA4 Amin'iliani
<b>6</b> 4.	, , , , ,		(NA) NOT Applicable
65.	11 0		120 Dogroop
	0 Degrees	60 Degrees	120 Degrees
-	Needs new shaft		
66.	Opposite Drive End Bearing Shaft Fit	Condition	
67.			
	Drive End Air Seal	Opposite Drive End Air Seal	
	, <u></u>		
-	Na		

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**Mechanical Fits- Bearing Housings** 

68.			
	Drive End - Endbell Bearing Fit		
	0 Degrees	60 Degrees	120 Degrees
	5.5133	5.513	5.513
69.	Drive End - Endbell Bearing Fit Condi	tion	(F) Fail
70.	Opposite Drive End - Endbell Bearing	Fit	
	0 Degrees	60 Degrees	120 Degrees
	3.9384	3.9381	3.9386
71.	Opposite Drive End - Endbell Bearing	Fit Condition	(F) Fail
72.	Bearing Cap Condition		
	Drive End Bearing Cap	Opposite Drive End Bearing Cap	
-	Pass		
73.	End Bell Air Seal Fits		
	Drive End Air Seal	Opposite Drive End Air Seal	
	Na		
74.	List Machine Work Needed Below		
, 14.	New shaft broke bolts need drilled and	tapped and both end bell bearing fits	
75	Technician		Cw
/	hum		
	Cause of Failure		
Root (	Cause of Failure Failure locations		
<b>Root (</b> 76.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp	peller is broke, bolts sheered in two	
<b>Root (</b> 76.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure	peller is broke, bolts sheered in two hit something causing bolts to sheer in two and	d bending the shaft and causing
76.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller I		d bending the shaft and causing
76. 77.  Oynar	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller lywindings to overload		d bending the shaft and causing
76. 77.  Oynar	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller ly windings to overload mic Balance Report Rotor Weight and Balance Grade		d bending the shaft and causing
76. 77.  Oynar	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller I windings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight	hit something causing bolts to sheer in two and	d bending the shaft and causing
76. 77.  Oynar	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller I windings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings	hit something causing bolts to sheer in two and Balance Grade	d bending the shaft and causing
76. 77.  Dynar 78.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller I windings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight	hit something causing bolts to sheer in two and	d bending the shaft and causing
76. 77.  Dynar 78.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller I windings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings Drive End	hit something causing bolts to sheer in two and Balance Grade	d bending the shaft and causing
76. 77.  Oynar 78.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller I windings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings Drive End Final Balance Readings	hit something causing bolts to sheer in two and Balance Grade  Opposite Drive End	d bending the shaft and causing
76. 77.  Dynar 78.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller I windings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings Drive End	hit something causing bolts to sheer in two and Balance Grade	d bending the shaft and causing
76. 77.  Dynar 78.  79.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller I windings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings Drive End Final Balance Readings	hit something causing bolts to sheer in two and Balance Grade  Opposite Drive End	d bending the shaft and causing
76. 77.  Dynar 78.  79.  80.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, implementaring for cause of failure Contamination, metal fatigue, impeller lywindings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings Drive End Final Balance Readings Drive End Technician	hit something causing bolts to sheer in two and Balance Grade  Opposite Drive End	d bending the shaft and causing
76. 77.  Dynar 78.  79.  80.  Rewin	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller I windings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings Drive End Final Balance Readings Drive End Technician	Balance Grade  Opposite Drive End  Opposite Drive End	d bending the shaft and causing
76. 77.  Oynar 78.  80.  81.  Rewin	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, implementaring for cause of failure Contamination, metal fatigue, impeller lywindings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings Drive End Final Balance Readings Drive End Technician	Balance Grade  Opposite Drive End  Opposite Drive End	d bending the shaft and causing
76. 77.  Oynar 78.  79.  80.  Rewin	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, implementation, metal fatigue, impeller lawindings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings Drive End Final Balance Readings Drive End Technician Ind Core Test Results - Watts loss per Po	Balance Grade  Opposite Drive End  Opposite Drive End	d bending the shaft and causing
76. 77.  Dynar 78.  80.  81.  Rewin 82.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, implementation, metal fatigue, impeller lawindings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings Drive End Final Balance Readings Drive End Technician Ind Core Test Results - Watts loss per Po	Balance Grade  Opposite Drive End  Opposite Drive End	d bending the shaft and causing
76. 77.  Oynar 78.  80.  81.  Rewin 82.	Cause of Failure Failure locations Bearings, bearing fits, shaft is bent, imp Root cause of failure Contamination, metal fatigue, impeller I windings to overload mic Balance Report Rotor Weight and Balance Grade Rotor Weight Initial Balance Readings Drive End Final Balance Readings Drive End Technician nd Core Test Results - Watts loss per Po	Balance Grade  Opposite Drive End  Opposite Drive End	d bending the shaft and causing

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85.	Post Rewind Polarization Index		
86.	Post Rewind Winding Resistance		
	1-2	1-3	2-3
0=	D . D 10 . T .		
	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
93.	Coupling Fit Closest to the end of the	·	
	0 Degrees	60 Degrees	120 Degrees
0.4	Drive End Bearing Shaft Fit Post Rep	air	
94.	0 Degrees	60 Degrees	120 Degrees
	0 Degrees	00 Degrees	120 Degrees
95.	Opposite Drive End Bearing Shaft Fit	Post Repair	
	0 Degrees	60 Degrees	120 Degrees
96.	Shaft Air Seal Fits Post Repair	0 5 . 5	
	Drive End Air Seal	Opposite Drive End Air Seal	
97.	Shaft Repair Sign-off		
	anical Fits- Bearing Housings - P	ost Repair	
	Drive End - Endbell Bearing Fit Post I	•	
	0 Degrees	60 Degrees	120 Degrees
	3	S .	J
99.	Opposite Drive End - Endbell Bearing	Fit Post Repair	
	0 Degrees	60 Degrees	120 Degrees
400	Description Con Condition Boot Bonsin		
100.	Bearing Cap Condition Post Repair	Opposite Drive Ford Bearing Con	
	Drive End Bearing Cap	Opposite Drive End Bearing Cap	
101.	End Bell Air Seal Fits Post Repair		
	Drive End Air Seal	Opposite Drive End Air Seal	
102.	DE Sleeve Bearing Inside ID Post Re	pair	
	Measure 1	Measure 2	Measure 3
100	DE Olassa Bassin, O. C. L. ID D. C.		
103.	DE Sleeve Bearing Outside ID Post R	•	Manager 2
	Measure 1	Measure 2	Measure 3

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104	DE Sleeve Bearing Inside OD Post Re	anair				
104.	Measure 1	Measure 2	Measure 3			
	ivieasure i	iviedSure 2	Measure 3			
105	105. DE Sleeve Bearing Outside OD Post Repair					
100.	Measure 1	Measure 2	Measure 3			
	Wedsure 1	Wicdoure 2	Wedsure 5			
106.	06. End Bell Repair Sign-off					
	ODE Sleeve Bearing Inside ID Post R	epair				
	Measure 1	Measure 2	Measure 3			
108.	ODE Sleeve Bearing Outside ID Post	Repair				
	Measure 1	Measure 2	Measure 3			
109.	ODE Sleeve Bearing Inside OD Post I	Repair				
	Measure 1	Measure 2	Measure 3			
	00501 5 1 0 11 55	. 5				
110.	ODE Sleeve Bearing Outside OD Pos	·				
	Measure 1	Measure 2	Measure 3			
A	able					
Assen	-	in to Annual b				
	QC Check All Parts for Cleanliness Pr	·				
	Photograph All Major Components pri	or to assembly				
	Final Insulation Resistance Test					
	Assembled Shaft Endplay					
	Assembled Shaft Runout					
116.	Test Run Voltage					
	Volts	Volts	Volts			
117	Test Run Amperage					
117.		Amna	Amno			
	Amps	Amps	Amps			
118.	Drive End Vibration Readings - Inches	s Per Second				
	Horizontal	Vertical	Axial			
	. ionzoniai	· O. GOGI	, 50001			
119.	Opposite Drive End Vibration Reading	s - Inches Per Second				
	Horizontal	Vertical	Axial			
120.	Ambient Temperature - Fahrenheit					
121.	Drive End Bearing Temps - Fahrenhei	t				
	5 Minutes	10 Minutes	15 Minutes			
122.	Drive End Bearing Temps - Fahrenhei					
	20 Minutes	25 Minutes	30 Minutes			
123.	Drive End Bearing Temps - Fahrenhei					
	35 Minutes	40 Minutes	45 Minutes			

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124.	Drive End Bearing Temps - Fahrenheit 50-60 Minutes			
	50 Minutes	55 Minutes	60 Minutes	
125.	Opposite Drive End Bearing Temps - Fahrenheit			
	5 Minutes	10 Minutes	15 Minutes	
400	On a seite Debus Ford Passing Tagers - Fabrascheit 00 00 Missed			
126.	Opposite Drive End Bearing Temps -			
	20 Minutes	25 Minutes	30 Minutes	
127	Opposite Drive End Bearing Temps - Fahrenheit 35-45 Minutes			
127.	35 Minutes	40 Minutes	45 Minutes	
	35 Millutes	40 Minutes	45 Minutes	
128.	Opposite Drive End Bearing Temps - Fahrenheit 50-60 Minutes			
	50 Minutes	55 Minutes	60 Minutes	
129.	Stator Temperatures- Fahrenheit			
	5 Minutes	10 Minutes	15 Minutes	
130.	Stator Temperatures- Fahrenheit 20-30 Minutes			
	20 Minutes	25 Minutes	30 Minutes	
401				
131.	131. Stator Temperatures- Fahrenheit 35-45 Minutes			
	35 Minutes	40 Minutes	45 Minutes	
130	Stator Temperatures- Fahrenheit 50-60 Minutes			
132.	•		CO Minutes	
	50 Minutes	55 Minutes	60 Minutes	
133.	Document Final Condition with Pictures after paint			
	Final Pics and QC Review			

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- 2. PRICE. All quoted prices shall remain firm and binding for a period of thirty (30) days from the date of quotation or for the period specifically stated in the quotation. The price for any and all goods and/or services ordered or approved by Buyer after thirty (30) days from the date of any quotation are subject to any increase in price that may occur after the expiration of thirty (30) days from the issuance of the quotation and the date the Buyer releases any shipment.
- 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. 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.