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LR Motor Shop Repairs

Job Number 100727

Prepared for Central Arkansas Water-Wilson(10195-01)

Central Arkansas Water Wilson
Little Rock AR 72212

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Submersible Pump Repair Report - *MOTOR SHOP*
LR

Submersible Pump Repair Report: *10570799*

1.0

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Submersible Pump Repair Report

Central Arkansas Water-Wilson(10195-01)
Central Arkansas Water Wilson
Little Rock, AR 72212

FolderID: 100727
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Submersible Pump Repair Report

Location: MOTOR SHOP LR
Serial Number: 10570799
Description: 40HP HYDROMATIC 1800RPM SUB PUMP

Make:	HYDROMATIC
HP:	40 (HP)
Model:	S4K4000M3-4
Serial:	10570799
V:	230 (V)
A:	105 (A)
RPM:	1750 (RPM)
Hz:	60 (Hz)
Phase:	3
Service Factor:	1.2
Impeller Diameter:	12 (in)

Priorities Found: ● 3 - High ● 16 - Good

General

1. Job Number

100727



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2. Report Date	01/05/2023
3. Customer	CAW
Initial Pump Inspection	
4. Power Cord Wire Size	AWG
5. Power Cord # of Conductors	
6. Power Cord Length	
7. Power Cord Condition	
8. Sensor Cord Wire Size	
9. Sensor Cord # of Conductors	
10. Sensor Cord Length	
11. Sensor Cord Condition	
12. Sensor Cord for Thermal Protection?	
13. Sensor Cord for Water Protection	
14. Bowl Condition	(F) Fail
15. Impeller Condition	(F) Fail
16. Number of Wear Rings	1
17. Wear Ring Condition	(F) Fail
18. Wear Ring Size	
19. Wear Ring Clearance to Impeller	
20. Wear Ring Material	bronze
21. Seal Surfaces Condition	(P) Pass

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22. Seal Type	Mechanical
23. Number of Seals	2
24. Seal Material on Rotary Face	
25. Seal Material on Stationary Seat	
26. Elastic Component Material	
27. Seal OD	2.75 mm
28. Seal ID	2 in
29. Seal Sleeve Material	no sleeve
● 30. Seal Plate Condition	(P) Pass
● 31. Water Sensor in Seal Cavity?	(Y) Yes
● 32. Oil Filled Seal Cavity?	(Y) Yes
● 33. Oil Filled Stator?	(Y) Yes
Initial Inspection	
34. Number of Leads	
35. Lead Length	
36. Lead Size	
37. Lead Condition	
38. Lead Markings	
39. Lead Size for Oil Filled Stator	
40. Lug Size, Condition, and Type	
41. Overload Required?	
42. Winding RTD's	
43. Winding Rtd's Condition	
44. Shaft Run Out	
45. Does Shaft Turn Freely	
46. Does Shaft Have Visible Damage	
47. Bearing Rtd's	
48. Bearing Rtd's Condition	
49. Contamination	
50. Frame Condition	
51. Fan Condition	
52. Broken or missing components	
Initial Electric Test	
53. Resistance to Ground	2000 Mohm
54. Winding Resistance 1-2	
55. Winding Resistance 2-3	
56. Winding Resistance 1-3	
57. Resistive Imbalance	
58. Hi-Pot	
● 59. Surge Test	(P) Pass
60. Stator Condition	good.
61. Failure Location	
Initial Rotor Inspection	
62. Rotor Type	cast aluminum
63. Air Gap <10% Variation	
64. Number of Rotor Bars	40

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65. Number of Broken Rotor Bars	0
66. Growler Test	(P) Pass
67. Rotor Condition	(P) Pass
Mechanical Inspection	
68. Bearing Manufacturer	SKF
69. Bearing DE Size	7314 BECBY



70. Bearing DE Type	angular contact
71. DE Bearing Qty.	1
72. Bearing ODE Size	6308
73. Bearing ODE Type	ball
74. ODE Bearing Qty.	1
75. Insulated Bearing	none
76. Lubrication Type	transformer oil
77. Grease Condition	
78. Bearing Retainers	(Y) Yes
Snap ring on DE, wavy on ODE	
79. Shaft Grounding Device	(NA) Not Applicable
80. DE Seal	(NA) Not Applicable
81. DE Seal Type/Size	
82. ODE Seal	(NA) Not Applicable
83. ODE Seal Type/Size	

Root Cause of Failure

84. Component Failure	impeller and shaft damaged
85. Cause of Failure	Line Stop/start
86. Comments	Replace shaft, sleeve impeller, wear ring, 7314 bearing, 6308 bearing, 2 - 2" * 2.75" mech seals
87. Service Technician	


Machine Fit Inspection Report

88. Shaft Run Out	
89. Initial Shaft Run Out	
90. Final Shaft Run Out	
91. DE Bearing Shaft Fit	(P) Pass

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92. DE Initial Shaft Bearing Fit Size			
Measure 1	Measure 2	Measure 3	
<div> <div></div> <div>Shaft is being replaced</div> </div>			
93. DE Final Shaft Bearing Fit Size			
Measure 1	Measure 2	Measure 3	
94. ODE Bearing Shaft Fit			(P) Pass
95. ODE Initial Shaft Bearing Fit Size			
Measure 1	Measure 2	Measure 3	
<div> <div></div> <div>Shaft is being replaced</div> </div>			
96. ODE Final Shaft Bearing Fit Size			
Measure 1	Measure 2	Measure 3	
97. DE Air Seal Shaft Fit			
98. DE Air Seal Shaft Size			
Initial	Final		
99. ODE Air Seal Shaft Fit			
100. ODE Air Seal Shaft Size			
Initial	Final		
101. DE Endbell Fit			(P) Pass
102. DE Initial Endbell Fit Size			
Measure 1	Measure 2	Measure 3	
5.906	5.9059	5.906	
103. DE Final Endbell Fit Size			
Measure 1	Measure 2	Measure 3	
104. DE Endbell Fit Insulated			
105. DE Endbell Air Seal Fit			
106. DE Endbell Air Seal Fit Size			
Initial	Final		
107. ODE Endbell Fit			(P) Pass
108. ODE Initial Endbell Fit Size			
Measure 1	Measure 2	Measure 3	
3.5435	3.5435	3.5435	
109. ODE Final Endbell Fit Size			
Measure 1	Measure 2	Measure 3	
110. ODE Endbell Fit Insulated			
111. ODE Endbell Air Seal Fit			
112. ODE Endbell Air Seal Fit Size			
Initial	Final		
113. Foot Flatness			(NA) Not Applicable
114. Foot Condition			(NA) Not Applicable

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115. Flange Condition	(P) Pass		
116. Service Technician	David Maclin		
			
Balancing Report			
117. Balance Type			
118. Balance Operating Speed			
119. Start Left End			
120. Start Right End			
121. Balancing Specification			
122. Finish Left End			
123. Finish Right End			
124. Service Technician			
Assembly and Final Test			
125. Rotor and Impeller Balanced			
126. Stator Housing Refilled with Oil (if required)			
127. Stator Pressure Test			
128. Seal Cavity Pressure Test			
129. Time Under Pressure			
130. Overload Continuity			
131. Water Sensor Open?			
132. Meggar Testing Reading			
133. Surge Test			
134. Hi-Pot			
135. Winding Resistance			
1-2	2-3	3-1	
136. Test Run			
137. Test Run Voltage			
Phase A	Phase B	Phase C	
138. Test Run Current			
Phase A	Phase B	Phase C	
139. DE Vibration Reading			
Horizontal	Vertical	Axial	
140. ODE Vibration Reading			
Horizontal	Vertical	Axial	
141. Ambient Temp at start of Test Run			
142. Temp at 5 minutes			
143. Temp at 10 minutes			
144. Temp at 15 minutes			
145. Temp at 20 minutes			

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146. Temp at 25 minutes
147. Temp at 30 minutes
148. Temp at 35 minutes
149. Temp at 40 minutes
150. Temp at 45 minutes
151. Temp at 50 minutes
152. Temp at 55 minutes
153. Temp at 60 minutes
154. Motor Paint
155. Service Technician



STANDARD TERMS AND CONDITIONS FOR PURCHASE OF GOOD AND/OR SERVICES

1. **APPLICABILITY.** The sale of any and all goods and/or services by Mock, Inc. d/b/a Hi-Speed Industrial Service ("Hi-Speed") shall be specifically conditioned upon and subject to the following terms and conditions which are incorporated by reference into any contracts and purchase orders with Hi-Speed, and which shall form and become a part of any agreement related thereto. Buyer's acceptance of any offer or quotation made by Hi-Speed for sale of any goods or services is expressly made subject to the terms and conditions set forth herein and to be so effective, Buyer need not sign or approve these Terms and Conditions to be bound hereunder provided a copy of same is provided to Buyer through any means. None of the terms and conditions contained herein may be added to, expanded, changed, modified, superseded or otherwise altered except as revised in writing and duly executed by Hi-Speed, and all orders received by Hi-Speed shall be governed only by the terms and conditions contained herein, notwithstanding any terms, conditions or provisions of any purchase order, release order, authorization or any other form issued by the Buyer. Hi-Speed hereby objects to any additional, modified, changed, deleted, altered or other terms and conditions not contained herein and notifies Buyer that any such terms or provisions are expressly rejected by Hi-Speed.
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 be 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. **BILLING AND PAYMENT TERMS.** 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. **DELIVERY OF GOODS AND/OR SERVICES.** 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.
6. **DELIVERY SITE AND TIME FOR PERFORMANCE.** Hi-Speed and Buyer 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. **WARRANTIES.** 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 PARTICULAR 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. **LIMITATION OF DAMAGES.** 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. **SEVERABILITY.** 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, earthquake, 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. **NONWAIVER.** 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.