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

Submersible Pump Repair Report

George's Inc
1810 S. St. Louis Street
Batesville, AR 72501

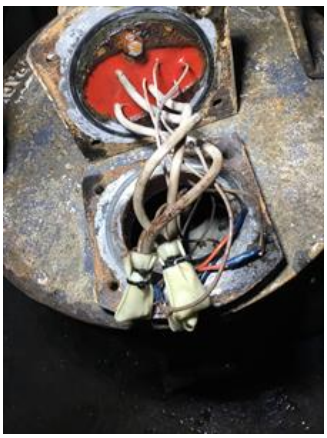
FolderID: 99785
FormID: 13560557

Submersible Pump Repair Report			
Location:	Shop	**Make:**	Barnes
Serial Number:	6SE2004	**HP:**	20 (HP)
Description:	20HP Barnes Pump NO NP	**Model:**	6SE2004
		Serial:	6SE2004
		Phase:	3

Priorities Found: **7 - High** **19 - Good**

General

1.	Job Number	**99785**	
2.	Report Date	**05/11/2022**	
3.	Customer	**George's**	P27



Initial Pump Inspection

	4.	Power Cord Wire Size	**2 AWG**
	5.	Power Cord # of Conductors	**4**
	6.	Power Cord Length	**32 ft**
●	7.	Power Cord Condtion	**(F) Fail**
	8.	Sensor Cord Wire Size	**16 AWG**
	9.	Sensor Cord # of Conductors	**5**
	10.	Sensor Cord Length	**32 ft**
●	11.	Sensor Cord Condition	**(F) Fail**
●	12.	Sensor Cord for Thermal Protection?	**(Y) Yes**
●	13.	Sensor Cord for Water Protection	**(Y) Yes**
	14.	Bowl Condition	
●	15.	Impeller Condition	**(F) Fail**
		Loose impeller to shaft fit. Wear ring surface on impeller broken.	
	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	
	21.	Seal Surfaces Condition	
	22.	Seal Type	
	23.	Number of Seals	
	24.	Seal Material on Rotary Face	

	25.	Seal Material on Stationary Seat		
	26.	Elastic Component Material		
	27.	Seal OD		
	28.	Seal ID		
	29.	Seal Sleeve Material		
●	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	**3**	
	35.	Lead Length	**Inches**	
	36.	Lead Size		
●	37.	Lead Condition	**(P) Pass**	
	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	**no**	
	46.	Does Shaft Have Visible Damage	**yes**	P94

Shaft key way wallowed. Outer Seal surface worn

	47.	Bearing Rtd's		
	48.	Bearing Rtd's Condition		
	49.	Contamination		

Water from seal failure.

●	50.	Frame Condition	**(P) Pass**	
●	51.	Fan Condition	**(NA) Not Applicable**	
	52.	Broken or missing components		

Impeller worn. Replace.

Initial Electric Test

	53.	Resistance to Ground		
	54.	Winding Resistance 1-2		
	55.	Winding Resistance 2-3		

56.	Winding Resistance 1-3		
57.	Resistive Imbalance		
58.	Hi-Pot		
59.	Surge Test	**(F) Fail**	P56

60.	Stator Condition		
61.	Failure Location		

Initial Rotor Inspection

62.	Rotor Type	**squirrel cage laminate 56 bars**	P2

63.	Air Gap <10% Variation	
64.	Number of Rotor Bars	**56**
65.	Number of Broken Rotor Bars	**0**

66.	Growler Test	**(P) Pass**	
67.	Rotor Condition	**(P) Pass**	

Mechanical Inspection

68.	Bearing Manufacturer	**koyo/MRC**	
69.	Bearing DE Size	**5310 dbl wide/dbl row**	P18

70.	Bearing DE Type		P21

71.	DE Bearing Qty.	**1**	
72.	Bearing ODE Size	**207 M**	P42

73.	Bearing ODE Type		P47

	74.	ODE Bearing Qty.	**1**
	75.	Insulated Bearing	**no**
	76.	Lubrication Type	**oil**
●	77.	Grease Condition	**(NA) Not Applicable**
	78.	Bearing Retainers	**(NA) Not Applicable**
	79.	Shaft Grounding Device	**(NA) Not Applicable**
●	80.	DE Seal	**(Y) Yes**
	81.	DE Seal Type/Size	
	82.	ODE Seal	
	83.	ODE Seal Type/Size	

Root Cause of Failure

	84.	Component Failure	**Windings/impeller**
	85.	Cause of Failure	

Found impeller mount bolt loose enough to move impeller up and down on the shaft by hand which caused seals to fail and allow water to enter the stator housing. Electrical test after wash and bake shows coil to coil short between 1&2, and 1&3.

	86.	Comments	P22

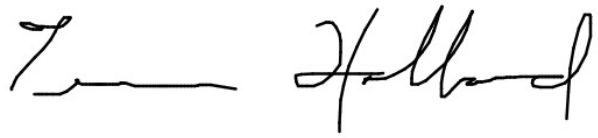
Shaft work needed on key way and seal surfaces.

	87.	Service Technician	**Terrence. Holland**

Machine Fit Inspection Report

88.	Shaft Run Out				**(F) Fail**
89.	Initial Shaft Run Out				**0.01 "**
90.	Final Shaft Run Out				
91.	DE Bearing Shaft Fit				**(P) Pass**
92.	DE Initial Shaft Bearing Fit Size				
	Measure 1	Measure 2	Measure 3		
	1.9689	**1.9687**	**1.9688**		
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		
	1.3781	**1.3781**	**1.3782**		
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		
	4.3309	**4.331**	**4.309**		
103.	DE Final Endbell Fit Size				
	Measure 1	Measure 2	Measure 3		
104.	DE Endbell Fit Insulated				**(NA) Not Applicable**
105.	DE Endbell Air Seal Fit				
106.	DE Endbell Air Seal Fit Size				
	Initial	Final			
107.	ODE Endbell Fit				**(F) Fail**
108.	ODE Initial Endbell Fit Size				
	Measure 1	Measure 2	Measure 3		
	2.8356	**2.8356**	**2.8354**		
109.	ODE Final Endbell Fit Size				
	Measure 1	Measure 2	Measure 3		
110.	ODE Endbell Fit Insulated				**(NA) Not Applicable**
111.	ODE Endbell Air Seal Fit				

112.	ODE Endbell Air Seal Fit Size		
	Initial	Final	
113.	Foot Flatness		**(P) Pass**
114.	Foot Condition		**(P) Pass**
115.	Flange Condition		**(P) Pass**
116.	Service Technician		**Terrence Holland**



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		
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		