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# Evaluation Report



Report On

**JACUZZI 5S4A-18-S2 SUBMERSIBLE DEEP WELL PUMP - 81**

**prairie agricultural machinery institute**

Humboldt, Saskatchewan · Lethbridge, Alberta · Portage la Prairie, Manitoba

DIRECTOR

..... J.A. Peck

## JACUZZI 5S4A-18-S2 SUBMERSIBLE DEEP WELL PUMP

### MANUFACTURER:

Jacuzzi Canada Ltd.  
330 Humberline Drive  
Rexdale, Ontario  
M9W 1R5

### RETAIL PRICE:

\$465.00 (f.o.b. Winnipeg March, 1979)

### DISTRIBUTORS:

Jacuzzi Canada Ltd.  
85 Keith Road  
Winnipeg, Manitoba  
R3H 0H7

Jacuzzi Canada Ltd.  
3824 - 7th Street S.E.  
Calgary, Alberta  
T2G 2Y8

### SUMMARY AND CONCLUSIONS

Measured capacity of the Jacuzzi 5S4A18S2 submersible pump varied from 39 L/min to 8 L/min over a range of discharge heads from 2 to 92 m. Capacity was 16% lower than manufacturer's published data at peak efficiency.

Peak pump-motor efficiency of 18.5% occurred at a discharge head of 63.5 m with a flow of 22 L/min. The corresponding power output was 0.23 kW.

The operator's manual was clearly written, containing comprehensive installation, servicing and operating instructions. An electrical wiring kit was provided with the pump.

### RECOMMENDATIONS:

No need for recommendations was apparent.

*Chief Engineer -- E.O. Nyborg*

*Senior Engineer -- J.C. Thauberger*

*Project Engineer -- G.R. Pool*

### THE MANUFACTURER STATES

The pump-motor efficiency referred to in this report includes the combination of electrical and hydraulic losses of the pump-motor system.

The pump-motor efficiency must not be 'confused with the pump efficiency, a higher value that is used by manufacturers to evaluate the pump only, regardless of how it is driven.

The power demand of this pump is less than the maximum output of the motor, thereby increasing the motor life expectancy.

### GENERAL DESCRIPTION

The Jacuzzi 5S4A18S2 is a 100 mm diameter, 18 stage, deep well, submersible water pump with a 25 mm (nominal 1 inch NPT) discharge outlet, designed for use in wells up to 85 m deep. It is powered by a 230 V, 0.37 kW Franklin electric motor.

Detailed specifications are given in APPENDIX I.

### SCOPE OF TEST

The performance characteristics of the Jacuzzi 5S4A18S2 were determined with water, over a full range of discharge heads, using a standard pump testing procedure.<sup>1</sup> In addition, the suitability of the operator's manual and the safety of the pump were assessed.

### RESULTS AND DISCUSSION

#### PERFORMANCE CHARACTERISTICS

Pump performance characteristics, over a range of discharge heads from 2 to 102 m of water are given in FIGURE 1. Maximum flow rate at 2 m discharge head was 39 L/min while flow ceased at a discharge head of 102 m. The manufacturer's published performance data indicated higher pumping rates than those obtained, over the full range of discharge heads. At the point of peak pump-motor efficiency, the PAMI test data were 16% lower than the manufacturer's published capacity data. The peak efficiency,

occurring at a head of 63.5 m, was 18.5%. The corresponding flow rate was 22 L/min.

Maximum power output was 0.23 kW, occurring at the peak efficiency point, with a corresponding current draw of 5.43 A.

#### OPERATOR'S MANUAL AND SAFETY ASSESSMENT

The operator's manual was clearly written and contained comprehensive installation, servicing and operating instructions. Detailed drawings and explanations were provided for various equipment installations.

A power cable selection chart and suggested fuse sizes were provided. A method for splicing the cable to the motor drop cable was clearly explained. If the instructions were followed closely, this method provided a safe electrical connection.

The operator's manual recommended that a suitable pressure relief valve be installed if the pump could generate more than 60 m pressure at the well head.

1. PAMI 77821, *Detailed Test Procedure for Domestic Water Pumps*

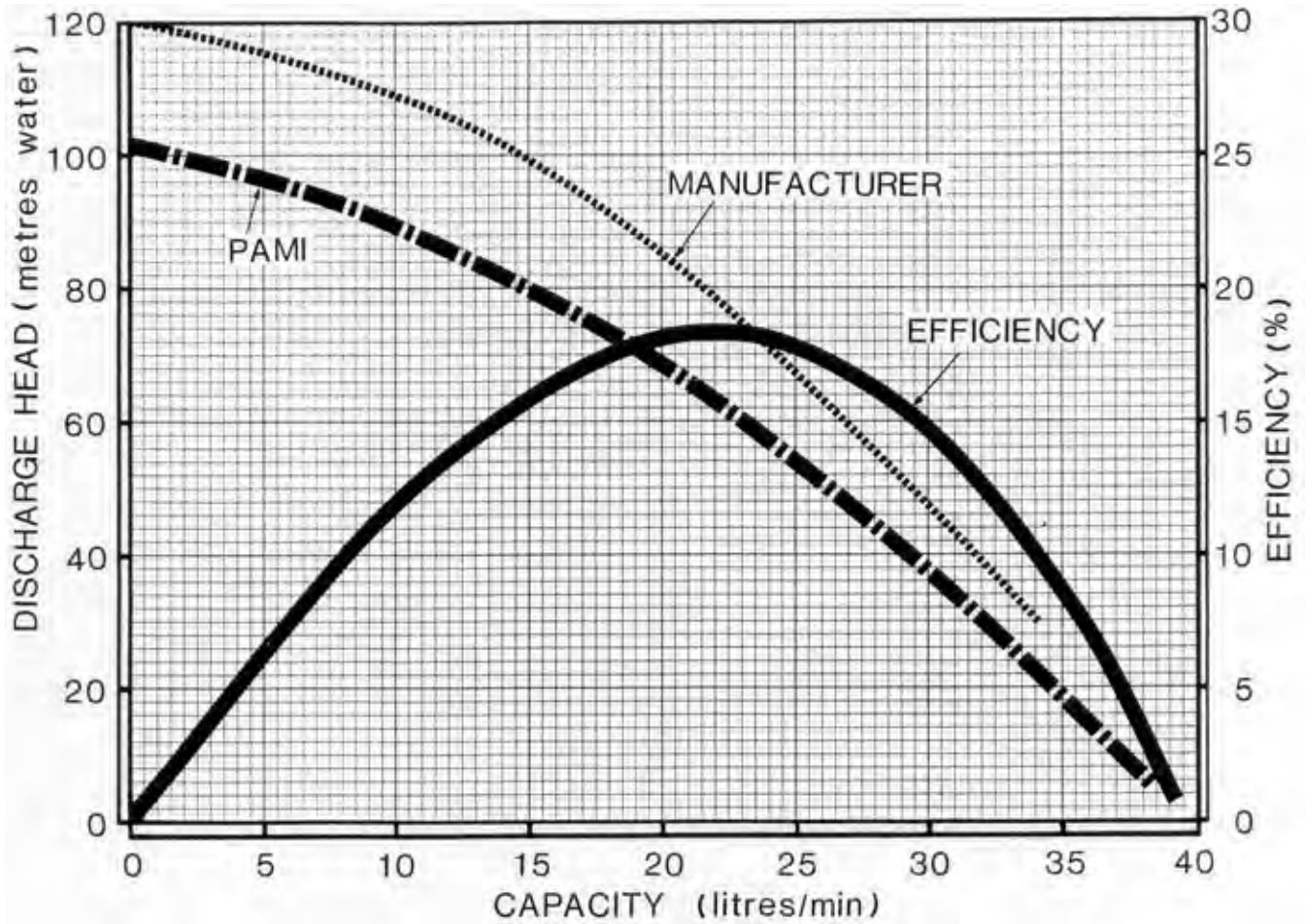


FIGURE 1. Performance Characteristics.

APPENDIX I	
<b>SPECIFICATIONS</b>	
<i>Pump:</i>	
-- make	Jacuzzi
-- model	5S4A-18-S2
-- number of impellers	18
-- speed	3450 rpm
<i>Motor:</i>	
-- make	Franklin Electric
-- model	2143054116
-- size	0.37 kW
-- voltage	230 V
-- ampere rating	5.9 A
-- service factor	1.6
-- speed	3450 rpm
<i>Overall Dimensions:</i>	
-- motor length	255 mm
-- pump length	560 mm
-- total length	815 mm
-- clearance diameter	100 mm
<i>Total Weight:</i>	14.8 kg
<i>Inlet.</i>	
-- location	255 mm above pump foot

-- screen type	plastic
-- screen mesh	3.0 mm
-- inlet area	8870 mm
<i>Outlet:</i>	
-- nominal size	25 mm (1 in NPT)
<i>Rope Eyes:</i>	
-- number	1
-- diameter	9 mm

APPENDIX II	
<b>METRIC UNITS</b>	
In keeping with the Canadian metric conversion program, this report has been prepared in Si units. For comparative purposes, the following conversions may be used.	
1 litre/min (L/min)	= 0.22 Imperial gallon/rain (gal/min)
1 kilowatt (kW)	= 1.34 horsepower (hp)
1 metre water (m)	= 1.42 pounds/square inch (psi)
1 metre water (m)	= 3.28 feet water (ft)



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