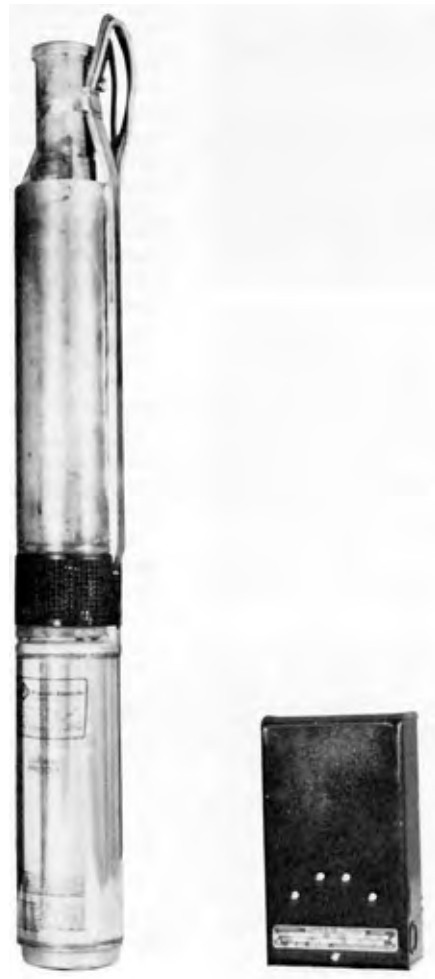


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**Evaluation
Report**



Report On

GSW STA-RITE 350316 SUBMERSIBLE DEEP WELL PUMP - 80

prairie agricultural machinery institute

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

DIRECTOR

..... J.A. Peck

GSW STA-RITE 350316 SUBMERSIBLE DEEP WELL PUMP

MANUFACTURER:

GSW Pump Division
599 Hill Street West
Fergus, Ontario
N1M 1G6

RETAIL PRICE:

\$522.26 (f.o.b. Winnipeg March, 1979)

SUMMARY AND CONCLUSIONS

Measured capacity of the Sta-Rite 350316 submersible pump varied from 56 L/min to 7 L/min over a range of discharge heads from 4 to 98 m. Capacity was identical to the manufacturer's published data at peak efficiency.

Peak pump-motor efficiency of 21% occurred at a discharge head of 63 m with a flow of 32 L/min. The corresponding power output was 0.33 kW.

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

RECOMMENDATIONS:

It is recommended that the manufacturer consider:

1. Modifying the operator's manual to include the recommendation that a safety line be attached to the pump during installation.
2. Providing a power cable selection chart and suggested fuse sizes with the operator's manual.

Chief Engineer -- E. O. Nyborg

Senior Engineer -- J. C. Thauberger

Project Engineer -- G.R. Pool

THE MANUFACTURER STATES

With regard to items 1 and 2 under Recommendations, we will immediately include an insert in our installation manual clearly explaining the installation instructions and benefits of attaching a safety line to the pump. Additionally, and on the same insert, will be a power cable selection chart and suggested fuse sizes. On our next installation manual reprint, the insert will form part of the manual.

ADDITIONAL COMMENTS:

In respect to the efficiency performance of the units tested, recent engineering tests on similar units produced considerably higher efficiency ratings.

GENERAL DESCRIPTION

The Sta-Rite 350316 is a 100 mm diameter, 10 stage, deep well, submersible water pump with a 25 mm (nominal 1 inch NPT) discharge outlet. It is designed for use in wells up to 60 m deep. Power is supplied by a 230 V, 0.56 kW Franklin electric motor.

Detailed specifications are given in APPENDIX I.

SCOPE OF TEST

The performance characteristics of the Sta-Rite 350316 were determined with water, over a full range of discharge heads, using a standard pump testing procedure.¹ In addition, the suitability of the operator's manual and the safety of the pump were assessed.

DISTRIBUTORS:

Prairie Water Services
88 Fennell Street
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Wig's Sandpoint
1510 Alberta Avenue
Saskatoon, Saskatchewan

Russel Steel (Alberta) Ltd.
2020 - 17th Avenue S.E.
Calgary, Alberta

Russel Steel (Alberta) Ltd.
7016 - 99th Street
Edmonton, Alberta

RESULTS AND DISCUSSION

PERFORMANCE CHARACTERISTICS

Pump performance characteristics, over a range of discharge heads from 4 to 100 m, are given in FIGURE 1. Maximum flow rate at 4 m discharge head was 56 L/min while flow ceased at a discharge head of 100 m. The manufacturer's published performance data indicated higher pumping rates than those obtained, up to 60 m of discharge head. At the point of peak pump-motor efficiency, the PAMI test data were identical to the manufacturer's published capacity data. For discharge heads greater than 65 m, the pump actually performed better than the manufacturer's data indicated. The peak efficiency, occurring at a head of 63 m, was 21%. The corresponding flow rate was 32 L/min.

Maximum power output was 0.33 kW, occurring at the peak efficiency point, with a corresponding current draw of 7.2 A.

OPERATOR'S MANUAL AND SAFETY ASSESSMENT

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

Power cable selection charts and fuse size recommendations were not provided. Two methods for splicing the power cable to the motor drop cable were clearly explained. These provided a safe electrical connection, if the instructions were followed closely.

The manual recommended that a suitable pressure relief valve be installed if the pump could generate more than 55 m pressure at the well head. Detailed explanations were given for proper well development and pump testing before hooking up the pump.

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

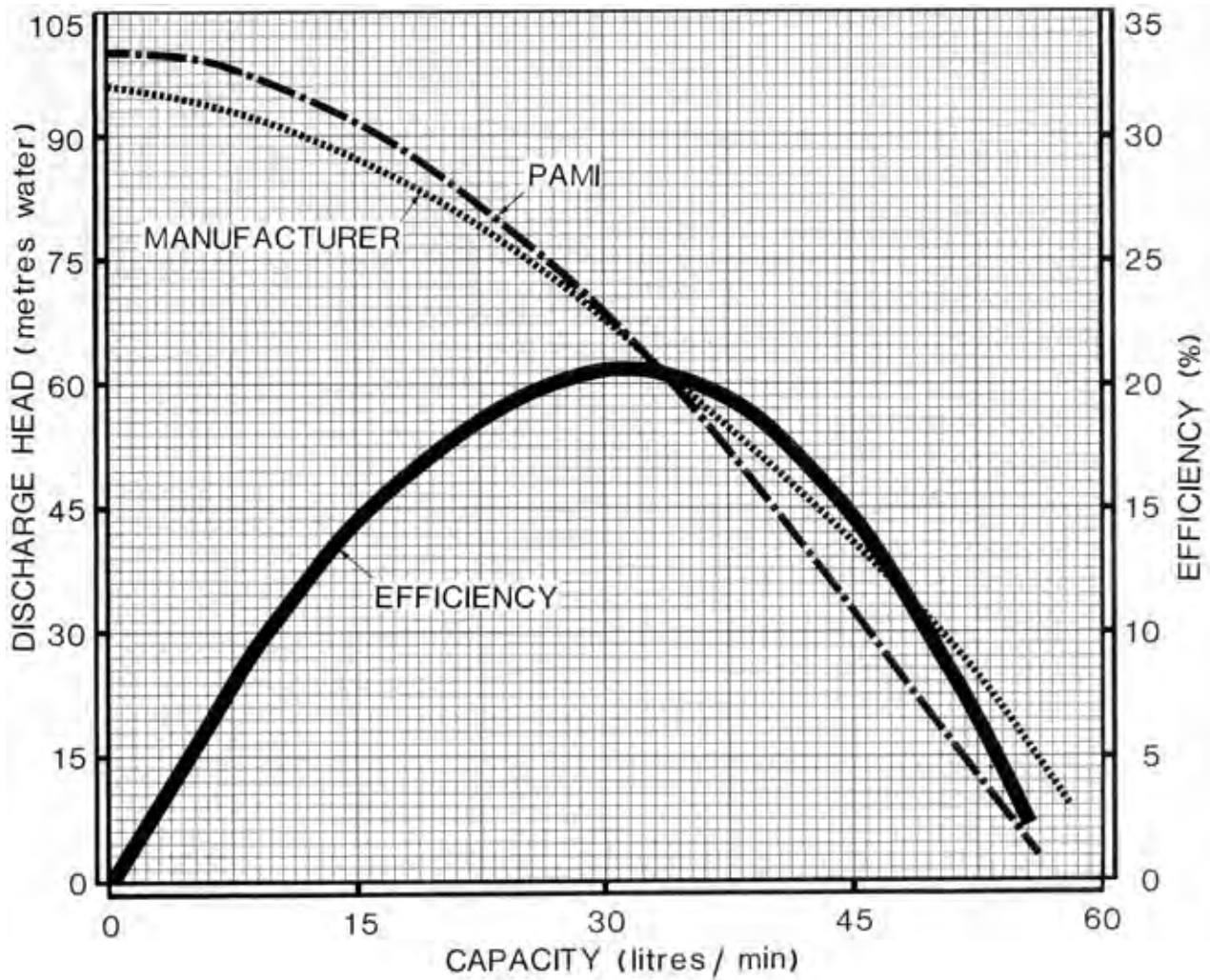


FIGURE 1 Performance Characteristics.

APPENDIX I	
SPECIFICATIONS	
<i>Pump:</i>	
-- make	Sta-Rite (GSW)
-- model	350318 (75K1BA10)
-- serial no.	9-78
-- number of impellers	10
-- speed	3450 rpm
<i>Motor:</i>	
-- make	Franklin Electric
-- model	2143074116
-- size	0.56 kW
-- voltage	230V
-- ampere rating	8.0 A
-- service factor	1.5
-- speed	3450 rpm
<i>Overall Dimensions:</i>	
-- motor length	290 mm
-- pump length	520 mm
-- total length	810 mm
-- clearance diameter	100 mm
<i>Total Weight:</i>	15.9 kg
<i>Inlet:</i>	
-- location	330 mm above pump foot

-- screen type	plastic
-- screen mesh	3.0 mm
-- inlet area	13500 mm ²
<i>Outlet:</i>	
-- nominal size	25 mm (1 in NPT)
<i>Rope Eyes:</i>	
-- number	1
-- diameter	10 mm

APPENDIX II	
METRIC UNITS	
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/min (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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