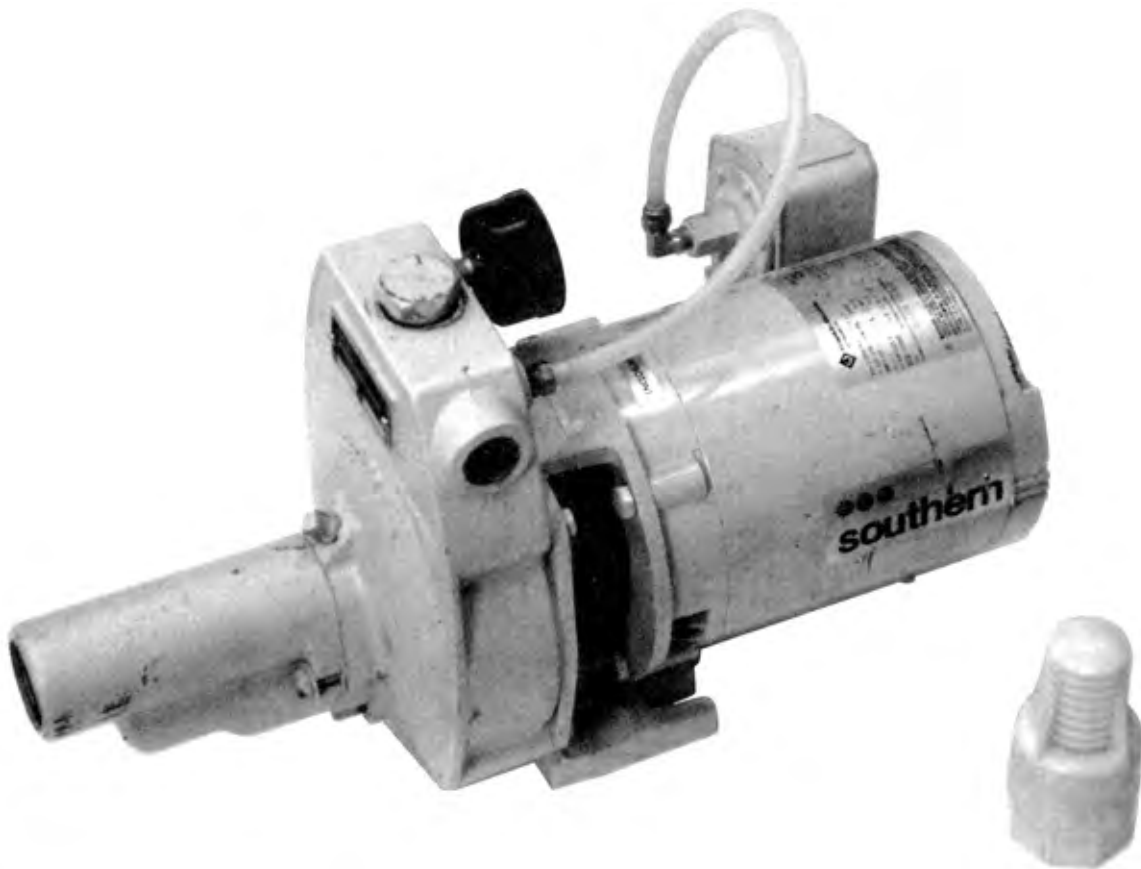


# Evaluation Report 239



## SOUTHERN J-547 SHALLOW WELL JET PUMP

A Co-operative Program Between



ALBERTA  
FARM  
MACHINERY  
RESEARCH  
CENTRE



PRAIRIE AGRICULTURAL MACHINERY INSTITUTE

## SOUTHERN J-547 SHALLOW WELL JET PUMP

### MANUFACTURER:

Southern Pump Company  
72 Goshen Street  
P.O. Box 456  
Tillsonburg, Ontario  
N4G 4J1

### DISTRIBUTORS:

Manitoba/Saskatchewan  
Marwin Distributors Ltd.  
1123' Empress St.  
Winnipeg, Manitoba  
R3E 3H1

### Alberta

Gardiner Agencies Ltd.,  
314 4th Ave. S.E.  
Calgary, Alberta  
T2G 0C7

**RETAIL PRICE:** \$281.00 (March, 1980, f.o.b. Tillsonburg, Ontario)

### SUMMARY AND CONCLUSIONS

Measured water flow of the Southern J-547 jet pump varied from 32 L/min (7 gal/min) to 4 L/min (0.9 gal/min) over a range of total heads from 8 to 40 m (26 to 131 ft) with a 4.5 m (15 ft) suction lift. Flow was 23% lower than the manufacturer's published data at peak efficiency.

Peak overall efficiency of 9% occurred at a discharge head of 21 m (69 ft) with a flow of 29.5 L/min (6.5 gal/min). The corresponding pump power output was 0.12 kW.

The operating instructions supplied with the pump were clearly written, and contained comprehensive installation, priming and maintenance instructions. A pressure switch was supplied with the pump.

### RECOMMENDATIONS

No need for recommendations was apparent.

*Chief Engineer -- E. O. Nyborg*

*Senior Engineer -- J. C. Thauberger*

*Project Engineer: Gregory R. Pool*

### THE MANUFACTURER STATES:

Our tests show performance to agree with our published data.

Note: This report has been prepared using SI units of measurement. A conversion table is given in APPENDIX II.

### GENERAL DESCRIPTION

The Southern J-547 is a single stage, shallow well jet pump, with a 35 mm (nominal 1.25 inch NPT) inlet and a 25 mm (nominal 1 inch NPT) outlet, designed for use in wells up to 6.7 m (22 ft) deep. It is powered by a 115/230V, 0.37 kW Franklin Electric electric motor.

Detailed specifications are given in APPENDIX I.

### SCOPE OF TEST

The performance characteristics of the Southern J-547 were determined with water, over a full range of discharge heads and suction lifts, using a standard pump testing procedure<sup>1</sup>. In addition, ease of installation, the suitability of the operating instructions, and the safety of the pump were evaluated.

## RESULTS AND DISCUSSION

### PERFORMANCE CHARACTERISTICS

Pump performance characteristics, over a range of total heads<sup>2</sup> from 5 to 43 m (16 to 141 ft) of water are given in FIGURE 1, for a 4.5 m (15 ft) suction lift. Maximum flow at 5 m (16 ft) total head was 32 L/min (7 gal/min), while flow ceased at a total head of 43 m (141 ft). The manufacturer's published performance data indicated higher flows than those obtained, over the full range of total heads. At the point of peak overall efficiency, the measured flow was 23% lower than that indicated by the manufacturer. The peak efficiency, occurring at a discharge head of 21 m (69 ft) was 9%. The corresponding flow was 29.5 L/min (6.5 gal/min.)

Maximum pump power output was 0.12 kW, occurring at the peak efficiency point, with a corresponding current draw of 5.8A at a 230V line voltage.

### EASE OF INSTALLATION

One street elbow was required to connect the suction pipe to the pump inlet. A plastic foot valve was supplied with the pump, and was installed on the lower end of the suction pipe throughout the test. Access to the inlet and outlet, for plumbing connections, was convenient. A priming plug was conveniently located on top of the pump body. Priming of the pump was accomplished after the pump body had been filled with water two times.

### OPERATOR'S MANUAL AND SAFETY ASSESSMENT

The operator's manual was clearly written and contained comprehensive installation, priming and maintenance instructions. Wiring and plumbing recommendations were provided. If the instructions were followed closely, a safe electrical connection could be made. The pump motor had CSA approval.

<sup>1</sup> PAMI T7821, Detailed Test Procedure for Domestic Water Pumps.

<sup>2</sup> Total head is the sum of the discharge head and the suction lift.

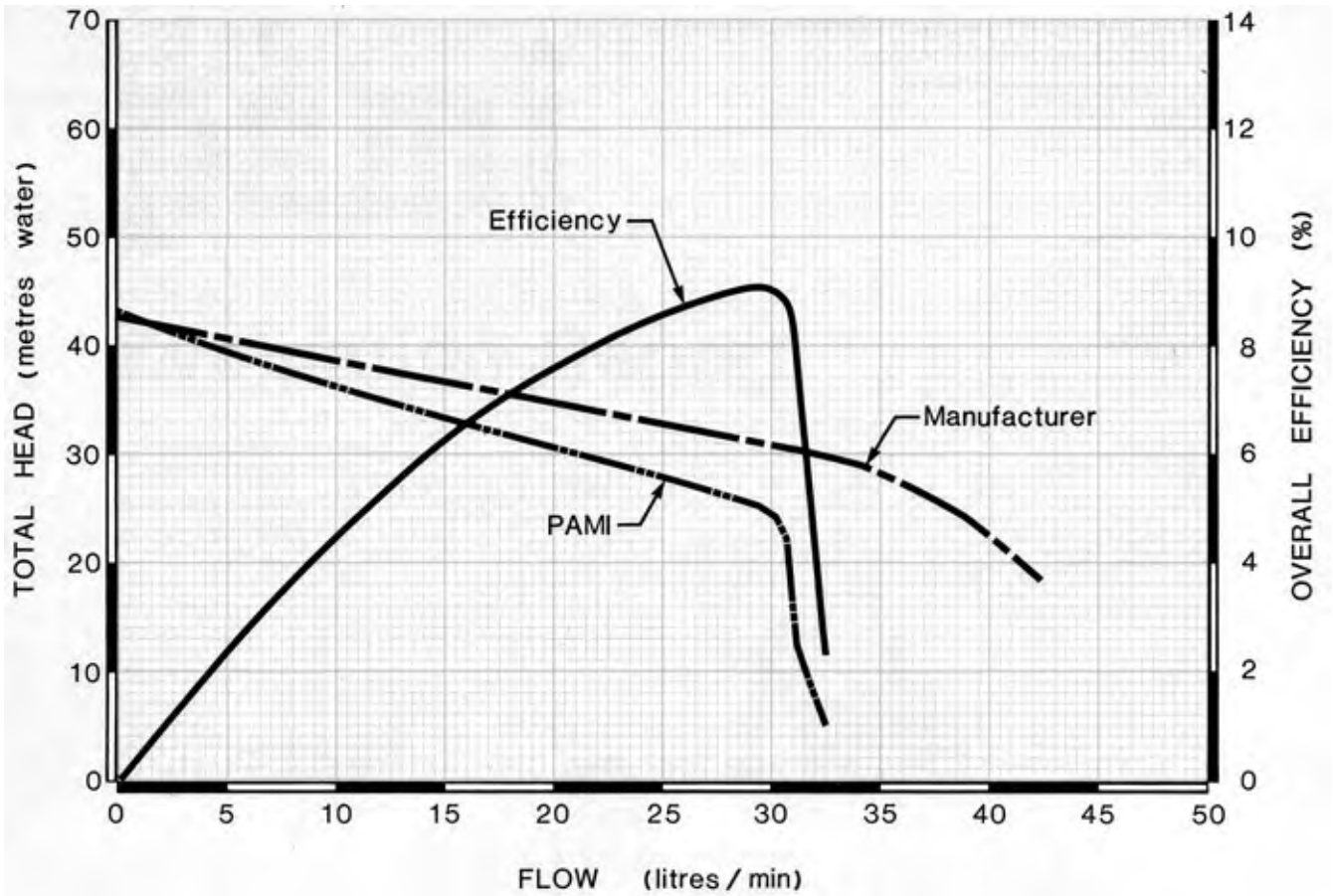


FIGURE 1. Performance Characteristics.

APPENDIX I	
<b>SPECIFICATIONS</b>	
<i>PUMP:</i>	
-- make	Southern
-- model	J-547
-- serial no.	EH
<i>MOTOR:</i>	
-- make	Franklin Electric
-- model	11030 12431
-- power rating	0.37 kW
-- voltage rating	115/230 V
-- current rating	8.2/4.1 A
-- service factor	1.6
-- speed	3450 rpm
<i>OVERALL DIMENSIONS:</i>	
-- length	475 mm
-- width	245 mm
-- height	270 mm
<i>TOTAL WEIGHT:</i>	18.6 kg
<i>INLET:</i>	
-- location	end of ejector body
-- nominal size	35 mm (1.25 inch NPT)
<i>OUTLET:</i>	
-- location	top right side
-- nominal size	25 mm (1 inch NPT)
<i>FOOT VALVE:</i>	
-- type	plastic
-- nominal size	35 mm (1.25 inch NPT)
<i>PRESSURE REGULATOR SWITCH:</i>	
-- make	Pumptrol -- Square 'D'
-- switching pressure range	140 - 280 kPa

APPENDIX II	
<i>CONVERSION TABLE</i>	
1 litre (L)	= 0.22 Imperial gallon (gal)
1 kilowatt (kW)	= 1.3 horsepower (hp)
1 metre water (m)	= 1.4 pounds force/square inch (psi)
1 metre water (m)	= 3.3 feet water (ft)
1 kilopascal (kPa)	= 0.15 pounds force/square inch (psi)

The Prairie Agricultural Machinery Institute is a co-operative undertaking of the Canadian provinces of Alberta, Manitoba and Saskatchewan. To meet its objectives of evaluating existing agricultural machinery and developing new and improved machinery, the Institute operates three facilities located at Humboldt, Saskatchewan; Lethbridge, Alberta; and Portage la Prairie, Manitoba. Programs of evaluation, research and development are conducted relevant to machinery used by prairie farmers.

This report is published under the authority of the Ministers of Agriculture of Alberta, Manitoba and Saskatchewan and may not be reproduced in whole or in part without the prior approval of the Prairie Agricultural Machinery Institute.

For further information on other reports which are available and on the work of the Machinery Institute contact the PRAIRIE AGRICULTURAL MACHINERY INSTITUTE:

**Head Office:** P.O. Box 1900  
Humboldt, Saskatchewan, Canada, SOK 2A0  
Telephone: (306) 682.2555  
Telex: 074-2468

**Test Stations:** 3000 College Drive South  
Lethbridge, Alberta, Canada, T1K 1L6  
Telephone (403) 329-1212

P.O. Box 1060  
Portage la Prairie, Manitoba, Canada, R1N 3C5  
Telephone: (204) 857.9701

P.O. Box 1150  
Humboldt, Saskatchewan, Canada, SOK 2A0  
Telephone: (306) 682.5033



3000 College Drive South  
Lethbridge, Alberta, Canada T1K 1L6  
Telephone: (403) 329-1212  
FAX: (403) 329-5562  
<http://www.agric.gov.ab.ca/navigation/engineering/afmrc/index.html>

### **Prairie Agricultural Machinery Institute**

Head Office: P.O. Box 1900, Humboldt, Saskatchewan, Canada SOK 2A0  
Telephone: (306) 682-2555

Test Stations:  
P.O. Box 1060  
Portage la Prairie, Manitoba, Canada R1N 3C5  
Telephone: (204) 239-5445  
Fax: (204) 239-7124

P.O. Box 1150  
Humboldt, Saskatchewan, Canada SOK 2A0  
Telephone: (306) 682-5033  
Fax: (306) 682-5080