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# **Evaluation Report** 243



# **DURO P&S BIG GIANT SHALLOW WELL JET PUMP**

A Co-operative Program Between



## **DURO P&S BIG GIANT SHALLOW WELL JET PUMP**

#### **MANUFACTURER:**

Pumps and Softeners, Limited 680 Waterloo Street P.O. Box 5332 London, Ontario N6A 4N8

#### **DISTRIBUTORS:**

Mid-Continental Pump Supply Ltd. 539 Pepperloaf Crescent Winnipeg, Manitoba R3R 1E6 Pumps and Softeners, Limited

Pumps and Softeners, Limited 305 Dewdney Avenue East Regina, Saskatchewan S4N 4G3

Pumps and Softeners, Limited 615 Manitou Road, S.E. Calgary, Alberta T2G 4C2

RETAIL PRICE: \$311.00 (March, 1980, f.o.b. London, Ontario).

### **SUMMARY AND CONCLUSIONS**

Measured water flow of the Duro Big Giant jet pump varied from 41 L/min (9 gal/min) to 4 L/min (0.9 gal/min) over a range of total heads from 8 to 40 m (28 to 131 ft) with a 4.5 m (15 ft) suction lift. At peak efficiency, flow was 3% lower than the manufacturer's, published data.

Peak overall efficiency of 13% occurred at a discharge head of 25 m (82 ft) with a flow of 37.1 L/min (8.2 gal/min). The corresponding pump power output was 0.18 kW.

The owner's manual supplied with the pump was clearly written, and contained comprehensive installation, electrical, priming, maintenance and troubleshooting 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:

We have reviewed your report and agree, in general, with your findings.

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

## **GENERAL DESCRIPTION**

The Duro Big Giant 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 7.5 m (25 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 Duro Big Giant 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 owner's manual 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 6 to 41 m (20to 135 ft) of water, are given in FIGURE 1, for a 4.5 m (15 ft) suction lift. Maximum flow at 6 m (20 ft) total head was 41 L/min (9 gal/min), while flow ceased at a total head of 41 m (135 ft). The manufacturer's published performance data indicated higher flows than those obtained, up to a total head of 30 m (98 ft). At the point of peak overall efficiency, the measured flow was 3% lower than that indicated by the manufacturer. The peak efficiency, occurring at a discharge head of 25 m (82 ft), was 13%. The corresponding flow was 37.1 L/min (8.2 gal/min).

Maximum pump power output was 0.18 kW, occurring at the peak efficiency point, with a corresponding current draw of 5.7A 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 ofthe 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 required filling the pump body with water three or four times.

### **OPERATOR'S MANUAL AND SAFETY ASSESSMENT**

The installation and operating instructions were clearly written and contained comprehensive installation, electrical, priming, maintenance and troubleshooting 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.

1PAMI T7821, Detailed Test Procedure for Domestic Water Pumps. 2Total head is the sum of the discharge head and the suction lift.

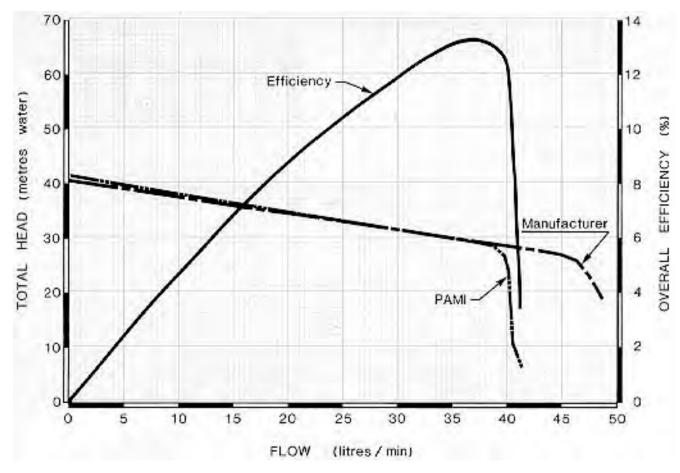


FIGURE 1. Performance Characteristics.

APPENDIX I	
SPECIFICATIONS	
PUMP:	
make model	Duro P&S Big Giant
serial no.	8001
MOTOR:	
make	Franklin Electric 11030 12486
model power rating	0.37 kW
voltage rating	115/230 V
current rating	8.2/4.1 A
serwce factor	1.6
speed	3450 rpm
OVERALL DIMENSIONS:	
length width	380 mm 270 mm
wiath height	270 mm 250 mm
neight	230 111111
TOTAL WEIGHT:	18.3 kg
INLET:	
location nominal size	middle of left side 35 mm (1.25 inch NPT)
nominai size	33 Hilli (1.23 HICH NPT)
OUTLET:	
location nominal size	top of pump body
nominai size	25 mm (1 inch NPT)
FOOT VALVE:	
type	plastic
nominat size	35 mm (1.25 inch NPT)
PRESSURE REGULATOR SWITCH:	
make	Pumptrol Square 'D'
switching pressure range	140 - 280 kPa

APPENDIX II		
CONVERSION TABLE		
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 kilonascal (kPa)	= 0.15 pounds force/square inch (psi)	



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