

AUBURN HILLS, MICHIGAN

3333 Bald Mountain Road
Auburn Hills, MI 48326-1808

***Magnom™ PumpMate™* Pressure Differential Test**

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The tests were conducted in the workshop of Morrell in Auburn Hills, Michigan, USA, using a standard Morrell MVP Power Unit.

The pump in this unit is a Bosch Rexroth AA10VSO71DRG/31 + AA10VSO28DRG/31 double pump driven by a 40hp electric motor at a speed of 1800 rpm.

The reservoir/tank holds 150 gallon of ISO Vg 46 mineral oil and the oil temperature remained constant around 69 deg F throughout the testing.

The MVP is a vertical style hydraulic power unit, where the pump / motor combination is mounted vertically. The pump is completely submerged in oil with the pump suction lines pointing to the bottom of the tank. To measure the suction pressure of the pumps, a 0.25 inch port was drilled into the suction flanges that are mounted to the pump bodies.

A 6 foot clear plastic tube was fitted to these ports and placed into a bucket of water standing on the floor. In this way we could measure the head of water that was created above the normal water level by the suction losses in the suction lines. These values (inches of water) were then converted to PSI vacuum .

The test was firstly conducted with the standard suction lines to establish a baseline for the flow losses of the suction line assembly. The test was then repeated with the Magnom™ filter fitted to the end of the suction lines and the baseline pressure was then subtracted from this value.

Therefore, the resultant pressure is the pressure loss of the Magnom™ filter itself. The results of these tests are included in the following pages.

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Test Parameters for Magnom™ 2" PumpMate™ Filter

Pump Type: AA10VSO71DRG/31R-PKC62K03

Pump drive speed: 1800 rpm

Pump Flow: 32 gpm

Pump outlet pressure: Atmospheric Pressure

Oil Type: Mineral Oil ISO Vg 46

Oil Viscosity @ 69 F: 130 cSt or 600 SUS

Operating Temperature: 69 Deg F

Head of Oil Above Filter: 27 inches

Suction Line I.D.: 2 inch

Suction Line length: 18 inches

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Measured Pressure Loss Across the 2" Magnom™ PumpMate™ Filter Tested with an AA10VSO71 Pump

Test Date: December 15, 2006

Description	Oil Type	Flow in g.p.m.	Inches of Water	Pressure Loss Total	Pressure Loss Total	Net Pressure Differential
				in Pascal	in PSI	in PSI
2" Sch 40 Pipe with 45 deg end	ISO Vg 46	32	0.875	218	0.032	
2" Magnom™ PumpMate™ Filter	ISO Vg 46	32	4.375	1090	0.158	0.126

NOTE: The acceptable inlet pressure to the pump may not exceed 11 psi absolute pressure, as specified by Bosch Rexroth.

Atmospheric pressure is 14.5 psi absolute

Inlet pressure to the pump with the filter and the suction line for the 2" Magnom™ PumpMate™ Filter is 14.342 psi

The test was then repeated with a fully contaminated **Magnom™ PumpMate™**

The 'dirty' Magnom PumpMate containing 250gams/½ lb of contaminant, was then tested following the same process as described above. This fully loaded 'dirty' filter also measured 7.25" of water head with some very small variations of around .0625" of water or 0.00231psi.

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Description	Oil Type	Flow in g.p.m.	Inches of Water	Pressure Total	Pressure Total	Net Pressure Differential
				in Pascal	in PSI	in PSI
2" <i>Magnom™ PumpMate™</i> Clean	ISO Vg 46	33	7.25"	1804	65.10	
2" <i>Magnom™ PumpMate™</i> Dirty	ISO Vg 46	33	7.25" +/- 0.0625"	1804 +/- 15.55	65.10 +/- 0.0022	0.0022

All testing was found to be repeatable.

This means that the Pressure Differential for a MAGNOM 2" Pump Mate Suction Filter is identical for a Clean Filter as it is for a Fully Loaded "Dirty" Filter within standard measurement error.

Conclusion:

The *Magnom™ PumpMate™* Suction Filtration Technology falls well within the criteria for fitment to the negative pressure line (suction) of these hydraulic pumps, as specified by the manufacturer.

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