

Comparison of the 500HPx and 500HP Syringe Pump Technical Specifications



Syringe Pump Technical Bulletin
Oct. 2020, TB36

Overview

This technical bulletin will cover the technical specifications of the 500HPx and the 500HP syringe pumps. The 500HPx differs from the 500HP in several physical ways. The 500HPx has:

- A taller base height
- Lower gear ratio
- Higher flow rate
- Dual motors

For performance, both pumps provide up to 344.7 bar of pressure; however, the 500HPx delivers nearly double the flow rate of the 500HP (see Table 2).

The accessories are similar for each pump with the exception of the High Temperature package. The HPx has:

Table 1: Table 1: Accessories

D-Series	500HP Valve Options
500HP Dual Pump Valve Packages	
Continuous Flow Air Valve Packages	
601247061	Continuous Flow Dual Air Valve Package (1/8 inch valves) for Model 500D. Requires pressurized air source. No additional controller options required for air valve operation. Standard D-Series controller 681240026 can be used at minimum. PED Compliant for EU
Continuous Flow Electric Valve Packages	
681247091	Continuous Flow Electric Valve Package (1/8 inch valves) for Model 500D. Electric Valve controller required. 681240062 Electric Valve Controller can be used at minimum. PED compliant for EU
500HP Single Pump Valve Packages	
Single Pump Electric Valve Packages	
681247089	Single air valve (1/8 inch valve) auto-refill/outlet package for Model 500D. Requires pressurized air source. PED Compliant for EU
681247112	Single Electric Valve (1/8 inch valve) auto-refill/outlet package for Model 500D. Electric Valve controller required. 681240062 Electric Valve Controller can be used at minimum. PED Compliant for EU
500HP Manual Valve Packages	
681247083	Manual Refill Valve Kit for Model 500D. PED Compliant for EU
681247082	Manual Outlet Valve Kit for Model 500D. PED Compliant for EU
D-Series	500HPx Valve Options
500HPx Dual Air Pump Valve Packages	
605364343	500HV 3/8" Dual air valve package based on Swagelock valves. Not PED Compliant for EU
601244482	Hastelloy continuous air valve package for 500HPx - Not PED Compliant for EU
500HPx Single Air Pump Valve Packages	
605364572	500HPx 3/8" Single Air Valve. PED Compliant for EU
601244482	Hastelloy continuous air valve package for 500HPx - Not PED Compliant for EU
500HPx Electric Valve Packages	
n/a	Electric Valve options not available on 500HPx models
500HPx Manual Valve Packages	
605364458	3/8" Manual Refill Package for 500HV or 500HPx- PED Compliant for EU
605364459	3/8" Manual Outlet Package for 500HV or 500HPx- PED Compliant for EU
500HP and 500HPX Temperature Control Jacket	
605364216	Factory installation: Temperature control jacket
681247057	Temperature Control Jacket for Model 500D (water jacket for temperature control for use with recirculating bath; bath not included). PED Compliant for EU
Hastelloy conversion package– only available for 500HPX:	
601247171	Factory installation: Temperature control jacket
605364429	500HPx Hastelloy Conversion Package, includes Titanium Transducer, Not PED Compliant for EU

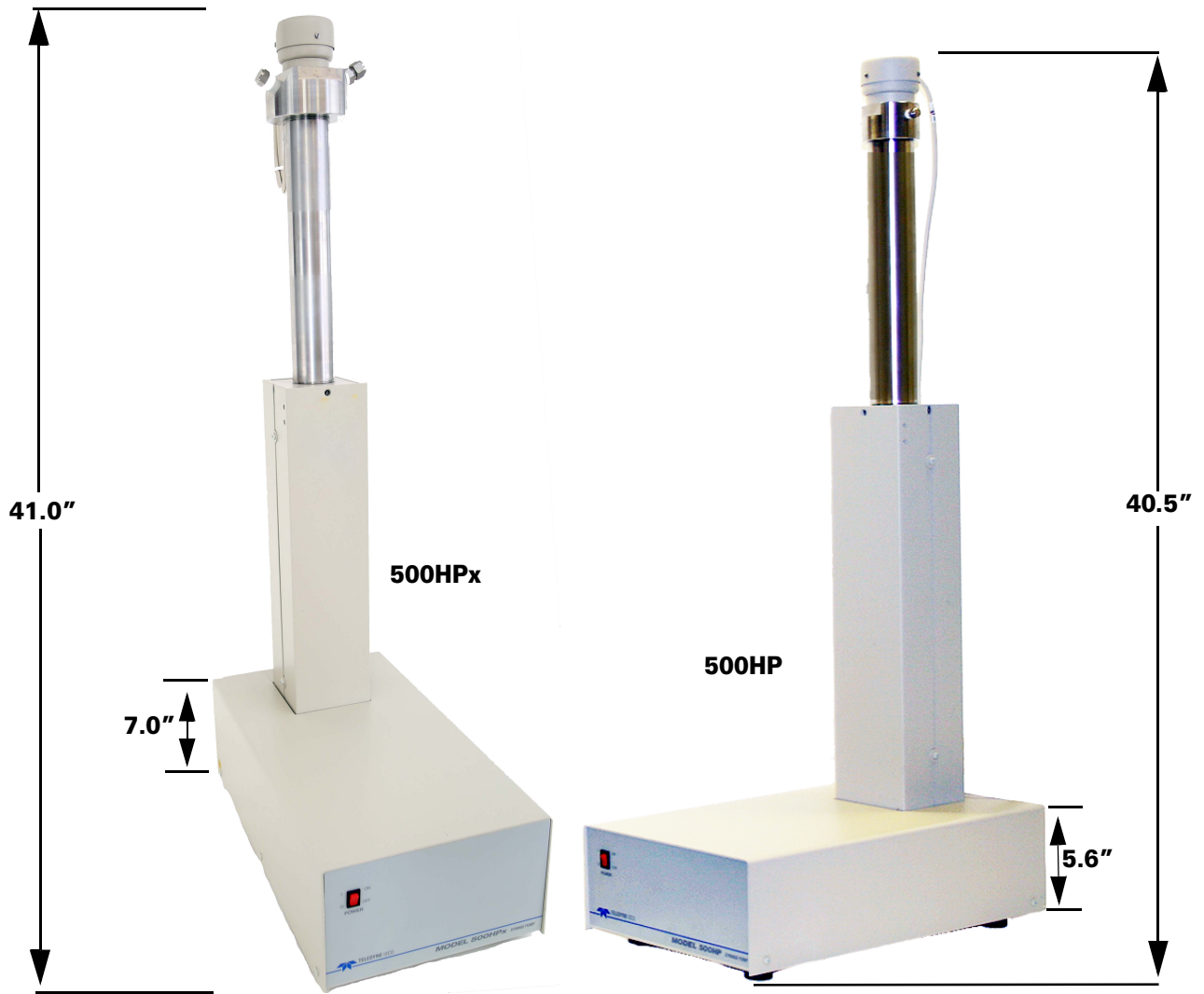
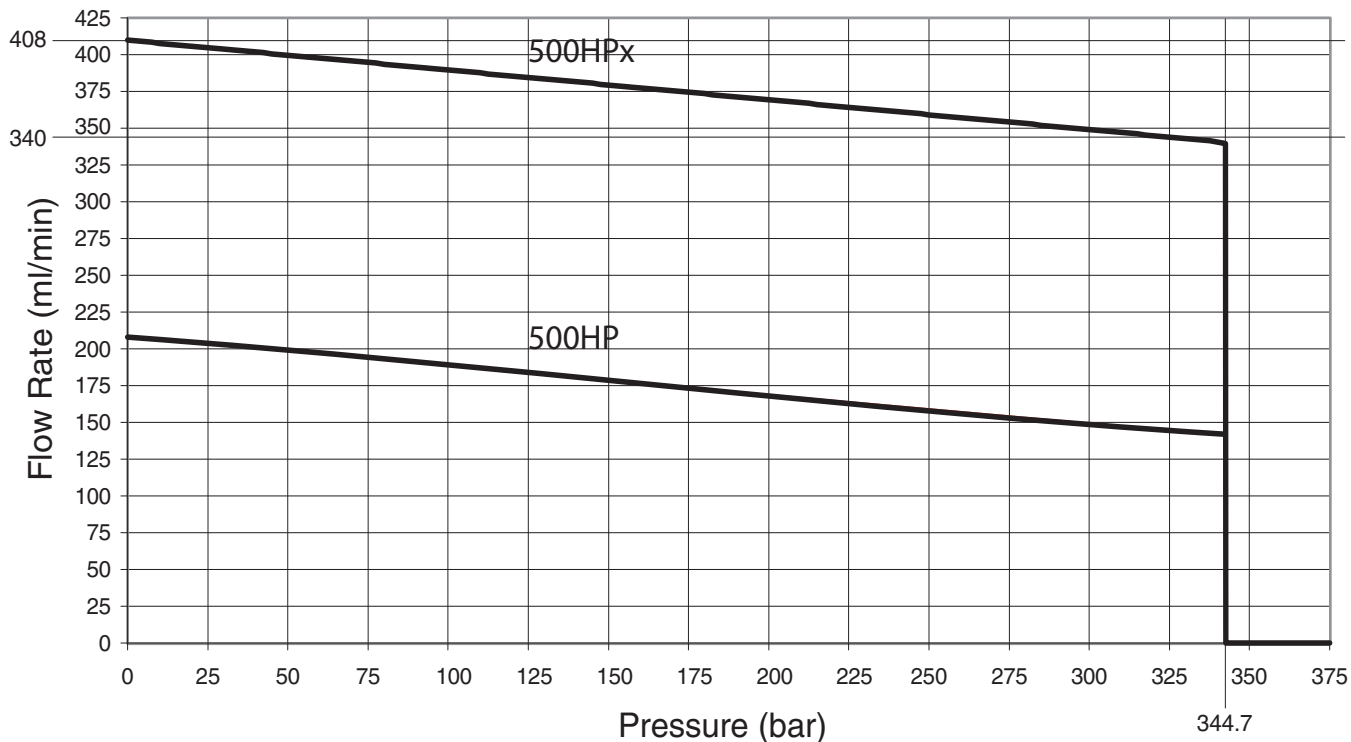


Figure 1: Dimensions of 500HPx (left) and 500HP (right)

Table 2: 500HP and 500HPx Technical Specifications



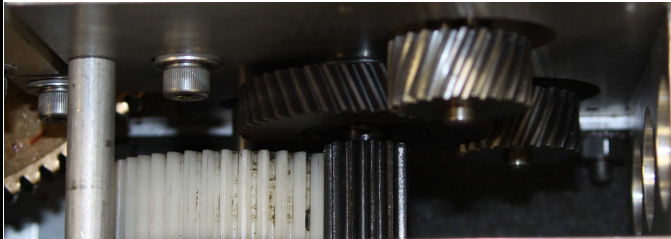
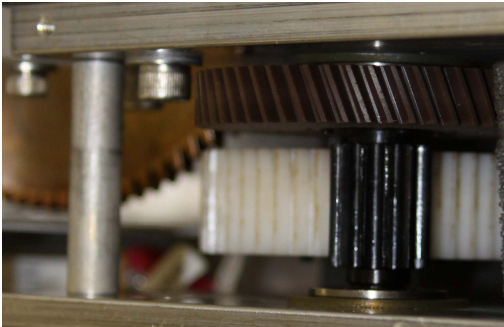
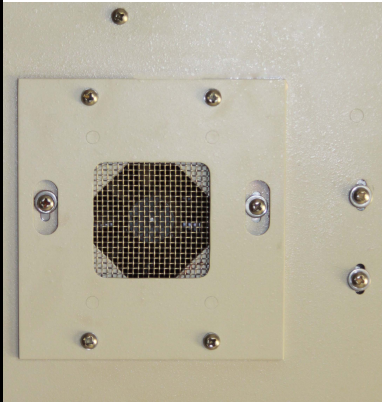
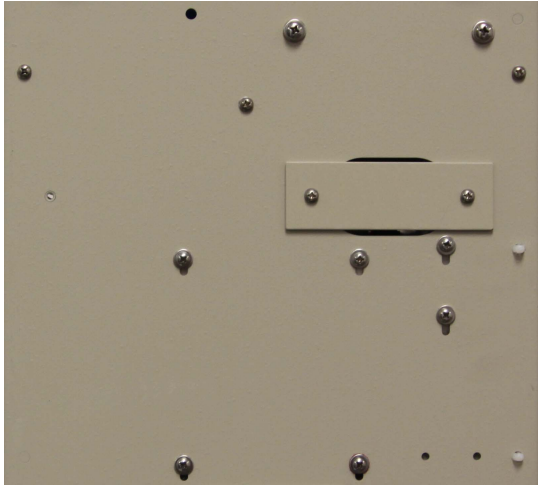
	500HP	500HPx
CYLINDER CAPACITY	507.38 mL	
POWER REQUIREMENTS (Factory Set) (Mains voltage line cord is a "Disconnect Device")	100 ± 10 VAC, 1.5 A maximum 117 ± 12 VAC, 1.5 A maximum 234 ± 23 VAC, 0.75 A maximum	100 ± 10 VAC, 5A maximum 117 ± 12 VAC, 5A maximum 234 ± 23 VAC, 2.5A maximum
LINE FREQUENCY	50 or 60 Hz	
LINE VOLTAGE NOISE TOLERANCE	1.7 × nominal rms line voltage, 10 µsecond pulses, any phase angle, random or repetitive	
DIMENSIONS	PUMP Width: 27.18 cm Depth: 46.74 cm Height: 102.36 cm	PUMP Width: 27.18 cm Depth: 46.74 cm Height: 104.14 cm
WEIGHT	PUMP 33.25 kg	PUMP 42.64 kg
FLOW RATE RANGE	Refer to Figure 2 for flow rate/pressure curves	Refer to Figure 2 for flow rate/pressure curves
FLOW RATE ACCURACY	± 0.5% (maximum 1.0 µl/min seal leakage)	
FLOW RATE DISPLAY RESOLUTION	1.0 µl/min	
ANALOG OUTPUT ACCURACY	± 1% of selected range	
DISPLACEMENT RESOLUTION	31.71 nl / step	25.36 nl /step
REFILL TIME	2.5 minutes	1.25 minutes
REFILL OR DEPRESSURIZATION RATE	1.0 µl/min to 204 mL/min at any pressure from 0 to 344.7 bar	1.0 µl/min to 408 mL/min at any pressure from 0 to 344.7 bar
PRESSURE RANGE	0.6895 to 344.7 bar	
PRESSURE ACCURACY	± 0.5% of full scale at constant temperature	
PRESSURE REPEATABILITY	± 0.5% of full scale within 48 hours at constant temperature	
ZERO PRESSURE DRIFT	± 0.25% of full scale within 48 hours at constant temperature	
PRESSURE DISPLAY RESOLUTION	6.895 kPa	
AMBIENT TEMPERATURE RANGE	5 to 40°C	
TEMPERATURE DRIFT	± 0.15% of full scale/°C	
HUMIDITY	95% maximum	
DEAD (HEADSPACE) VOLUME	4.00 ± 0.020 mL	10.45 ± 0.65 mL
POLLUTION DEGREE	2	
INSTALLATION CATEGORY	II	
MAXIMUM ALTITUDE	2000 m	

500HPx and 500HP Flow Rate Ranges



Flow Rate (mL/min)	Maximum Pressure (bar)
500HPx: 0.001 to 340	344.7
500HPx: 340-408	(409.8 mL/min- flow rate) x 4.985
500HP: 0.001 to 158	344.7
500HP:158-204	(208.9 mL/min- flow rate) x 7.3

Figure 2: 500HPx and 500HP Flow Rate Ranges

500HPx	500HP
 <p>Figure 3: 500HPx Dual Motor</p>	 <p>Figure 4: 500HP Single Motor</p>
 <p>Figure 5: 500HPx Gear Train</p>	 <p>Figure 6: 500HP Gear Train</p>
 <p>Note: The 500HPx has two fans near the motor. Be sure not to block the fan vent on the bottom of the unit.</p> <p>Figure 7: Bottom view of 500HPx Fan Vent</p>	 <p>Figure 8: Bottom view of 500HP (no fan vent)</p>

Teledyne ISCO

P.O. Box 82531, Lincoln, Nebraska, 68501 USA
Toll-free: (800) 228-4373 • Phone: (402) 464-0231 • Fax: (402) 465-3091
E-mail: iscinfo@teledyne.com

Teledyne ISCO is continually improving its products and reserves the right to change product specifications, replacement parts, schematics, and instructions without notice.

