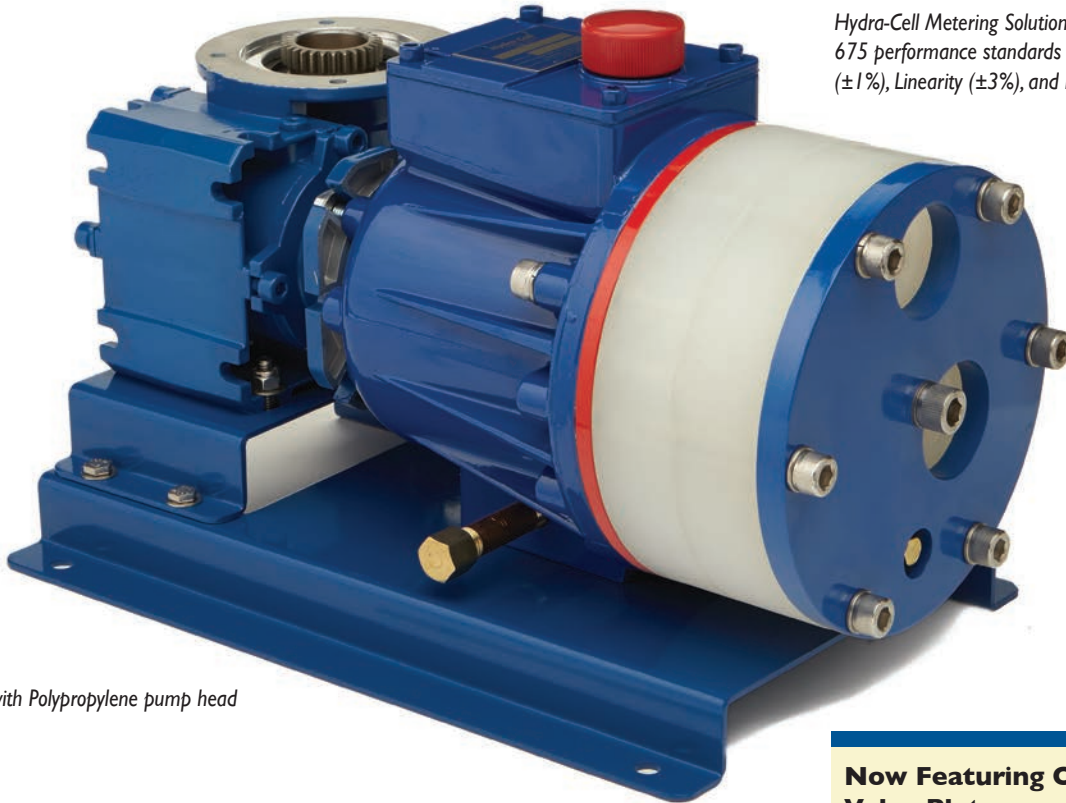


# Hydra·Cell<sup>®</sup>

## METERING SOLUTIONS<sup>™</sup>

### P400 Series

Maximum Flow Rate: 242.8 gph (765.9 lph)  
Maximum Pressure: 1000 psi (69 bar) for Metallic Pump Heads  
350 psi (24 bar) for Non-metallic Pump Heads



P400 with Polypropylene pump head

Hydra-Cell Metering Solutions pumps meet or exceed API 675 performance standards for Steady-State Accuracy ( $\pm 1\%$ ), Linearity ( $\pm 3\%$ ), and Repeatability ( $\pm 3\%$ ).

### Metering Pumps with “Pulse-Free” Linear Flow

- Handles a wide range of fluids from clear water to thick slurries
- Electronic flow control increases accuracy and reliability
- Smaller footprint saves valuable space
- One pump covers a wide range of flows and pressures - reducing inventory requirements with fast, simple field conversion
- Duplexing option doubles capacity and equipment savings
- Hydraulically-actuated, balanced diaphragms provide superior performance across entire pressure range
- Rugged construction with a variety of affordable choices for liquid end, diaphragm and check valve materials
- Seal-less design means no seals, cups, or packing to leak or replace
- A replenishment valve in every piston assembly ensures optimum actuating oil on every stroke for continuous accuracy

### Now Featuring Optimized Valve Plate

Geometric design improvements have reduced the valve pocket by 30% for Hydra-Cell P400 Metering Solutions pumps, providing several advantages:

- Superior performance in gaseous fluid applications.
- Faster, easier priming in low-speed metering applications.
- Improved efficiency because “dead space” in the diaphragm pocket is minimized.
- Decreased chance of pump “pack-out” or vapor lock.
- Increased fluid velocity through the plate (due to the 6% reduction of the port through-holes).

## Performance

Flows are based upon lab testing of multiple pumps. However, flows listed are approximate values and pumps must be calibrated once installed into any system. Flow variations will occur, but calibration will ensure proper pump performance.

### Maximum Flow (gph) at Designated Pressure (psi)

All Pumps (gph)		Metallic Pump Heads Only (gph)		Pump rpm	Gear Ratio	Motor rpm
100 psi	250 psi	500 psi	1000 psi			
9.637	9.280	8.491	6.464	30	60:1	1800
11.652	11.283	10.452	8.269	36	50:1	
14.66	14.30	13.37	11.21	45	40:1	
19.73	19.31	18.30	15.96	60	30:1	
23.79	23.32	22.24	19.75	72	25:1	
29.87	29.34	28.15	25.45	90	20:1	
40.011	39.375	38.00	34.94	120	15:1	
60.290	59.438	57.70	53.92	180	10:1	
80.569	79.501	77.41	72.90	240	7.5:1	
121.1	119.6	116.8	110.9	360	5:1	
161.69	159.75	156.22		480	7.5:1	3600
242.80	240.01			720	5:1	

### Required Motor hp

1/4	1/2	3/4	1	1-1/2	2
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### Maximum Flow (lph) at Designated Pressure (bar)

All Pumps (lph)		Metallic Pump Heads Only (lph)		Pump rpm	Gear Ratio	Motor rpm
7 bar	17 bar	34 bar	69 bar			
30.40	29.27	26.78	20.391	25	60:1	1500
36.76	35.59	32.97	26.09	30	50:1	
46.25	45.10	42.18	35.36	37.5	40:1	
62.24	60.92	57.72	50.33	50	30:1	
75.04	73.58	70.15	62.31	60	25:1	
94.23	92.56	88.80	80.27	75	20:1	
126.21	124.21	119.87	110.21	100	15:1	
190.19	187.50	182.03	170.09	150	10:1	
254.16	250.79	244.18	229.98	200	7.5:1	
382.1	377.4	368.5	349.7	300	5:1	
510.0	503.9	492.8	469.5	400	7.5:1	3000
765.9	757.1	741.4	709.0	600	5:1	

### Required Motor kW

0.18	0.25	0.37	0.55	0.75	1.1	1.5	2.2
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## Pump Data

Diaphragms per Liquid End	3
Flow Control	Electronic variable speed drive
Maximum Discharge Pressure	
Metallic Heads:	1000 psi (69 bar)
Non-metallic Heads:	PVDF- 350 psi (24 bar) Polypropylene- 250 psi (17 bar)
Maximum Inlet Pressure	250 psi (17 bar)
Maximum Operating Temperature	
<i>Consult factory for correct metallic head component selection for temperatures from 160 °F (71 °C) to 250 °F (121 °C).</i>	
Metallic Heads:	250 °F (121 °C)
Non-metallic Heads:	140 °F (60 °C)
Maximum Solids Size	500 microns
Inlet Port	1 inch NPT or BSPT
Discharge Port	3/4 inch NPT or BSPT
Shaft Rotation	Bi-directional
Oil Capacity	1.35 US quarts (1.27 liters)
Weight (less motor)	
Metallic Heads:	65.5 lbs (29.7 kg)
Non-metallic Heads:	52.5 lbs (23.8 kg)
Dimensions (less motor)	
<i>For NEMA 56 motor frames only; see page 6 for other motor frame sizes.</i>	
Metallic Heads:	9.94" W x 16.12" D x 10.29" H (252.4 mm W x 409.4 mm D x 261.3 mm H)
Non-metallic Heads:	9.94" W x 17.29" D x 10.29" H (252.4 mm W x 439.2 mm D x 261.3 mm H)

## Accessories, Options and Services

Consult Wanner Engineering for complete details about available accessories and options as well as special services.

- Manifolds and Flanges
- Multiplexing Capability
- Different Gearbox Ratios
- Oil Cooler Systems
- Actuating Oils
- Magnetic Drain Plug
- Motors (Standard/Hazardous-duty)
- Controllers
- Control Freak™ Touch-screen Metering Controller
- SmartDrive Motor-Controller
- Calibration Cylinders
- Back Pressure Valves
- Pressure Relief Valves
- Pulsation Dampeners
- Demonstration (Cutaway) Units
- Testing Services
- System Components, Priming Kits and Plugs
- Replacement Part Kits and Tool Kits
- Customization Services



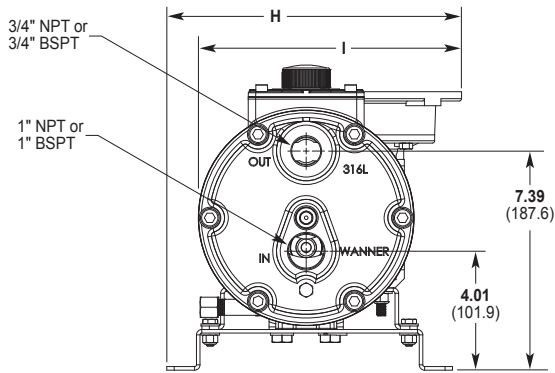
P400 with Brass pump head



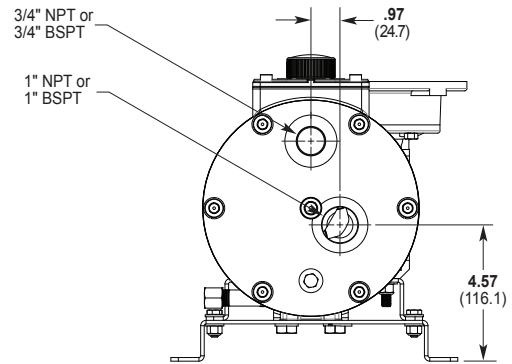
P400 with Stainless Steel pump head and ANSI flanges

## Representative Drawings

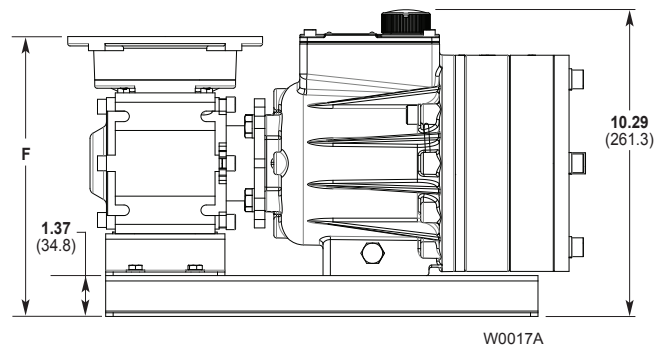
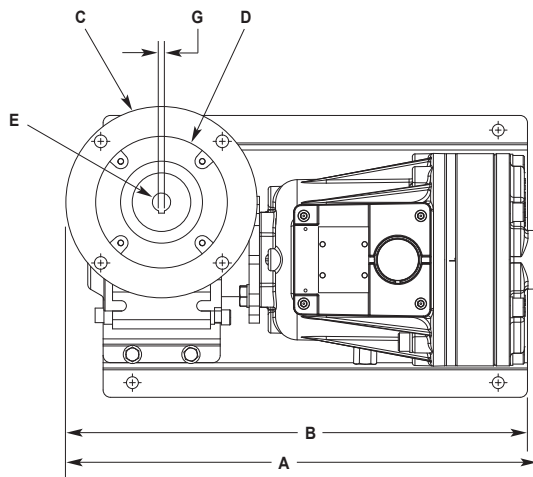
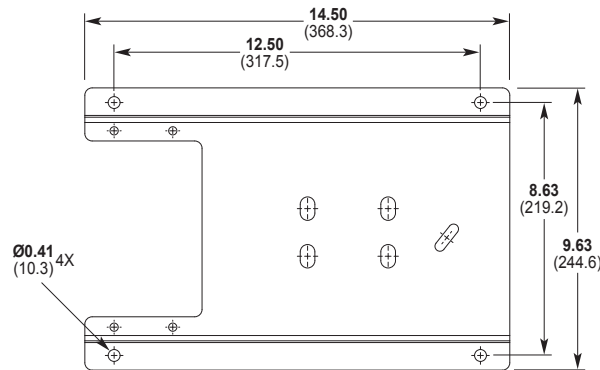
### Metallic and Non-metallic Pump Heads Inches (mm)



**Metallic**



**Non-metallic**



### Dimensions: Inches (mm)

Input Frame Size	A		B	C	D	E	F	G (Square Key)	H	I
	Metallic Pump Head	Plastic Pump Head								
NEMA 56C	16.12 (409.4)	17.29 (439.1)	15.77 (400.6)	Ø 6.54 (Ø 166)	Ø 4.50 (Ø 114.3)	Ø 0.62 (Ø 15.7)	9.39 (238.4)	0.187 (4.75)	9.94 (252.4)	8.86 (225.1)
NEMA 143/145 TC	16.12 (409.4)	17.29 (439.1)	15.77 (400.6)	Ø 6.54 (Ø 166)	Ø 4.50 (Ø 114.3)	Ø 0.87 (Ø 22.2)	9.86 (250.4)	0.187 (4.75)	9.94 (252.4)	8.86 (225.1)
IEC 63 B5	15.60 (396.2)	16.77 (426)	15.25 (387.4)	Ø 5.51 (Ø 140)	Ø 3.74 (Ø 95)	Ø 0.43 (Ø 11)	9.21 (233.9)	0.157 (4)	9.43 (239.5)	8.35 (212.2)
IEC 71 B5	16.00 (406.4)	17.17 (436.1)	15.65 (397.5)	Ø 6.30 (Ø 160)	Ø 4.33 (Ø 110)	Ø 0.55 (Ø 14)	9.21 (233.9)	0.196 (5)	9.82 (249.4)	8.74 (222.1)
IEC 80 B5	16.79 (426.5)	17.96 (456.2)	16.43 (417.32)	Ø 7.87 (Ø 200)	Ø 5.12 (Ø 130)	Ø 0.75 (Ø 19)	9.21 (233.9)	0.236 (6)	10.61 (269.5)	9.53 (242.2)
IEC 90 B5	16.79 (426.5)	17.96 (456.2)	16.43 (417.32)	Ø 7.87 (Ø 200)	Ø 5.12 (Ø 130)	Ø 0.94 (Ø 24)	9.69 (246.9)	0.315 (8)	10.61 (269.5)	9.53 (242.2)

# P400 Series

## How to Order

A complete pump order number contains 13 digits based on the specified pump materials listed below.

1	2	3	4	5	6	7	8	9	10	11	12	13
P	4	0	0									

### Pump Configuration (Digits 1-4)

**P400** For all P400 Pumps (Kel-Cell) with Optimized Valve Plate

### Pump Version (Digit 5)

**N** NPT Ports or ANSI Flanges (NEMA motors only)  
**M** BSPT Ports or ANSI Flanges (IEC motors only)  
**X** ATEX BSPT Ports (IEC motors only)

### Pump Head / Retainer Material (Digit 6)

**B** Brass / Hastelloy C  
**C** Cast Iron / Hastelloy C  
**M** PVDF / PVDF  
**P** Polypropylene / Polypropylene  
**R** 316L Stainless Steel (ANSI flange class 150 x 600) / Hastelloy C  
**S** 316L Stainless Steel (NPT or BSPT) / Hastelloy C  
**T** Hastelloy CW12MW / Hastelloy C

### Diaphragm & O-ring Material / Oil (Digit 7)<sup>▲</sup>

**A** Aflas / PTFE O-rings (Synthetic oil)  
**E** EPDM (EPDM-compatible oil)  
**X** FKM (Synthetic oil)  
**J** PTFE (Food-contact oil)  
*(Note: PTFE diaphragms require a minimum suction pressure of 15 psi/1 bar.)*  
**P** Neoprene (Standard oil)  
**T** Buna-N (Standard oil)

<sup>▲</sup> See price list for different actuating oils available with these materials.

### Check Valve Material (Digits 8-9)

#### (Valve Spring / Valve Seat / Valve)

**SS** Elgiloy / 316L SST / Nitronic 50  
**TT** Hastelloy C / Hastelloy C / Hastelloy C  
**SC** Elgiloy / Ceramic / Ceramic  
**TC** Hastelloy C / Ceramic / Ceramic  
**SD** Elgiloy / Tungsten Carbide / Tungsten Carbide  
**TD** Hastelloy C / Tungsten Carbide / Tungsten Carbide

### Gearbox Ratio (Digits 10-12) NEMA Motors

**060** 60:1 (56C Motor Frame)  
**050** 50:1 (56C Motor Frame)  
**040** 40:1 (56C Motor Frame)  
**030** 30:1 (56C Motor Frame)  
**025** 25:1 (56C Motor Frame)  
**020** 20:1 (56C Motor Frame)  
**015** 15:1 (56C Motor Frame)  
**010** 10:1 (56C Motor Frame)  
**007** 7.5:1 (56C Motor Frame)  
**A07** 7.5:1 (143/145TC Motor Frame)  
**005** 5:1 (56C Motor Frame)  
**A05** 5:1 (143/145TC Motor Frame)

### Gearbox Ratio (Digits 10-12) IEC Motors

**060** 60:1 (63 B5 Motor Frame)  
**050** 50:1 (63 B5 Motor Frame)  
**040** 40:1 (63 B5 Motor Frame)  
**A30** 30:1 (71 B5 Motor Frame)  
**A25** 25:1 (71 B5 Motor Frame)  
**A20** 20:1 (71 B5 Motor Frame)  
**A15** 15:1 (71 B5 Motor Frame)  
**A10** 10:1 (71 B5 Motor Frame)  
**B10** 10:1 (80 B5 Motor Frame)  
**C10** 10:1 (90 B5 Motor Frame)  
**A07** 7.5:1 (71 B5 Motor Frame)  
**B07** 7.5:1 (80 B5 Motor Frame)  
**C07** 7.5:1 (90 B5 Motor Frame)  
**B05** 5:1 (80 B5 Motor Frame)  
**C05** 5:1 (90 B5 Motor Frame)

### Base Plate (Digit 13)

**C** Carbon Steel (Epoxy painted)  
**S** 304 Stainless Steel

# Hydra·Cell<sup>®</sup>

## METERING SOLUTIONS<sup>™</sup>



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