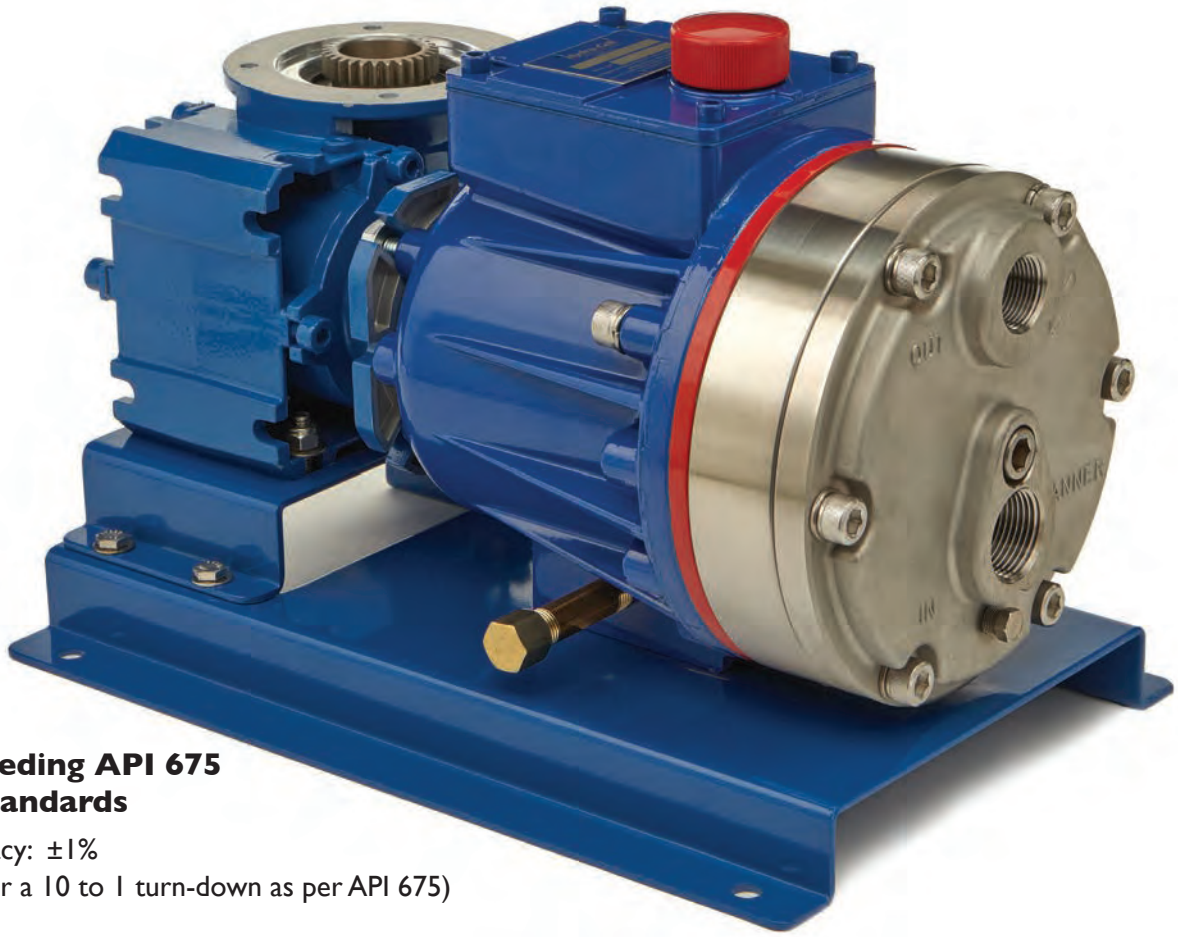
Hydra-Cell®
METERING SOLUTIONS™

API 675

ATEX

P400 Series Electronic Precision Metering Pumps

Maximum Flow Rate: 766 L/hr
Maximum Pressure: 69 bar for Metallic Pump Heads
24 bar for Non-metallic Pump Heads



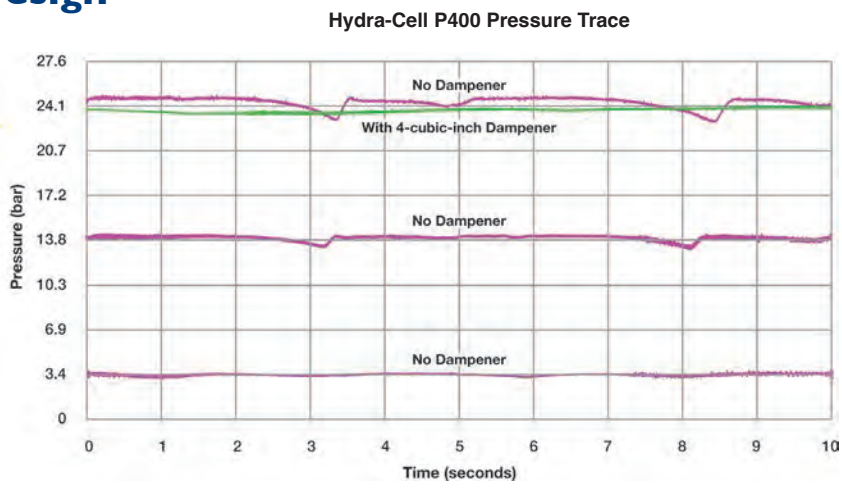
Meeting & Exceeding API 675 Performance Standards

- Steady State Accuracy: ±1%
- Linearity: ±3% (over a 10 to 1 turn-down as per API 675)
- Repeatability: ±3%
- Infinite turn-down achievable

Unique Multiple Diaphragm Design for Linear, Pulse-free Flow

Hydra-Cell Metering Solutions P400 pumps feature three diaphragms in one pump head. This unique design enables Hydra-Cell to provide virtually "pulse-free" flow without the need to buy expensive pulsation dampeners.

- Minimises pipe strain and other maintenance; enhances operator safety
- Reduces acceleration/friction losses in the suction line
- Provides accurate metering with linear, constant flow



Hydra-Cell can eliminate the need for expensive pulsation dampeners because, as the graph shows, it provides virtually pulse-less flow.

Performance - Flow Capacities and Pressure Ratings

For Synchronous Speed, Self-cooled Motors

L/hr Maximum Flow at Designated Pressure

L/hr All Pumps 7 Bar	L/hr All Pumps 17 Bar	L/hr Metallic Pump Heads Only 34 Bar	L/hr Metallic Pump Heads Only 69 Bar	Pump RPM	Gear Ratio	Motor RPM
30.4	29.3	26.8	20.4	25	60:1	1500
36.8	35.6	33.0	26.1	30	50:1	
46.2	45.1	42.2	35.4	37.5	40:1	
62.2	60.9	57.7	50.3	50	30:1	
75.0	73.6	70.1	62.3	60	25:1	
94.2	92.6	88.8	80.3	75	20:1	
126.2	124.2	119.9	110.2	100	15:1	
190.2	187.5	182.0	170.1	150	10:1	
254.2	250.8	244.2	230.0	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 | 0.37 | 0.55 | 0.75 | 1.1 | 1.5 | 2.2

Notes:

1. The motor kW are based on ambient temperature conditions up to 40˚C. For ambient temperatures above 40˚C, please contact Wanner International.
2. Capacity data is shown for pumps with elastomeric diaphragms. Contact factory for performance characteristics of pumps with PTFE diaphragms.
3. Contact factory for performance specifications.
4. Based on using IE2 motors.
5. Maximum continuous motor speed is 1800 rpm at full pressure.
6. For intermittent or reduced pressure duties, please contact Wanner International.

For 10:1 Turndown, Self-cooled Motors

L/hr Maximum Flow at Designated Pressure

L/hr All Pumps 7 Bar	L/hr All Pumps 17 Bar	L/hr Metallic Pump Heads Only 34 Bar	L/hr Metallic Pump Heads Only 69 Bar	Pump RPM	Gear Ratio	Motor RPM
30.4	29.3	26.8	20.4	25	60:1	1500
36.8	35.6	33.0	26.1	30	50:1	
46.2	45.1	42.2	35.4	37.5	40:1	
62.2	60.9	57.7	50.3	50	30:1	
75.0	73.6	70.1	62.3	60	25:1	
94.2	92.6	88.8	80.3	75	20:1	
126.2	124.2	119.9	110.2	100	15:1	
190.2	187.5	182.0	170.1	150	10:1	
254.2	250.8	244.2	230.0	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 | 3.0

Notes:

1. The motor kW are based on ambient temperature conditions up to 25˚C. For ambient temperatures above 25˚C, Force-cooled Motors may be required. Please contact Wanner International.
2. Capacity data is shown for pumps with elastomeric diaphragms. Contact factory for performance characteristics of pumps with PTFE diaphragms.
3. Contact factory for performance specifications.
4. Based on using IE2 motors.
5. Maximum continuous motor speed is 1800 rpm at full pressure.
6. For intermittent or reduced pressure duties, please contact Wanner International.

See Page 6 for **Electronic Flow Rate Controller**.

Mechanical Adjustment Controller for ATEX/Explosive Areas

All Min/Max flow rates in litres/hour

7 bar		17 bar		34 bar		69 bar		Pump rpm	Gearbox Ratio	Model Number	Required Motor Size & Frame
Min	Max	Min	Max	Min	Max	Min	Max				
4.7	28.8	3.5	27.6	1.2	24.7	0	17.6	5 - 24	25:1	MEC5 - 71B14	0.37kW / IEC 71 / 4-Pole
	36.5		35.1		32.1		24.5	5 - 30	20:1		
	49.1		47.8		44.4		36.4	5 - 40	15:1		
	74.7		73.1		69.3		60.4	5 - 60	10:1	MEC5 - 80B14	0.55kW / IEC 80 / 4-Pole
	100.3		98.4		94.1		84.4	5 - 80	7.5:1		
	151.5		149.0		143.9		132.3	5 - 120	5:1		0.75kW / IEC 80 / 4-Pole
	202.6		199.7		193.6		180.2	5 - 160	7.5:1		1.1kW / IEC 80 / 2-Pole
	305.0		300.9		293.0		276.0	5 - 240	5:1	MEC5 - 90B14	1.5kW / IEC 90 / 2-Pole

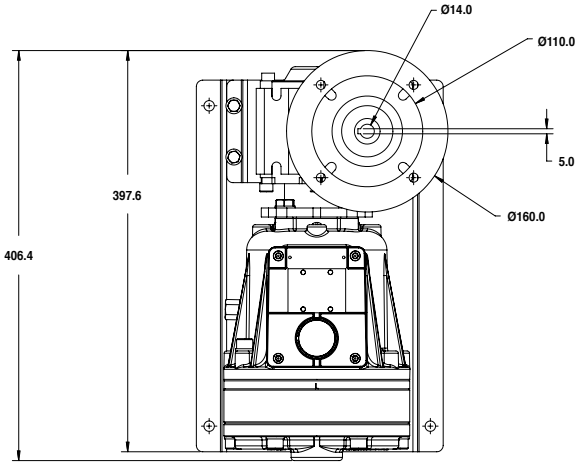
P400 Series

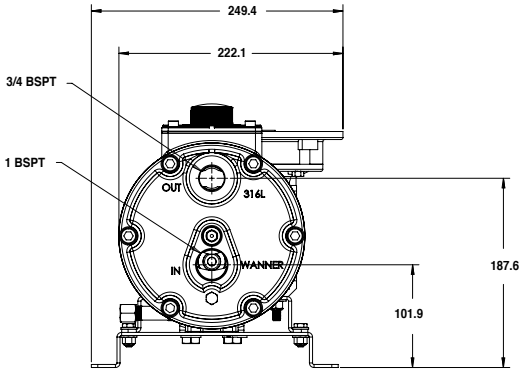
Specifications

Diaphragms per Liquid End	3
Flow Control	Electronic variable speed drive
Maximum Discharge Pressure	
Metallic Heads:	69 bar
Non-metallic Heads:	17 bar - Polypropylene
	24 bar - PVDF
Maximum Inlet Pressure	17 bar
Maximum Liquid Operating Temperature	
Metallic Heads:	121 °C - Consult factory for correct component selection for temperatures greater 71 °C.
Non-metallic Heads:	PVDF to 80 °C
	Polypropylene to 60 °C
Maximum Solids Size	500 microns
Inlet Port	1 inch BSPT
Discharge Port	3/4 inch BSPT
Shaft Rotation	Reverse (bi-directional)
Oil Capacity	1.05 litres
Weight (less motor)	
Metallic Heads:	29.7 kg
Non-metallic Heads:	23.8 kg
Dimensions (less motor)	
Metallic Heads:	252.4 mm W x 409.4 mm D x 261.3 mm H
Non-metallic Heads:	252.4 mm W x 439.2 mm D x 261.3 mm H
Controllers	
Mechanical Adjustment:	245 mm D x 200 mm H (13.8 kg)

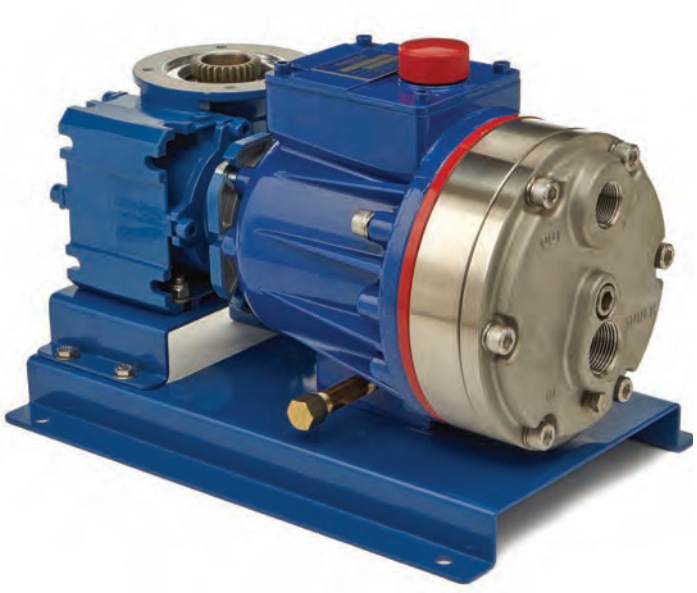
Representative Drawings (mm)

Metallic Pump Heads





P400 with Brass pump head



P400 with Stainless Steel pump head

Hydra-Cell METERING SOLUTIONS

Pump Ordering Information

A complete pump order number contains 13 digits based on the specified pump materials listed below. Contact your Hydra-Cell sales representative for accompanying motor drive options.

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

Pump Model Size (Digits 1-4)

P400	For all P400 Pumps (Kel-Cell)

Pump Version (Digit 5)

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

ATEX reducer must be ordered in conjuction with one of the ATEX Certification Kit Options below.

Category 2, Zone 1

Part Number	Description
ATEX-Z1-G10/P400	Kit-ATEX Category 2, Zone 1 IIB T4 G10/P400

Category 3, Zone 2

Part Number	Description
ATEX-Z2-G10/P400	Kit-ATEX Category 3, Zone 2 IIC T4 G10/P400

Notes:

1. All options include Certificate, Oil Level Monitor, Earth Stud & Secondary ATEX Label.

2. Extra oil is required to fill the oil bowl during installation of ATEX pumps. This oil is not . included and must be ordered separately.

Pump Head / Retainer Material (Digit 6)

B	Brass / Hastelloy C
C	Cast Iron / Hastelloy C
M	PVDF / PVDF
P	Polypropylene / Polypropylene (Hastelloy C followers & screws)
R	316L Stainless Steel with ANSI RF Flanges, Class 150lb x 600lb
S	316L Stainless Steel (NPT or BSPT) / Hastelloy C
-	316L Stainless Steel with Tri-clamp (1-1/2" Inlet & 1" Discharge) Flanges polished to 0.8 Ra ◆
-	316L Stainless Steel with Tri-clamp (1-1/2" Inlet & 1" Discharge) Flanges polished to 0.4 Ra ◆
	Tri-clamp options include polishing of Pump Head, Valve Plate, Valves, Valve Seats, Springs & Retainers to 0.8 Ra or 0.4 Ra per above, Sanitary Drain along with TSE, Passivation, Surface Finish & Weld Procedure Certificates
-	High-viscosity Manifold, 316L Stainless Steel
T	Hastelloy CW12MW / Hastelloy C
	◆Selecting this option will result in a Wanner International generated Pump Code, stamped onto the pump.

Diaphragm & O-ring Material / Oil (Digit 7)

A	Aflas / PTFE o-ring (Synthetic oil)
E	EPDM (EPDM-compatible oil)
G	FKM (Standard oil)
S	FKM (Food-contact oil)
X	FKM (Synthetic oil)
J	PTFE (Food-contact oil)
W	PTFE (Synthetic oil)
	Note: PTFE diaphragms require a minimum suction pressure of 1 bar.
P	Neoprene (Standard oil)
R	Neoprene (Food-contact oil)
Z	Neoprene (Synthetic oil)
T	Buna-N (Standard oil)
F	Buna-N (Food-contact oil)
Y	Buna-N (Synthetic oil)

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) 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)

Notes:

Largest motor rating: 2kW 4-pole motor.

These are Wanner standard options. Other flange sizes are available upon request.

Base Plate (Digit 13)

C	Carbon Steel (Epoxy painted)
S	316L Stainless Steel

Notes:

1. Please consult factory for rpm below 6.

2. Constant torque drives are required to meet API 675 performance standards.

3. Ensure that the motor chosen is capable of delivering the torque and power required over the full range of adjustment. (Consult factory for values.)

4. IEC motor size has been calculated assuming IE2 performance as defined by IEC 60034-30.

Calibration Cylinders

Port Size	Cylinder Size (mL)	Cylinder Capacity (L/h)	Maximum Shaft (rpm)	Part Number BSPT Ports	Dimensions - mm Height	Diameter
PVC Cylinders						
1/2"	200	24	75	111-001-B	482.6	38.1
3/4"	1000	120	300	111-003-B	558.8	63.5
1"	2000	240	600	111-004-B	508.0	94.0
2"	10000	1200	--	111-006-B	635.0	176.5.0
Glass Cylinders						
1/4"	30	3.6	36	111-010-B	355.6	35.6
1/2"	200	24	75	111-011-B	533.4	63.5
3/4"	1000	120	300	111-013-B	685.8	88.9
1"	2000	240	600	111-014-B	685.8	127.0

Back Pressure Valves

Port Size	Maximum Flow (L/h) Pulsating	Wetted* Materials	Pressure Adjustment Range (bar)	Maximum Temp (˚C)	Part Number (BSPT Ports)
3/4" (DN 20)	1135	Polypropylene	0.7 - 10.3	90	111-341-B
	1135	PVDF	0.7 - 10.3	90	111-343-B
	1135	316 SST	0.7 - 10.3	149	111-346-B
	1135	Hastelloy C	0.7 - 10.3	149	111-350-B

** Diaphragm material is PTFE on all models. Other materials available on request.*

Pressure Relief Valves

Port Size	Maximum Flow (L/h) Pulsating	Wetted* Materials	Pressure Adjustment Range (bar)	Maximum Temp (˚C)	Part Number (BSPT Ports)
3/4" StdFlo (DN 20)	1135	Polypropylene	0.7 - 10.3	90	111-541-B
	1135	PVDF	0.7 - 10.3	90	111-543-B
	1135	316 SST	0.7 - 10.3	149	111-546-B
	1135	Hastelloy C	0.7 - 10.3	149	111-550-B
3/4" HiFlo (DN 20)	2271	Polypropylene	0.7 - 10.3	90	111-641-B
	2271	PVDF	0.7 - 10.3	90	111-643-B
	2271	316 SST	0.7 - 10.3	149	111-646-B
	2271	Hastelloy C	0.7 - 10.3	149	111-650-B
3/4" High Pressure (DN 20)	4542	316 SST	24 - 172	149	111-746-B
	4542	Hastelloy C	24 - 172	149	111-750-B

** Diaphragm material is PTFE on all models. Other materials available on request.*

Hastelloy® C is a registered trademark of Haynes International, Inc.

P400 Version-6 01.22

Metering and Dosing Control Options

Electronic Flow Rate Adjustment for Local Control

- Force-cooled Drives supplied as standard
- ATEX Dust Zone 21 (Ex tb IIIC T125c Db)
- IP66 Standard
- Various flow rate adjustments options including:
  1. On-board potentiometer(s)
  2. On-board key-pad controller with flow rate display
  3. Removable, hand-held key-pad controller for authorised personnel only
  4. Use the 10:1 Turndown table on Page 2 to select the correct motor kW for ambient temperatures up to 25˚C

Maximum Flow at Designated Pressure (see table on Page 2)

On-board keypad control

Hand-held keypad control

Mechanical Flow Rate Adjustment for Local Control

- ATEX Zone 1
- Linear fine adjustment scale on hand-wheel
- High reliability due to frictionless design
- Option to fit a mechanical lock to prevent unauthorised flow rate change

Control Freak™ for Sophisticated Local Control

- Option available to control up to 6 x Hydra-Cell pumps with one Hydra-Cell "Control Freak"
- Multiple Variable Frequency Dive (VFD) options
- Enables programming for flow rate or totalisation
- Allows up to 10 x separate batch sequences
- Built-in Calibration mode

P400 Series

WANNER Hydra-Cell®

Partners in over 70 Countries

Standards Compliance

ATEX

- API 675 performance testing, both witnessed and non-witnessed available. (Consult your local Wanner office for further details.)

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Seal-less Pumping Technology

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