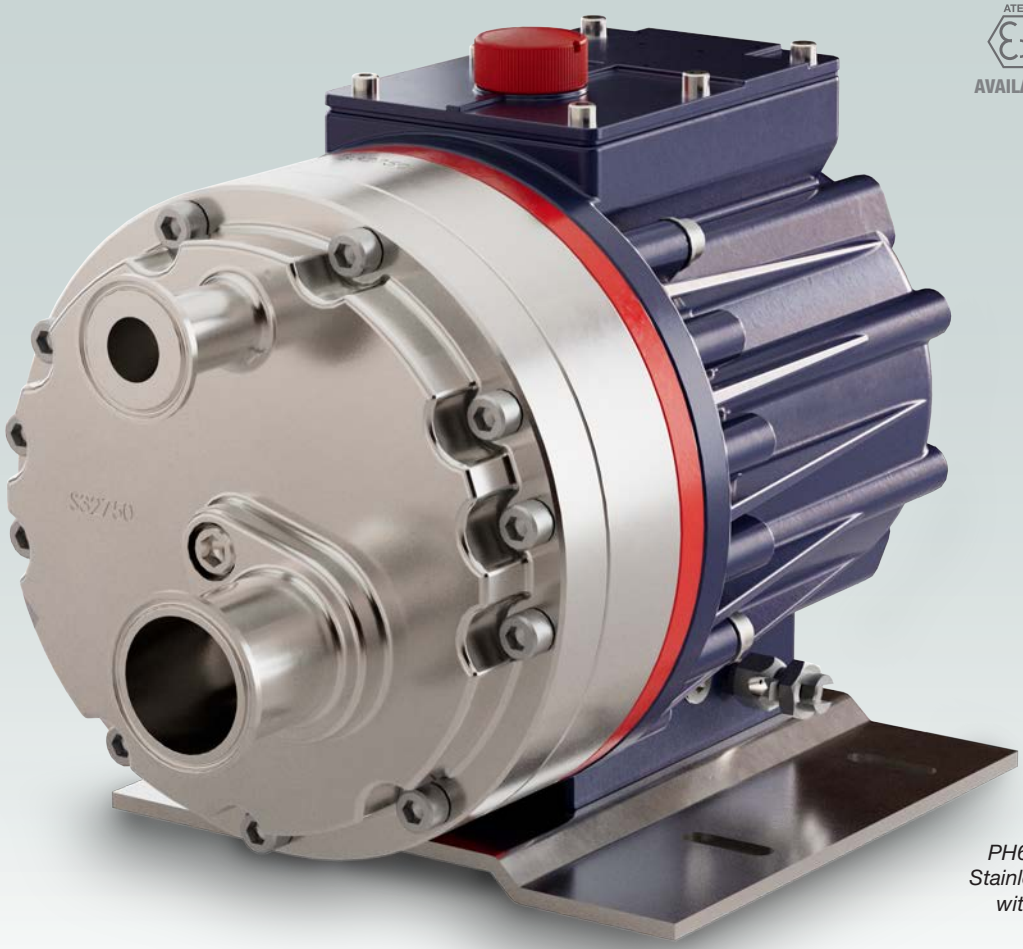
PH60 SERIES
PHARMACEUTICAL

Maximum Flow rate: 76 l/min (20 US gpm)
Maximum Pressure: 40 bar (580 psi) for Metallic Pump Heads

WANNER™ PHARMA-PRO™
LEADING INNOVATION IN SEAL-LESS PUMP TECHNOLOGIES™

ATEX AVAILABLE



PH60A Shaft-driven with Stainless Steel pump head with ASME BPE flanges

Low pulse flow. Control and reliability for continuous processes.

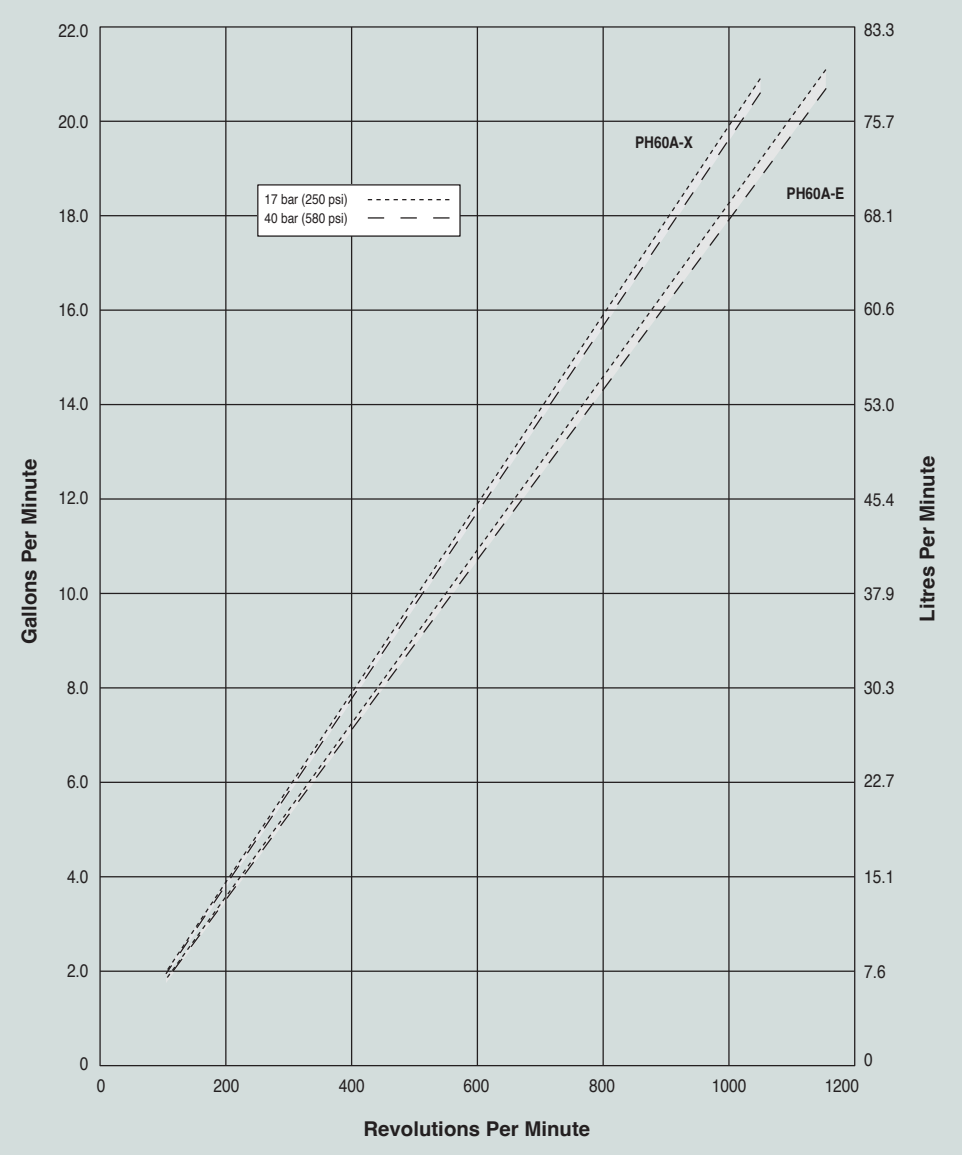
- Low pulse flow; no pulsation dampeners needed in most applications
- Unique multiple diaphragm arrangement results in compact design, saving on installation space
- Extremely accurate wide adjustable flow range for ultimate controllability
- Low shear pumping action
- Reliably handles challenging liquids and slurries including abrasives, corrosives, non-lubricating, and liquids with micron-sized particles
- Patented ADPC (Advanced Diaphragm Position Control) technology protects diaphragms under closed or restricted inlet conditions
- ASME BPE flange connections as standard
- Wetted surfaces polished to ≤ 0.8 Ra
- Diaphragm options to FDA compliance
- ATEX certification
- TSE / BSE-free materials
- Multipurpose: CIP and main process pump
- Full material traceability

Capacities

Model	Max. Input rpm	Max. Flow Capacities @40 bar (580 psi) l/min	US gpm	Max. Inlet Pressure bar	psi	Max. Discharge Pressure Metallic Heads bar	psi
PH60AX	1050	75.7	20	17	250	40	580
PH60AE	1150	75.9	20	17	250	40	580

Performance and specification ratings apply to PH60A configurations unless specifically noted otherwise.

Maximum Flow at Designated Pressure



Metering & Dosing

Performance characteristics of better than

± 1% steady state accuracy
± 3% linearity
± 3% repeatability

can be achieved at speeds up to 960 rpm and pressures up to 40 bar for X-cam pumps only.

Due to the Wanner Continuous Improvement Program, specifications and other data are subject to change.

Diaphragms per Liquid End	3

Flow Capacities @ 40 bar (580 psi) 6-pole Motor @ 50 Hz

Model	rpm	l/min	US gpm
PH60AX	960	69.2	18.2
PH60AE	960	69.2	16.7

Flow Capacities @ 40 bar (580 psi) 8-pole Motor @ 50 Hz

Model	rpm	l/min	US gpm
PH60AX	730	52.6	13.9
PH60AE	730	48.2	12.7

Delivery @ 40 bar (580 psi)

Model	litres/rev	gal/rev
PH60AX	0.0721	0.0190
PH60AE	0.0660	0.0174

Maximum Discharge Pressure	
Metallic Heads:	40 bar (580 psi)
Maximum Inlet Pressure	17 bar (250 psi)
Maximum Operating Temperature	
Metallic Heads:	90˚C (194˚F) Consult Wanner for correct component selection for temperatures greater than 71˚C (160˚F).
Maximum Solids Size	800 microns
Inlet Port	2" ASME BPE
Discharge Port	1" ASME BPE
Shaft Diameter	28.6 mm (1-1/8 inch)
Shaft Rotation	Bi-directional
Bearings	Tapered roller bearings
Oil Capacity	3.1 litres (3.3 US quarts)
Weight	57 Kg (125.7 lbs)

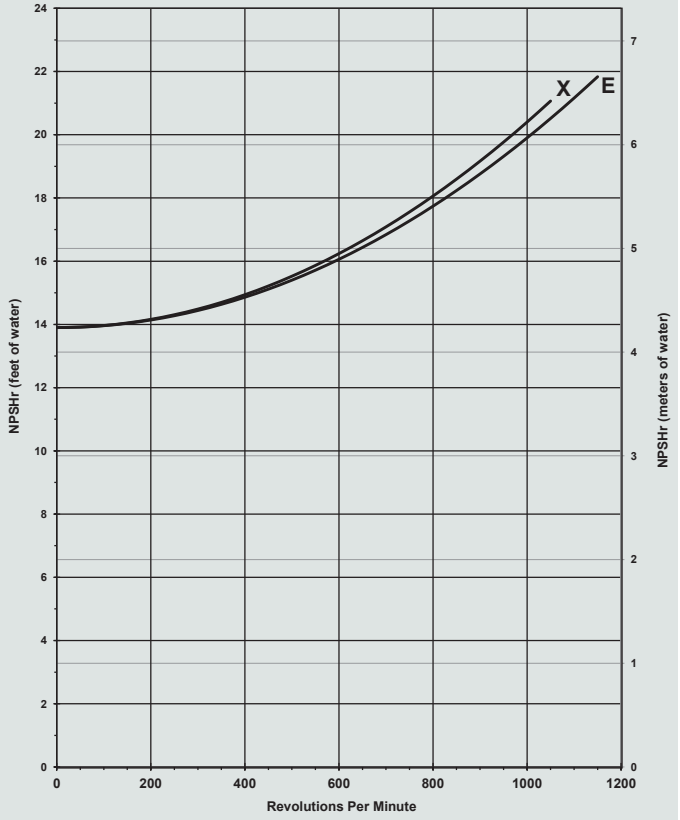
Calculating Required Power

$$\frac{50 \times \text{rpm}}{63{,}000} + \frac{\text{gpm} \times \text{psi}}{1{,}460} = \text{electric motor hp*}$$

$$\frac{50 \times \text{rpm}}{84{,}428} + \frac{\text{l/min} \times \text{bar}}{511} = \text{electric motor kW*}$$

When using a variable frequency drive (VFD) controller, calculate the hp or kW at minimum and maximum pump speed to ensure the correct hp or kW motor is selected. Note that motor manufacturers typically de-rate the service factor to 1.0 when operating with a VFD.

Net Positive Suction Head (NPSHr)



Notes: Positive inlet pressure required with PTFE diaphragms.
X cam line: Also applicable to PH60C

Suction Lift:

Each Pharma-Pro pump has different lift capability depending on model size, cam angle, speed, and fluid characteristics. To ensure that your specific lift characteristics are met, refer to the inlet calculations regarding friction and acceleration head losses in your Pharma-Pro Product Manual. Compare those calculations to the NPSHr curves above.

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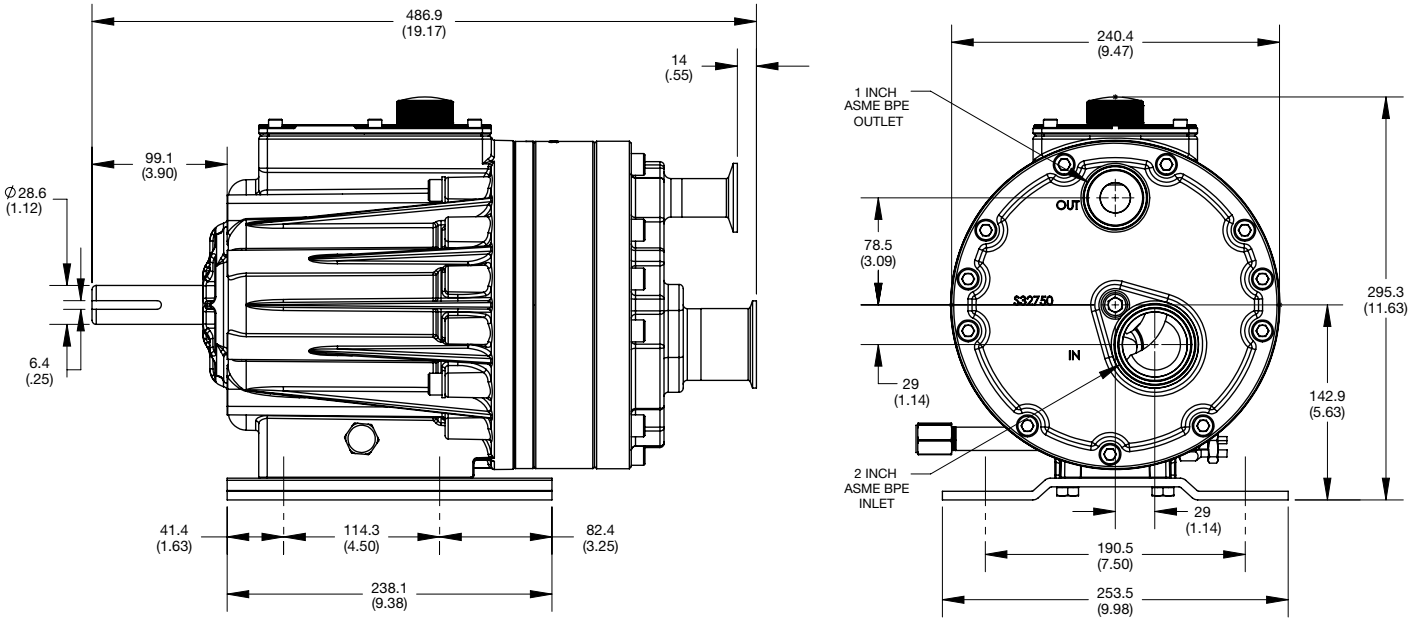
PH60A Models with ASME BPE Flanges mm (Inches)

Maximum Discharge Pressure: 40 bar (580 psi)

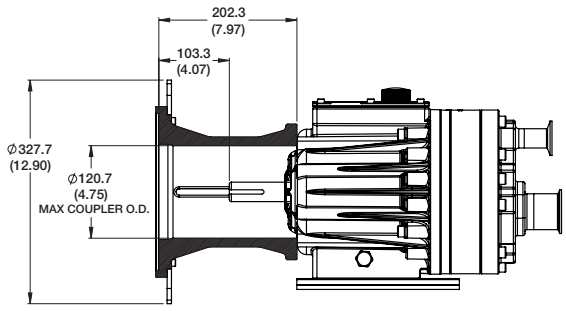


PH60A Pump / Motor Adapter mm (Inches)

Part Number: A04-041-1201

Must be ordered separately for PH60A models for use with IEC 132 frame motors, B35 flange.

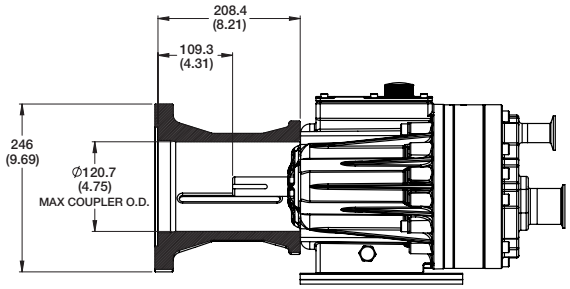
NEMA adapter available - consult Wanner.



Part Number: A04-041-1203

Must be ordered separately for PH60A models for use with IEC 160 frame motors, B14 flange.

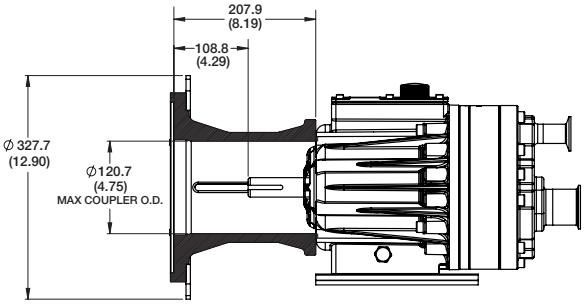
NEMA adapter available - consult Wanner.



Part Number: A04-041-1205

Must be ordered separately for PH60A models for use with IEC 160-180 frame motors, B35 flange.

NEMA adapter available - consult Wanner.

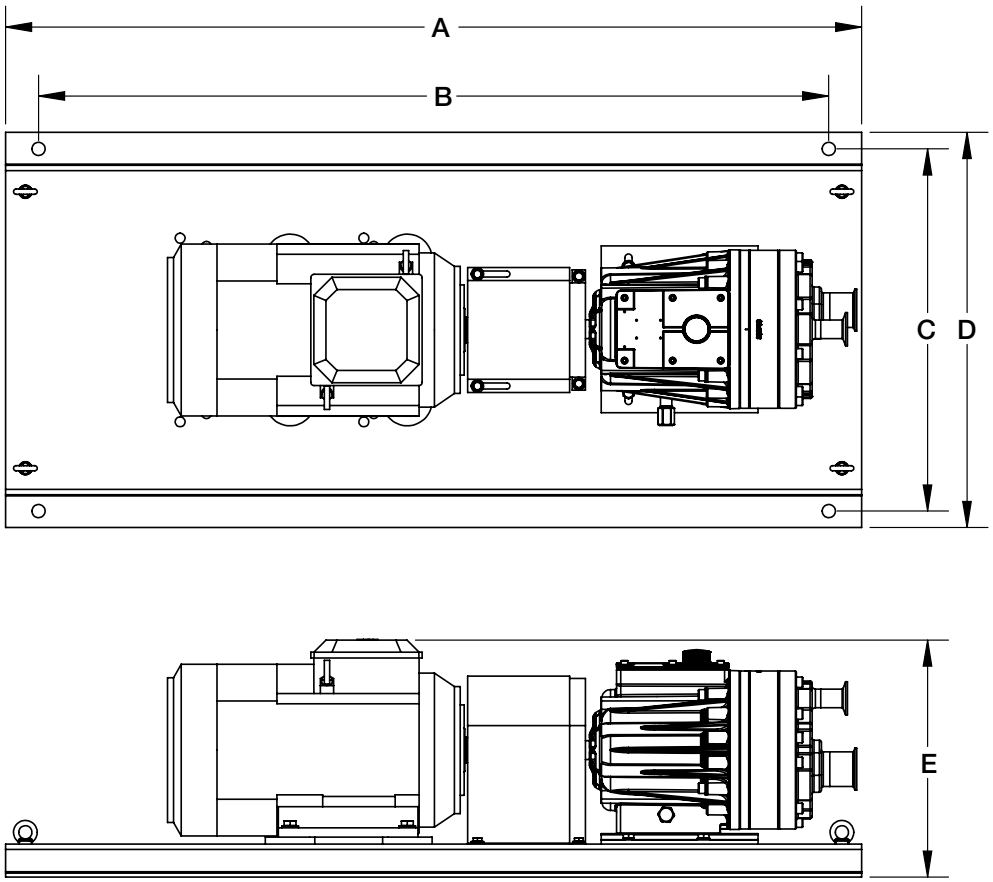


Note: Dimensions are for reference only. Contact Wanner for certified drawings.
Due to the Wanner Continuous Improvement Program, specifications and other data are subject to change.

Baseplate Options for IEC Motor Frame sizes

Major Baseplate Dimensions:

Description	Dimensions (mm)					Weight Approx. (kg)
	A	B	C	D	E	
PH60A, long-coupled with IEC 132 Motor	1300	1200	550	600	360	193
PH60A, long-coupled with IEC 160 Motor	1300	1200	550	600	418	242
PH60A, long-coupled with IEC 180 Motor	1300	1200	550	600	511	328



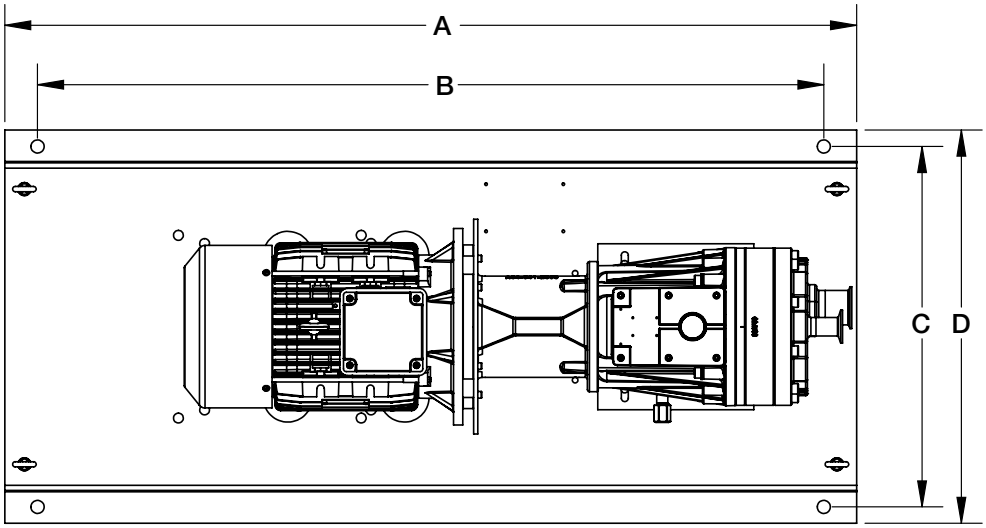
A Baseplate overall length
B Mounting bolt positions – horizontal
C Mounting bolt positions – vertical
D Baseplate overall width
E Height to highest point on assembly

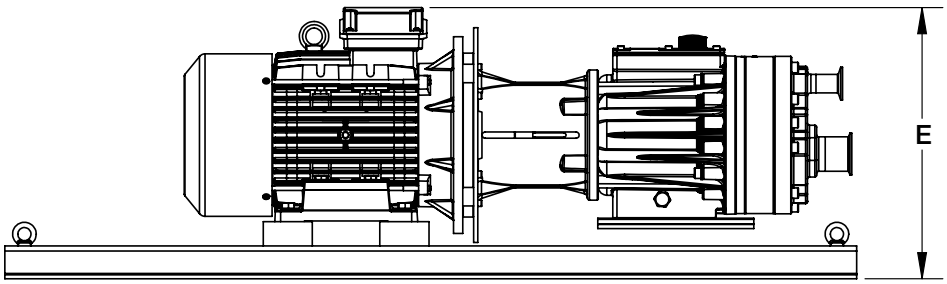
Note: Dimensions are for reference only. Contact Wanner for certified drawings.
Due to the Wanner Continuous Improvement Program, specifications and other data are subject to change.

Baseplate Options for IEC Motor Frame sizes

Major Baseplate Dimensions:

Description	Dimensions (mm)					Weight Approx. (kg)
	A	B	C	D	E	
PH60A with Motor Adapter and IEC 132 Motor	1300	1200	550	600	386	193
PH60A with Motor Adapter and IEC 160 Motor	1300	1200	550	600	435	242
PH60A with Motor Adapter and IEC 180 Motor	1300	1200	550	600	511	328





A Baseplate overall length
B Mounting bolt positions – horizontal
C Mounting bolt positions – vertical
D Baseplate overall width
E Height to highest point on assembly

Note: Dimensions are for reference only. Contact Wanner for certified drawings.
Due to the Wanner Continuous Improvement Program, specifications and other data are subject to change.

Diaphragms per Liquid End 3

Flow Capacities @ 20 bar (290 psi)

Model	Max. Pump Input rpm	Min. Flow l/hr	Min. Flow US gph	Max. Flow l/hr	Max. Flow gph
PH60C...NA100*	600	216	57	2600	687

Flow Capacities @ 40 bar (580 psi)

Model	Max. Pump Input rpm	Min. Flow l/hr	Min. Flow US gph	Max. Flow l/hr	Max. Flow gph
PH60C...NA200*	600	216	57	2600	687

Maximum Discharge Pressure Metallic Heads

PH60C...NA100*	Up to 20 bar (290 psi) @ 600 rpm max
PH60C...NA200*	Up to 40 bar (580 psi) @ 600 rpm max

Maximum Inlet Pressure 17 bar (250 psi)

Maximum Operating Temperature

Metallic Heads	90˚C (194˚F) – Consult Wanner for correct component selection for temperatures from 71˚C (160˚F).

Maximum Solids Size 800 microns

Inlet Port	2" ASME BPE
Discharge Port	1" ASME BPE
Shaft Rotation	Bi-directional

Motor

PH60C....NA100*	Requires 3kW, IEC 100, 4-pole, B5 motor
PH60C....NA200*	Requires 7.5kW, IEC 132, 2-pole, B5 motor

Bearings	Tapered ball bearings
Pump Oil Capacity	3.1 litres (3.3 US quarts)

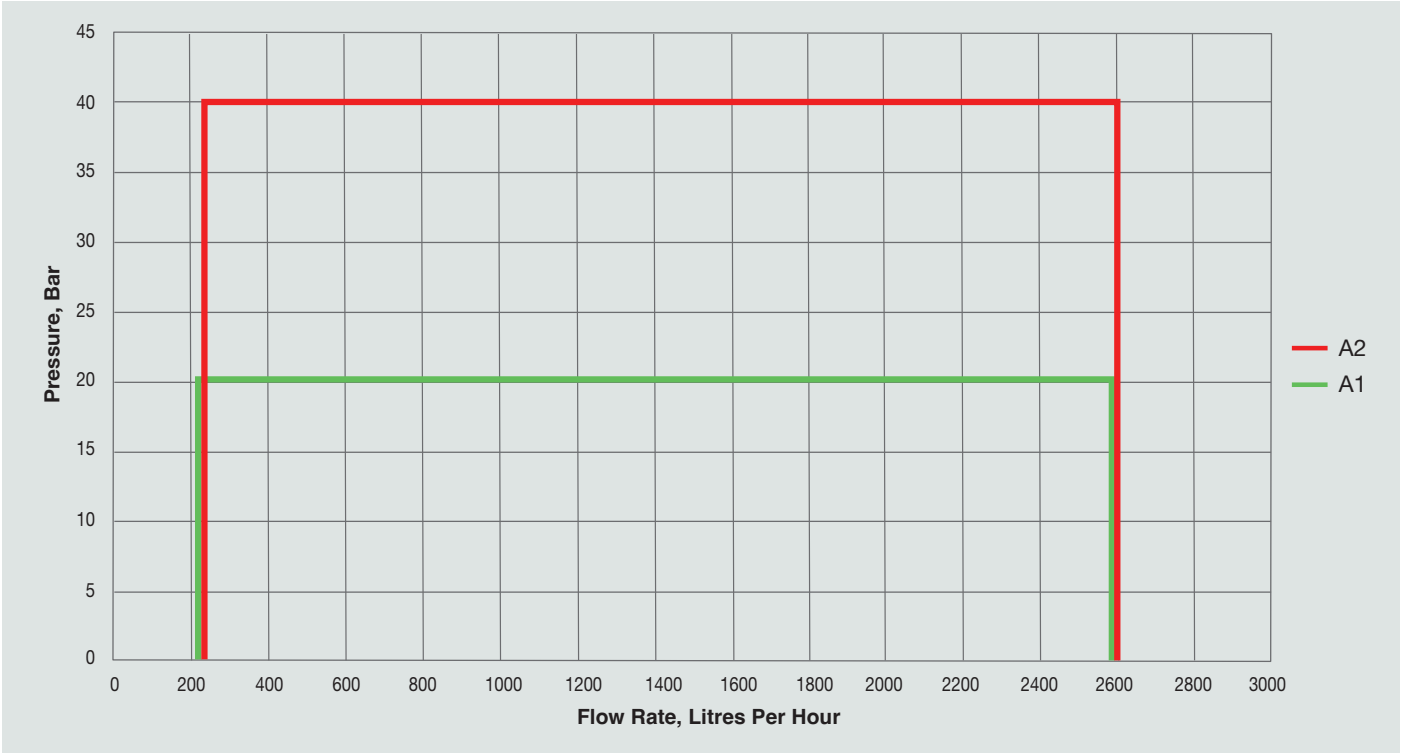
Traction Fluid Capacity

PH60C....NA100* Gearbox Only:	850 ml (0.90 US quarts)
PH60C....NA200* Gearbox Only:	3.2 litres (3.4 US quarts)

Weight	**Metallic Heads**
PH60 Pump:	57 kg (126 lbs.)
PH60C....NA100* Assembly:	~196 kg (432 lbs.)
PH60C....NA200* Assembly:	~305 kg (672 lbs.)

** First 5 and last 5 digits – refer to How To Order page 10*

Flow Ranges PH60C



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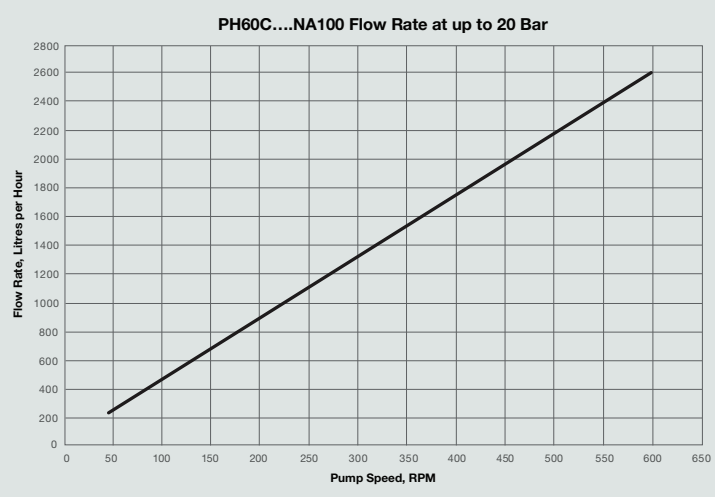
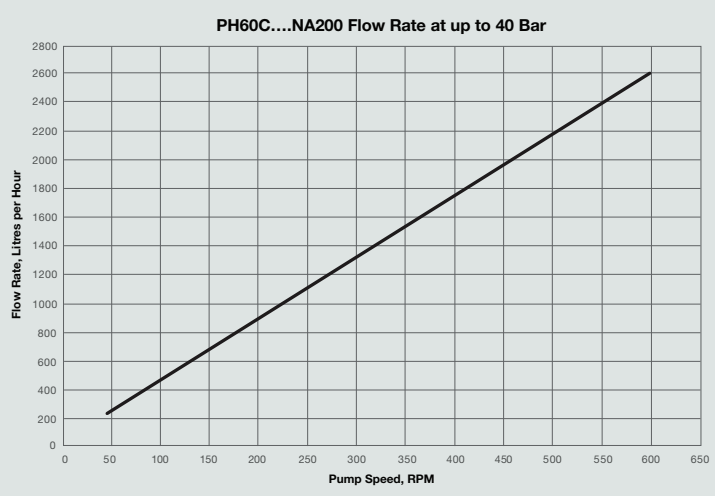
Flow Range PH60C



A1 PH60C – 216-2600 l/hr (57-687 US gph) @ 600 rpm max. at up to 20 bar. Requires a 3 kW, IEC 100, 4-Pole B5 Motor (Motor not included but available on request).



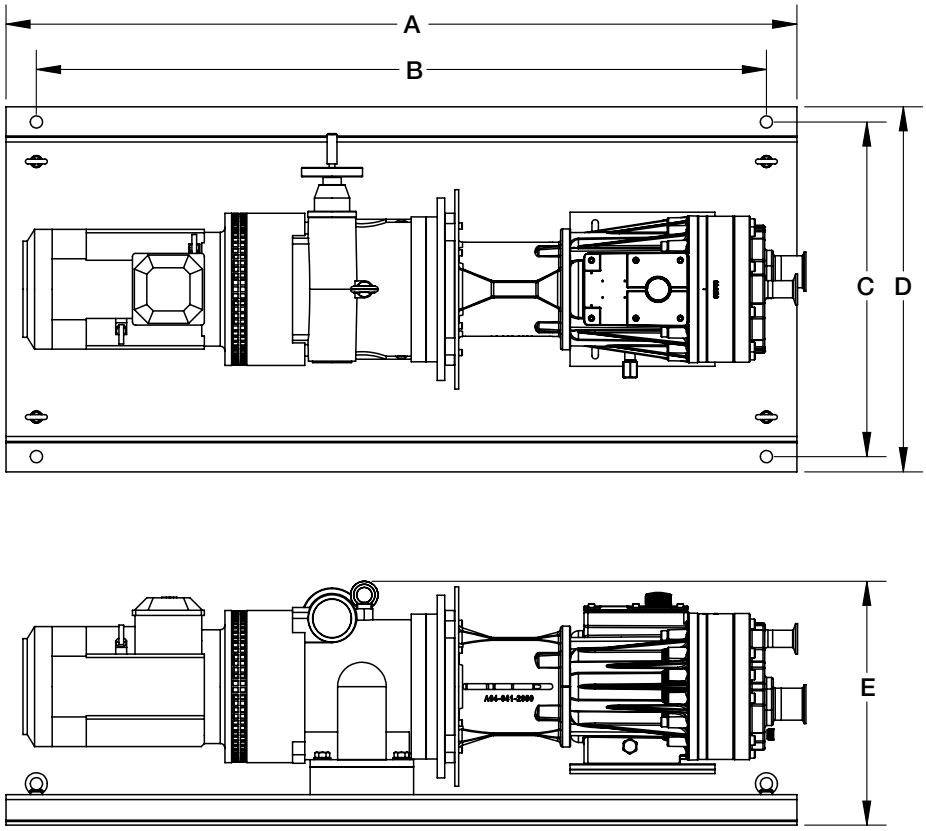
A2 PH60C – 216-2600 l/hr (57-687 US gph) @ 600 rpm max. at up to 40 bar. Requires a 7.5kW, IEC 132, 4-Pole B5 Motor (Motor not included but available on request).

Due to the Wanner Continuous Improvement Program, specifications and other data are subject to change.

Baseplate Options

Major Baseplate Dimensions:

Description	Dimensions (mm)					Weight Approx. (Kg)
	A	B	C	D	E	
PH60C...NA100	1300	1200	550	600	392	196
PH60C...NA200	1600	1500	600	650	476	305



A Baseplate overall length
B Mounting bolt positions – horizontal
C Mounting bolt positions – vertical
D Baseplate overall width
E Height to highest point on assembly

Note: Dimensions are for reference only. Contact Wanner for certified drawings.
Due to the Wanner Continuous Improvement Program, specifications and other data are subject to change.

Ordering Information

A complete PH60 Series Model Number contains 19 digits including 12 customer-specified design and materials options; example: PH60AXAS200JTCX0000

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
P	H	6	0									T					0	0

Digit	Order Code	Description
1-5		**Pump Configuration**
	PH60A	Shaft-driven (up to 76 l/min) Pump/motor adapters sold separately; see page 4
	PH60C	Inline Manual Mechanical Variator Reducer Unit Select an option from Digit 15 and 16-17
6		**Hydraulic End Cam**
	X	Max 76 l/min (20 US gpm) @ 1050 rpm
	E	Max 76 l/min (20 US gpm) @ 1150 rpm
7		**Pump Head Version** – [1] ADPC (Advanced Diaphragm Position Control System)
	A	ADPC[1] Non-Hazardous – Safe Area
	B	ADPC[1] Hazardous Area: ATEX CAT 2, Zone 1, IIC, T4
	C	ADPC[1] Hazardous Area: ATEX CAT 3, Zone 2, IIC, T4
8-9		**Pump Head Material & Connection Type*** (Machined, 3.1 material certs, ASME BPE Flange, Maximum Operating Pressure 40 Bar)
	S2	316L stainless steel
	D2	Duplex 2507 stainless steel
10		**Manifold Drain Options**
	0	No drain
	D	Drain – Only available with Digits 8-9 S2 option
11		**Diaphragm Rupture Detection**
	0	No detection
	A	High / Low oil level bowl – not required with Digit 7 – B and C
12		**Diaphragm / O-rings / Follower** (All process wetted materials FDA compliant and TSE/BSE free)
	J	PTFE / PTFE / Hastelloy C276 – Digit 6 E-cam pumps only
	K	FFKM / PTFE / Hastelloy C276
	E	EPDM / PTFE / Hastelloy C276 – Must be used with option "C" Digit 14
13		**Valve / Valve Seat / Valve Spring / Spring Retainer***
	T	Hastelloy C / Hastelloy C / Hastelloy C / Hastelloy C

* Polished to 0.8 Ra

Digit	Order Code	Description
14		**Hydra-Oil**
	C	EPDM-compatible oil, NSF H1 – Must be used with Digit 12 option "E"
	E	Food-contact oil, NSF H1
15		**Reduction Gearing Options**
	X	PH60A – Bare shaft pump; no reduction gearbox required
	N	PH60C – Inline Manual Mechanical Variator options
16-17		**Vertical Reduction Gearbox Ratio Options**
	00	PH60A – No reduction gearbox
		Inline Manual Mechanical Variator Options DIGIT 15 "N" ONLY
	A1	PH60C – 216-2600 l/hr (57-687 US gph) @ 600 rpm max. at up to 20 bar. Requires a 3 kW, IEC 100, 4-Pole B5 motor**
	A2	PH60C – 216-2600 l/hr (57-687 US gph) @ 600 rpm max. at up to 40 bar. Requires a 7.5kW, IEC 132, 4-Pole B5 motor**
18-19		**Vertical Reduction Gearbox with Vertical Mechanical Variator Options**
	00	No mechanical variator

** Motor not included but available on request

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