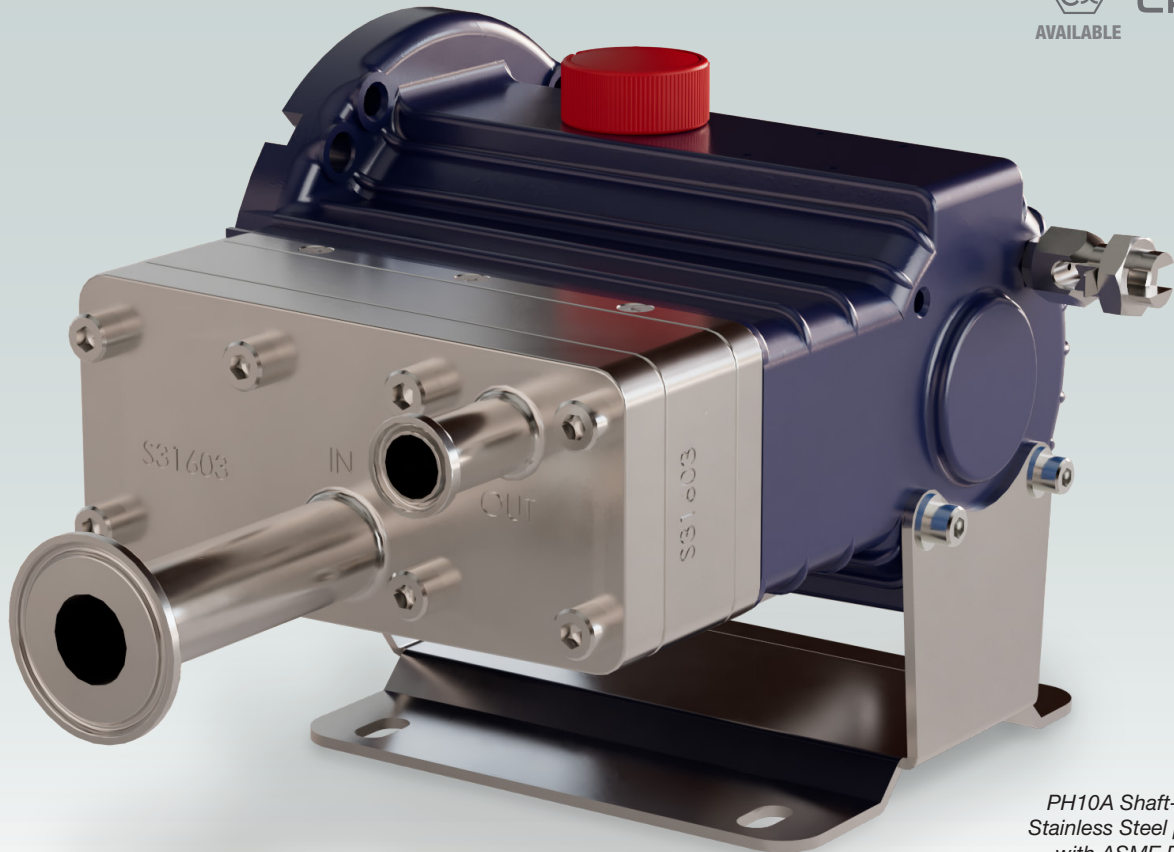


PH10 SERIES PHARMACEUTICAL

Maximum Flow Rate: 11.7 l/min (3.1 US gpm)
Maximum Pressure: 40 bar (580 psi) for Metallic Pump Heads

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



*PH10A 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

WANNER™

PH10A Pharma-Pro™ | Performance

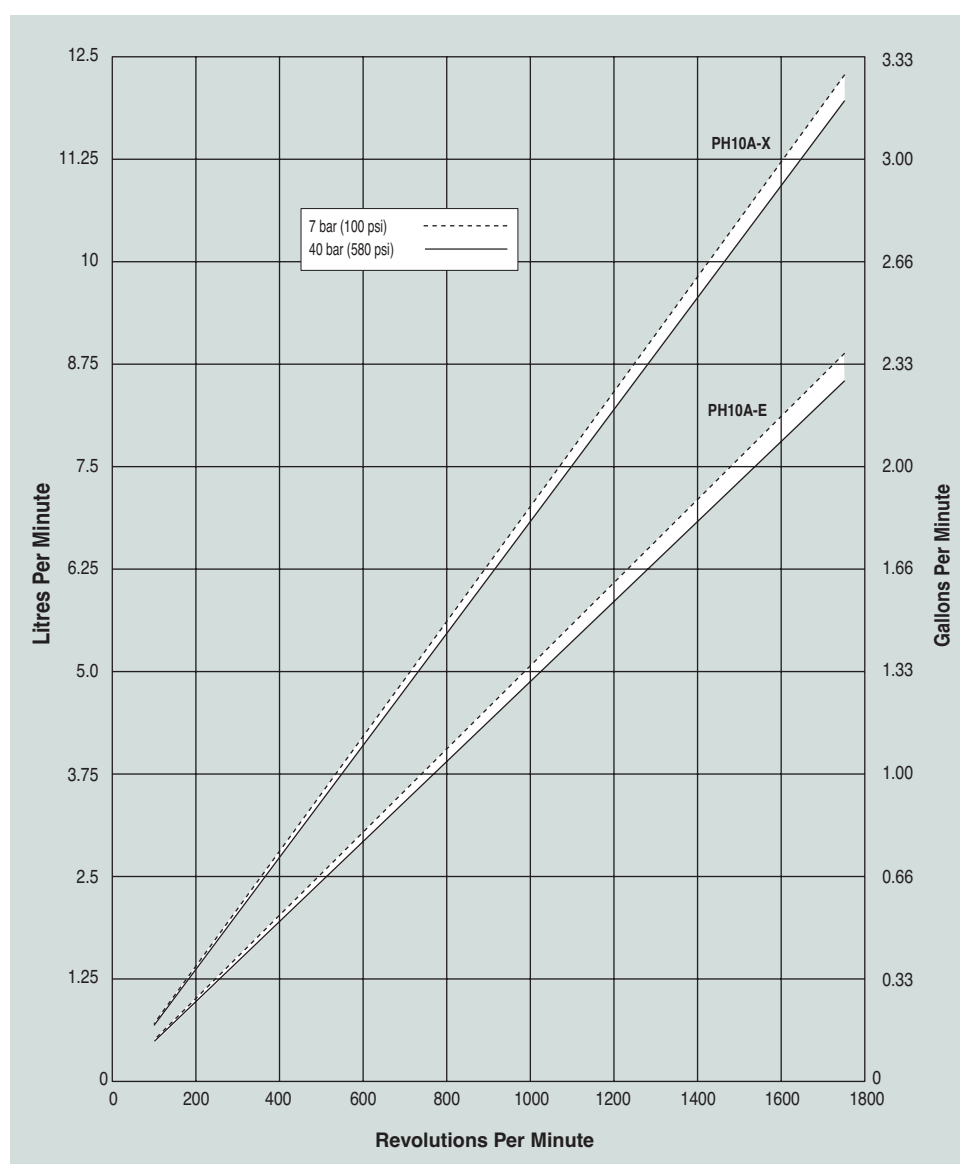
Bare Shaft Pump Options

Capacities

Model	Max. Input rpm	Max. Flow Capacities		Max. Inlet Pressure		Max. Discharge Pressure	
		@40 bar (580 psi) l/min	US gpm	bar	psi	Metallic Heads bar	psi
PH10AX	1750	11.7	3.1	17	250	40	580
PH10AE	1750	8.3	2.2	17	250	40	580

Performance and specification ratings apply to PH10A 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 1440 rpm and pressures up to 40 bar for X-cam pumps only. Also applicable to PH10B (see pages 6-7) and PH10C (see pages 8-10).

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

PH10A Pharma-Pro™ | Specifications

Bare Shaft Pump Options

Diaphragms per Liquid End 3

Flow Capacities @ 40 bar (580 psi) 4-pole Motor @ 50 Hz

Model	rpm	l/min	US gpm
PH10AX	1450	9.7	2.60
PH10AE	1450	6.8	1.80

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

Model	rpm	l/min	US gpm
PH10AX	960	6.2	1.6
PH10AE	960	4.5	1.1

Delivery @ 40 bar (580 psi)

Model	litres/rev	gal/rev
PH10AX	0.0067	0.0018
PH10AE	0.0047	0.0013

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 200 microns

Inlet Port 1" ASME BPE

Discharge Port 3/4" ASME BPE

Shaft Diameter 22.2 mm (7/8 inch)

Shaft Rotation Reverse (bi-directional)

Bearings Precision ball bearings

Oil Capacity 0.95 litres (1.0 US quarts)

Weight 13 Kg (28.7 lbs)

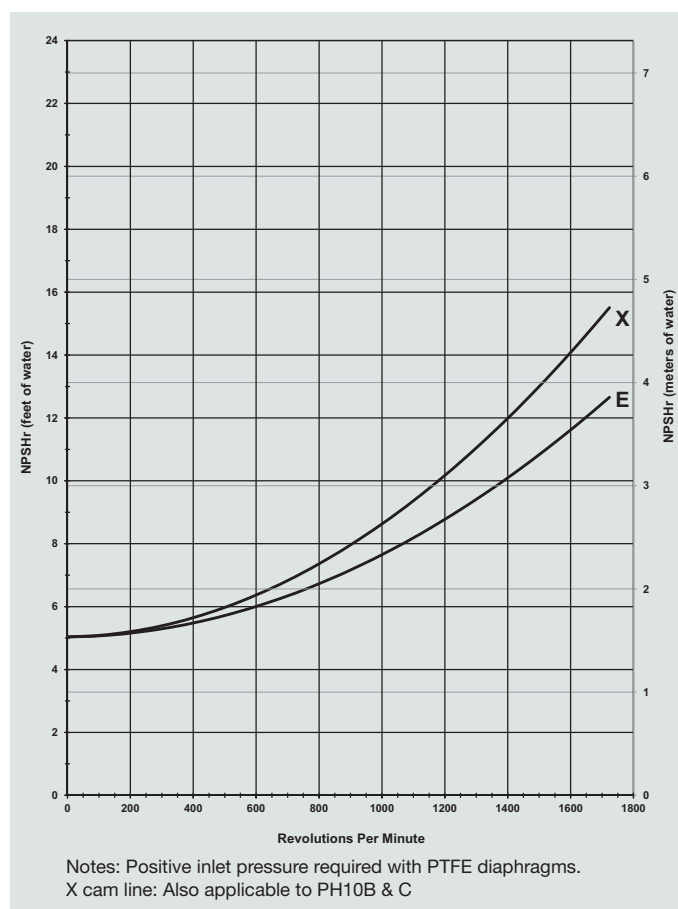
Calculating Required Power

$$\frac{6 \times \text{rpm}}{63,000} + \frac{\text{gpm} \times \text{psi}}{1,460} = \text{electric motor hp}^*$$

$$\frac{6 \times \text{rpm}}{84,428} + \frac{\text{l/min} \times \text{bar}}{511} = \text{electric motor kW}^*$$

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)



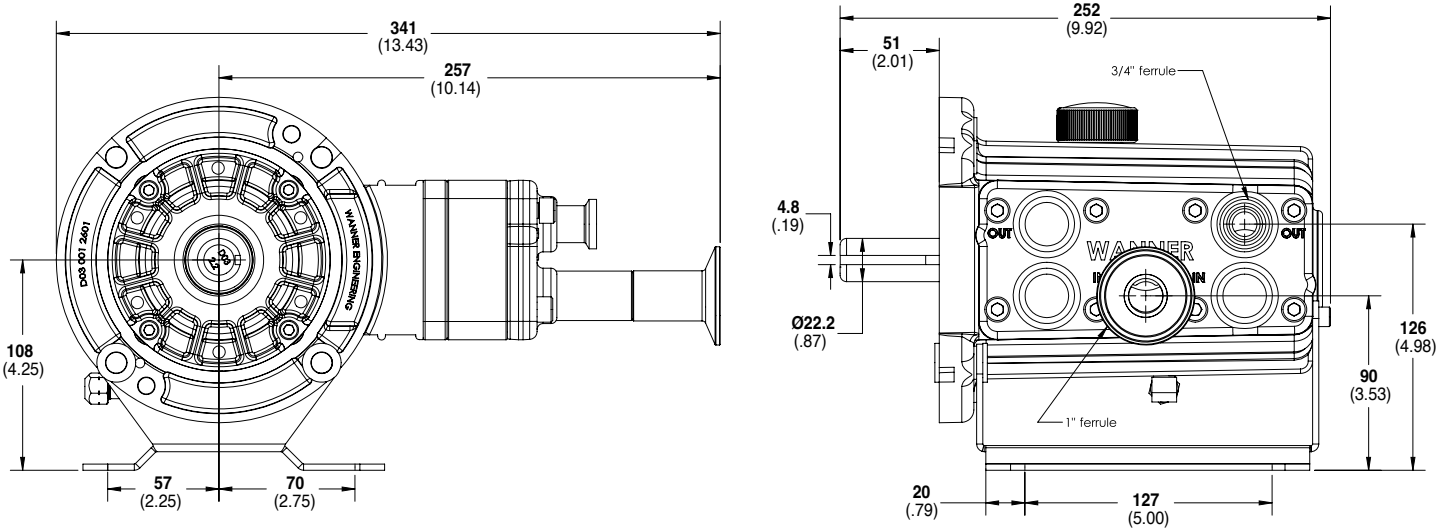
Suction Lift:

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.

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

PH10A Models with ASME BPE Flanges mm (Inches)

Maximum Discharge Pressure: 40 bar (580 psi)

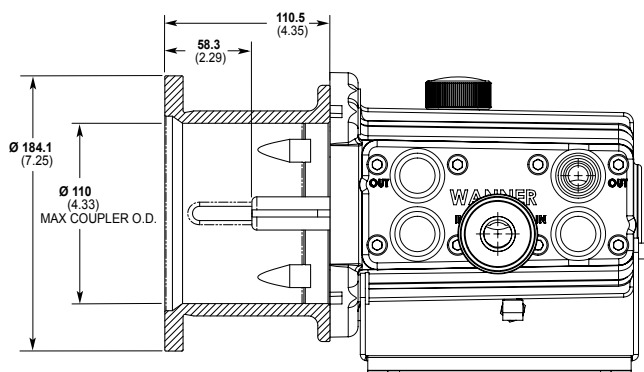


PH10A Pump / Motor Adapter mm (Inches)

Part Number: A04-003-1202

Must be ordered separately for PH10A models for use with IEC 80 - 90 frame motors, B5 flange.

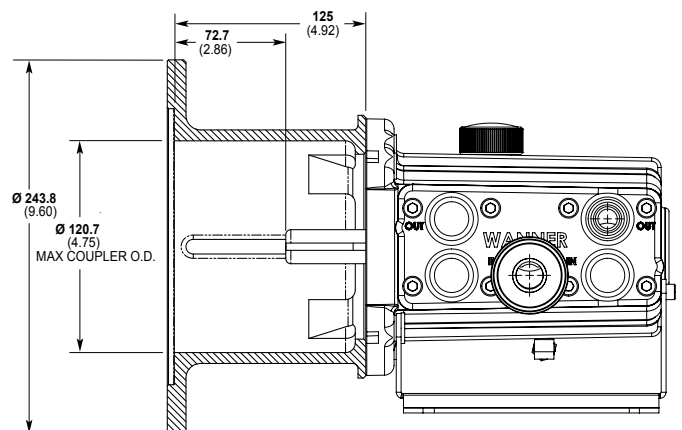
NEMA adapter available - consult Wanner.



Part Number: A04-004-1202

Must be ordered separately for PH10A models for use with IEC 100 - 112 frame motors, B5 flange.

NEMA adapter available - consult Wanner.

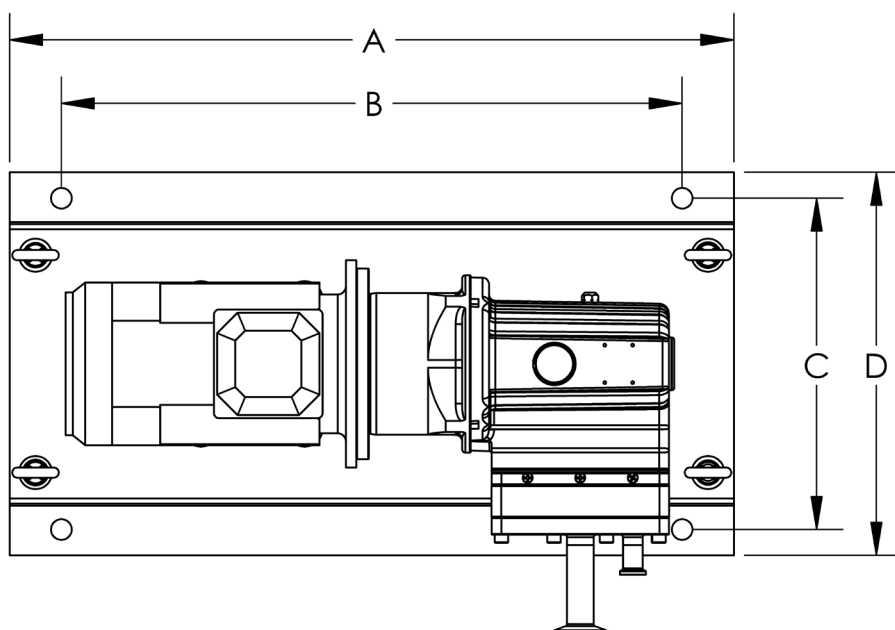


Note: Dimensions are for reference only. Contact Wanner for certified drawings.
Due to the Wanner Continuous Improvement Program, specifications and other data are subject to change.

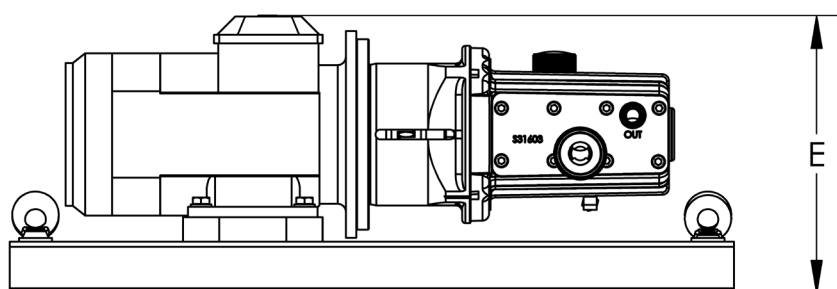
Baseplate Options for IEC Motor Frame sizes

Major Baseplate Dimensions:

Description	Dimensions (mm)					Weight Approx. (kg)
	A	B	C	D	E	
PH10A with Motor Adapter and IEC 90 Motor	850	750	400	450	292	57
PH10A with Motor Adapter and IEC 100 Motor	850	750	400	450	326	69
PH10A with Motor Adapter and IEC 132 Motor	850	750	400	450	373	99



- 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.

PH10B Pharma-Pro™ | Specifications

Pump and Vertical Reduction Gearbox Options

Diaphragms per Liquid End	3
Flow Control	Electronic variable speed drive
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 from 71°C (160°F).
Maximum Solids Size	200 microns

Inlet Port	1" ASME BPE
Discharge Port	3/4" ASME BPE
Shaft Rotation	Reverse (bi-directional)
Bearings	Precision ball bearings
Oil Capacity	0.95 litres (1.0 US quarts)
Weight (less motor)	
Metallic Heads:	20.0 kg (44 lbs.)
Controllers	
Mechanical Adjustment:	220 mm D x 155 mm (7.2 kg)
Electronic Controller:	215 mm W x 280 mm D x 300 mm H (10 kg)

Performance | Flow Capacities and Pressure Ratings

For Synchronous Speed, Self-cooled Motors

l/hr All Pumps			Pump rpm	Gear Ratio	Motor rpm
7 bar	17 bar	40 bar			
10.6	10.5	10.2	25	60:1	1500
12.8	12.6	12.3	30	50:1	
16.0	15.8	15.4	37.5	40:1	
21.3	21.1	20.6	50	30:1	
25.5	25.3	24.7	60	25:1	
31.9	31.6	30.9	75	20:1	
42.5	42.2	41.3	100	15:1	
63.8	63.3	62.0	150	10:1	
85.1	84.4	82.7	200	7.5:1	3000
127.6	126.5	124.2	300	5:1	
170.1	168.7	165.6	400	7.5:1	
255.1	253.1	248.5	600	5:1	

Required Motor kW **0.18** **0.37**

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. Contact Wanner for performance specifications.
3. Based on using IE3 motors.
4. For intermittent or reduced pressure duties, please contact Wanner International.

For 10:1 Turndown, Self-cooled Motors

l/hr All Pumps			Pump rpm	Gear Ratio	Motor rpm
7 bar	17 bar	40 bar			
10.7	10.5	10.2	25	60:1	1500
12.8	12.6	12.3	30	50:1	
16.0	15.8	15.4	37.5	40:1	
21.3	21.1	20.6	50	30:1	
25.5	25.3	24.7	60	25:1	
31.9	31.6	30.9	75	20:1	
42.5	42.2	41.3	100	15:1	
63.8	63.3	62.0	150	10:1	3000
85.1	84.4	82.7	200	7.5:1	
127.6	126.5	124.2	300	5:1	
170.1	168.7	165.6	400	7.5:1	
255.1	253.1	248.5	600	5:1	

Required Motor kW **0.18** **0.25** **0.37** **0.55** **0.75** **1.1**

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. Contact Wanner for performance specifications.
3. Based on using IE3 motors.
4. For intermittent or reduced pressure duties, please contact Wanner International.

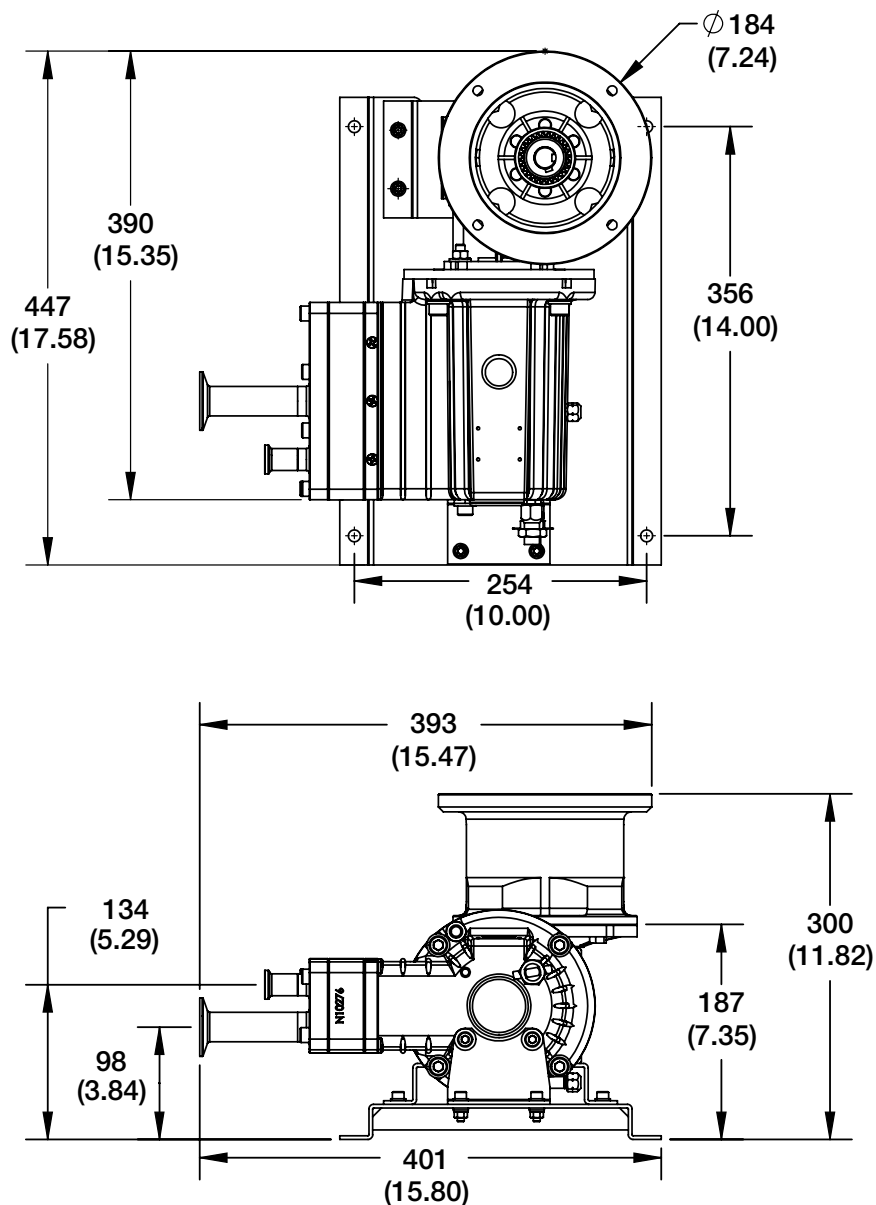
Mechanical Variator Options for ATEX / Explosive Areas

7 bar		17 bar		40 bar		Pump rpm	Gearbox Ratio	Variable Gearbox Model Number	Required Motor Size & Frame
Min	Max	Min	Max	Min	Max				
2.0	10.2	1.9	10.0	1.9	9.8	5 - 24	25:1	MEC3-71B14	0.25kW / IEC 71 / 4-Pole
	12.8		12.6		12.3	5 - 30	20:1		
	17.1		16.9		16.5	5 - 40	15:1		
	25.6		25.3		24.8	5 - 60	10:1		
	34.1		33.7		33.1	5 - 80	7.5:1		
	51.1		50.6		49.8	5 - 120	5:1		
	68.1		67.5		66.4	5 - 160	7.5:1	MEC5-80B14	0.55kW / IEC 71 / 2-Pole
	102.2		101.2		99.6	5 - 240	5:1		0.75kW / IEC 80 / 2-Pole

All Min/Max flow rates in Litres per Hour (l/hr)

Major Dimensions

Model shown with IEC 80 Gearbox Adapter | Dimensions in mm [in]



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.

PH10C Pharma-Pro™ | Specifications

Pump with Inline Manual Mechanical Variator Options

Diaphragms per Liquid End	3
----------------------------------	---

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
PH10C...NA300*	1200	38	10	462	122

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
PH10C...NA100*	600	19	5	230	61
PH10C...NA200*	1200	38	10	462	122

Maximum Discharge Pressure Metallic Heads

PH10C...NA100*	Up to 20 bar (290 psi) @ 600 rpm max
PH10C...NA200*	Up to 20 bar (290 psi) @ 1200 rpm max
PH10C...NA300*	Up to 40 bar (580 psi) @ 1200 rpm max

Maximum Inlet Pressure Up to 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 200 microns

Inlet Port	1" ASME BPE
-------------------	-------------

Discharge Port	3/4" ASME BPE
-----------------------	---------------

Shaft Rotation	Reverse (bi-directional)
-----------------------	--------------------------

Motor

PH10C...NA100*	Requires 0.37kW, IEC 71, 4-pole, B14
PH10C...NA200*	Requires 0.37kW, IEC 71, 2-pole, B14
PH10C...NA300*	Requires 1.5kW, IEC 90, 2-pole, B14

Bearings	Precision ball bearings
-----------------	-------------------------

Pump Oil Capacity	0.95 litres (1.0 US quarts)
--------------------------	-----------------------------

Traction Fluid Capacity

PH10C...NA100* Gearbox Only:	160 ml (0.17 US quarts)
PH10C...NA200* Gearbox Only:	160 ml (0.17 US quarts)
PH10C...NA300* Gearbox Only:	300 ml (0.32 US quarts)

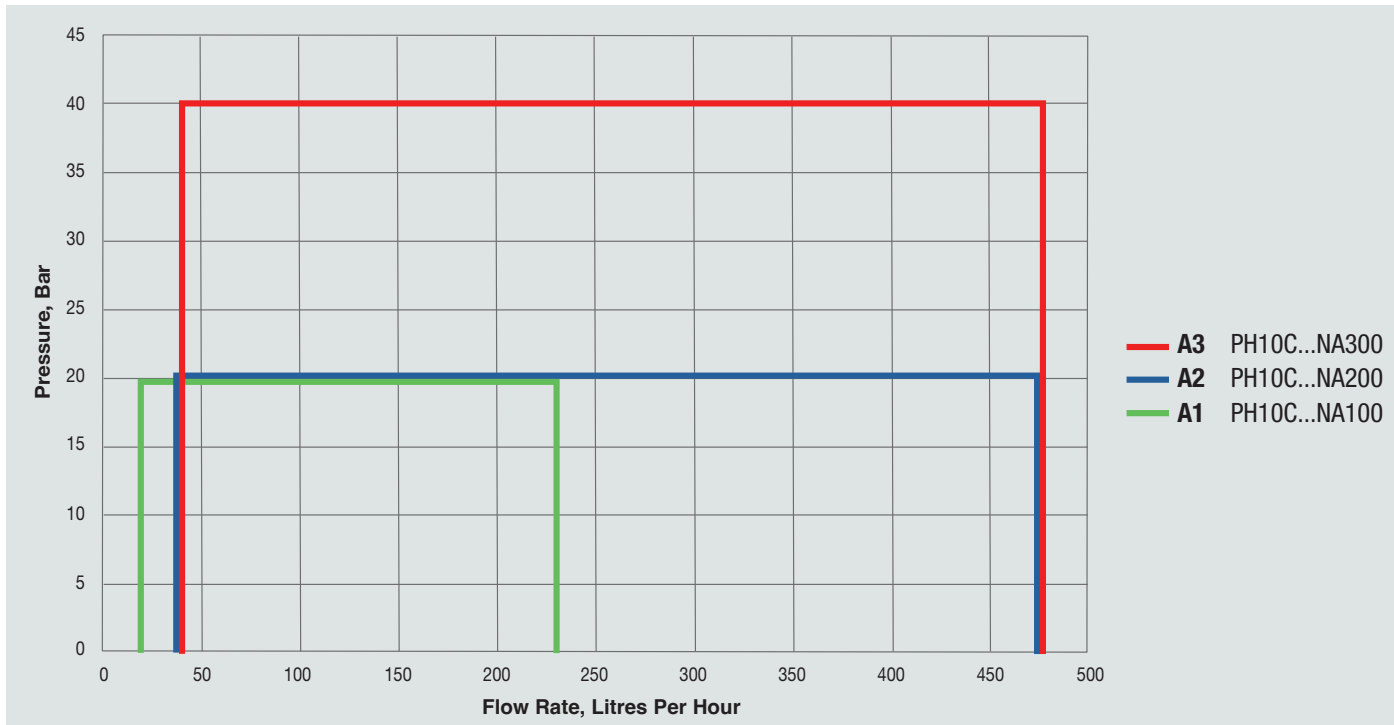
Weight

PH10 Pump:	13 kg (28.6 lbs.)
PH10C...NA100* Assembly:	~45 kg (99 lbs.)
PH10C...NA100* Assembly:	~45 kg (99 lbs.)
PH10C...NA300* Assembly:	~60 kg (132 lbs.)

Metallic Heads

* First 5 and last 5 digits – refer to How To Order page 11

Flow Ranges PH10C



Notes:

A1 PH10C – 19-230 l/hr (5-61 gph) @ 600 rpm max. at up to 20 bar
Requires a 0.37kW, IEC 71, 4-Pole B14 (Motor not included but available on request).

A2 PH10C – 38-462 l/hr (10-122 gph) @ 1200 rpm max. at up to 20 bar
Requires a 0.55kW, IEC 71, 2-Pole B14 Motor (Motor not included but available on request).

A3 PH10C – 38-462 l/hr (10-122 gph) @ 1200 rpm max at up to 40 bar
Requires a 1.5kW, IEC 90, 2-Pole B14 Motor (Motor not included but available on request)

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

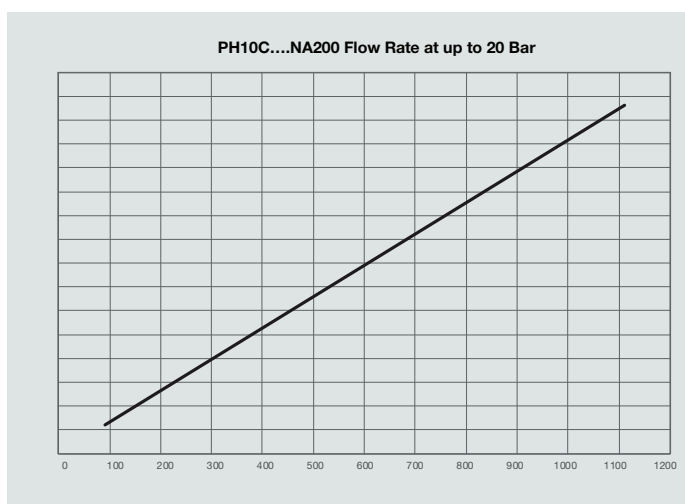
PH10C Pharma-Pro™ | Specifications

Pump with Inline Manual Mechanical Variator Options

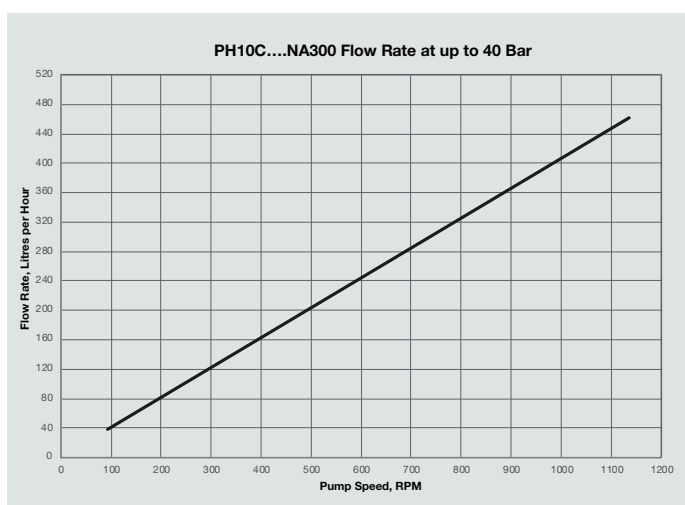
Flow Range PH10C



A1 PH10C – 19-230 l/hr (5-61 gph) @ 600 rpm max. at up to 20 Bar. Requires a 0.37kW, IEC 71, 4-Pole B14 (Motor not included but available on request).



A2 PH10C – 38-462 l/hr (10-122 gph) @ 1200 rpm max. at up to 20 Bar. Requires a 0.55kW, IEC 71, 2-Pole B14 Motor (Motor not included but available on request).



A3 PH10C – 38-462 l/hr (10-122 gph) @ 1200 rpm max at up to 40 Bar. Requires a 1.5kW, IEC 90, 2-Pole B14 Motor (Motor not included but available on request).

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

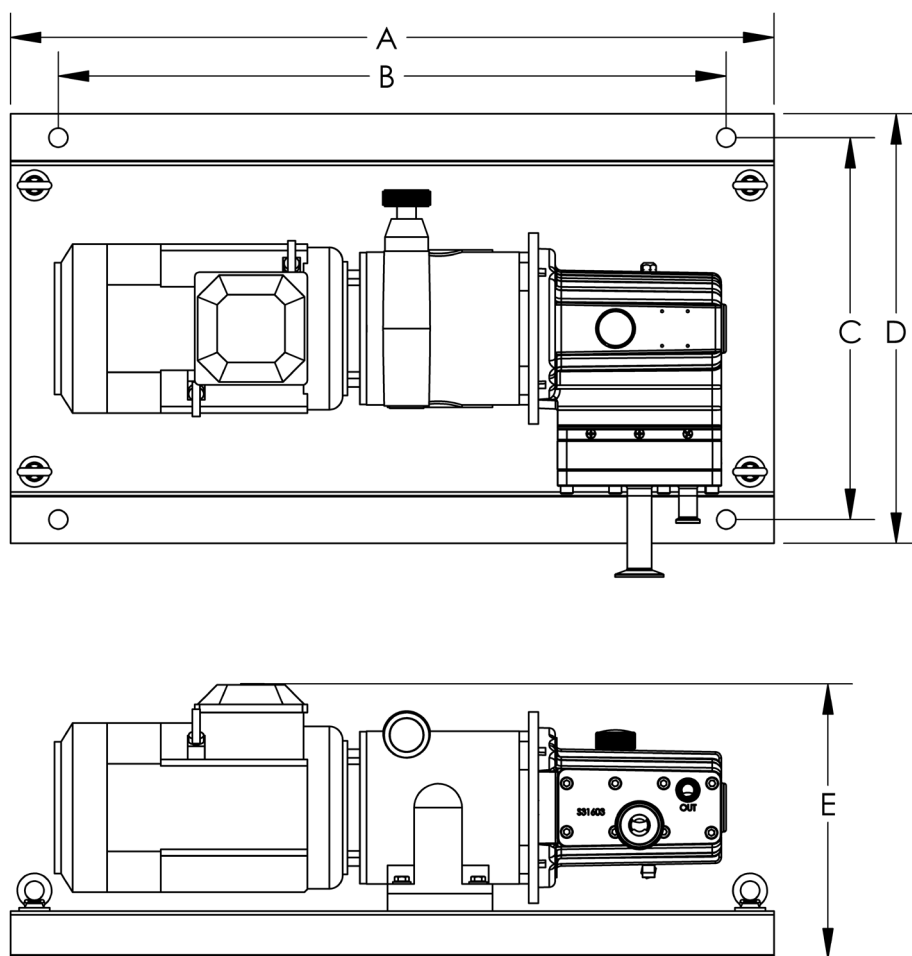
PH10C Pharma-Pro™ | General Assemblies

Pump with Inline Manual Mechanical Variator Options

Baseplate Options

Major Baseplate Dimensions:

Description	Dimensions (mm)					Weight Approx. (Kg)
	A	B	C	D	E	
PH10C...NA100	800	700	350	450	259	45
PH10C...NA200	800	700	350	450	259	45
PH10C...NA300	800	700	350	450	259	60



- 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 PH10 Series Model Number contains 19 digits including 10 customer-specified design and materials options; example: PH10AXAT200JTCX0000

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

Digit	Order Code	Description
1-5		Pump Configuration
	PH10A	Shaft-driven (up to 11.7 l/min) Pump/motor adapters sold separately; see page 4
	PH10B	Vertical Gear Reducer Unit Select an option from Digit 15 and 16-17
	PH10C	Inline Manual Mechanical Variator Unit Select an option from Digit 15 and 16-17
6		Hydraulic End Cam
	X	Max 11.7 l/min (3.1 US gpm) @ 1750 rpm
	E	Max 8.3 l/min (2.1 US gpm) @ 1750 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*
	T2	Hastelloy C276 (Machined, 3.1 material certs, ASME BPE Flange)
10		Manifold Drain Options
	0	No drain
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*
	J	PTFE / PTFE / Hastelloy C276 (All process wetted materials FDA compliant and TSE/BSE free)
13		Valve / Valve Seat / Valve Spring / Spring Retainer*
	T	Hastelloy C / Hastelloy C / Hastelloy C / Hastelloy C
14		Hydra-Oil
	C	EPDM-compatible oil, NSF H1
	E	Food-contact oil, NSF H1

* Polished to 0.8 Ra

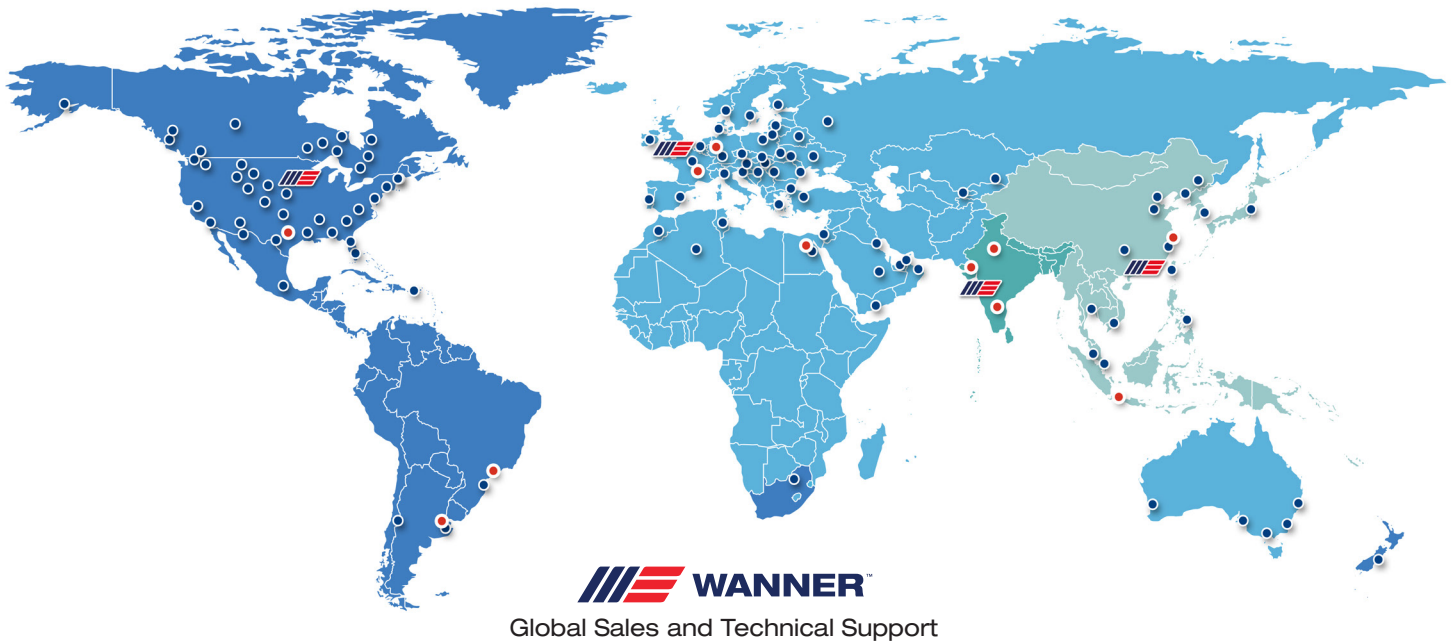
Contact Wanner for:

- Motors, bases, couplings and other pump accessories
- Hydra-Oil selection and specification information
- Design considerations, installation guidelines, and other technical assistance in pump selection

Digit	Order Code	Description
15		Reduction Gearing Options
	X	PH10A – Bare shaft pump; no reduction gearbox required
	C	PH10B – IEC 63 motor frame – B5 mounting (60, 50, 40, 30, 25, 20, 15, 10, 7.5, 5 vertical gearbox ratio options)
	D	PH10B – IEC 71 motor frame – B5 mounting (15, 7.5, 5 vertical gearbox ratio options)
	E	PH10B – IEC 80 motor frame – B5 mounting (40, 30, 20, 10, 7.5, 5 vertical gearbox ratio options)
	N	PH10C – Inline Manual Mechanical Variator options
16-17		Vertical Reduction Gearbox Ratio Options
	00	PH10A – No reduction gearbox
	60	PH10B – 60:1 reduction gearbox
	50	PH10B – 50:1 reduction gearbox
	40	PH10B – 40:1 reduction gearbox
	30	PH10B – 30:1 reduction gearbox
	25	PH10B – 25:1 reduction gearbox
	20	PH10B – 20:1 reduction gearbox
	15	PH10B – 15:1 reduction gearbox
	10	PH10B – 10:1 reduction gearbox
	07	PH10B – 7.5:1 reduction gearbox
	05	PH10B – 5:1 reduction gearbox
		Inline Manual Mechanical Variator Options
		DIGIT 15 "N" ONLY
	A1	PH10C – 19-230 l/hr (5-61 US gph) @ 600 rpm max. at up to 20 bar requires a 0.37kW, IEC 71, 4-pole B14**
	A2	PH10C – 38-462 l/hr (10-122 US gph) @ 1200 rpm max. at up to 20 bar requires a 0.55kW, IEC 71, 2-pole B14**
	A3	PH10C – 38-462 l/hr (10-122 US gph) @ 1200 rpm max. at up to 40 bar requires a 1.5kW, IEC 90, 2-pole B14**
18-19		Vertical Reduction Gearbox with Vertical Mechanical Variator Options; see table on page 6 for options
	00	No mechanical variator
	M1	MEC3-71B14 (PH10B only)
	M2	MEC5-80B14 (PH10B only)

** Motor not included but available on request

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