

1420 Series

THOMAS
by Gardner Denver

FEATURES

- > Oil-less
- > Low power consumption
- > Low sound level
- > Low vibration
- > Long lifetime
- > Compact design
- > Lightweight

TYPICAL APPLICATIONS

- > Medical devices
- > Analysis
- > Battery operated systems

BASE MODEL

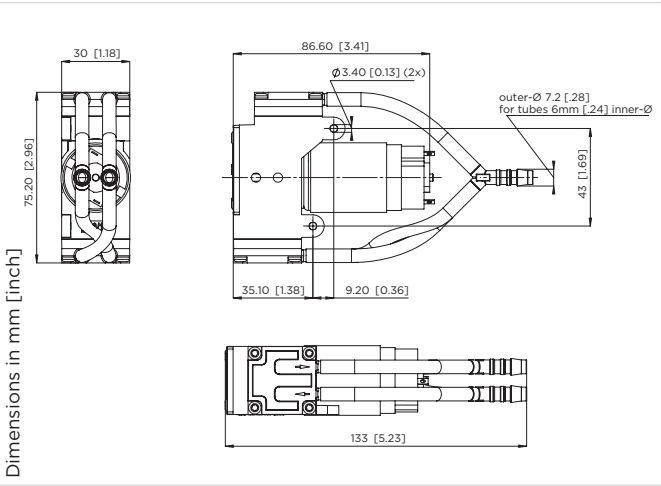
1420 LC
1420 DC
1420 BLDC



Diaphragm

Diaphragm Pump 1420VP LC, 1420VR LC

Flow	8.2 l/min
Final Vacuum	90 %



PNEUMATIC DATA

Description	1420VP/2.2/E/LC		1420VR/2.2/E/LC
Part number	12 V	14200001	14200160
	24 V	14200002	14200161
Max. flow	8.2 l/min		4.2 l/min
Max. intermittent vacuum	78 %		90%
Max. continuous vacuum	78 %		90%
Max. restart vacuum	78 %		90%

ELECTRICAL DATA

Motor type	DC brush ¹⁾	DC brush ¹⁾
Nominal speed	3400 rpm	3400 rpm
Nominal voltage	12/24 V DC	12/24 V DC
Max. power consumption	8.5 W	6.8 W
Motor insulation class	F	F
Protection class	IP00	IP00

GENERAL DATA

Ambient temperature	5 to 50 °C	5 to 50 °C
Media temperature	5 to 50 °C	5 to 50 °C
Weight	220 g	220 g
Configuration	Parallel	Series

WETTED PARTS

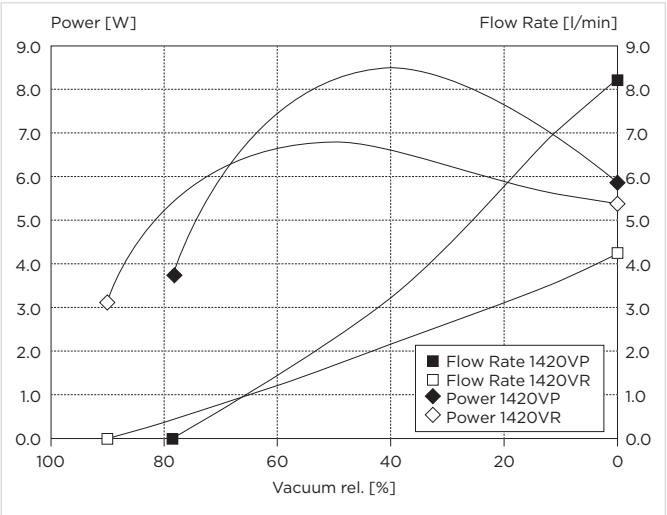
Pump head	PAA	PAA
Diaphragm	EPDM	EPDM
Valves	EPDM	EPDM
Tubing	PUR	PUR
Y-Connector	POM	POM

OPTIONS

PPS

1) radio interference suppression according to EN 55011-B (12 V only)

FLOW CURVES



1420... Stock programme

Model key:

P=Parallel
R=Series
Eccentric
Motor type

1420 VP / 2.2 / E / LC

Type Vacuum Diaphragm, Valves

Diaphragm Pump 1420DP LC

Flow	8.2 l/min
Final Pressure	1.0 bar



PNEUMATIC DATA

Description	1420DP/2.2/E/LC	
Part number	12 V	14200003
	24 V	14200004
Max. flow	8.2 l/min	
Max. intermittent pressure	1.0 bar	
Max. continuous pressure	1.0 bar	
Max. restart pressure	1.0 bar	

ELECTRICAL DATA

Motor type	DC brush ¹⁾
Nominal speed	3400 rpm
Nominal voltage	12/24 V DC
Max. power consumption	7.9 W
Motor insulation class	F
Protection class	IP00

GENERAL DATA

Ambient temperature	5 to 50 °C
Media temperature	5 to 50 °C
Weight	220 g
Configuration	Parallel

WETTED PARTS

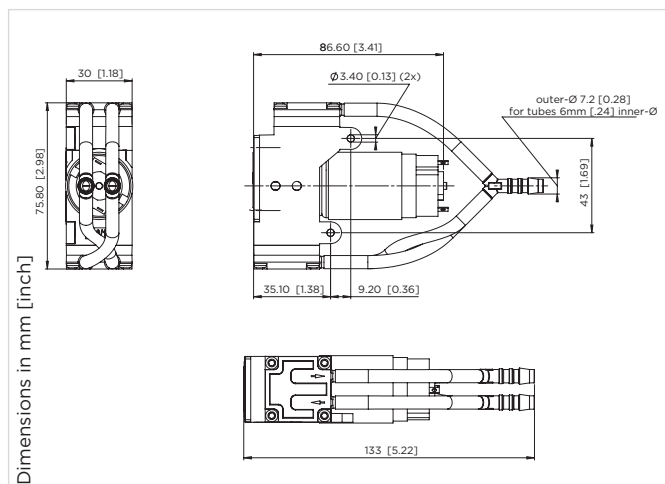
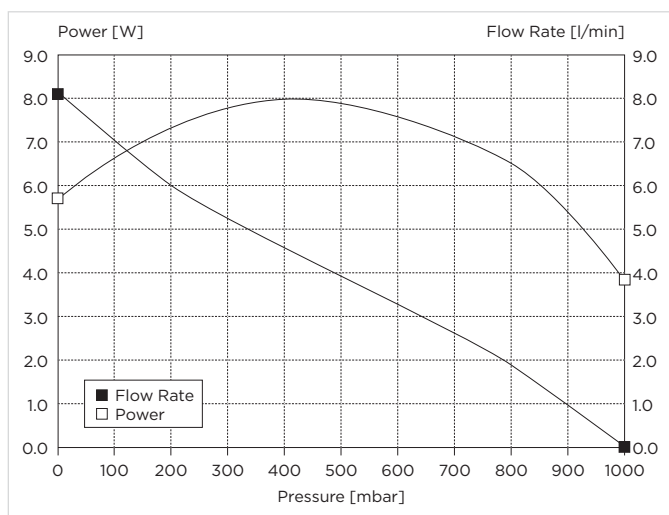
Pump head	PAA
Diaphragm	EPDM
Valves	EPDM
Tubing	PUR
Y-Connector	POM

OPTIONS

PPS

1) radio interference suppression according to EN 55011-B (12 V only)

FLOW CURVES



1420... Stock programme

Model key:

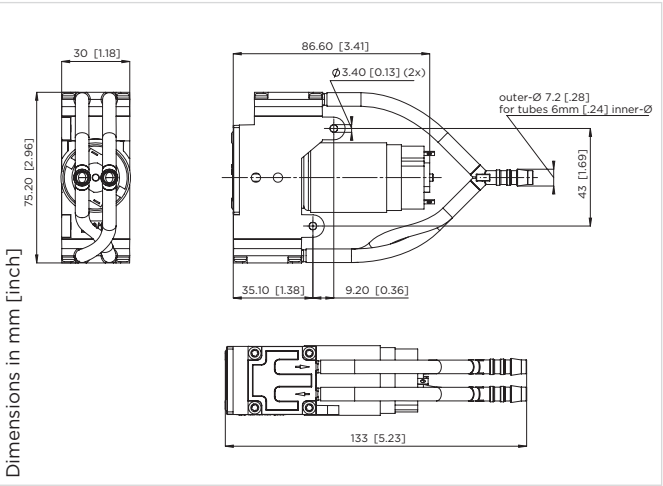
P=Parallel
R=Series
Eccentric
Motor type

1420 DP / 2.2 / E / LC

Type Pressure Diaphragm, Valves

Diaphragm Pump 1420VDP LC

Flow	6.3 l/min
Final Pressure	1.9 bar
Final Vacuum	73 %



PNEUMATIC DATA

Description	1420VDP/1.5/E/LC	
Part number	12 V	14200200
	24 V	14200201
Max. flow	6.3 l/min	
Max. intermittent pressure	1.9 bar	
Max. continuous pressure	0.7 bar	
Max. restart pressure	1.9 bar	
Max. intermittent vacuum	73%	
Max. continuous vacuum	73%	
Max. restart vacuum	73%	

ELECTRICAL DATA

Motor type	DC brush ¹⁾
Nominal speed	3400 rpm
Nominal voltage	12/24 V DC
Max. power consumption	8.3 W
Motor insulation class	F
Protection class	IP00

GENERAL DATA

Ambient temperature	5 to 50 °C
Media temperature	5 to 50 °C
Weight	220 g
Configuration	Parallel

1) radio interference suppression according to EN 55011-B (12 V only)

WETTED PARTS

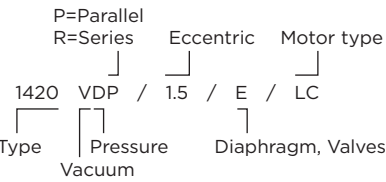
Pump head	PAA
Diaphragm	EPDM
Valves	EPDM
Tubing	PUR
Y-Connector	POM

OPTIONS

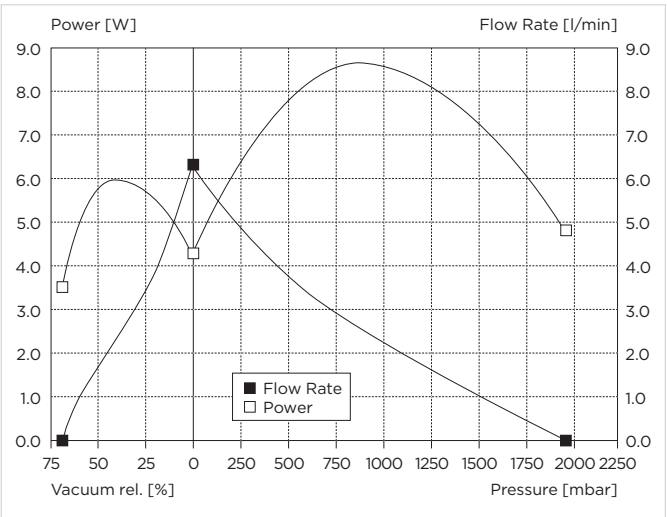
PPS

1420... Stock programme

Model key:

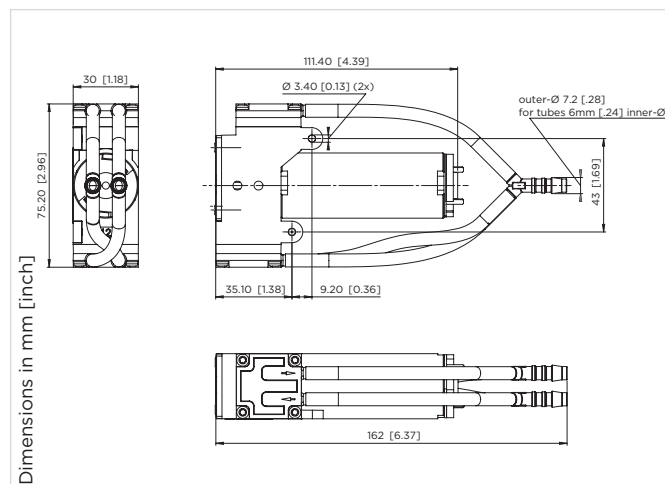


FLOW CURVES



Diaphragm Pump 1420VP DC, 1420VR DC

Flow	7.8 l/min
Final Vacuum	90 %



PNEUMATIC DATA

Description	1420VP/2.2/E/DC	1420VR/2.2/E/DC
Part number	12 V 24 V 14200052 14200053	14200162 14200163
Max. flow	7.8 l/min	4.0 l/min
Max. intermittent vacuum	78 %	90%
Max. continuous vacuum	78 %	90%
Max. restart vacuum	78 %	90%

ELECTRICAL DATA

Motor type	DC brush ¹⁾	DC brush ¹⁾
Nominal speed	3200 rpm	3200 rpm
Nominal voltage	12/24 V DC	12/24 V DC
Max. power consumption	8.1 W	6.3 W
Motor insulation class	E	E
Protection class	IP00	IP00

GENERAL DATA

Ambient temperature	5 to 50 °C	5 to 50 °C
Media temperature	5 to 50 °C	5 to 50 °C
Weight	310 g	310 g
Configuration	Parallel	Series

WETTED PARTS

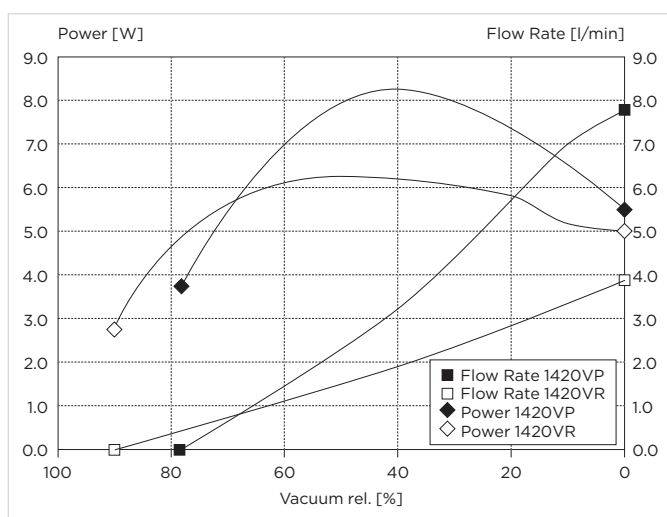
Pump head	PAA	PAA
Diaphragm	EPDM	EPDM
Valves	EPDM	EPDM
Tubing	PUR	PUR
Y-Connector	POM	POM

OPTIONS

PPS

1) radio interference suppression according to EN 55011-B

FLOW CURVES



1420... Stock programme

Model key:

P=Parallel
R=Series
Eccentric
Motor type
1420 VP / 2.2 / E / DC
Type Vacuum Diaphragm, Valves

Diaphragm Pump 1420DP DC

Flow	7.8 l/min
Final Pressure	1.0 bar



PNEUMATIC DATA		
Description	1420DP/2.2/E/DC	
Part number	12 V	14200050
	24 V	14200051
Max. flow	7.8 l/min	
Max. intermittent pressure	1.0 bar	
Max. continuous pressure	1.0 bar	
Max. restart pressure	1.0 bar	

ELECTRICAL DATA	
Motor type	DC brush ¹⁾
Nominal speed	3200 rpm
Nominal voltage	12/24 V DC
Max. power consumption	7.4 W
Motor insulation class	E
Protection class	IP00

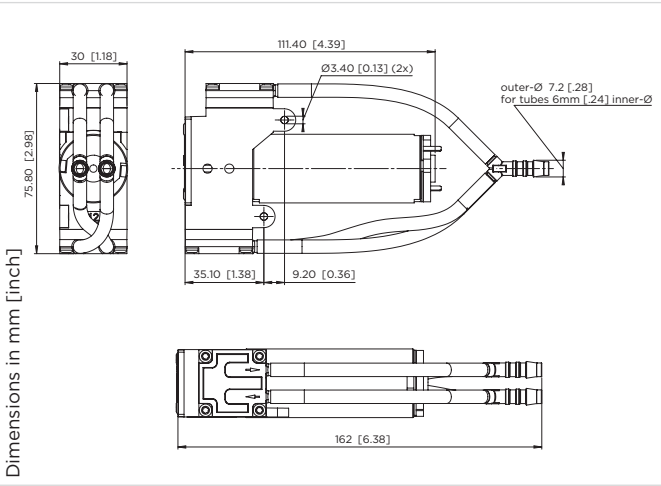
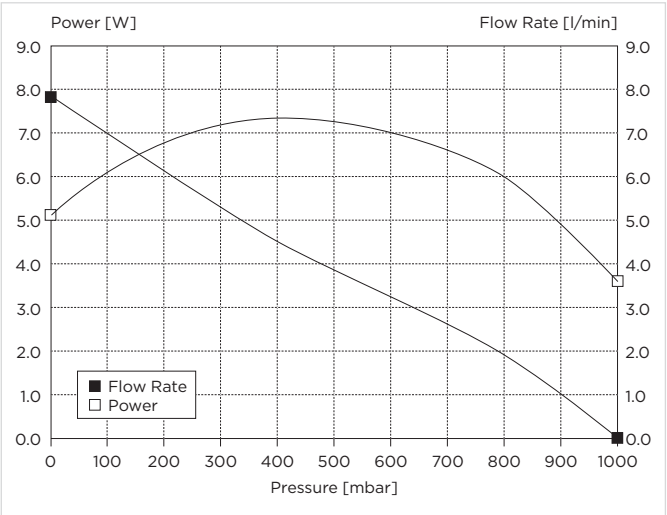
GENERAL DATA	
Ambient temperature	5 to 50 °C
Media temperature	5 to 50 °C
Weight	310 g
Configuration	Parallel

WETTED PARTS	
Pump head	PAA
Diaphragm	EPDM
Valves	EPDM
Tubing	PUR
Y-Connector	POM

OPTIONS
PPS

1) radio interference suppression according to EN 55011-B

FLOW CURVES



1420... Stock programme

Model key:

P=Parallel
R=Series
Eccentric
Motor type

1420 DP / 2.2 / E / DC

Type Pressure Diaphragm, Valves

Diaphragm Pump 1420VDP DC

Flow	6.0 l/min
Final Pressure	1.9 bar
Final Vacuum	73 %



PNEUMATIC DATA

Description	1420VDP/1.5/E/DC	
Part number	12 V	14200202
	24 V	14200203
Max. flow	6.0 l/min	
Max. intermittent pressure	1.9 bar	
Max. continuous pressure	0.7 bar	
Max. restart pressure	1.9 bar	
Max. intermittent vacuum	73%	
Max. continuous vacuum	73%	
Max. restart vacuum	73%	

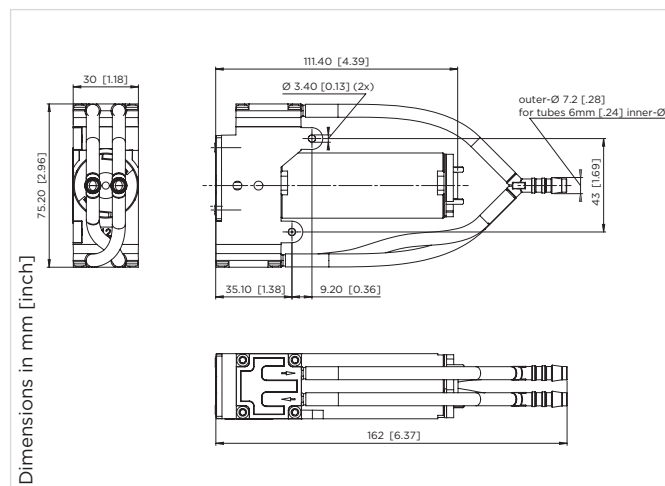
ELECTRICAL DATA

Motor type	DC brush ¹⁾
Nominal speed	3200 rpm
Nominal voltage	12/24 V DC
Max. power consumption	7.9 W
Motor insulation class	E
Protection class	IP00

GENERAL DATA

Ambient temperature	5 to 50 °C
Media temperature	5 to 50 °C
Weight	310 g
Configuration	Parallel

1) radio interference suppression according to EN 55011-B



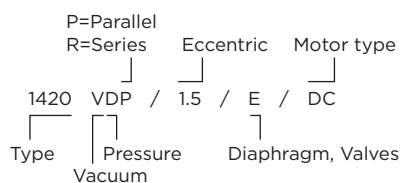
WETTED PARTS

Pump head	PAA
Diaphragm	EPDM
Valves	EPDM
Tubing	PUR
Y-Connector	POM

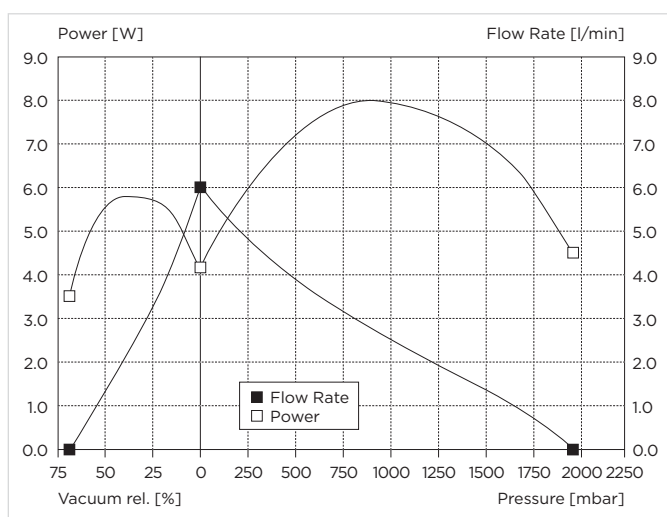
OPTIONS

PPS

Model key:



FLOW CURVES



Diaphragm Pump 1420VP BLDC

Flow	11 l/min
Final Vacuum	78 %



PNEUMATIC DATA

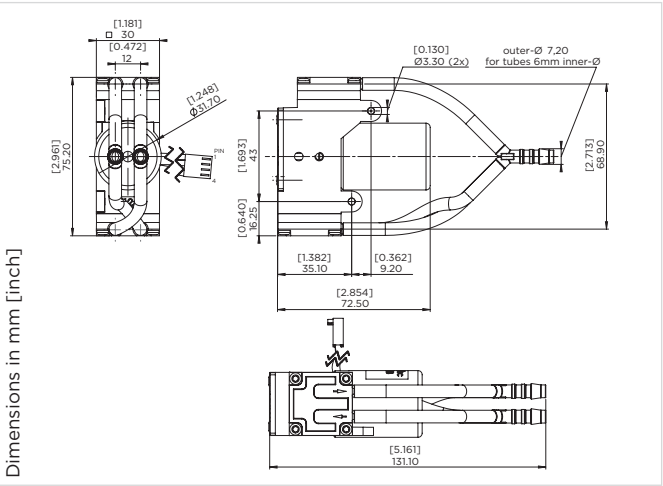
Description	1420VP/2.2/E/BLDC	
Part number	12 V	14200500
	24 V	14200501
Max. flow	11 l/min	
Max. intermittent vacuum	78 %	
Max. continuous vacuum	78 %	
Max. restart vacuum	78 %	

ELECTRICAL DATA

Motor type	Brushless DC	
Nominal speed	0 to 4600 rpm	
Nominal voltage	12/24 V DC	
Drive electronics	integrated with reverse supply voltage protection	
Max. power consumption	10.5 W	
Motor insulation class	B	
Protection class	IP20	
Connector	Housing:	Molex KK 22-01-2045
	Terminal:	Molex KK 08-50-0031

GENERAL DATA

Ambient temperature	15 to 40 °C
Media temperature	15 to 40 °C
Weight	190 g
Configuration	parallel



WETTED PARTS

Pump head	PAA
Diaphragm	EPDM
Valves	EPDM
Tubing	PUR
Y-Connector	POM

OPTIONS

PPS

WIRING DIAGRAM

Pin 1	V Supply	Red	12 V DC (max. voltage range: 10..18 V DC) 24 V DC (max. voltage range: 10..28 V DC)
Pin 2	Ground	Black	Ground for Vsupply (PIN 1) and Speed Control (PIN 3)
Pin 3	Speed Control	White	analog: 0..5 V DC (max. 28V) PWM: 6..20kHz - 14..96% Speed voltage input threshold: 0.2 V
Pin 4	Tacho out	Green	18 pulses per revolution Pulse time „LOW“: 195 µs Output level „LOW“: 0 / max. 0.5 V Output level „HIGH“: min. 4 V / max. 5 V

Optional: Adapter for 2-wire duty incl. potentiometer for speed adjustment

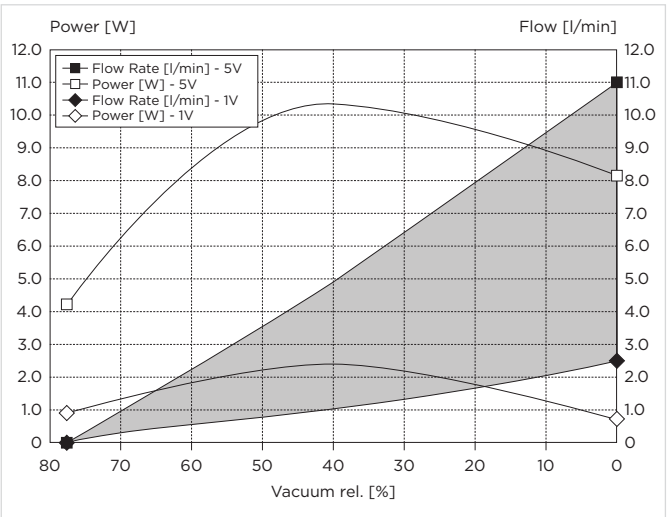
Model key:

P=Parallel
R=Series
Eccentric
Motor type

1420 VP / 2.2 / E / BLDC

Type Vacuum Diaphragm, Valves

FLOW CURVES



Diaphragm Pump 1420DP BLDC

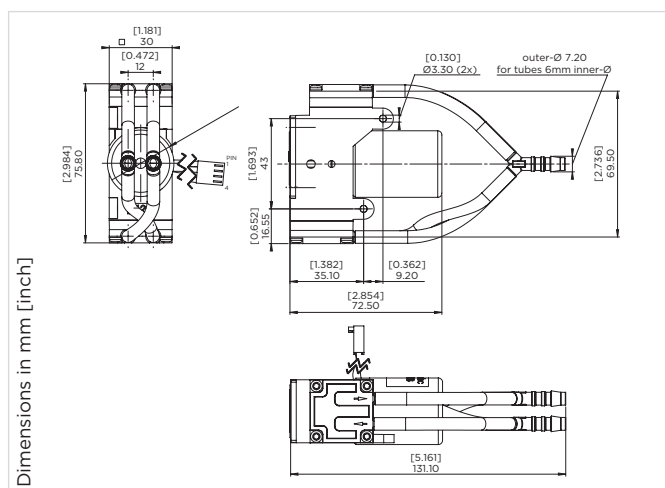
Flow	11 l/min
Final Pressure	1.0 bar



PNEUMATIC DATA		
Description	1420DP/2.2/E/BLDC	
Part number	12 V	14200502
	24 V	14200503
Max. flow	11 l/min	
Max. intermittent pressure	1.0 bar	
Max. continuous pressure	1.0 bar	
Max. restart pressure	1.0 bar	

ELECTRICAL DATA		
Motor type	Brushless DC	
Nominal speed	0 to 4600 rpm	
Nominal voltage	12/24 V DC	
Drive electronics	integrated with reverse supply voltage protection	
Max. power consumption	10.5 W	
Motor insulation class	B	
Protection class	IP20	
Connector	Housing:	Molex KK 22-01-2045
	Terminal:	Molex KK 08-50-0031

GENERAL DATA		
Ambient temperature	15 to 40 °C	
Media temperature	15 to 40 °C	
Weight	190 g	
Configuration	parallel	



WETTED PARTS	
Pump head	PAA
Diaphragm	EPDM
Valves	EPDM
Tubing	PUR
Y-Connector	POM

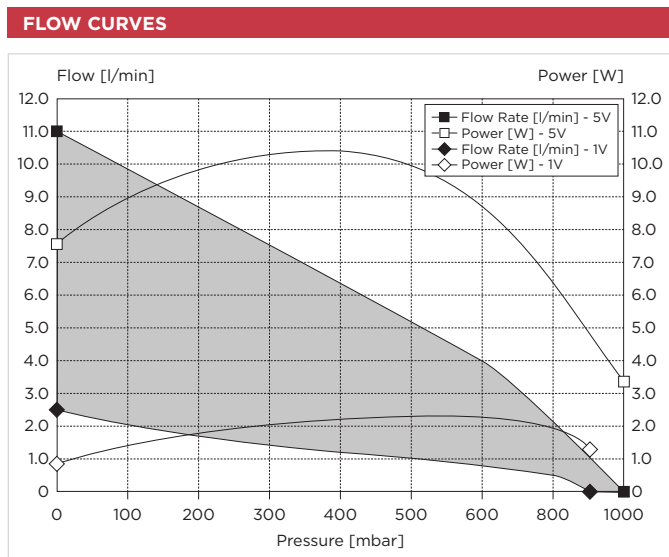
OPTIONS
PPS

WIRING DIAGRAM				
Pin 1	V Supply	Red	12 V DC (max. voltage range: 10..18 V DC)	
Pin 2	Ground	Black	24 V DC (max. voltage range: 10..28 V DC)	
Pin 3	Speed Control	White	Ground for Vsupply (PIN 1) and Speed Control (PIN 3)	
Pin 4	Tacho out	Green	analog: 0..5 V DC (max. 28V) PWM: 6..20kHz - 14..96% Speed voltage input threshold: 0.2 V 18 pulses per revolution Pulse time „LOW“: 195 µs Output level „LOW“: 0 / max. 0.5 V Output level „HIGH“: min. 4 V / max. 5 V	

Optional: Adapter for 2-wire duty incl. potentiometer for speed adjustment

Model key:

P=Parallel
R=Series
Eccentric
Motor type
1420 DP / 2.2 / E / BLDC
Type Vacuum Diaphragm, Valves



Diaphragm Pump 1420VDP BLDC

Flow	8.2 l/min
Final Pressure	1.9 bar
Final Vacuum	73 %



PNEUMATIC DATA

Description	1420VDP/1.5/E/BLDC	
Part number	12 V	14200504
	24 V	14200505
Max. flow	8.2 l/min	
Max. intermittent pressure	1.9 bar	
Max. continuous pressure	0.7 bar	
Max. intermittent pressure	1.9 bar	
Max. intermittent vacuum	73 %	
Max. continuous vacuum	73 %	
Max. restart vacuum	73 %	

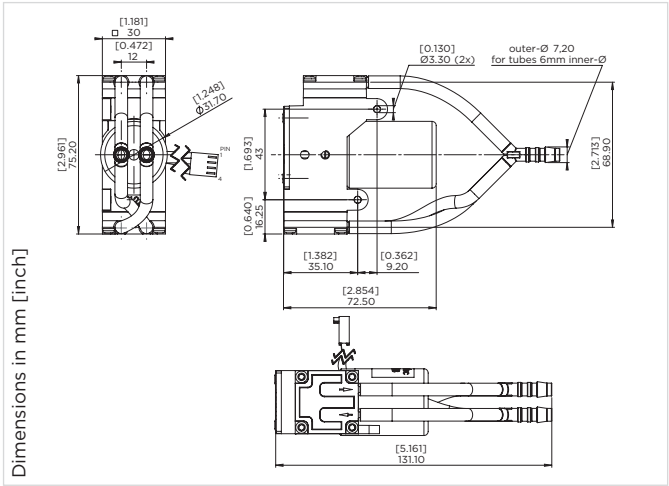
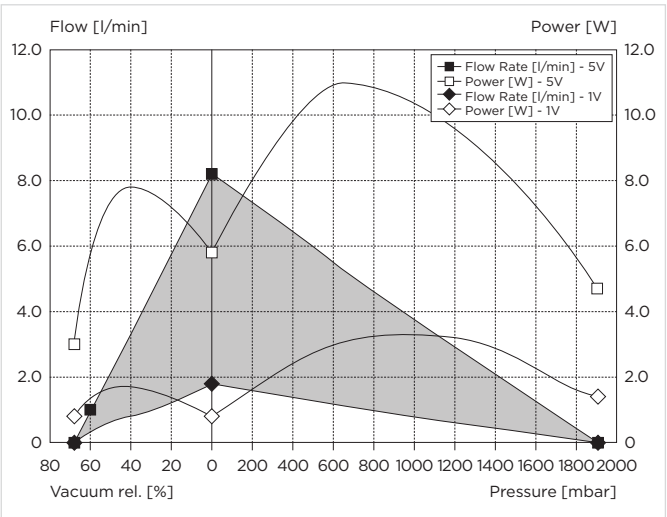
ELECTRICAL DATA

Motor type	Brushless DC	
Nominal speed	0 to 4600 rpm	
Nominal voltage	12/24 V DC	
Drive electronics	integrated with reverse supply voltage protection	
Max. power consumption	11 W	
Motor insulation class	B	
Protection class	IP20	
Connector	Housing:	Molex KK 22-01-2045
	Terminal:	Molex KK 08-50-0031

GENERAL DATA

Ambient temperature	15 to 40 °C
Media temperature	15 to 40 °C
Weight	190 g
Configuration	parallel

FLOW CURVES



WETTED PARTS

Pump head	PAA
Diaphragm	EPDM
Valves	EPDM
Tubing	PUR
Y-Connector	POM

OPTIONS

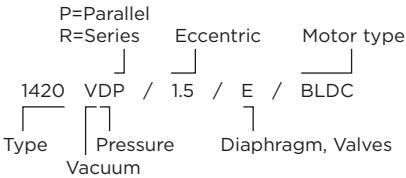
PPS

WIRING DIAGRAM

Pin 1	V Supply	Red	12 V DC (max. voltage range: 10..18 V DC) 24 V DC (max. voltage range: 10..28 V DC)
Pin 2	Ground	Black	Ground for Vsupply (PIN 1) and Speed Control (PIN 3)
Pin 3	Speed Control	White	analog: 0..5 V DC (max. 28V) PWM: 6..20kHz - 14..96% Speed voltage input threshold: 0.2 V
Pin 4	Tacho out	Green	18 pulses per revolution Pulse time „LOW“: 195 µs Output level „LOW“: 0 / max. 0.5 V Output level „HIGH“: min. 4 V / max. 5 V

Optional: Adapter for 2-wire duty incl. potentiometer for speed adjustment

Model key:



Diaphragm Pump 1420HP BLDC

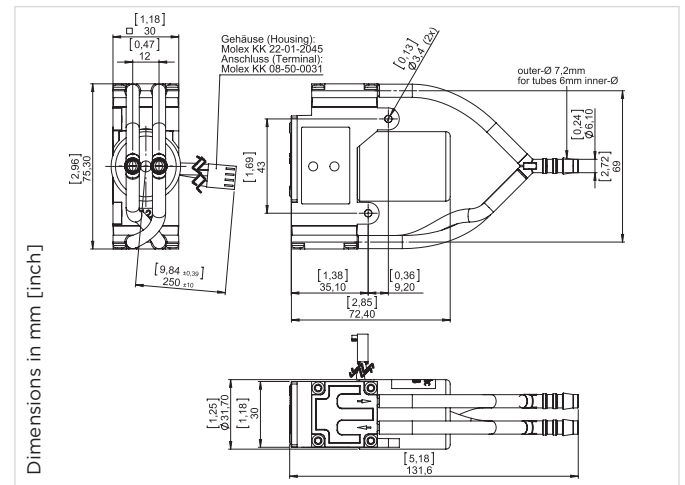
Flow	10.4 l/min
Final pressure	2.7 bar



PNEUMATIC DATA		
Description	1420HP/2.2/TF/BLDC	
Part number	12 V	14201005
	24 V	14201006
Max. flow	10.4 l/min	
Max. intermittent pressure	2.7 bar	
Max. continuous pressure	0.5 bar @ 21°C (room temperature)	
Max. restart pressure	0.5 bar @ 21°C (room temperature)	

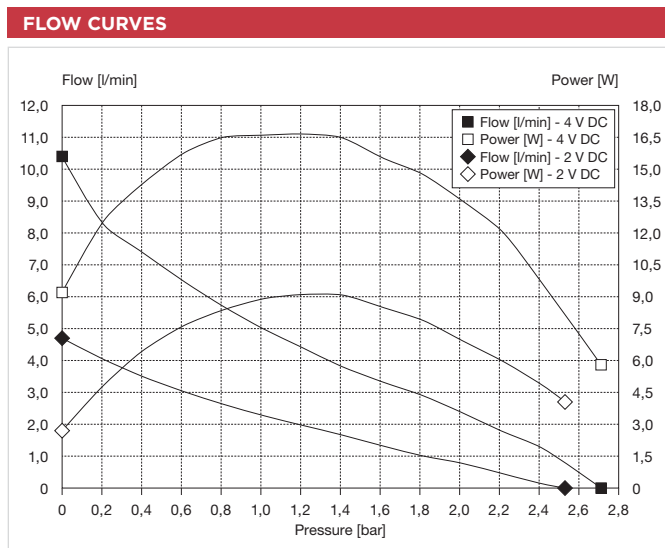
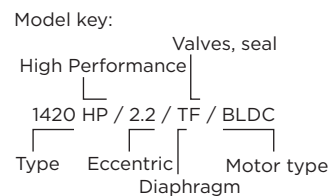
ELECTRICAL DATA		
Motor type	Brushless DC	
Nominal speed	0 - 4600 rpm	
Nominal voltage	12/24 V DC	
Drive electronics	integrated with reverse supply voltage protection	
Max. power consumption	16.6 W	
Motor insulation class	B	
Protection class	IP20	
Connector	Housing:	Molex KK 22-01-2045
	Terminal:	Molex KK 08-50-0031

GENERAL DATA		
Ambient temperature	15 to 40 °C	
Media temperature	15 to 40 °C	
Weight	205 g	
Configuration	Parallel	



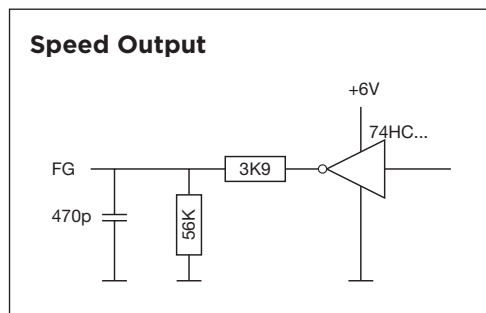
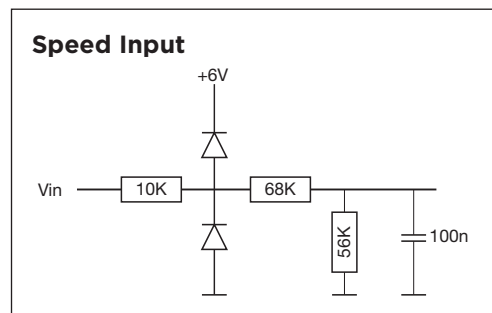
WETTED PARTS	
Pump head	PPS
Diaphragm	ThomaLast
Valves	FKM
Tubing	PUR
Y-Connector	POM

WIRING DIAGRAM			
Pin 1	V Supply	Red	12 V DC (max. voltage range: 10..18 V DC) 24 V DC (max. voltage range: 10..28 V DC)
Pin 2	Ground	Black	Ground for V Supply (Pin 1) and Speed control (Pin 3)
Pin 3	Speed Control	White	analog: 0.5 V DC PWM: 6..20 kHz ~ 14..96% Speed voltage input threshold: 0.2 V
Pin 4	Tacho out	Green	18 pulses per revolution Pulse time "LOW": 195 µs Output level "LOW": 0 / max. 0.5 V Output level "HIGH": min. 4 V / max. 5 V

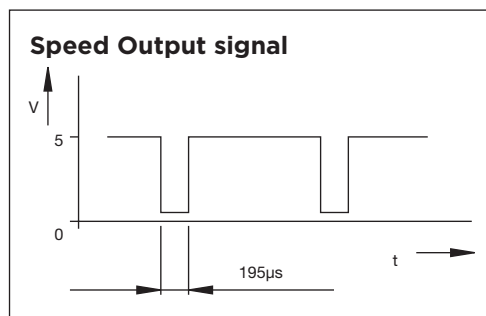


Wiring diagram (Brushless DC motor)

	Function	Colour	Control
Pin 1	V Supply	Red	12 V DC (max. voltage range: 10..18 V DC) 24 V DC (max. voltage range: 10..28 V DC)
Pin 2	Ground	Black	Ground for Vsupply (PIN 1) and Speed Control (PIN 3)
Pin 3	Speed Control	White	analog: 0..5 V DC (max. 28V) PWM: 6..20kHz - 14..96% Speed voltage input threshold: 0.2 V
Pin 4	Tacho out	Green	18 pulses per revolution Pulse time „LOW“: 195 μ s Output level „LOW“: 0 / max. 0.5 V Output level „HIGH“: min. 4 V / max. 5 V



Optional: Adapter for 2-wire duty incl. potentiometer for speed adjustment



Options / Accessories

P/N 29011932

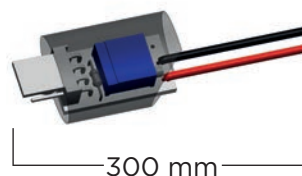
Adapter for BLDC motor

4-2 wire w/ manual speed control
12 V DC "red"

P/N 29011933

Adapter for BLDC motor

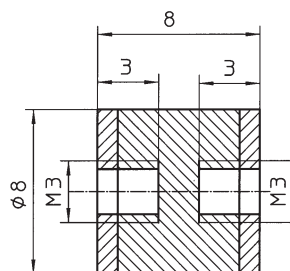
4-2 wire w/ manual speed control
24 V DC "black"



P/N 91420505

Rubber feet assy.

(2 pcs. incl. screws and washers)



Notes

PUMP AND COMPRESSOR SOLUTIONS FOR OEMS WORLDWIDE

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THOMAS
by Gardner Denver

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