

# 400 FD/A single channel precision pump

400/A series panel mount pumps

## Features and benefits

- Flow rates from  $\mu\text{l}/\text{min}$  to 30 ml/min
- Instrument quality in very compact size 31 x 48 mm
- Spring-loaded track for precision and extended tube life
- For 0.85 mm tube wall thickness
- Compatible with continuous tubing or tube elements
- 12 V and 24 V DC drives with a range of maximum speeds
- Pumphead available in standard or high pressure



## 400 FD/A single channel precision pump performance

Flow rates (ml/min)								
Tube bore (mm)	(ml/rev)	Speed (rpm)						
		13	26	35	47	74	155	290
0.25	0.0025	0.03	0.07	0.09	0.12	0.19	0.39	0.73
0.51	0.0097	0.13	0.25	0.34	0.46	0.72	1.5	2.8
0.76	0.020	0.26	0.52	0.7	0.94	1.5	3.1	5.8
1.02	0.034	0.44	0.88	1.2	1.6	2.5	5.3	9.9
1.22*	0.046	0.6	1.2	1.6	2.2	3.4	7.1	13
1.52	0.068	0.88	1.8	2.4	3.2	5	11	20
2.06	0.104	1.4	2.7	3.6	4.9	7.7	16	30

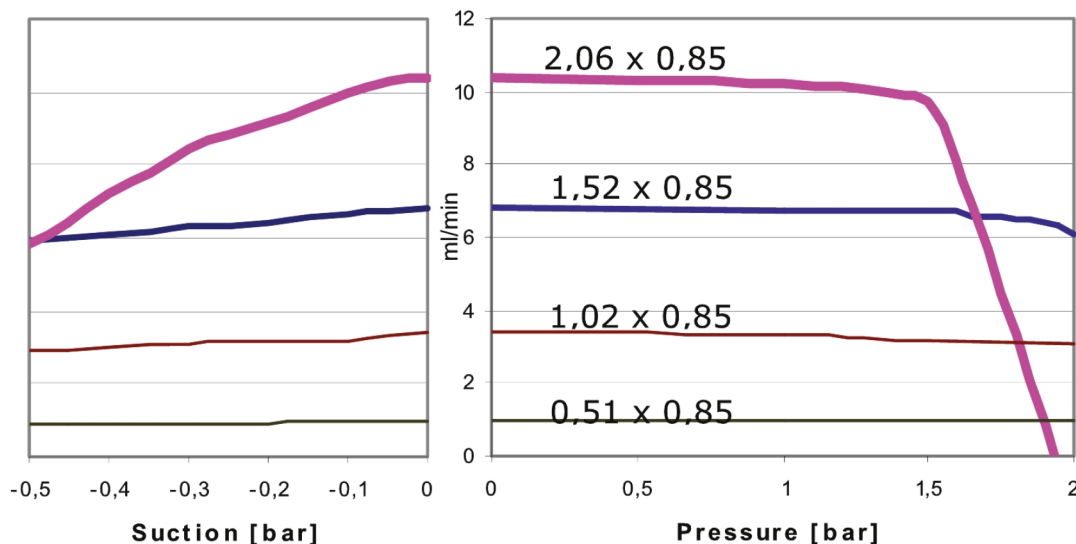
**Note: Reduced tube life with tube sizes from 1.65mm up to 2.06mm**

Santoprene tubing wall 0.85mm, zero pressure and no suction height

All flow figures are nominal and may vary +/-10% depending on tube tolerances

\* This dimension is only available in PVC

## Pressure Chart Santoprene tubing @100rpm



## Technical specifications

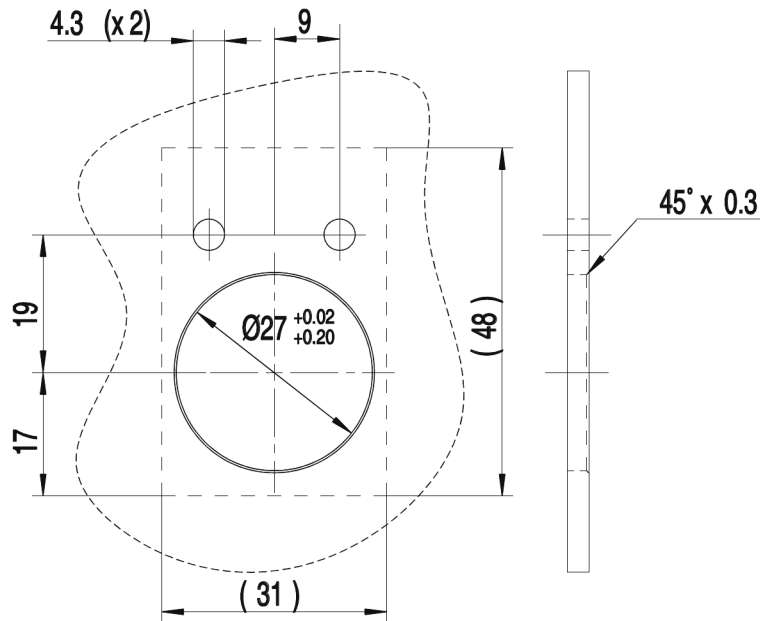
	400 FD/A single channel precision pump
Motor types	Fixed speed DC motor
Pumphead options	400/A
Flow rate range	0.03 ml/min to 30 ml/min
Operating speed range	to 290 rpm
Supply voltage	12 V DC, 24 V DC
Weight	0.14 kg (0.309 lbs)
Gearbox ratio	Spur; 188:1, Spur; 21:1, Spur; 43:1, Spur; 90:1
Compatible tubing bore size	0.25, 0.51, 0.76, 1.02, 1.22, 1.52, 2.06 mm
Compatible tubing wall thickness	0.85 mm

## Materials of construction

	400 FD/A single channel precision pump
Pumphead body assembly	Acetal (black), Polyester resin (PET)
Pumphead rotor assembly	Acetal (black), Stainless steel
Pumphead roller assembly	Acetal (black)
Driveshaft	Stainless steel
Springs	Stainless steel

Information listed covers the complete range. For detailed specifications of individual models/components refer to product reference manual or contact WMFTS representative.

## 400 FD/A single channel precision pump dimensions



**Panel Cutout**

## Product codes

12V					
Description/Motor type	Nominal speed (rpm)	Current nominal (mA)	Track setting	Pumps for continuous tubing	Pumps for tube element
L	13	<30	standard	040.K91A.B1C	040.K91A.T1C
			+Pressure	040.K91A.B15	040.K91A.T15
L	26	~35	standard	040.KC1A.B1C	040.KC1A.T1C
			+Pressure	040.KC1A.B15	040.KC1A.T15
L	47	~55	standard	040.KK1A.B1C	040.KK1A.T1C
			+Pressure	040.KK1A.B15	040.KK1A.T15
HL	74	~120	standard	040.KN1A.B1C	040.KN1A.T1C
			+Pressure	040.KN1A.B15	040.KN1A.T15
HV	155	~180	standard	040.QR1A.B1C	040.QR1A.T1C
			+Pressure	040.QR1A.B15	040.QR1A.T15
HV	290	~250	standard	040.QT1A.B1C	040.QT1A.T1C
			+Pressure	040.QT1A.B15	040.QT1A.T15

24V					
Description/Motor type	Nominal speed (rpm)	Current nominal (mA)	Track setting	Pumps for continuous tubing	Pumps for tube element
HL	35	<50	standard	040.PG1A.B1C	040.PG1A.T1C
			+Pressure	040.PG1A.B15	040.PG1A.T15
HL	74	~60	standard	040.PN1A.B1C	040.PN1A.T1C
			+Pressure	040.PN1A.B15	040.PN1A.T15
HV	155	~90	standard	040.PR1A.B1C	040.PR1A.T1C
			+Pressure	040.PR1A.B15	040.PR1A.T15
HV	290	~125	standard	040.PT1A.B1C	040.PT1A.T1C
			+Pressure	040.PT1A.B15	040.PT1A.T15

+Pressure track recommended with PVC-tubing and with >Ø1.0mm ID Santoprene and Silicone >Ø1.5mm ID tubing.

Some tubing-speed combinations may not be suitable for continuous tubing models

Motor	ØD	L	Description
L	27	13rpm: 47mm 47rpm: 42mm	Small metal brush DC-motor with Varisto-Disc noise suppression
HL	30	35.74rpm: 71mm	Carbon brush DC-motor with Varisto-Disc noise suppression. 3-pulse encoder available
HV	30	155rpm: 71mm 290rpm: 66mm	Carbon brush DC-motor with Varisto-Disc noise suppression. 3-pulse encoder available

Disclaimer: All flow rates shown were obtained pumping water at 20 °C (68 °F) with zero suction and delivery heads. Watson-Marlow, Pumpsil, PureWeld XL, Bioprene and Marprene are trademarks of Watson-Marlow Limited. Disclaimer: The information contained in this document is believed to be correct but Watson-Marlow Limited accepts no liability for any errors it contains, and reserves the right to alter specifications without notice. GORE and STA-PURE are trademarks of W. L. Gore & Associates. Please state the product code when ordering pumps and tubing.



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