

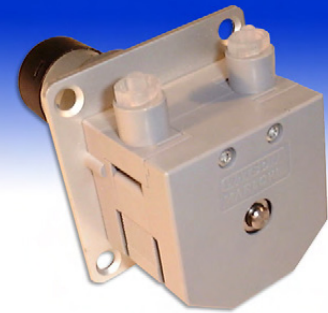
400F/M1 one channel ultra-compact pump

400series

Watson-Marlow Pumps

FEATURES AND BENEFITS

- Easy to fit compact design
- Tube elements for easy loading
- Tube elements enclosed in pumphead chamber
- Luer fittings to connect transfer tubes
- Wide range of gear motors available
- Flow rates up to 200 ml/min and up to 2 bars backpressure



Watson-Marlow...Innovation in Full Flow

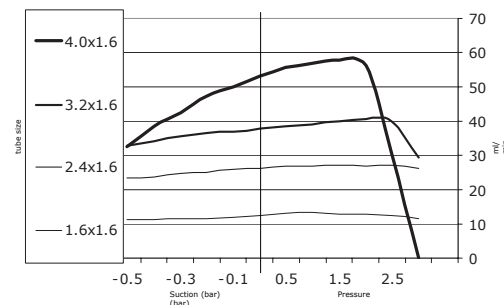
PERFORMANCE

Flow rates (ml/min) Tubing 1.6mm wall

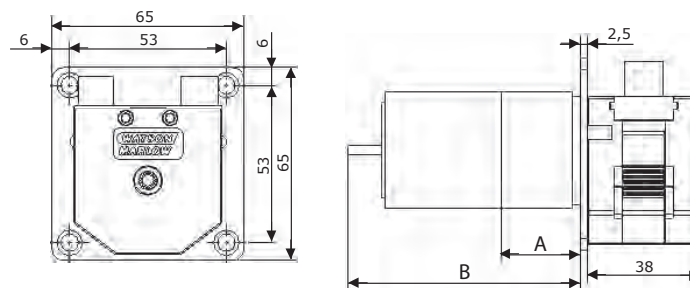
Tube bore (mm)	Speed (rpm)													
	4	5	10	12	20	25	40	70	75	100	160	200	270	350
1.6	0.44	0.55	1.1	1.32	2.2	2.7	4.4	7.66	8.2	11	17.4	22	29	38
2.4	0.96	1.2	2.4	2.9	4.8	6.0	9.6	16.8	18	24	38.3	48	64.8	84
3.2	1.6	2.1	4.1	4.9	8.2	10	16	28.8	31	41	65.4	82	111.4	144
4.0	2.4	3.0	5.9	7.1	11	14	23	41	44	59	94.6	118	160	207

Custom Options
Pumphead
Other materials
Optional colours available
Custom mounting panel
Drives
Alternative speeds
12VDC 400FDC
Other drive options
400SCB/534 speed control board

Suction/Pressure chart



DIMENSIONS



Motor type	400FDC/M1 5W	400FD/M1 5W	400FDL/M1 5W	400FS/M1 2W
Dimension A	L=26.5mm x Ø39.6mm	L=26.5mm x Ø39.6mm	L=26.5mm x Ø39.6mm	Total lenght (A+B)=32.9mm*
Dimension B	L=79.0mm* x Ø39.6mm	L=85.3mm* x Ø39.6mm	L=75.0mm* x Ø39.6mm	Total diameter (A+B)=78.6mm

*=maximum length behind mounting plate

TECHNICAL SPECIFICATION

Pumptype	400/M1
Pumptype	One channel peristaltic pump
Tubing	1.6mm wall, for tube elements

	400FDC/M1 5W	400FD/M1 5W	400FDL/M1 5W	400FS/M1 2W
Recommended use	Continuous or intermittent	Continuous or intermittent	Continuous or intermittent	Continuous or intermittent
Operation	CW and CCW	CW and CCW	CCW	CW
Approximate motor life	Up to 5000 hrs	Up to 3000 hrs	Up to 20000 hrs (the limitation is typically the gearbox)	Up to 5000 hrs
Supply voltage	24-30VDC	24VDC	24 VDC	110/230 VAC (60/50 Hz)
Power consumption	5W	5W	5W	2W
Brushes	Silver palladium precious metal	Carbon	None - brushless drive	None
Speed control	PWM or voltage control	Voltage control	Voltage control (down to 50%)	Fixed speed
Gearbox	Spur; 15:1, 30:1, 75:1, 250:1	Spur; 30:1, 75:1, 250:1	Spur; 15:1, 30:1, 75:1, 250:1	Spur; 125:1
Operating temperature	-10 to +45C	-10 to +45C	-10 to +45C	-10 to +45C

ORDER INFORMATION

MATERIALS OF CONSTRUCTION

Motor type	Voltage	Speed rpm	Product code
Standard DC 5W	24-30VDC	200rpm	040.ES1M.E1C
Standard DC 5W	24-30VDC	100rpm	040.EP1M.E1C
Standard DC 5W	24-30VDC	40rpm	040.EH1M.E1C
Standard DC 5W	24-30VDC	12rpm	040.E81M.E1C
Economy DC 5W	24VDC	350rpm	040.BU1M.E1C
Economy DC 5W	24VDC	200rpm	040.BS1M.E1C
Economy DC 5W	24VDC	75rpm	040.BN1M.E1C
Economy DC 5W	24VDC	25rpm	040.BC1M.E1C
Brushless DC 5W	24VDC	270rpm	040.FT1M.E1C
Brushless DC 5W	24VDC	160rpm	040.FQ1M.E1C
Brushless DC 5W	24VDC	70rpm	040.FK1M.E1C
Brushless DC 5W	24VDC	20rpm	040.F91M.E1C
SYNCHRONOUS AV 2W	110VAC (60Hz)	25rpm	040.HC1M.E1C
SYNCHRONOUS AV 2W	220VAC (50Hz)	20rpm	040.JA1M.E1C
SYNCHRONOUS AV 2W	110VAC (60Hz)	12rpm	040.H81M.E1C
SYNCHRONOUS AV 2W	220VAC (50Hz)	10rpm	040.J71M.E1C
SYNCHRONOUS AV 2W	110VAC (60Hz)	5rpm	040.H41M.E1C
SYNCHRONOUS AV 2W	220VAC (50Hz)	4rpm	040.J31M.E1C

Component	Material
Pump house	Acetal
Rotor	Acetal
Rollers	Acetal
Track	Acetal
Tube holder	Acetal
Shafts	Acid resistant stainless steel
Mounting panel	Anodised aluminium
Screws	Acid resistant stainless steel

Standard 410 Elements for 400F/M1 pumpheads				
Bore/Wall	Bioprene	Tygon® E-3603	Peroxide cured Silicone	Connects to
1.6/1.6 mm	049.EF6M.E16	049.ET6M.E16	049.EH6M.E16	FTLL, see transfer connections below
2.4/1.6 mm	049.EF6M.E24	049.ET6M.E24	049.EH6M.E24	FTLL, see transfer connections below
3.2/1.6 mm	049.EF6M.E32	049.ET6M.E32	049.EH6M.E32	FTLL, see transfer connections below
4.0/1.6 mm	049.EF6M.E40	049.ET6M.E40	049.EH6M.E40	FTLL, see transfer connections below

Transfer connections	
Connects to	Ordering codes
Tube bore 1.6	FTLL210-6
Tube bore 2.4	FTLL220-6
Tube bore 3.2	FTLL230-6
Tube bore 4.0	FTLL240-6
Tube bore 4.8	FTLL250-6

All flow rates shown were obtained pumping water at 20C (68F) with zero suction and delivery heads. Watson-Marlow, 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. LoadSure is a trademark of Watson-Marlow Limited. © STA-PURE PFL and © STA-PURE PCS are registered trademarks of W.L Gore & Associates Inc. Please state the product code when ordering pumps and tubing.

**WATSON
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Pumps**

wmpg.com
info@wmpg.com
+44 (0) 1326 370370