

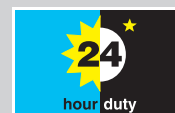
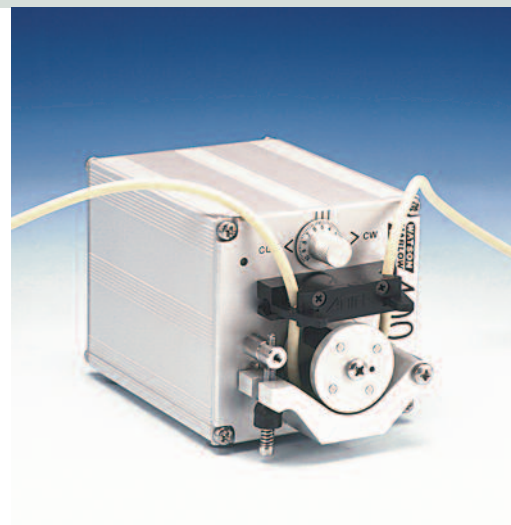
401U/D1, 401U/DM2 and 401U/DM3 auto/manual control pumps

400 series

Watson-Marlow Pumps Group

COMMON FEATURES AND BENEFITS

- 401U/D1 flow rates up to 120ml/min and 401U/DM2 and DM3 flow rates up to 36ml/min per channel
- 401U/D1 single channel pump accepts continuous tubing in six bore sizes
- 401U/DM2 two channel pump and 401U/DM3 three channel pump accepts double segment manifold tubing for microlitre flows
- Pumpheads have adjustable occlusion for precision flow rates
- IP21 ingress protection



Watson-Marlow ... Value for life

FUNCTIONALITY

Pump drives	401U/D1	401U/DM2	401U/DM3
Manual/auto control			
Single potentiometer for speed control, direction and stop/start	•	•	•
1.2-12rpm 10:1 speed control	•	•	•
4-40rpm 10:1 speed control	•	•	•
10-100rpm 10:1 speed control		•	•
20-200rpm 10:1 speed control	•		
Reversible drive	•	•	•
Analogue speed control and remote switching			
Via a 15D connector	•	•	•

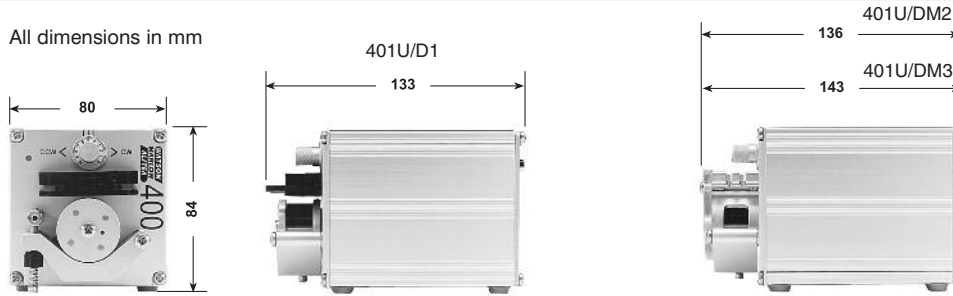
PERFORMANCE

Flow rate ranges, per channel (ml/min)							
	Speed rpm	0.5mm	0.8mm	1.6mm	2.4mm	3.2mm	4.0mm
401U/D1	1.2 - 12	0.01 - 0.1	0.03 - 0.3	0.14 - 1.4	0.29 - 2.9	0.49 - 4.9	0.70 - 7.0
401U/D1	4 - 40	0.05 - 0.5	0.12 - 1.2	0.45 - 4.5	0.97 - 9.7	1.6 - 16	2.3 - 23
401U/D1	20 - 200	0.23 - 2.3	0.58 - 5.8	0.23 - 23	4.9 - 49	8.1 - 81	12 - 120

401U/DM2 and 401U/DM3 Flow rate ranges, per channel (ml/min)										
Tube code	Orange/Black	Orange/Red	Orange/Blue	Orange/Green	Orange/Yellow	Orange/White	Black/Black	Orange/Orange	White/White	Red/Red
Bore mm	0.13	0.19	0.25	0.38	0.50	0.63	0.76	0.88	1.02	0.14
1.2 to 12rpm	0.001 - 0.01	0.002 - 0.02	0.004 - 0.04	0.01 - 0.1	0.02 - 0.2	0.03 - 0.3	0.04 - 0.4	0.05 - 0.5	0.07 - 0.7	0.08 - 0.8
4.0 to 40rpm	0.004 - 0.04	0.008 - 0.08	0.014 - 0.14	0.03 - 0.3	0.06 - 0.6	0.09 - 0.9	0.12 - 1.2	0.17 - 1.7	0.22 - 2.2	0.28 - 2.8
10 to 100rpm	0.009 - 0.09	0.020 - 0.20	0.035 - 0.35	0.08 - 0.8	0.14 - 1.4	0.22 - 2.2	0.31 - 3.1	0.43 - 4.3	0.55 - 5.5	0.70 - 7.0
Tube code	Grey/Grey	Yellow/Yellow	Yellow/Blue	Blue/Blue	Green/Green	Purple/Purple	Purple/Black	Purple/Orange	Purple/White	
Bore mm	1.29	1.42	1.52	1.65	1.85	2.05	2.29	2.54	2.79	
1.2 to 12rpm	0.11 - 1.1	0.13 - 1.3	0.15 - 1.5	0.17 - 1.7	0.21 - 2.1	0.26 - 2.6	0.31 - 3.1	0.37 - 3.7	0.44 - 4.4	
4.0 to 40rpm	0.35 - 3.5	0.43 - 4.3	0.49 - 4.9	0.56 - 5.6	0.70 - 7.0	0.85 - 8.5	1.0 - 10	1.2 - 12	1.5 - 15	
10 to 100rpm	0.89 - 8.9	1.1 - 11	1.2 - 12	1.4 - 14	1.8 - 18	2.1 - 21	2.6 - 26	3.1 - 31	3.6 - 36	

DRAWINGS

All dimensions in mm



TECHNICAL SPECIFICATION

401U	
Weight	1.0kg
Temperature	5C to 40C (40F to 104F)
Noise	< 70dB(A) at 1m
Control ratio	10:1
Standards	CE, BS0800, IEC335-1, EN60529(IP21)
Power supply	15VAC from mains transformer - supplied

MATERIALS OF CONSTRUCTION

Component	Material
Drive	Extruded anodised aluminium
Front support plate	Anodised aluminium
Pumphead track	Extruded anodised aluminium
Pumphead rollers	Acetal
Pumphead rotor	Aluminium

ORDER INFORMATION

Product codes		
Description		Partcode
401U/D1 1.2-12rpm	(15VAC)220-240V 50/60Hz 1ph single channel standard tubing pump	040.181D.010
401U/D1 4.0-40rpm	(15VAC)220-240V 50/60Hz 1ph single channel standard tubing pump	040.1H1D.010
401U/D1 20-200rpm	(15VAC)220-240V 50/60Hz 1ph single channel standard tubing pump	040.1S1D.020
401U/DM2 1.2-12rpm	(15VAC)220-240V 50/60Hz 1ph one or two channel manifold tubing pump	040.181D.M20
401U/DM2 4.0-40rpm	(15VAC)220-240V 50/60Hz 1ph one or two channel manifold tubing pump	040.1H1D.M20
401U/DM2 10-100rpm	(15VAC)220-240V 50/60Hz 1ph one or two channel manifold tubing pump	040.1P1D.M20
401U/DM3 1.2-12rpm	(15VAC)220-240V 50/60Hz 1ph three channel manifold tubing pump	040.181D.M30
401U/DM3 4.0-40rpm	(15VAC)220-240V 50/60Hz 1ph three channel manifold tubing pump	040.1H1D.M30
401U/DM3 10-100rpm	(15VAC)220-240V 50/60Hz 1ph three channel manifold tubing pump	040.1P1D.M30
400AC1	0-10V CW/STOP/CCW 1.5m remote cable	049.0011.000
400AC2	4-20mA CW/STOP/CCW 1.5m remote cable	049.0031.000
400AC3	CW/STOP/CCW 1.5m remote cable	049.0051.000
400AC4	START/STOP 3m remote cable fitted with foot switch	049.0071.000

Tube ordering codes - 401U/D1							
Bore/wall(mm)	Bioprene	Marprene	Pumpsil	PVC	Neoprene	STA-PURE®	Chem-Sure®
0.5/1.6	903.0005.016	902.0005.016	913.A005.016				
0.8/1.6	903.0008.016	902.0008.016	913.A008.016	950.0008.016	920.0008.016		
1.6/1.6	903.0016.016	902.0016.016	913.A016.016	950.0016.016	920.0016.016	960.0016.016	965.0016.016
2.4/1.6		902.0024.016	913.A024.016				
3.2/1.6	903.0032.016	902.0032.016	913.A032.016	950.0032.016	920.0032.016	960.0032.016	965.0032.016
4.0/1.6		902.0040.016	913.A040.016				

Tube ordering codes - manifold pump tubing for 401U/DM2 and 401U/DM3										
Colour code	Orange/Black	Orange/Red	Orange/Blue	Orange/Green	Orange/Yellow	Orange/White	Black/Black	Orange/Orange	White/White	Red/Red
Tube	0.13	0.19	0.25	0.38	0.50	0.63	0.76	0.88	1.02	0.14
Marprene*			979.0025.000	979.0038.000	979.0050.000	979.0063.000	979.0076.000	979.0088.000	979.0102.000	979.0114.000
PVC	981.0013.000	981.0019.000	981.0025.000	981.0038.000	981.0050.000	981.0063.000	981.0076.000	981.0088.000	981.0102.000	981.0114.000
Silicone						983.0063.000	983.0076.000	983.0088.000	983.0102.000	983.0114.000
Colour code	Grey/Grey	Yellow/Yellow	Yellow/Blue	Blue/Blue	Green/Green	Purple/Purple	Purple/Black	Purple/Orange	Purple/White	
Tube	1.29	1.42	1.52	1.65	1.85	2.05	2.29	2.54	2.79	
Marprene*	979.0129.000	979.0142.000	979.0152.000	979.0165.000	979.0185.000	979.0205.000	979.0229.000	979.0254.000	979.0279.000	
PVC	981.0129.000	981.0142.000	981.0152.000	981.0165.000	981.0185.000	981.0205.000	981.0229.000	981.0254.000	981.0279.000	
Silicone	983.0129.000	983.0142.000	983.0152.000	983.0165.000	983.0185.000	983.0205.000	983.0229.000	983.0254.000	983.0279.000	

*For autoclavable Marprene tubing, please replace last "0" with "+" - eg. 978.0229.00+

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. © Chem-Sure and © STA-PURE are registered trademarks of W.L. Gore & Associates Inc. Please state the product code when ordering pumps and tubing.

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