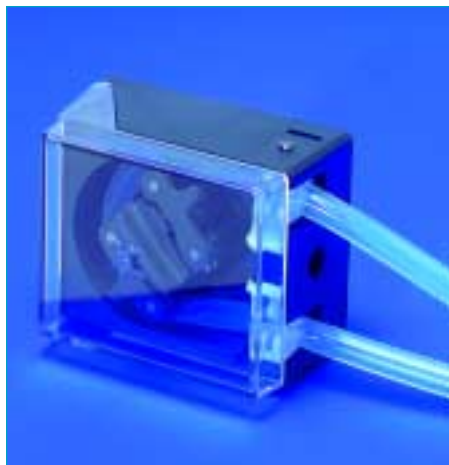


# 100 SERIES OEM SYSTEMS

The 100 series of OEM systems offers a choice of pumps in a range of speeds, based on the 102R low-flow pumphead, and use either synchronous or DC motors. The 102R pumphead is also available on its own, for use with users' own drives. Recently introduced into the range is the 100 series OEM speed control board providing direction and speed control for the 12V DC OEM pumps.

## 102R low flow pumphead



The 102R low-flow OEM pumphead accepts, without adjustment, all Watson-Marlow tubing from 0.5 mm (1/50") to 4.8 mm (3/16") internal diameter with 1.6 mm (1/16") wall thickness. It has a spring loaded, two roller rotor and is suitable for continuous use up to 65 rpm providing flow rates up to 106 ml/min (intermittent use up to 130 rpm giving flow rates up to 212 ml/min).

The 102R may be driven in either direction: clockwise rotation will give a longer tube life but anti-clockwise rotation can be used for working against greater pressures. It is available with a choice of track material and rotor springs and is suitable for either a 6 mm or 8 mm drive shaft if mounted on users' own drive. All 102R pumpheads have a choice of mounting points and a shatterproof clear polycarbonate guard which is hinged to allow easy access for tube changing.

For certain applications the 102R can be supplied with snap-in connectors (as shown in the photograph bottom left) in place of the sprung tube clamps.

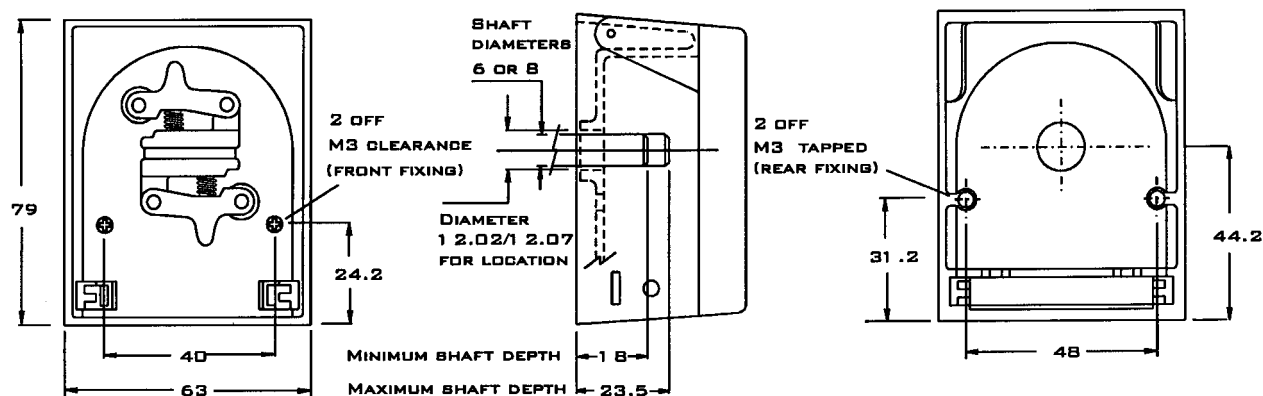


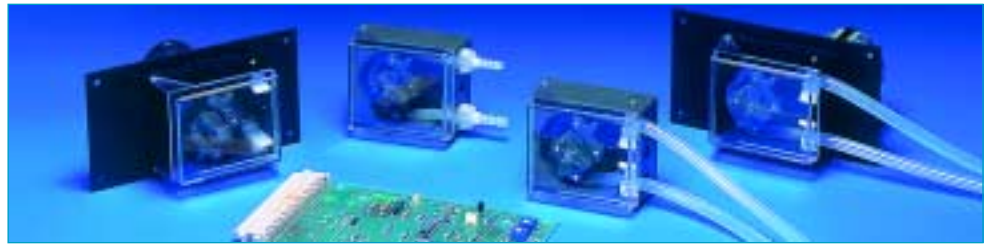
### Ordering information

For 6mm drive shaft	Suitable for
Kematal track with standard springs	<i>Peroxide cured Silicone/Platinum cured</i>
	<i>Silicone/Butyl/Neoprene</i> 013.2001.000
	<i>Marprene/Tygon/Viton</i> 013.2011.000
Kematal track with hard springs	<i>Peroxide cured Silicone/Platinum cured</i>
PVDF track with standard springs	<i>Silicone/Butyl/Neoprene</i> 013.3001.000
	<i>Marprene/Tygon/Viton</i> 013.3011.000
PVDF track with hard springs	
For 8mm drive shaft	Suitable for
Kematal track with standard springs	<i>Peroxide cured Silicone/Platinum cured</i>
	<i>Silicone/Butyl/Neoprene</i> 013.2101.000
	<i>Marprene/Tygon/Viton</i> 013.2111.000
Kematal track with hard springs	<i>Peroxide cured Silicone/Platinum cured</i>
PVDF track with standard springs	<i>Silicone/Butyl/Neoprene</i> 013.3101.000
	<i>Marprene/Tygon/Viton</i> 013.3111.000
PVDF track with hard springs	

### Materials of construction

IXEF (Polyarylamide)	<i>Rotor</i>
MOS2 filled Nylon 6 (Nylatron)	<i>Rollers</i>
Acetal copolymer (Kematal) or PVDF	<i>Track</i>
Acetal copolymer (Kematal)	<i>Tube clamps</i>
Polycarbonate	<i>Guard</i>
Stainless steel	<i>Spindles, Guide pins</i>





### Flow rates

Bore mm Bore °	1.6mm (1/16") wall tubing				
	0.5mm 1/50"	0.8mm 1/32"	1.6mm 1/16"	3.2mm 1/8"	4.8mm 3/16"
<i>Flow rate: ml/revolution</i>	<i>0.02</i>	<i>0.05</i>	<i>0.22</i>	<i>0.81</i>	<i>1.66</i>
<i>Maximum continuous flow rate (65rpm): ml/min</i>	<i>1.38</i>	<i>3.22</i>	<i>14.0</i>	<i>52.0</i>	<i>106</i>
<i>Maximum intermittent flow rate (130rpm): ml/min</i>	<i>2.76</i>	<i>6.44</i>	<i>28.0</i>	<i>104</i>	<i>212</i>

For tube selections, see Table A on page 48.

### Specifications

Bore mm Bore °	1.6mm (1/16") wall tubing				
	0.5mm 1/50"	0.8mm 1/32"	1.6mm 1/16"	3.2mm 1/8"	4.8mm 3/16"
<i>Maximum continuous speed: rpm</i>	<i>65</i>	<i>65</i>	<i>65</i>	<i>65</i>	<i>65</i>
<i>Maximum intermittent speed: rpm</i>	<i>130</i>	<i>130</i>	<i>130</i>	<i>130</i>	<i>130</i>
<b>With silicone tubing</b> (standard springs, clockwise rotation)					
Required torque up to 0.5 bar: kg cm	1.1	1.1	1.2	1.5	1.8
Required torque up to 1 bar: kg cm	1.2	1.2	1.25	1.8	2.1
<i>Maximum pressure: bar</i>	<i>3.0</i>	<i>3.0</i>	<i>3.0</i>	<i>1.0</i>	<i>1.0</i>
<b>With Marprene tubing</b> (hard springs, clockwise rotation)					
Required torque up to 0.5 bar: kg cm	3.5	3.5	3.6	4.2	4.6
<i>Maximum pressure: bar</i>	<i>1.6</i>	<i>1.6</i>	<i>1.6</i>	<i>1.6</i>	<i>1.6</i>

For counter-clockwise rotation, increase required torque figures by 80%.

### Performance against pressure

#### Conditions:

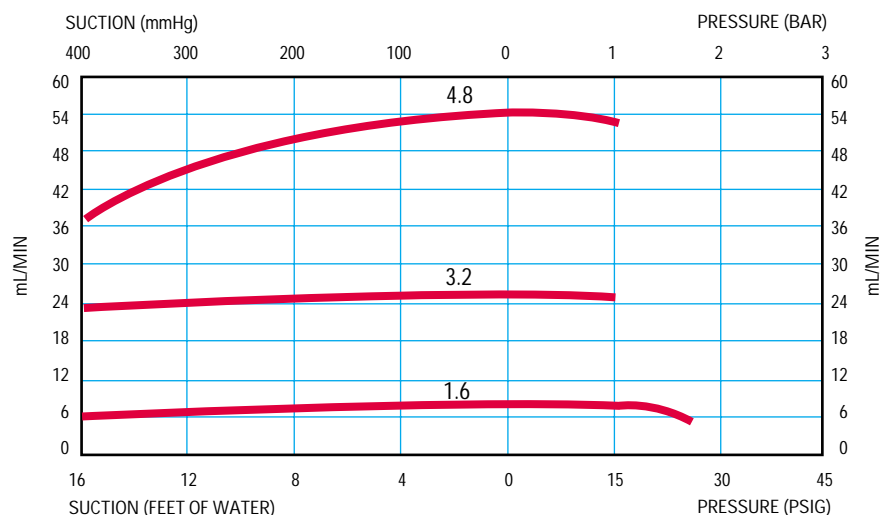
- Suction curves obtained with zero output pressure.
- Pressure curves obtained with zero lift.
- Pumphead speed 32 rpm

#### Conversion Factors:

Suction pressure in Bar x 747.7 = mm Hg

Suction pressure in Bar x 33.5 = Ft H<sub>2</sub>O

Back pressure in Bar x 14.5 = psi



## 102FS/R fixed speed AC pump



The 102FS/R comprises of a 102R pumphead plus synchronous motor and mounting plate. It will accept 1.6 mm wall thickness silicone tubing from 0.5 to 4.8 mm internal diameter and provides a choice of speeds giving flow rates up to 32.6 ml/min. No tube connectors are required and a continuous length of tubing can be run from source to delivery point. Long tube life and precise flow rates are assured by the sprung roller design.

### Ordering information

#### 100-120V AC

0.67/0.8rpm 50/60Hz	<a href="#">010.2102.000</a>
4.0/4.8rpm 50/60Hz	<a href="#">010.2202.000</a>
6.0/7.2rpm 50/60Hz	<a href="#">010.2302.000</a>
12rpm 50Hz	<a href="#">010.2402.000</a>
14.4rpm 60Hz	<a href="#">010.2412.000</a>
20/24rpm 50/60Hz	<a href="#">010.2502.000</a>

#### 200-250V AC

0.67rpm 50Hz	<a href="#">010.2112.000</a>
4.0rpm 50Hz	<a href="#">010.2212.000</a>
6.0rpm 50Hz	<a href="#">010.2312.000</a>
12rpm 50Hz	<a href="#">010.2422.000</a>
20rpm 50Hz 200-220V	<a href="#">010.2512.000</a>
20rpm 50Hz 230-250V	<a href="#">010.2522.000</a>

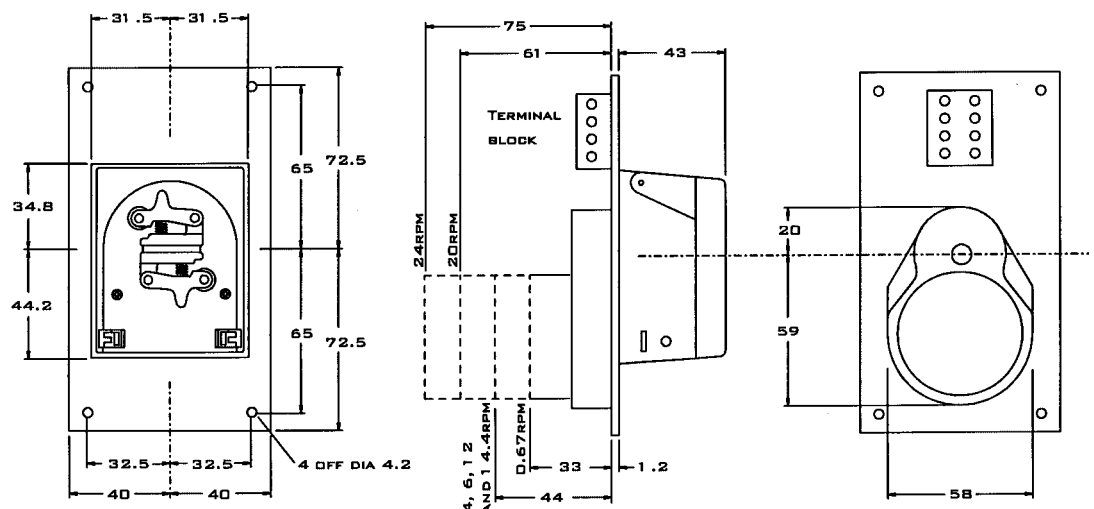
### Specifications

Motor type	<i>Synchronous</i>
Motor torque output	<i>2.5kg.cm</i>
Power consumption	<i>25VA</i>
Weight	<i>600g</i>

### Flow rates (ml/min)

		1.6mm (1/16") wall silicone tubing				
		0.5mm 1/50"	0.8mm 1/32"	1.6mm 1/16"	3.2mm 1/8"	4.8mm 3/16"
50	0.67	0.014	0.03	0.15	0.54	1.08
	4.0	0.087	0.20	0.87	3.17	6.35
	6.0	0.130	0.30	1.30	4.75	9.53
	12	0.250	0.60	2.55	9.44	19.0
	20	0.420	0.98	4.36	16.0	32.6
60	0.8	0.017	0.04	0.18	0.65	1.32
	4.8	0.104	0.24	1.05	3.80	7.62
	7.2	0.150	0.36	1.53	5.67	11.4
	14.4	0.300	0.72	3.06	11.3	22.9
	24	0.500	1.18	5.23	19.2	39.1

For tube selections, see Table A on page 48.



## 102FD/R fixed/variable speed DC pump



The 102FD/R comprises a 102R pumphead plus a 12V DC motor and mounting plate. It will accept 1.6 mm wall thickness silicone tubing from 0.5 to 4.8 mm internal diameter and provides a choice of speeds giving flow rates up to 106 ml/min. It may be used with the 100 series speed control board to provide a variable speed pumping system, giving a speed control ratio of 10:1, direction control and stop/start facilities.

### Ordering information

12V DC

4rpm

65rpm

010.1002.000

010.1042.000

### Specifications

Motor type

Standard 12V DC

Motor torque output

2.5kg cm

Power consumption

2VA

Weight

500g

Brush life

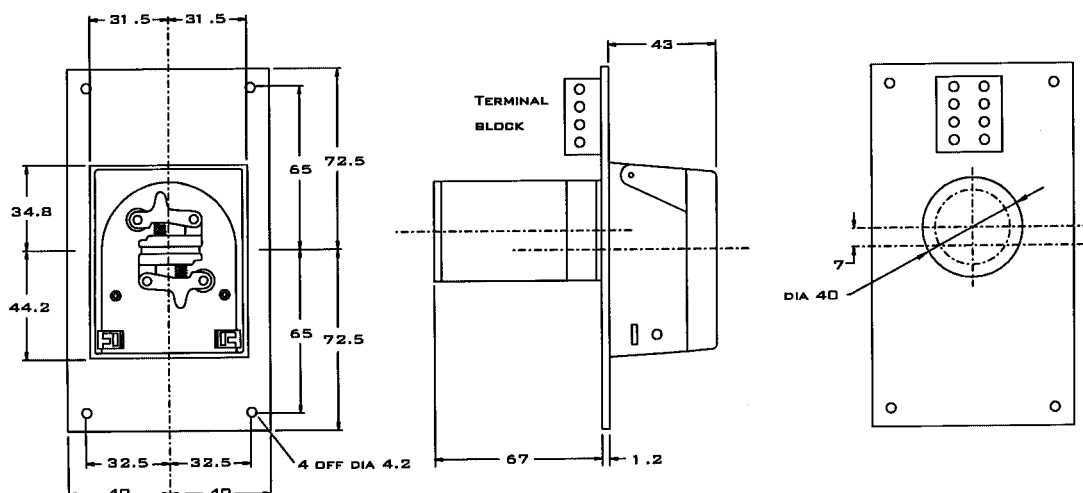
3000 hours

### Flow rates (ml/min)

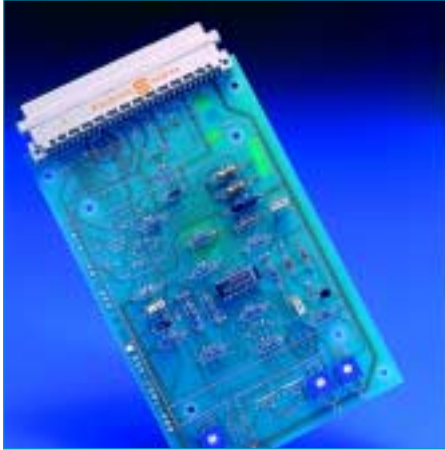
rpm	1.6mm (1/16") wall silicone tubing				
	0.5mm	0.8mm	1.6mm	3.2mm	4.8mm
	1/50"	1/32"	1/16"	1/8"	3/16"
4	0.09	0.20	0.87	3.17	6.40
65	1.38	3.22	14.0	52.0	106

Note: Minimum flows are 10% of rates given when using the 100 series OEM speed control board.

For tube selections, see Table A on page 48.



## OEM speed control board



The OEM speed control board is designed to give speed control and remote stop facilities for the 102FD/R and 313FD/D 12V DC OEM pumps, and is capable of accepting a remote speed control signal input from users' own equipment.

With the addition of extra components to the standard board, options of direction reverse, power on LED, AC supply input, board mounted speed control potentiometer and instant prime are available.

Two different boards are available, both in 'Eurocard' format with a 32 way edge connector. The 100 series OEM speed control board for the 102FD/R incorporates an on-board power transistor, whereas the power transistor for the 300 series board has to be mounted on an external heat sink with a 1,000 sq cm (130 sq. in.) surface area and is rated for higher loads.

### Ordering information

For 102FD/R  
For 313FD/D

019.2021.000  
039.2021.000

### Specifications

Power supply input	20-30V DC, (AC/Mains voltage optional)
Power supply rating	100 series: 0.5A, 300 series: 2.0A
Output	12V DC (variable)
Circuit board format	Eurocard (pillar mounting points as alternative)
Connections	32 way edge
Speed control input	Remote potentiometer or 0 to 5V DC input (board mounted potentiometer optional)
Speed control ratio	10% to 100%
Weight	100 series 150g, 300 series 100g plus external heat sink

### Board features

<ul style="list-style-type: none"> <li>Speed control by potentiometer (not supplied) or 0 to 5V DC control signal</li> <li>Motor stop/start control by remote switch, TTL or CMOS</li> <li>Motor may be connected for either clockwise or anti clockwise rotation</li> <li>Full connection and calibration instructions</li> </ul>	<p>Optional features requiring additional components</p> <ul style="list-style-type: none"> <li>Instant direction change</li> <li>Power on LED indication</li> <li>AC or DC power supply</li> <li>Prime maximum speed switch</li> <li>Board mounted potentiometer for speed control</li> <li>100 or 300 series OEM system</li> <li>32 way edge connector (supplied)</li> </ul>
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