6K Series - 12 channel for 1.0 mm wall tubing

6K peristaltic pump, 12 channel for 1.0 mm wall tubing with 24V stepper motor.

Options:
- 0.5, 1.0, 2.0 or 3.0 mm ID tubing
- 4 or 8 rollers
- complete with motor only or motor with choice of 3 pre-assembled drivers
- optical speed sensor

Note: separate datasheets provide details the 6K series for 1.6 mm wall tubing, however 1.0 mm and 1.6 mm wall tubing can be combined on the same pump.

**Technical Data**

### Flow per Revolution (per channel)

<table>
<thead>
<tr>
<th>ID Ø</th>
<th>Flow per Revolution (µl per revolution)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 mm</td>
<td>20 / 15 µl per revolution (4 / 8 rollers)</td>
</tr>
<tr>
<td>1.0 mm</td>
<td>61 / 41 µl per revolution (4 / 8 rollers)</td>
</tr>
<tr>
<td>2.0 mm</td>
<td>229 / 132 µl per revolution (4 / 8 rollers)</td>
</tr>
<tr>
<td>3.0 mm</td>
<td>382 / 187 µl per revolution (4 / 8 rollers)</td>
</tr>
</tbody>
</table>

### Flow at 300 RPM (max recommended speed)

<table>
<thead>
<tr>
<th>ID Ø</th>
<th>Flow at 300 RPM (ml / min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 mm</td>
<td>6.1 / 4.4 ml / min (4 / 8 rollers)</td>
</tr>
<tr>
<td>1.0 mm</td>
<td>18.7 / 12.4 ml / min (4 / 8 rollers)</td>
</tr>
<tr>
<td>2.0 mm</td>
<td>68.6 / 39.5 ml / min (4 / 8 rollers)</td>
</tr>
<tr>
<td>3.0 mm</td>
<td>115.1 / 56.3 ml / min (4 / 8 rollers)</td>
</tr>
</tbody>
</table>

### Electrical Data

- Power consumption (with ID Ø 3.0 mm tube and including A4 driver): 36 to 53 W
- Recommended driver current setting: 4.0 A
- Max. starting speed (with new tubing): 100 rpm

### Tube Materials

Pharm-A-line (PHI) / Norprene G / ED-Plex

### General Data

- Max pressure: 8 m H₂O
- Max suction height (dry): 8 m H₂O
- Motor life: >10000 hour
- Weight (without driver): 1280 g

### Optional Sensor

- Optical speed sensor: 4 pulses per revolution

All data measured with ‘run-in’ Pharm-a-line tubing and H₂O.

### Inlet / Outlet Positions

The 6K peristaltic pump is extremely compact due to each channel running through either the left or right side of the rotor assembly. The inlet and outlets of each channel are above and below the pump head.

The inlet and outlet positions shown here are for a pump running in the clockwise direction. If the motor is run in the reverse direction, the inlet and outlet position of each channel also reverse.

Each channel is run by a common shaft and cannot be controlled individually.
Motor Details

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>2 phase, hybrid, bipolar</td>
</tr>
<tr>
<td>Size</td>
<td>Nema 23 / 57 mm</td>
</tr>
<tr>
<td>Step Angle</td>
<td>1.8 ° (200 steps per revolution)</td>
</tr>
<tr>
<td>Voltage</td>
<td>24 V</td>
</tr>
<tr>
<td>Phase 1 / Phase 2</td>
<td>Black - Green / Red - Blue (see diagram above)</td>
</tr>
<tr>
<td>Ambient temperature range</td>
<td>-20 to +50 °C</td>
</tr>
<tr>
<td>Max temperature rise</td>
<td>80 °C</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>100 MΩ</td>
</tr>
<tr>
<td>Insulation class</td>
<td>B</td>
</tr>
<tr>
<td>Rated current</td>
<td>2.8 A</td>
</tr>
<tr>
<td>Resistance per phase</td>
<td>1.13 Ω ±10%</td>
</tr>
<tr>
<td>Inductance per phase</td>
<td>3.6 mH ±20%</td>
</tr>
<tr>
<td>Wire gauge</td>
<td>22 AWG</td>
</tr>
<tr>
<td>Lead length</td>
<td>300 mm</td>
</tr>
<tr>
<td>Available drivers</td>
<td>→ Drivers</td>
</tr>
<tr>
<td>Recommended driver rating</td>
<td>4.0 A</td>
</tr>
</tbody>
</table>

A current limiter should be used for low speed operation to avoid excessive motor temperatures.

Optional Speed Sensor

An optical sensor (shown in turquoise) is mounted inside the pump body and is interrupted by a 4 slot rotating disc (shown in purple). The optical sensor has 4 leads.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor type</td>
<td>OPB8340W (Optek Technology)</td>
</tr>
<tr>
<td>Input diode current</td>
<td>50 mA</td>
</tr>
<tr>
<td>Collector current</td>
<td>30 mA</td>
</tr>
<tr>
<td>Max. collector-emitter voltage</td>
<td>30 V</td>
</tr>
<tr>
<td>Lead gauge</td>
<td>26 AWG</td>
</tr>
<tr>
<td>Lead length</td>
<td>60 cm</td>
</tr>
</tbody>
</table>
Assembly Information

The 6K peristaltic pump is assembled to a panel cut-out using 4 x M4 bolts. The rubber gasket should be placed between the motor plate and the panel.

Suggested panel cut-out:

Tube Set Loading / Unloading

1. Align the lower tube clip with the pump body in the orientation shown below. Push the lower tube clip into the recess in the pump body.
2. Push the upper tube clip into the recess in the pump body. Some tension in the tube will be required as it is pulled over the rollers.
3. Align the saddle with the pump body in the orientation shown below. Insert the lower pin of the saddle into the recess in the pump body.
4. Push the upper end of the saddle down, rotate the saddle and insert the upper pin of the saddle into the recess in the pump.
5. Repeat steps 1 to 4 for the right hand side of the pump.
6. To unload the tube set follow steps 1 to 4 in the reverse order.
6K Series - 12 channel for 1.0 mm wall tubing

6K with Stepper Motor (without driver)

6K with Stepper Motor + A4 Analogue Driver (0 to 5 V Speed Input)

Links:
- Drawing (.png)
- STEP (.zip)
6K Series - 12 channel for 1.0 mm wall tubing

6K with Stepper Motor + A4p Analogue Driver with Speed Potentiometer

Link: → Drawing (.png) → STEP (.zip)

6K with Stepper Motor + iD Programmable Digital Driver

Link: → Drawing (.png) → STEP (.zip)
Order Information

When ordering the 6K peristaltic pump the base pump, tube sets and saddle kits should be ordered separately.

1 Base Pump

Part Number Description
Motor Only:
6343.100 6K 24 V Stepper / 12 Channel / 4 Rollers
6333.100 6K 24 V Stepper / 12 Channel / 8 Rollers
With A4 Driver:
6343.101 6K 24 V Stepper / 12 Channel / 4 Rollers / A4
6333.101 6K 24 V Stepper / 12 Channel / 8 Rollers / A4p
With A4p Driver:
6343.151 6K 24 V Stepper / 12 Channel / 4 Rollers / A4p
6333.151 6K 24 V Stepper / 12 Channel / 8 Rollers / A4p
With iD Driver:
6343.105 6K 24 V Stepper / 12 Channel / 4 Rollers / iD
6333.105 6K 24 V Stepper / 12 Channel / 8 Rollers / iD

2 Tube Set

Part Number Description
6000.547 PHI ID Ø 0.5 mm with PP connectors for 0.5 to 1.0 mm ID tubing
6000.540 PHI ID Ø 1.0 mm with PP connectors for 0.5 to 1.0 mm ID tubing
6000.546 PHI ID Ø 2.0 mm with PP connectors for 2.0 to 2.4 mm ID tubing
6000.548 PHI ID Ø 3.0 mm with PP connectors for 2.4 to 4.0 mm ID tubing
Sold as pair of double tubes. 3 sets required per 12 channel pump.

Listed above are Pharm-a-line (PHI) tube sets. Technical information including chemical compatibility:

→ Pharm-a-line

Alternative tubing (Norprene G and ED-Plex):

→ 6K Tubing

3 Saddle Kit

Part Number Description
6000.104 Saddle Kit / 1.0 mm wall tubing / 4 rollers
6000.108 Saddle Kit / 1.0 mm wall tubing / 8 rollers
Sold as pair. 3 kits required per 12 channel pump.

BOX-it (Webshop for online purchase)

Sample quantities are available for direct online purchase:

→ BOX-it

Additional Information (Links):

→ 6K web page
→ Boxer peristaltic pump overview

All data is representative for initial selection purposes. It is the responsibility of the user to determine suitability for the intended use. Technical changes reserved. These peristaltic pumps are not suitable for in-vivo applications.