

Precise

Dosing and Dispensing

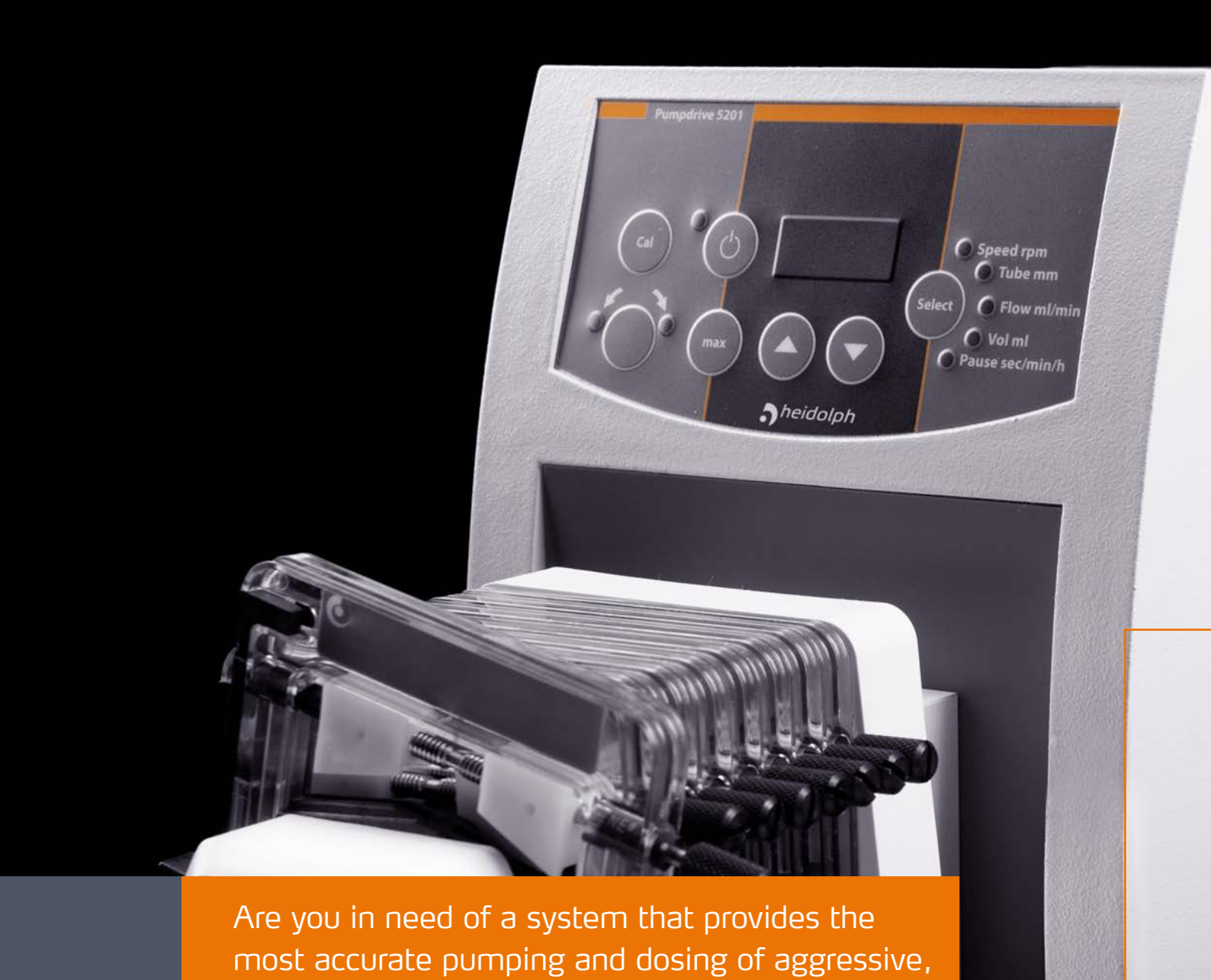


Leading Safety Standards

Superior Ease of Use

Reduced Cost of Ownership

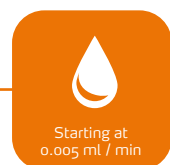
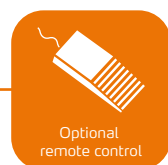
 **heidolph**
research made easy



Are you in need of a system that provides the most accurate pumping and dosing of aggressive, corrosive or even sterile media without any compromise to precision?

Precise Dosing and Dispensing

The versatile Hei-FLOW series can offer you all these options with flow rates ranging from 0.005 to 4,151 ml per minute depending on configuration!



Leading Safety Standards

- Important for continuous unattended operation: the motor will be switched off if a high thermal load situation occurs to increase safety in your lab and to **prevent accidents**
- Additional safety is provided by sparkless motors which **reduce incidents**
- All models feature a smooth start operation that **prevents spilling and splashing of media**. The speed will ramp up slowly until your set rpm has been reached
- Protection class IP 55 protects your unit from highly aggressive vapors or liquids – and thus **eliminates accidents, short-circuits and failures**
- Use an optional foot-pedal remote control via cable to start and stop your pump drive outside a **closed fume hood increasing your personal safety**
- The pumped media remains in the tubing and never comes in contact with you – keeping you and **your application safe**

Superior Ease of Use

- The Hei-FLOW series is **self-priming** and **comes without any valves**, thus providing care-free operation
- Analog and digital interfaces **facilitate operation**, e.g. by connecting the optional foot-pedal
- Use your valuable lab space efficiently and stack one pump on top of the other to build a space-saving **two-layer system**
- Use a single-channel pump head and **upgrade your model** to multi-channel operation in just minutes with a different pump head
- Our clear and **self-explanatory front panel** layout is for your ease of operation
- Make your life easier and rely on the **accurate liquid delivery** starting from 0.005 ml/min

Reduced Cost of Ownership

- Reduce your maintenance costs: the sealed housing protects your pump from aggressive fumes, liquids and vapors to prevent internal corrosion. This results in an increased **lifespan of 10 years** on average while reducing maintenance and repair cost
- Complete packages including pump drive, head and compatible tubing reduce your selection process and give you a **reduced package price**
- Maintenance-free motors **eliminate repairs and down times** to ensure years of continuous operation

Precise Dosing and Dispensing



Leading Safety Standards

Superior Ease of Use

Reduced Cost of Ownership

The average operational **lifespan of 10 years** is backed by a **3 year warranty** and makes your purchase a worthwhile investment.

Safety for continuous operation: the motor will be switched off if a high thermal load situation occurs to **prevent accidents**

Protection class IP 55 to prevent corrosion and short circuits

High precision even for flow rates starting at 0.005 ml/min

Optional foot-pedal remote control via cable to operate pump drive from **outside closed fume hoods** facilitate operation

For the use in cell biology just use a pump head which features convex rollers and **does not squeeze** the tubing as conventional rollers

All models feature a smooth start operation which **prevents spills and splashing media**. The speed will ramp up slowly until your set rpm has been reached



Precise dosing and dispensing

Are you in need of a system that provides the most accurate pumping and dosing of aggressive, corrosive or even sterile media without any compromise to precision?

The versatile Hei-FLOW series offers you all these options - with flow rates ranging from 0.005 to 4,151 ml per minute depending on configuration



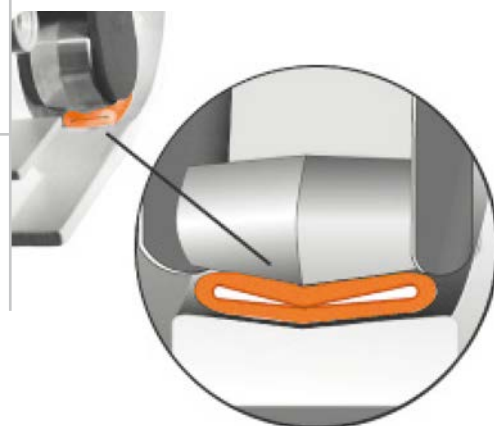
YOUR ADVANTAGES

- If you are looking for standard pumping or highly accurate interval dosing and interval operation allowing for standstills and filling of flasks, the Hei-FLOW series has it all
- Your application media never comes in contact with the pump head – eliminating cross-contamination and the need to clean the unit between projects
- The pumped media remains in the tubing and never comes in contact with you – keeping you and your application safe
- The versatile Hei-FLOW series offers you all these options - with flow rates ranging from 0.005 to 4,151 ml per minute depending on configuration
- Choose from six different pump drives, three pump heads for single-channel use, and three additional pump heads for multi-channel use that can accommodate up to twelve cassettes

Pump heads

Are you engaged in a highly specialized application such as cell biology and do you need to transfer the cells without causing damage?

The Hei-FLOW series offers you solutions for standard applications and highly sophisticated challenges that require added control!



YOUR ADVANTAGES

- For the use in cell biology, choose a pump head which features convex rollers that do not squeeze the tubing, as would conventional rollers
- Consequently, organic cell cultures are not crushed and your samples are safely transported
- A wide range of tubing material is available – choose the most appropriate material for your research: whether FDA-approved material for food analysis or material for aggressive media such as acids – you find it right here

➤ Hei-FLOW Value 01 / Hei-FLOW Value 06

For standard applications and liquid transfer

Pumps include leading safety standards and features for superior ease of use and reduced cost of ownership, plus:

- Adjust the variable speed from 10 - 600 rpm on the analog control knob. **Your speed is held constant** even under changing loads
- These models feature electronic speed control at an **accuracy rate of $\pm 2\%$**
- At the press of a button the pump operates **clockwise or counter-clockwise**



Hei-FLOW Value 01

Flow rates of 0.65 - 861 ml/min with single-channel pump heads

- Low speed range from 10 - 120 rpm
- This pump drive is suitable for multi-channel operation
- Multi-channel flow rates from 0.005 - 364 ml/min
- Upgrade your Hei-FLOW Value 01 for multi-channel operation in just minutes with a pump head adaptor: P/N 526-16000-00

Hei-FLOW Value 01

P/N. 523-50010-00

Hei-FLOW Value 01 Multi

(incl. adapter for multi-channel pumps heads)

P/N 523-50013-00

Hei-FLOW Value 06

Flow rates of 3.0 - 4,151 ml/min with single-channel pump heads

- High speed range from 50 - 600 rpm
- This pump drive is not suitable for multi-channel operation

Hei-FLOW Value 06

P/N 523-50060-00

➤ Hei-FLOW Advantage 01 / Hei-FLOW Advantage 06

For reproducible results and liquid transfer

Pumps include leading safety standards and features for superior ease of use and reduced cost of ownership, plus:

- Control speed (rpm), direction and On/Off function via **analog interface** for 0 - 10 V or 4 - 20 mA
- Adjust the variable speed from 5 - 600 rpm on the analog control knob. **Your speed is held constant** even under changing loads
- These models feature electronic speed control at an **accuracy of $\pm 0.5\%$**
- These models connect to an optional foot-pedal **remote control** via cable to start and stop your pump drive outside a closed fume hood increasing your personal safety and superior ease of use in multiple sample fills
- A press of the max button **accelerates** the **filling and draining** of your tube
- At the press of a button the pump operates **clockwise or counter-clockwise**



Hei-FLOW Advantage 01

Flow rates of 0.36 - 813 ml/min with single-channel pump heads

- Low speed range from 5 - 120 rpm
- This pump drive is suitable for multi-channel operation
- Multi-channel flow rates from 0.005 - 329 ml/min
- Upgrade your Hei-FLOW Advantage 01 for multi-channel operation in just minutes with a pump head adaptor: P/N 526-16000-00

Hei-FLOW Advantage 01

P/N 523-51010-00

Hei-FLOW Advantage 01 Multi

(incl. adapter for multi-channel pumps heads)

P/N 523-51013-00

Hei-FLOW Advantage 06

Flow rates of 1.0 - 4,056 ml/min with single-channel pump heads

- High speed range from 24 - 600 rpm
- This pump drive is not suitable for multi-channel operation

Hei-FLOW Advantage 06

P/N 523-51060-00

➤ Hei-FLOW Precision 01 / Hei-FLOW Precision 06

Reproducibility - pumping and dosing

Pumps include leading safety standards and features for superior ease of use and reduced cost of ownership, plus:

- Control speed (rpm), direction and On/Off function via **analog interface** for 0 – 10 V or 4 – 20 mA or digital **RS 232 interface**
- Flow characteristic** of pump heads in combination with various tubing diameters is **pre-programmed** for accurate flow rate numbers
- Digital read-out of:**
 - Speed (rpm)
 - Tubing diameter
 - Flow rate in ml/min
 - Dosing volume
 - Interval dosing
 - Pause function
- Easily change** all process parameters via control buttons
- These models connect to an optional foot-pedal **remote control** via cable to start and stop your pump drive outside a closed fume hood increasing your personal safety and superior ease of use in multiple sample fills
- These models feature electronic speed control at an **accuracy of $\pm 0.5\%$**
- A press of the max button **accelerates the filling and draining** of your tube
- At the press of a button the pump operates **clockwise or counter-clockwise**
- Calibrate** your flow volume and flow rate individually



Hei-FLOW Precision 01

Flow rates of 0.36 - 813 ml/min with single-channel pump heads

- Low speed range from 5 - 120 rpm
- This pump drive is suitable for multi-channel operation
- Multi-channel flow rates from 0.005 - 329 ml/min
- Upgrade your Hei-FLOW Precision 01 for multi-channel operation in just minutes with a pump head adaptor: P/N 526-16000-00

Hei-FLOW Precision 01

P/N 523-52010-00

Hei-FLOW Precision 01 Multi

(incl. adapter for multi-channel pumps heads)

P/N 523-52013-00

Hei-FLOW Precision 06

Flow rates of 1.0 - 4,056 ml/min with single-channel pump heads

- High speed range from 24 - 600 rpm
- This pump drive is not suitable for multi-channel operation

Hei-FLOW Precision 06

P/N 523-52060-00

➤ Single-Channel Pump Heads

SP quick

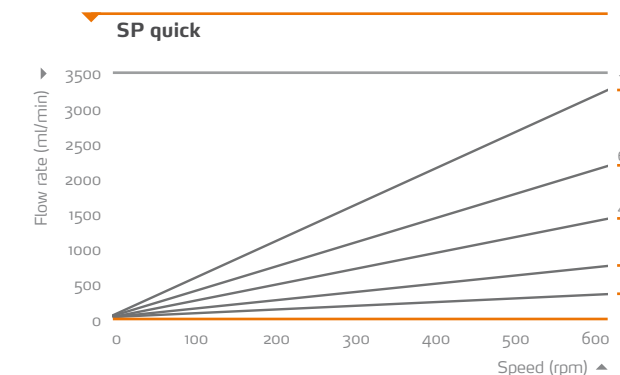
- Fast and convenient tube changes
- Low pulsation due to 5 roller system
- Pump head features ball bearings
- Rollers made of stainless steel
- For tubes with a 1.6-mm or 2.5-mm wall thickness (wt)
- Depending on drive and tubing, flow rate ranges from 0.38 to 3,436 ml per minute



SP quick

P/N 527-11100-00 (wt 1.6 mm)

P/N 527-11300-00 (wt 2.5 mm)



SP standard

- Recommended for standard applications
- Convex rollers do not squeeze or crush organic cell cultures
- Pump head features ball bearings
- Rollers made of stainless steel and polyamide
- For tubes with a 1.6-mm or 2.5-mm wall thickness (wt)
- Depending on drive and tubing, the flow rate ranges from 2.0 to 4,151 ml per minute



SP standard

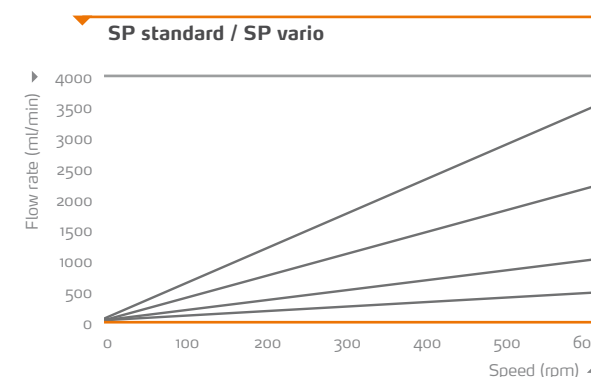
P/N 523-43010-00 (wt 1.6 mm)

P/N 523-43030-00 (wt 2.5 mm)



SP vario

P/N 523-45110-00



SP vario

- Suitable for most Heidolph tubing due to adjustable roller spacing
- Convex rollers do not squeeze or crush organic cell cultures
- Pump head features ball bearings
- Rollers made of stainless steel and aluminum
- Depending on drive and tubing, the flow rate ranges from 2.0 to 4,151 ml per minute



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Single-channel pump

➤ **Tubing Sizes for Single-Channel Pumps**

Tubing sizes

| | | | | | | |
|---|---------------------|-----------|-----------|-----------|-----------|-----------|
| Inner diameter | (mm) | 0.8 | 1.7 | 3.1 | 4.8 | 6.4 |
| Outer diameter | (mm) | 4 | 4.9 | 6.3 | 8 | 9.5 |
| Wall thickness (wt) | (mm) | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| Max. pressure (continuous / short time) | (bar) | 0.7 / 1.7 | 0.7 / 1.7 | 0.7 / 1.7 | 0.5 / 1.5 | 0.5 / 1.5 |
| Suction height | (mH ₂ O) | 8.8 | 8.8 | 8.8 | 8.8 | 6.7 |

Average flow rates in combination with pump head and pump drive:

| SP quick | | min. | max. | min. | max. | min. | max. | min. | max. | min. | max. |
|---|----------|------|------|------|------|------|-------|------|-------|------|-------|
| Hei-FLOW Advantage o6 / Hei-FLOW Precision o6 | (ml/min) | 2 | 33 | 8 | 186 | 26 | 653 | 59 | 1,529 | 89 | 2,072 |
| Hei-FLOW Value o6 | (ml/min) | 4 | 35 | 17 | 197 | 57 | 695 | 123 | 1,494 | 186 | 1,765 |
| Hei-FLOW Advantage o1 / Hei-FLOW Precision o1 | (ml/min) | 0.38 | 9 | 2 | 40 | 5 | 126 | 12 | 233 | 17 | 409 |
| Hei-FLOW Value o1 | (ml/min) | 0.83 | 9 | 3 | 41 | 11 | 134 | 25 | 292 | 36 | 413 |
| SP standard / SP vario | | | | min. | max. | min. | max. | min. | max. | min. | max. |
| Hei-FLOW Advantage o6 / Hei-FLOW Precision o6 | (ml/min) | | | 11 | 257 | 43 | 1,017 | 105 | 2,549 | 167 | 4,056 |
| Hei-FLOW Value o6 | (ml/min) | | | 22 | 249 | 93 | 1,037 | 228 | 2,613 | 364 | 4,151 |
| Hei-FLOW Advantage o1 / Hei-FLOW Precision o1 | (ml/min) | | | 2 | 55 | 9 | 221 | 21 | 530 | 33 | 813 |
| Hei-FLOW Value o1 | (ml/min) | | | 5 | 61 | 19 | 223 | 44 | 519 | 75 | 861 |

Tubing P/N (per meter):

| | | | | | |
|--|--------------|--------------|--------------|--------------|--------------|
| Silicone | 525-33000-00 | 525-34000-00 | 525-36000-00 | 525-30027-00 | 525-30028-00 |
| Viton® | 525-53000-00 | 525-54000-00 | 525-56000-00 | 525-50027-00 | 525-50028-00 |
| PharMed® | 525-23000-00 | 525-24000-00 | 525-26000-00 | 525-20027-00 | 525-20028-00 |
| Tygon® (standard) | 525-63000-00 | 525-64000-00 | 525-66000-00 | 525-60027-00 | 525-60028-00 |
| Tygon® (hydrocarbon) | 525-73000-00 | 525-74000-00 | 525-76000-00 | 525-70027-00 | 525-70028-00 |
| Tygon® 2001 (food) not suitable for pump drive Hei-FLOW Value o6 | 525-83000-00 | 525-84000-00 | 525-86000-00 | 525-80027-00 | 525-80028-00 |

Tubing sizes

| | | | | |
|---|---------------------|-----------|-----------|-----------|
| Inner diameter | (mm) | 4.8 | 6.4 | 7.9 |
| Outer diameter | (mm) | 9.8 | 11.3 | 12.9 |
| Wall thickness (wt) | (mm) | 2.5 | 2.5 | 2.5 |
| Max. pressure (continuous / short time) | (bar) | 0.8 / 1.8 | 0.8 / 1.8 | 0.8 / 1.8 |
| Suction height | (mH ₂ O) | 8.8 | 8.8 | 8.8 |

Average flow rates in combination with pump head and pump drive:

| SP quick | | min. | max. | min. | max. | min. | max. |
|---|----------|------|-------|------|-------|------|-------|
| Hei-FLOW Advantage o6 / Hei-FLOW Precision o6 | (ml/min) | 58 | 1,527 | 85 | 2,248 | 113 | 3,171 |
| Hei-FLOW Value o6 | (ml/min) | 123 | 1,580 | 180 | 2,411 | 257 | 3,436 |
| Hei-FLOW Advantage o1 / Hei-FLOW Precision o1 | (ml/min) | 12 | 299 | 18 | 435 | 25 | 630 |
| Hei-FLOW Value o1 | (ml/min) | 26 | 299 | 38 | 454 | 50 | 636 |
| SP standard / SP vario | | min. | max. | min. | max. | | |
| Hei-FLOW Advantage o6 / Hei-FLOW Precision o6 | (ml/min) | 92 | 2,390 | 139 | 3,821 | | |
| Hei-FLOW Value o6 | (ml/min) | 203 | 2,426 | 313 | 3,782 | | |
| Hei-FLOW Advantage o1 / Hei-FLOW Precision o1 | (ml/min) | 15 | 491 | 28 | 769 | | |
| Hei-FLOW Value o1 | (ml/min) | 42 | 493 | 68 | 773 | | |

Tubing P/N (per meter):

| | | | |
|--|--------------|--------------|--------------|
| Silicone | 525-35000-00 | 525-39000-00 | 525-32000-00 |
| Viton® | 525-55000-00 | 525-59000-00 | 525-52000-00 |
| PharMed® | 525-25000-00 | 525-29000-00 | 525-22000-00 |
| Tygon® (standard) | 525-65000-00 | 525-69000-00 | 525-62000-00 |
| Tygon® (hydrocarbon) | 525-75000-00 | 525-79000-00 | 525-72000-00 |
| Tygon® 2001 (food) not suitable for pump drive Hei-FLOW Value o6 | 525-85000-00 | 525-89000-00 | - |

➤ **Multi-Channel Pumps**

These pump drives can be configured for multi-channel use:

- Hei-FLOW Value o1,
Hei-FLOW Advantage o1,
Hei-FLOW Precision o1
- Increase your throughput by running up to 12 individual cassettes on one single pump drive and pump head system
 - Separate metering into multiple vessels with different feed rates in a single operation by using different tubing dimensions to adjust flow rate
 - Save time: tubing change is done in just seconds
 - In addition to standard pump heads which feature a 4-roller system you can choose 8-roller pump heads for low pulsation
 - Change your cassettes easily, even during operation – there are no restrictions
 - Cassette adjustments and changes are simple, just click in place
 - No additional purchase of a pump drive needed: upgrade your single-channel pump drive with just one adaptor for multi-channel use and pick the head/cassette configuration that matches your application needs



Hei-FLOW Advantage o1 + adaptor + pump head C 4 + cassette small

Multi-channel pump heads



Multi-channel pump head C 12
P/N 524-81220-00

- Accepts 12 cassettes small
- Built-in reduction gear allows feeding of smallest quantities
- 8 rollers minimizing pulsation



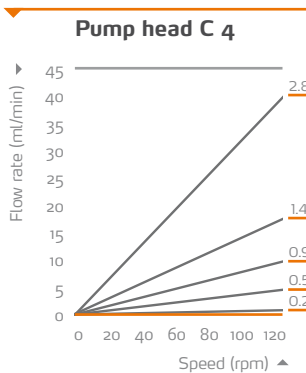
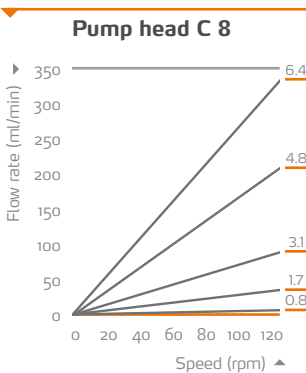
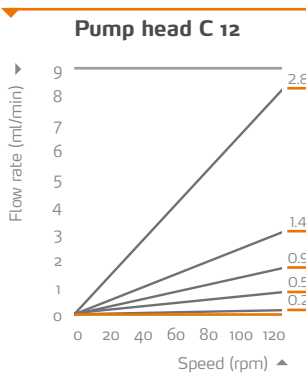
Multi-channel pump head C 8
P/N 524-40810-00

- Accepts 8 cassettes medium or 4 cassettes large
- 4-roller design



Multi-channel pump head C 4
P/N 524-80420-00

- Accepts 4 cassettes small
- 8 rollers for low pulsation



Flow rates pertain to water



➤ Multi-Channel Cassettes

- Setting screws to adjust roller contact pressure
- Cassettes easily change even while pumping
- All cassettes accept different tube materials and sizes

Cassette small

- Flow rates from 0.005 to 37 ml/min
- Suitable for tubes with 0.9-mm wall thickness (wt)
- Tube diameters available: 0.2 / 0.5 / 0.9 / 1.4 and 2.8 mm
- Two-Stop Tubing (40 cm) required to operate cassette small
- Stoppers secure tube in place
- Couplings and tube extensions allow extra hose length in 1-m increments
- Combinations:
 - C 4 multi-channel pump head: Max. 4 cassettes small
 - C 12 multi-channel pump head: Max. 12 cassettes small

Cassette small
P/N 524-90022-00

Two-Stop Tubing



Cassette medium

- Flow rates from 0.24 to 27 ml/min
- Suitable for tubes with 1.6-mm wall thickness (wt)
- Tube diameters available: 0.8 and 1.7 mm
- Tube available in requested sizes
- Combinations:
 - C 8 multi-channel pump head: Max. 8 cassettes medium

Cassette medium
P/N 524-90021-00



Cassette large

- Flow rates from 1 to 364 ml/min
- Suitable for tubes with 1.6-mm wall thickness (wt)
- Tube diameters available: 1.7 / 3.1 / 4.8 and 6.4 mm
- Tube available in requested sizes
- Combinations:
 - C 8 multi-channel pump head: Max. 4 cassettes large

Cassette large
P/N 524-90010-00



➤ Tubing Sizes for Multi-Channel Pumps

| Tubing sizes | | 0.2 | 0.5 | 0.9 | 1.4 | 2.8 |
|---|---------------------|-----------|-----------|-----------|-----------|-----------|
| Inner diameter | (mm) | 0.25 | 0.51 | 0.89 | 1.42 | 2.79 |
| Outer diameter | (mm) | 2.05 | 2.31 | 2.69 | 3.22 | 4.59 |
| Wall thickness (wt) | (mm) | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| Max. pressure (continuous / short time) | (bar) | 0.5 / 1.5 | 0.5 / 1.5 | 0.5 / 1.5 | 0.5 / 1.5 | 0.5 / 1.5 |
| Suction height | (mH ₂ O) | 7 | 7 | 7 | 7 | 7 |

Average flow rates in combination with cassette, pump head and pump drive:

| Hei-FLOW Advantage 01 / Hei-FLOW Precision 01 | min. | max. | min. | max. | min. | max. | min. | max. | min. | max. | max. number of cassettes |
|---|-------|------|------|------|------|------|------|------|------|------|--------------------------|
| Cassette small / pump head C 12 (ml/min) | 0.005 | 0.11 | 0.01 | 0.54 | 0.03 | 1 | 0.10 | 3 | 0.29 | 9 | 12 |
| Cassette small / pump head C 4 (ml/min) | 0.02 | 0.49 | 0.08 | 2 | 0.24 | 6 | 0.60 | 14 | 2 | 36 | 4 |
| Hei-FLOW Value 01 | min. | max. | min. | max. | min. | max. | min. | max. | min. | max. | |
| Cassette small / pump head C 12 (ml/min) | 0.005 | 0.11 | 0.02 | 0.42 | 0.10 | 1 | 0.23 | 3 | 0.69 | 8 | 12 |
| Cassette small / pump head C 4 (ml/min) | 0.04 | 0.53 | 0.17 | 2 | 0.57 | 6 | 1 | 15 | 4 | 37 | 4 |

Tubing P/N:

| | | | | | | |
|-------------------------------------|------------------------------------|--------------|--------------|--------------|--------------|--------------|
| Silicone | Two-Stop Tubing for cassette small | | | 525-30014-00 | 525-30015-00 | 525-30016-00 |
| | Extension tube (per meter) | | | 525-30024-00 | 525-30025-00 | 525-30026-00 |
| Viton® | Two-Stop Tubing for cassette small | | | 525-50014-00 | 525-50015-00 | 525-50016-00 |
| | Extension tube (per meter) | | | 525-50024-00 | 525-50025-00 | 525-50026-00 |
| PharMed® | Two-Stop Tubing for cassette small | 525-20012-00 | 525-20013-00 | 525-20014-00 | 525-20015-00 | 525-20016-00 |
| | Extension tube (per meter) | 525-20022-00 | 525-20023-00 | 525-20024-00 | 525-20025-00 | 525-20026-00 |
| Tygon® (standard) | Two-Stop Tubing for cassette small | 525-60012-00 | 525-60013-00 | 525-60014-00 | 525-60015-00 | 525-60016-00 |
| | Extension tube (per meter) | 525-60022-00 | 525-60023-00 | 525-60024-00 | 525-60025-00 | 525-60026-00 |
| Fittings for extension tubes (PTFE) | | 526-22000-00 | 526-22000-00 | 526-22000-00 | 526-22000-00 | 526-22000-00 |

| Tubing sizes | | 0.8 | 1.7 | 3.1 | 4.8 | 6.4 |
|---|---------------------|-----------|-----------|-----------|-----------|-----------|
| Inner diameter | (mm) | 0.8 | 1.7 | 3.1 | 4.8 | 6.4 |
| Outer diameter | (mm) | 4 | 4.9 | 6.3 | 8 | 9.5 |
| Wall thickness (wt) | (mm) | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| Max. pressure (continuous / short time) | (bar) | 0.7 / 1.7 | 0.7 / 1.7 | 0.7 / 1.7 | 0.7 / 1.7 | 0.5 / 1.5 |
| Suction height | (mH ₂ O) | 8.8 | 8.8 | 8.8 | 8.8 | 6.7 |

Average flow rates in combination with cassette, pump head and pump drive:

| Hei-FLOW Advantage 01 / Hei-FLOW Precision 01 | min. | max. | min. | max. | min. | max. | min. | max. | min. | max. | max. number of cassettes |
|---|------|------|------|------|------|------|------|------|------|------|--------------------------|
| Cassette medium / pump head C 8 (ml/min) | 0.24 | 7 | 1 | 26 | | | | | | | 8 |
| Cassette large / pump head C 8 (ml/min) | | | 1 | 27 | 4 | 90 | 8 | 192 | 11 | 329 | 4 |
| Hei-FLOW Value 01 | min. | max. | min. | max. | min. | max. | min. | max. | min. | max. | |
| Cassette medium / pump head C 8 (ml/min) | 0.55 | 6.97 | 2.17 | 27 | | | | | | | 8 |
| Cassette large / pump head C 8 (ml/min) | | | 2 | 27 | 7 | 85 | 18 | 246 | 26 | 364 | 4 |

Tubing P/N (per meter):

| | | | | | |
|----------------------|--------------|--------------|--------------|--------------|--------------|
| Silicone | 525-33000-00 | 525-34000-00 | 525-36000-00 | 525-30027-00 | 525-30028-00 |
| Viton® | 525-53000-00 | 525-54000-00 | 525-56000-00 | 525-50027-00 | 525-50028-00 |
| PharMed® | 525-23000-00 | 525-24000-00 | 525-26000-00 | 525-20027-00 | 525-20028-00 |
| Tygon® (standard) | 525-63000-00 | 525-64000-00 | 525-66000-00 | 525-60027-00 | 525-60028-00 |
| Tygon® (hydrocarbon) | 525-73000-00 | 525-74000-00 | 525-76000-00 | 525-70027-00 | 525-70028-00 |
| Tygon® 2001 (food) | 525-83000-00 | 525-84000-00 | 525-86000-00 | 525-80027-00 | 525-80028-00 |

Flow rates pertain to Tygon® (standard) tubing and water

➤ **Tubing Options**

Tygon® standard

- **Application:** For standard applications
- **Features:**
 - Non-toxic, non-oxidizing
 - Good resistance to acids, bases and inorganic media
 - Very low gas permeability, good performance life
- **Material:** Thermoplastic soft PVC, transparent
- **Complies with the standards:** FDA (21 CFR 177.2601) and GLP
- **Temperature range:** -50 to +75 °C
- **Sterilization:** Can be autoclaved for 30 min at 1 bar and 120 °C (material may change color) or with ethylene oxide
- **Restriction:** Segregation of plasticizers is possible



- **Use with:**

| | |
|----------------|-------------|
| Acids: | good |
| Lyes: | good |
| Solvents: | unsuitable |
| Pressure: | good |
| Vacuum: | good |
| Viscous media: | excellent |
| Sterile media: | conditional |



Tygon® 2001 for food

- **Application:** Food industry, well suited to products with high fat content
- **Features:**
 - Extremely chemical-resistant; e. g. appropriate for the use of polar solvents
 - Plasticizer and oil-free
 - Superior flex life in peristaltic pumps
 - Translucent to ease visual inspection
 - Outstanding flexibility
- **Material:** Thermoplastic tube, transparent
- **Complies with the standards:** USP Class VI, FDA (21 CFR 177.2600) and GLP
- **Temperature range:** -78 to +71 °C
- **Sterilization:** Can be autoclaved for 30 min at 1 bar, sterilized by irradiation or with ethylene oxide
- **Restriction:** Not suitable for pump drive Hei-Flow Value o6

- **Use with:**

| | |
|----------------|-----------|
| Acids: | excellent |
| Lyes: | excellent |
| Solvents: | good |
| Pressure: | good |
| Vacuum: | good |
| Viscous media: | good |
| Sterile media: | good |

Tygon® for hydrocarbons

- **Application:** Especially for hydrocarbons, mineral oil products and distillates
- **Features:**
 - Ideal for petrol, kerosene, heating oil, cutting solutions and coolants on a glycol base
 - Resistant to ozone and UV
- **Material:** Thermoplastic soft PVC, translucent yellow
- **Complies with the standards:** GLP conform
- **Temperature range:** -40 to +75 °C
- **Sterilization:** Sterilization is not recommended
- **Restriction:** Not suitable for concentrated acids, lyes, food and pharmaceuticals



- **Use with:**

| | |
|----------------|-------------|
| Acids: | good |
| Lyes: | good |
| Solvents: | conditional |
| Pressure: | good |
| Vacuum: | good |
| Viscous media: | excellent |
| Sterile media: | conditional |

PharMed®

- **Application:** Ideal for medical, lab and research uses
- **Features:**
 - High fatigue strength under repeated reversed bending stresses
 - Non-toxic, biocompatible
 - Very low gas permeability
 - Well suited to acids and bases
- **Material:** Thermoplastic elastomer on a polypropylene base with plasticizers; excellent tensile strength; opaque
- **Complies with the standards:** FDA (21 CFR 177.2600), USP Class VI, GLP, Pharmacopoea and Europaea
- **Temperature range:** -40 to +75 °C
- **Sterilization:** Can be autoclaved or sterilized with ethylene oxide or sterilized by irradiation
- **Restriction:** Additives may migrate



- **Use with:**

| | |
|----------------|------------|
| Acids: | good |
| Lyes: | good |
| Solvents: | unsuitable |
| Pressure: | good |
| Vacuum: | excellent |
| Viscous media: | good |
| Sterile media: | excellent |



Silicone

- **Application:** Platinum-coated silicone hose for use in pharmaceuticals and biology
- **Features:**
 - Extremely smooth interior prevents bacterial growth
 - Biocompatible, minimal adsorption and absorption
 - Best flow properties, high temperature stability
 - Absolutely inert, softener-free
- **Material:** Polydimethylsiloxane with siliceous earth and silicone additives; translucent white; excellent resistance to initial pressure
- **Complies with the standards:** USP Class VI, FDA, meets GLP and NSF
- **Temperature range:** -80 to +200 °C
- **Sterilization:** Can be autoclaved for 30 min at 1 bar or sterilized by irradiation
- **Restriction:** Not suitable for concentrated solvents, oils, acids or dilute caustic soda; relatively high permeability to gas

- **Use with:**

| | |
|----------------|--------------|
| Acids: | conditional |
| Lyes: | conditional |
| Solvents: | unsuitable |
| Pressure: | satisfactory |
| Vacuum: | good |
| Viscous media: | satisfactory |
| Sterile media: | excellent |

Viton®

- **Application:** Excellent acid resistance at high temperatures
- **Features:**
 - Low gas permeability
 - Resistant to solvents and corrosives at high temperatures
- **Material:** Fluorocarbon rubber, thermoformed Viton B (67% fluorinated); opaque black
- **Complies with the standards:** GLP conform
- **Temperature range:** -30 to +205 °C
- **Sterilization:** 16 hours at +250 °C with hot air circulation recommended
- **Restriction:** Limited performance life



- **Use with:**

| | |
|----------------|---------------------------|
| Acids: | excellent |
| Lyes: | excellent |
| Solvents: | varies; tests recommended |
| Pressure: | good |
| Vacuum: | good |
| Viscous media: | good |
| Sterile media: | satisfactory |

➤ **Tubing Compatibility**

| | Chemical | P | S | T | TU | TK | V | | Chemical | P | S | T | TU | TK | V |
|---|---|---|---|---|----|----|---|---|------------------------------|---|---|---|----|----|---|
| A | Acetaldehyde | D | C | D | D | D | D | C | Calcium oxide | A | A | A | A | A | - |
| | Acetic acid, 10 % in W. | A | A | A | A | A | - | | Carbon bisulfide | D | D | D | D | D | - |
| | Acetic acid, 100 % | B | D | D | D | - | - | | Carbon tetrachloride | D | D | D | D | D | A |
| | Acetic anhydride | A | A | D | D | A | D | | Chlorine, wet | D | D | B | B | C | B |
| | Acetone | D | C | D | D | C | D | | Chloracetic acid, 20 % in W. | B | A | A | D | A | D |
| | Acetonitrile | C | D | D | D | B | D | | Chlorobenzene | D | D | D | D | C | A |
| | Acetyl bromide | C | D | D | D | C | - | | Chloroform | D | D | D | D | C | A |
| | Acetyl chloride | C | D | D | D | C | A | | Chlorobromomethane | B | D | D | D | - | A |
| | Aliphatic hydrocarbons | D | D | D | B | D | - | | Chromic acid, 20 % in W. | A | D | B | C | B | A |
| | Aluminum chloride, 53 % in W. | A | A | A | A | A | A | | Chromic acid, 50 % in W. | C | D | C | D | - | - |
| | Aluminum sulfate, 50 % in W. | A | A | A | A | A | A | D | Copper salts | A | A | A | A | A | - |
| | Alums | A | A | A | A | A | - | | Cyclohexane | D | D | D | C | D | A |
| | Ammonia, gas and liquid | A | D | B | B | B | D | | Cyclohexanone | D | D | D | D | C | D |
| | Ammonium acetate, 45 % in W. | A | A | A | A | A | - | | Chlorosulfonic acid | D | D | D | D | D | D |
| | Ammonium carbonate, 20 % in W. | A | A | A | A | A | A | | Diesel | D | D | D | B | - | - |
| | Ammonium chloride | A | C | A | A | A | A | | Dimethyl formamide | B | B | D | D | A | D |
| | Ammonium hydroxide, 30 % in W. | A | D | A | C | A | B | | Ethanol (ethyl alcohol) | A | B | D | B | A | A |
| | Ammonium nitrate | A | C | A | A | A | - | | Ether | C | D | D | C | D | - |
| | Ammonium phosphate | A | A | A | A | A | - | | Ethyl acetate | B | D | D | D | D | D |
| | Ammonium sulfate | B | A | A | A | A | D | | Ethyl bromide | D | D | D | D | C | - |
| B | Amyl acetate | B | D | D | D | D | A | E | Ethyl chloride | C | D | D | D | D | A |
| | Amyl alcohol | D | D | D | A | A | A | | Ethylamine | D | C | D | D | B | - |
| | Amyl chloride | C | D | D | D | D | - | | Ethylene chlorhydrin | A | B | D | B | A | A |
| | Aniline | C | D | D | D | D | D | | Ethylene dichloride | C | D | D | D | D | B |
| | Aniline hydrochloride | C | D | D | D | D | B | | Ethylene glycol | A | A | A | A | A | A |
| | Aqua regia (80 % HCl, 20 % HNO ₃) | D | D | D | D | A | - | | Ethylene oxide | A | D | A | A | A | D |
| | Aromatic hydrocarbons | A | D | D | D | D | - | F | Fatty acids | C | B | B | C | C | C |
| | Arsenic salts | A | A | A | A | A | - | | Ferric chloride 40 % in W. | A | A | A | A | A | B |
| | Barium salts | A | A | A | A | A | - | | Ferric sulfate 5 % in W. | A | A | A | A | A | A |
| | Benzaldehyde | D | C | D | D | C | D | | Ferrous chloride 43 % in W. | A | A | A | A | A | - |
| | Benzene | D | D | D | D | - | - | | Ferrous sulfate 5 % in W. | A | A | A | A | A | - |
| | Benzenesulfonic acid | D | D | D | D | D | A | | Fluoboric acid, 10 % in W. | D | D | A | A | A | - |
| | Boric acid, 4 % in W. | A | A | A | A | A | A | | Fluoroborate salts | A | - | A | A | A | - |
| | Bromine | D | D | D | D | D | A | | Fluosilicic acid | C | B | D | B | A | - |
| | Butane | A | A | A | A | B | A | | Formaldehyde, 37 % in W. | D | C | D | D | C | D |
| | Butanol (butyl alcohol) | D | B | D | A | A | A | | Formic acid, 25 % in W. | A | A | A | C | A | D |
| | Butyl acetate | B | D | D | D | D | - | G | Freon 11 | A | A | A | A | - | - |
| | Butyric acid | B | D | D | C | D | D | | Fruit juice | A | A | A | A | A | A |
| | | | | | | | | | Gasoline, high-aromatic | D | D | D | B | D | A |
| | | | | | | | | | Gasoline, non-aromatic | D | D | D | B | D | A |
| | | | | | | | | | Glycerin | A | A | A | A | A | A |
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| | Chemical | P | S | T | TU | TK | V | | Chemical | P | S | T | TU | TK | V |
|-----|---------------------------------|---|---|---|----|----|---|-----|-----------------------------------|---|---|---|----|----|---|
| H/J | Hydrobromic acid, 20 - 50 % | D | D | A | A | A | A | Q/S | Potassium hydroxide, <10 % in W. | A | A | A | D | - | B |
| | Hydrochloric acid, 10 % in W. | A | D | A | A | A | A | | Potassium iodide, 56 % in W. | A | A | A | A | A | - |
| | Hydrochloric acid, 37 % in W. | B | D | A | D | A | B | | Propanol (propyl alcohol) | C | A | D | D | A | B |
| | Hydrocyanic acid | A | A | A | A | A | A | | Pyridine | C | D | D | D | C | D |
| | Hydrofluoric acid, 10 % in W. | D | D | C | A | A | B | | Silicone oils | C | D | B | A | B | A |
| | Hydrofluoric acid, 50 % | D | D | D | D | A | A | | Silver nitrate, 55 % in W. | A | A | A | A | A | A |
| | Hydrogen peroxide, 10 % in W. | A | A | A | A | A | A | | Soap solutions | B | A | A | A | A | A |
| | Hydrogen peroxide, 90 % in W. | B | C | D | D | B | - | | Sodium bicarbonate, 7 % in W. | A | A | A | A | A | A |
| | Hydroiodic acid | B | B | A | A | A | - | | Sodium bisulfate | A | - | A | A | A | - |
| | Hypochlorous acid, 25 % in W | A | A | A | A | A | A | K/L | Sodium borate | A | A | A | A | A | A |
| M | Iodine solutions | A | C | A | A | A | - | | Sodium carbonate | A | A | A | A | A | B |
| | Ketones | D | D | D | D | C | - | | Sodium ferrocyanide | A | A | A | D | - | - |
| | Lactic acid, 10 % in W. | A | A | A | A | A | - | | Sodium hydrosulfite | A | - | A | A | A | - |
| | Lactic acid, 85 % in W. | B | D | D | D | - | - | | Sodium hydroxide, 10 - 15 % in W. | A | A | A | D | A | B |
| | Lead acetate, 35 % in W. | A | A | A | A | A | - | | Sodium hydroxide, 30 - 40 % in W. | A | C | C | D | A | B |
| N | Manganese salts | A | A | A | A | A | - | O | Sodium nitrate, 3.5 % in W. | A | A | A | A | A | - |
| | Magnesium chloride, 35 % in W. | A | A | A | A | A | A | | Sodium sulfate, 3.6 % in W. | A | A | A | A | - | A |
| | Magnesium sulfate, 25 % in W. | A | A | A | A | A | - | | Sodium sulfide, 13 % in W. | A | A | A | A | A | - |
| | Mercury salts | A | A | A | A | A | - | | Stearic acid, 5 % in Alc. | C | D | D | B | B | - |
| | Methane | A | - | A | A | A | A | P | Sulfuric acid, 10 % in W. | A | A | A | B | A | A |
| O | Methanol | A | B | D | B | A | D | | Sulfuric acid, 30 % in W. | A | B | A | B | A | A |
| | Methyl Ethyl Ketone | D | D | D | D | C | D | | Sulfuric acid, 95 - 98 % in W. | D | D | D | D | C | A |
| | Monoethanolamine | C | D | D | D | D | D | | Sulfurous acid | A | A | A | A | A | A |
| | Naphtha | D | D | D | D | D | A | T | Tannic acid, 75 % in W. | B | A | B | D | A | - |
| P | Nickel salts | A | A | A | A | A | - | | Tartaric acid, 56 % in W. | A | A | A | A | A | A |
| | Nitric acid, 10 % in W. | A | C | A | D | A | A | | Tin salts | A | A | A | A | A | - |
| | Nitric acid, 35 % in W. | A | D | A | D | A | A | | Toluene (toluol) | D | D | D | D | C | A |
| | Nitric acid, 68 - 71 % in W. | D | D | D | D | D | - | | Trichloroacetic acid, 90 % in W. | B | D | A | D | A | C |
| | Nitrobenzene | D | D | D | D | C | - | W/Z | Trichlorethylene | C | D | D | D | C | A |
| P | Nitrous acid, 10 % in W. | A | B | A | C | A | - | | Trisodium phosphate | A | A | A | A | A | A |
| | Oils, animal | C | A | D | A | B | - | | Turpentine | D | D | D | B | A | A |
| | Oils, mineral | D | D | C | A | D | A | | Urea, 20 % in W. | A | A | A | A | A | - |
| | Oleic acid | C | B | D | B | D | B | | Uric acid | A | A | A | C | A | - |
| | Perchloric acid, 67 % in W. | A | D | C | D | A | A | | Xylene | D | D | D | D | C | B |
| P | Perchlorethylene | C | D | D | D | D | A | W/Z | Zinc chloride, 80 % in W. | A | A | A | A | A | A |
| | Phenol, 91 % in W. | A | D | D | C | A | - | | | | | | | | |
| | Phosphoric acid 25 % in W. | A | D | A | A | A | A | | | | | | | | |
| | Phthalic acid, 9 % in Alc. | A | B | D | C | B | - | | | | | | | | |
| | Potassium carbonate, 55 % in W. | A | A | A | A | A | - | | | | | | | | |
| P | Potassium cyanide, 33 % in W. | A | A | A | A | - | - | | | | | | | | |
| | | | | | | | | | | | | | | | |
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Tubing:
P = PharMed®
S = Silicone
T = Tygon® standard
TU = Tygon® for hydrocarbons
TK = Tygon® 2001 for food
V = Viton®

Resistance:
A = excellent
B = good
C = conditional
D = unsuitable
- = not tested

Please note:
- All information provided here is not guaranteed to be correct
- Recommended testing of tubing prior to application use

➤ Accessories



Foot-pedal

P/N 526-14100-00

For start and stop
(Hei-FLOW Advantage 01 / Hei-FLOW Advantage 06 and Hei-FLOW Precision 01 / Hei-FLOW Precision 06 only)



Adaptor for multi-channel pump heads

P/N 526-16000-00

To connect pump drive to multi-channel pump head



Fitting for extension tubes

P/N 526-22000-00

For tubing diameter 0.2 - 2.8 mm

➤ Hei-FLOW Packages

Hei-FLOW Silver 1 Package

P/N 523-50019-00

Package includes:

- Pump Hei-FLOW Value 01
- Pump head SP quick 1.6
- Each 1-m Tygon tubing and Silicone tubing (inner dia. 3.1 mm)

Hei-FLOW Silver 2 Package

P/N 523-50068-00

Package includes:

- Pump Hei-FLOW Value 06
- Pump head standard 2.5
- Each 1-m Tygon tubing and Silicone tubing (inner dia. 6.4 mm)

Hei-FLOW Gold Package

P/N 523-51019-00

Package includes:

- Pump Hei-FLOW Advantage 01
- Pump head SP quick 1.6
- Each 1-m Tygon tubing and Silicone tubing (inner dia. 0.8 mm)

Hei-FLOW Platinum Package

P/N 523-52019-00

Package includes:

- Pump Hei-FLOW Precision 01
- Pump head SP quick 1.6
- Each 1-m Tygon tubing and Silicone tubing (inner dia. 0.8 mm)



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➤ Technical Specifications - Peristaltic Pumps

| Model | Hei-FLOW Value 01 | Hei-FLOW Value 06 | Hei-FLOW Advantage 01 | Hei-FLOW Advantage 06 | Hei-FLOW Precision 01 | Hei-FLOW Precision 06 |
|---|--|--|--|--|--|--|
| P/N (230 V) | 523-50010-00 | 523-50060-00 | 523-51010-00 | 523-51060-00 | 523-52010-00 | 523-52060-00 |
| P/N (230 V) incl. multi-channel adaptor | 523-50013-00 | – | 523-51013-00 | – | 523-52013-00 | – |
| Flow rates single-channel pumps (ml/min) | 0.85 – 861 | 4.0 – 4,151 | 0.38 – 813 | 2.0 – 4,056 | 0.36 – 813 | 2.0 – 4,056 |
| Flow rates multi-channel pumps (ml/min) | 0.005 – 364 | – | 0.005 – 329 | – | 0.005 – 329 | – |
| Flow rate accuracy * | ± 5 | ± 5 | ± 3.5 | ± 3.5 | ± 1 | ± 2 |
| Speed range (rpm) | 10 – 120 | 50 – 600 | 5 – 120 | 24 – 600 | 5 – 120 | 24 – 600 |
| Speed setting | scale | scale | scale | scale | digital | digital |
| Electronic speed control | analog | analog | digital | digital | digital | digital |
| Control accuracy motor (%) | ± 2 | ± 2 | ± 0.5 | ± 0.5 | ± 0.5 | ± 0.5 |
| Select direction of rotation | CW / CCW | CW / CCW | CW / CCW | CW / CCW | CW / CCW | CW / CCW |
| Motor power (W) | 100 | 100 | 100 | 100 | 100 | 100 |
| Supply power (W) | 100 | 100 | 100 | 100 | 100 | 100 |
| Analog interface | – | – | for speed 0 - 10 V / 4 - 20 mA direction of rotation start/stop | for speed 0 - 10 V / 4 - 20 mA direction of rotation start/stop | for speed 0 - 10 V / 4 - 20 mA direction of rotation start/stop | for speed 0 - 10 V / 4 - 20 mA direction of rotation start/stop |
| Digital interface | – | – | – | – | RS 232 | RS 232 |
| Flow rate indicator | – | – | – | – | digital | digital |
| Volume dosing (ml) | – | – | – | – | 0.001 – 9,999 | 0.001 – 9,999 |
| Interval dosing (ml) | – | – | – | – | 0.001 – 9,999 in breaks 0.1 sec – 750 h | 0.001 – 9,999 in breaks 0.1 sec – 750 h |
| Smooth start | – | – | – | – | yes | yes |
| Electronic brake | – | – | – | – | yes | yes |
| Foot-pedal connection | – | – | yes | yes | yes | yes |
| Continuous operation (hours/days) | 24/7 | 24/7 | 24/7 | 24/7 | 24/7 | 24/7 |
| Safety feature | overheat protection | overheat protection | electronic current limiter and overheat protection | electronic current limiter and overheat protection | electronic current limiter and overheat protection | electronic current limiter and overheat protection |
| Weight (kg) | 7.6 | 7.1 | 7.6 | 7.3 | 7.7 | 7.3 |
| Protection class (DIN EN 60529) | IP 55 | IP 55 | IP 55 | IP 55 | IP 55 | IP 55 |
| Permissible ambient conditions | 5 – 31 °C at 80 % rel. humidity 32 – 40 °C decreasing linearly up to max. 50 % rel. humidity | 5 – 31 °C at 80 % rel. humidity 32 – 40 °C decreasing linearly up to max. 50 % rel. humidity | 5 – 31 °C at 80 % rel. humidity 32 – 40 °C decreasing linearly up to max. 50 % rel. humidity | 5 – 31 °C at 80 % rel. humidity 32 – 40 °C decreasing linearly up to max. 50 % rel. humidity | 5 – 31 °C at 80 % rel. humidity 32 – 40 °C decreasing linearly up to max. 50 % rel. humidity | 5 – 31 °C at 80 % rel. humidity 32 – 40 °C decreasing linearly up to max. 50 % rel. humidity |
| Dimensions (w x d x h) (mm) | 166 x 256 x 225 | 166 x 256 x 225 | 166 x 256 x 225 | 166 x 256 x 225 | 166 x 256 x 225 | 166 x 256 x 225 |

* Flow-rate accuracy pertains to water without counter pressure
Standard supply voltage: 230 V - other voltages upon request, please specify for order



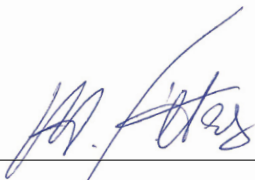
Certificate


To confirm the ability for
continuous operation
of the Hei-FLOW series Peristaltic Pumps

The Hei-FLOW series Peristaltic Pumps feature overtemperature safety circuits according to DIN EN 61010-1:2001 and DIN EN 61010-2-051:2015 and therefore is designed for continuous operation.

This statement is made under the precondition that all units are operated in accordance with the operation manual and in accordance with good practice standards for safety in laboratories, rules for accident preventions, and compliance with directions on hazardous materials.

S c h w a b a c h , J a n u a r y 2 0 1 7


Stefan Peters
Research and Development Manager


Marcell Sarré
Quality Manager



 **heidolph**
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