

# HIRSCHMANN®



## rotarus®

The HiClass pump family

# rotarus®

## Continuous dispensing, intelligent control

The rotarus® pump family sees Hirschmann taking the leap into the world of continuous dispensing pumps.

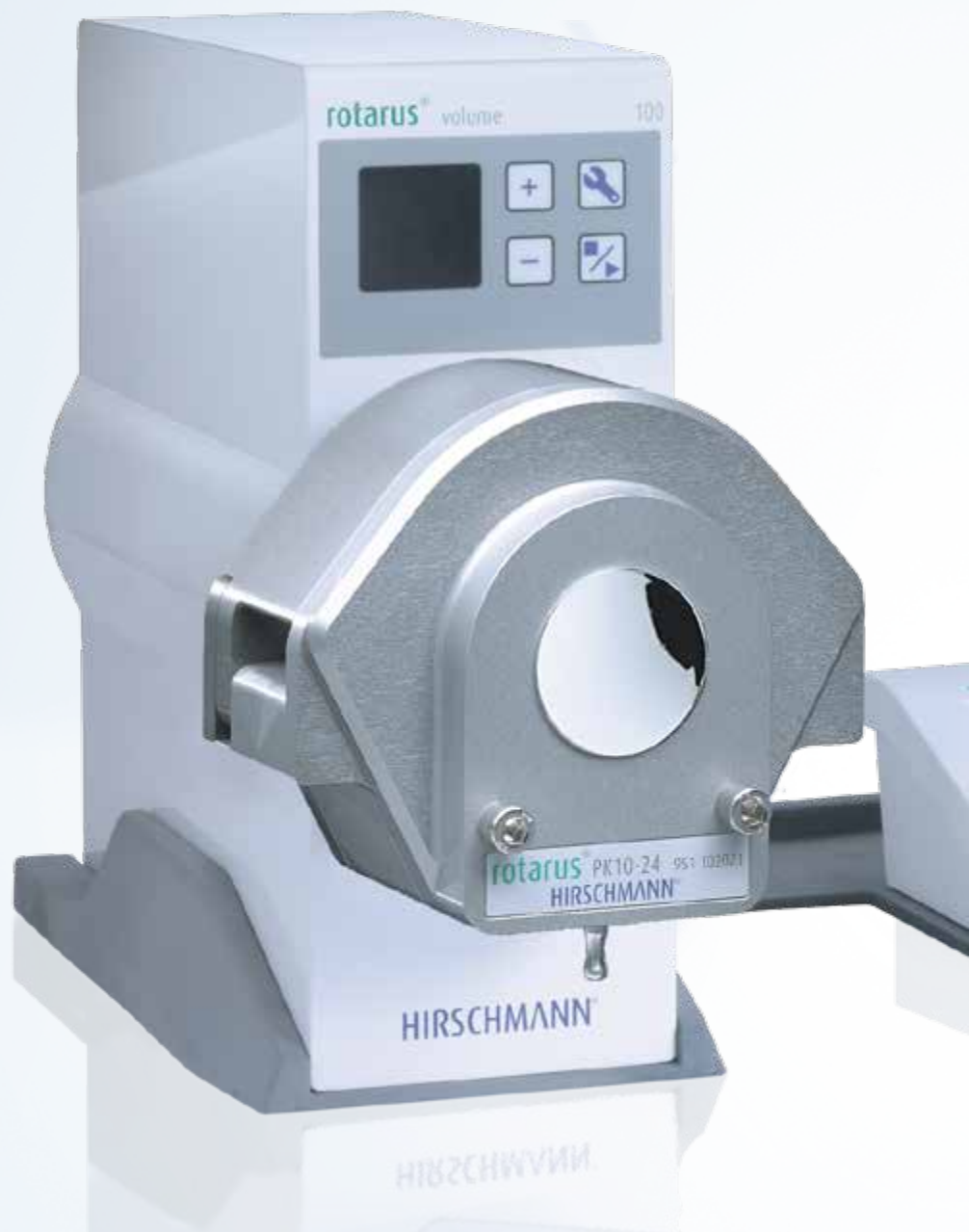
An universal product family is available with a selection of different motors, pump heads, varying housing protection classes and intelligent control of delivery volumes, covering a broad spectrum of application areas in the lab or industry.

Hirschmann's liquid handling competence is also evident in the sophisticated functions and innovative details of rotarus®.

A variety of 30 to 100 Watt class motors ensure precise delivery in speed ranges from 0.2 to 3,100 revolutions per minute. RFID technology is used to detect the pump head and tubes. This means that media with a high viscosity can also be accurately dispensed. RFID technology is used to detect the pump head. Configuration data for basic parameters can also be stored in this manner and retrieved at any time. The rotarus® flow, rotarus® volume and rotarus® fast models have automatic blockage detection and tube rupture monitoring.

### Overview of details

- Rapid tool-free changing of pump heads
- Automatic pump head and tube detection with RFID technology (rotarus® flow, volume and fast)
- Control panel located directly on pump housing
- External TFT touchscreen with user-friendly menu (standard feature on rotarus® flow, volume and fast)
- Calibratable
- Operation with 24 V DC, outdoor use is also possible with appropriate accessories
- USB and RS232 interface for PC connection



## Comfortable use and rapid handling

A control panel for the most important functions is integrated directly into the housing of all rotarus® models. In addition, rotarus® flow, rotarus® volume and rotarus® fast are equipped with an external control module with touch-screen.

The pump head connection technology guarantees rapid handling as a standard feature.

Changing is realised quickly and simply in a single action without using tools. The range encompasses a comprehensive selection of single and multichannel peristaltic pump heads or piston pump heads. Pump heads from other manufacturers can also be fitted without difficulty using an adapter.



### flexible

Changeable peristaltic pump heads, single and multichannel design or piston pump heads

### enduring

Continuous precise delivery with low to high flow rates

### powerful

Two different motor variants for speed ranges from 0.2 to 3,100 revolutions per minute

### foresighted

Integrated blockage detection and rupture monitoring (rotarus® flow, volume and fast variants)

### intelligent

Fully automatic pump head detection using RFID prevents confusion

### interactive

USB and RS232 interface for PC connection

### variable

The pump housing can also be attached to a stand or stacked

### rapid

Pump heads can be changed with a single action

### comfortable

The rotarus® flow, volume and fast models are comprehensive, but can still be programmed easily via the control module

Precise media delivery

## Five models, numerous applications

The rotarus® series comes with five versions, each with a choice of different motors and different protection classes.

An intelligent pump range which always provides the appropriate model for a variety of applications.

### rotarus® smart

rotarus® smart rounds off the selection of rotarus® pump drives in the basic segment.

The control panel on the housing enables simple and rapid configuration of the most important parameters, and the speed can be programmed directly on the unit.

Thanks to its low space requirement, the V smart can be easily integrated in an existing laboratory environment or production system.







## rotarus® standard

rotarus® standard is a powerful basic model. The cost-effective, precise delivery pump for small delivery volumes and high viscosities is ideal for flexible applications, thanks to the use of diverse pump heads and tubes. The control panel on the housing enables simple and rapid configuration of the most important parameters, and the speed can be programmed directly on the unit.

## rotarus® flow

rotarus® flow is the comfortable delivery pump. With control options for velocity and flow speed, flow is particularly suitable for delivery tasks which require a particular delivery speed calibrated in flow rate (e.g. ml/min). Basic functions can be configured quickly and easily using the control panel on the housing. The external control module with a TFT touchscreen provides clear, self-explanatory menu guidance through further functions. Speed in the case of the rotarus® flow model can be configured directly on the unit. The flow rate is programmed on the control module.

As with all rotarus® pumps, pump heads on the rotarus® flow version can also be replaced quickly and simply with a single action. Use of RFID technology enhances user comfort and safety through automatic detection of the pump head and tube. The intelligent functions are supplemented by rupture monitoring and blockage detection on the tube. rotarus® flow also has a calibration function and method memory.

Intelligent range

## rotarus® volume

rotarus® volume, an extremely comfortable and accurate dispensing pump, has positioned itself right from the outset as the top model in the series. In addition to selection options for speed, flow rate, dispensing duration and total volume, rotarus® volume also has a range of other intelligent functions. Different pump methods with variable cycles and graduated speeds can also be accurately and reliably controlled. In common with the flow model, the control panel on the housing enables rapid and simple configuration of the basic functions.

The external control module with a TFT touch-screen provides clear, self-explanatory menu guidance through further functions.

As with all rotarus® pumps, pump heads on the volume version can also be replaced quickly and simply with a single action. Use of RFID technology enhances user comfort and safety through automatic detection of the pump head and tube.

The intelligent functions are supplemented by rupture monitoring and blockage detection on the tube. rotarus® volume also has a calibration function and method memory.





## rotarus® fast

rotarus® fast, has been specially designed for combination with piston pump heads. The homogenous geometry of the pump head adapts also enable use of all peristaltic pump heads in the rotarus® family.

It embodies maximum intelligence and can be used either as a delivery pump, but also as a dispensing pump. As in the entire rotarus® family, the parameters required for this can be programmed in an extremely clear and self-explanatory manner using a TFT touchscreen.

The RFID technology detects the fitted pump head, and the rotarus® fast adjusts automatically to the appropriate parameters without the intervention of the operator. This enables, for example, automatic activation of the maximum speed best suited to the pump head. The optimum pump head delivery rate is therefore exploited as a result, while wear is simultaneously reduced.

All interfaces necessary for operating the pump via a system control or PC are also provided.

# Multiple possibilities

# Appropriate power for individual use

A variety of 30 to 100 Watt class motors is available for selection for the pump drive. They ensure that the required power is provided to suit the application, flow rate and medium.



## Series 30

The Series 30 rotates quicker and, with an appropriate pump head, is ideal for the delivery of low-viscosity media.

The speed of rotarus® Series 30 models can be set between 10 and 350 1/min with a resolution of 0.1 1/min on the pump drive.

As before, the achievable flow rates are determined by the pump head used and the selected tube sizes.



## Series 40

The Series 40 achieves greater performance with slower revolutions. Motor gear reduction is realised with a 2-stage planetary gearbox, thus providing sufficient power for higher-viscosity media.

The speed of rotarus® Series 40 models can be set between 3 and 200 1/min with a resolution of 0.1 1/min on the pump drive.

As before, the achievable flow rates are determined by the pump head used and the selected tube sizes.



## Series 50

The Series 50 is a powerful precision pump drive for low flow rates or highly viscous media.

The speed of rotarus® Series 50 models can be set between 0.2 rpm and 100 rpm with a resolution of 0.1 rpm on the pump drive or the external control module.

In addition, the achievable flow rates are determined by the pump head used and the selected tube size.





## Series 80

The Series 80 is a rapid and precise pump drive ideally suited to applications where positive displacement pump heads are used.

The speed of rotarus® Series 80 models can be set between 50 and 3,100 1/min with a resolution of 0.1 1/min either on the pump drive or the external control unit. This enables the achievement of the maximum possible pumping capacity of the piston pump heads.



## Series 100

The Series 100 is a rapid pump drive for high flow rates.

The speed of rotarus® Series 100 models can be set between 5 rpm and 500 rpm with a resolution of 0.1 rpm on the pump drive or the external control module.

In addition, the achievable flow rates are determined by the pump head used and the selected tube size.

Adapted to the environment

## Housing and interior in perfect combination

Two housing versions with different protection classes are available for rotarus®. The housing with a white powder coating conforms to protection class IP54 and, like the rotarus® smart series housing with protection class IP43, is ideally suitable for use in the laboratory. The inox stainless steel design with protection class IP65 meets stricter environmental requirements and is the right choice for use in industrial applications in pharmaceutical, medicinal or food production.

All housing versions have been developed to conform to the fundamental principles of Hirschmann design. Design and functionality also complement each other in rotarus® to produce units which, thanks to their low space requirement, can be easily integrated in an existing laboratory environment or production system, achieving convincing results during use with their sophisticated technology. The smooth housing surfaces can be cleaned without difficulty.



## Award-winning styling and function

The entire rotarus® pump family has been developed to conform to the fundamental principles of Hirschmann design. The pump series is distinguished by a contemporary design, ergonomics, ecological compatibility and a high degree of innovation coupled with a low space requirement.

Users and a variety of juries have been impressed by this design quality and, equally, the functionality of the rotarus® pump family. rotarus® has been distinguished with a total of 6 awards since it was launched on the market.



2012 – Gute Gestaltung 12 (Good Design)



2013 – iF Design Award, Hanover



2013 – red dot



2013 – Universal Design Award



2014 – Good Design Award



2014 – German Design Award

Award-winning quality

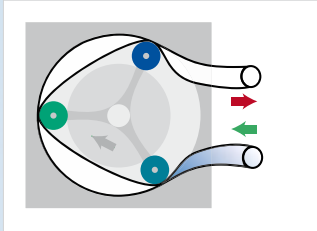
# rotarus® peristaltic pump heads

## The functional principle

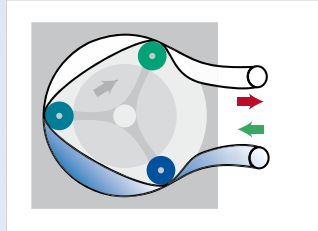
Peristaltic pumps are so-called roller pumps in which the rollers are rotated over a tube fitted in the pump head, leading to the mechanical deformation (squeezing) of the tube.

The restitution of the tube following the roller triggers pumping of the medium in the interior of the tube. As a consequence, only the pump tube comes into contact with the medium.

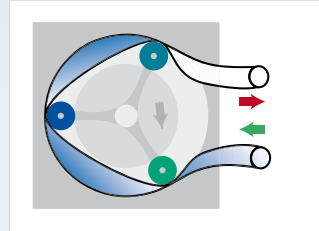
The flow rate is determined by the geometry of the roller head, the speed of the roller head, the number of rollers and the inner diameter of the tube.



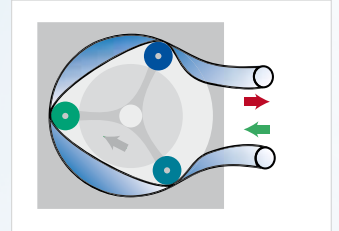
1. The tube is tensioned between the tubing bed and the rotor. Each roller compresses the tube.



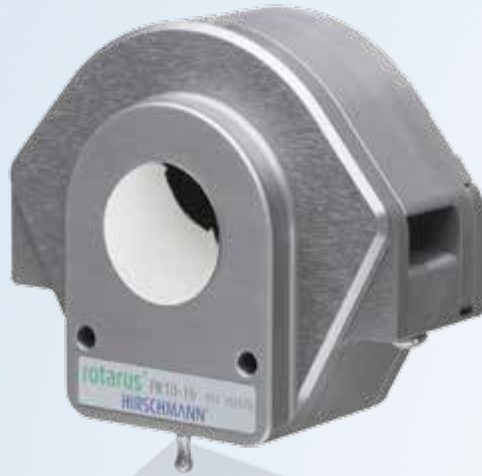
2. The rotor rollers move along the tube. The tube is squeezed continually through the rollers which displace the liquid in the direction of the roller head motion.



3. The tube behind the roller resumes its original shape, creates a vacuum and suctions the liquid.



4. The process begins anew.



PK 10-16



PK 10-24



MKF 4-8



MKF 8-4



## Speedier change, more versatile functions

The rotarus® range encompasses a comprehensive selection of single and multichannel pump heads. The pump head connection technology was developed for rapid handling. Changing of heads is realised quickly and simply in a single action without using tools.

Pump heads from other manufacturers can also be fitted without difficulty using an adapter. rotarus® single channel pump heads are easily cascaded (i.e. they can be stacked in an assembly and operated on a single rotarus® pump).



MMKFI 1288

# Numerous versions

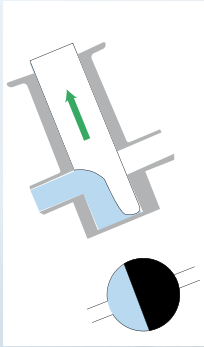
# rotarus® piston pump heads

## Continuous dispensing, intelligent control

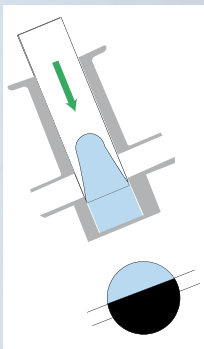
Pumping of the medium is enabled through the lifting motion of the piston stroke at an oblique angle to the drive axis. The stroke volume is set by changing the angle of the pump head. The simultaneous rotary motion of the piston triggers the switchover from suctioning to ejection.

Exactly the same volume is conveyed by the piston stroke during each rotation, achieving the same high degree of dispensing precision possible with a piston pump.

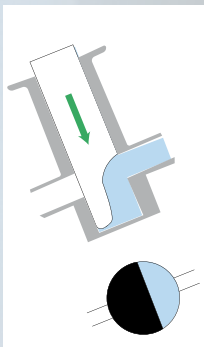
The desired flow rate is thus achieved in combination with the speed.



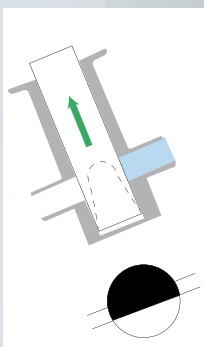
1. Suctioning



2. Reversal point



3. Ejection



4. Reversal point



## Dispensing with the intelligent rotation

Hirschmann has now applied experience gained from dispensers with pistons to the principle of continuous delivery by a pump, and this is reflected in the pump head series for piston pumps.

The pump head is available with pistons in a variety of materials. As itemised in the adjacent material index, a variety of models ranging from ceramic to stainless steel is available, depending on the application and medium to be dispensed.

This pump head connection technology was developed for rapid handling. Changing of heads is realised quickly and simply in a single action without using tools. Ease of cleaning is also guaranteed, thanks to the modular design of the piston pump heads.



Numerous versions

Material index for piston pump heads					
Type	Piston Size	Piston Material	Cylinder Case Material	Cylinder Liner Material	Options
RH	00/0/1	C = ceramic	K = fluorocarbon (PVDF)	C = ceramic	LF = Low Flow Adaptor Kit
		S = stainless steel	T = Tefzel (EFTE)		
QP	Q0/Q1-Q3	SAN = sanitary (CSC)	S = stainless steel	Y = Carbon (sintered)	W = Isolation Gland
			SAN = sanitary (CSC)	SAN = sanitary (CSC)	SAN = sanitary (CSC)



## Specially developed accessory range for maximum adaptability



**Stacking aid**  
For stacking 2 or more rotarus®.



**Stand holder**  
The stand holder also facilitates use of rotarus®  
in a stand assembly.



**Control module holder**  
For placing the control module on the rotarus®.



**Pedal switch - so you have both hands free.**  
An ingenious accessory range ensures that you have complete freedom of action. For example, you can start dispensing with the pedal switch and have both hands free for work on the laboratory table.



**System platform**  
Non-slip depositing surface for rotarus® control  
module, inclusive cable guide.

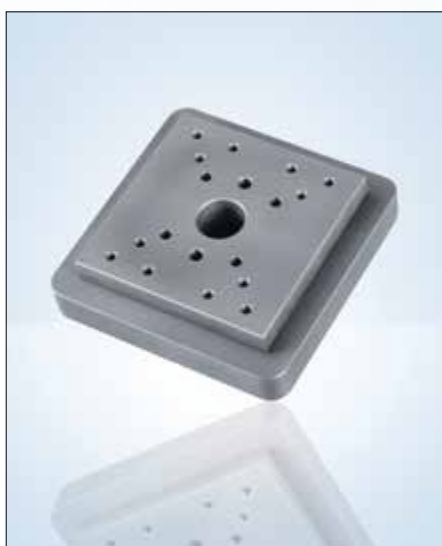


**Mouse**  
For extremely sensitive medium dispensing.



Order number	Article designation	rotarus® smart	rotarus® standard	rotarus® flow	rotarus® volume	rotarus® fast
953 11 20	rotarus® pedal switch	✓	✓	✓	✓	✓
953 11 21	rotarus® mouse	✓	✓	✓	✓	✓
953 11 41	rotarus® data power cable, 0.5 m			✓	✓	✓
953 11 42	rotarus® data power cable, 2 m			✓	✓	✓
953 11 43	rotarus® data power cable, 5 m			✓	✓	✓
953 11 44	rotarus® data power cable, 10 m			✓	✓	✓
953 11 45	rotarus® RS232 cable, lenght 2 m			✓	✓	✓
953 11 46	rotarus® USB cable, lenght 2 m			✓	✓	✓
953 11 47	rotarus® control cable button function 3-pole, lenght 2 m	✓	✓	✓	✓	✓
953 11 48	rotarus® control cable analog signal 5-pole, lenght 2 m		✓	✓	✓	✓
953 11 49	Power cord 24 Volt, lenght 2 m	✓	✓	✓	✓	✓
953 11 61	rotarus® system platform	✓	✓	✓	✓	✓
953 11 62	rotarus® control unit holder	✓	✓	✓	✓	✓
953 11 63	rotarus® stacking aid	✓	✓	✓	✓	✓
953 11 70	rotarus® stand holder	✓	✓	✓	✓	✓
953 12 50	adapter plate for MASTERFLEX PK	✓	✓	✓	✓	✓
953 12 51	adapter plate for ISMATEC PK	✓	✓	✓	✓	✓
953 12 22	Set for stacking/screwing of 2 single-channel pump heads	✓*	✓*	✓	✓	✓
953 12 23	Set for stacking/screwing of 3 single-channel pump heads	✓*	✓*	✓	✓	✓

\*cascading in 30 and 50 Watt class conditionally possible..



#### Adapter plate

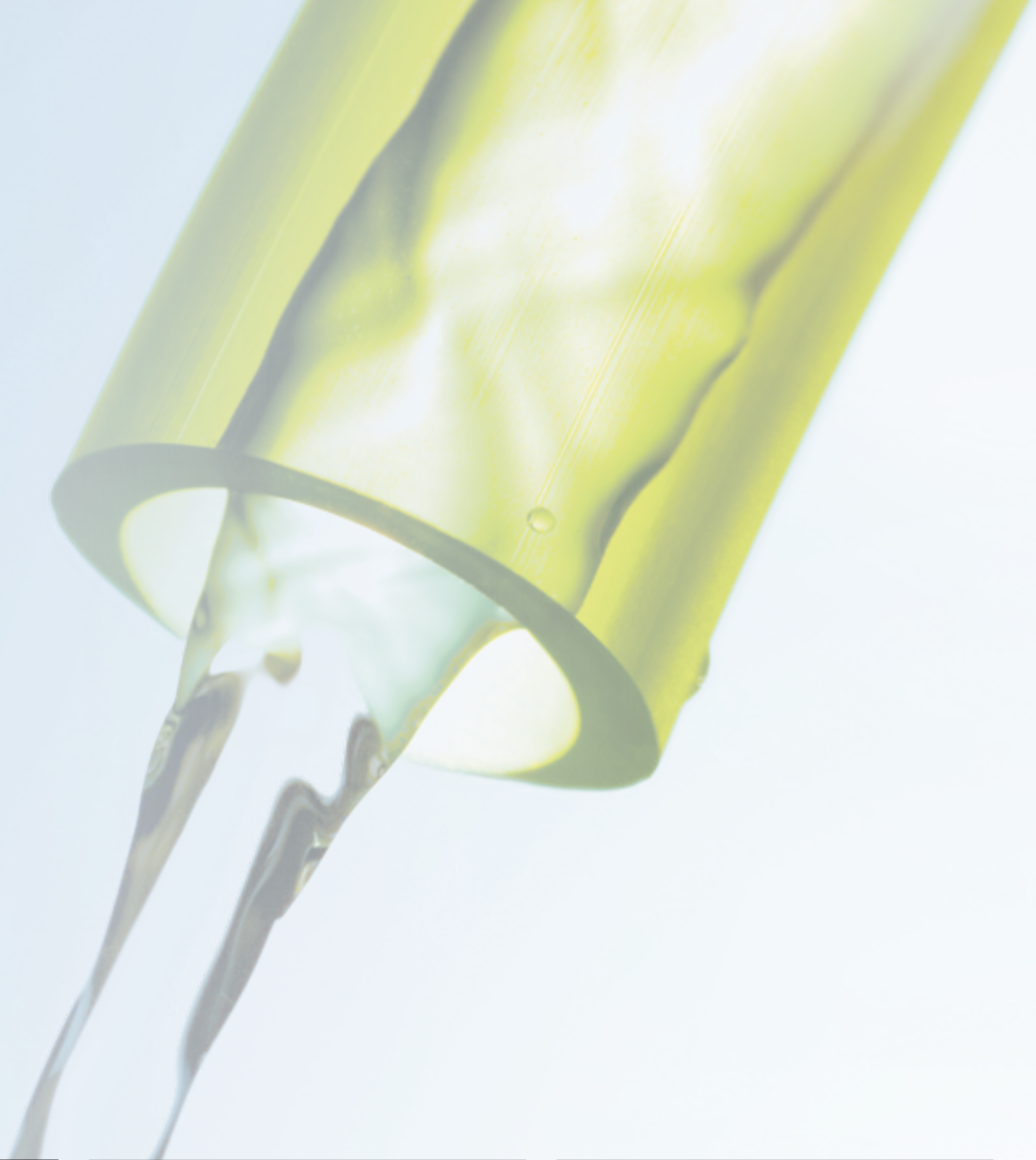
For use with pump heads from other manufacturers.



#### Connection cable for the serial interface

Cable for linking units to the serial interface (9-pole) and USB interface of the PC.

# Tubes



## Tygon® R-3603/E-3603

Tygon® laboratory tube for general use in the lab and industry.

### Properties:

highly transparent, temperature resistance from -54 to 74 °C, Shore hardness A 55, autoclavable, excellent chemical resistance to the majority of chemical, inorganic lab products, low particle detachment, due to extremely smooth inner wall, extreme flexibility.



## Tygon® LFL

Tygon® Long Flex Life pump tube for general applications in the lab and industry and a long service life.

### Properties:

highly transparent, temperature resistance from -54 to 74 °C, Shore hardness A 56, autoclavable, max. bending fatigue strength of all transparent Tygon® tubes, extremely low particle detachment, broad chemical resistance, long service life.



## PharMed® BPT

Biocompatible tubes for sensitive pharmaceutical and biotechnological applications.

### Properties:

beige-coloured, temperature resistance from -50 to 135 °C, Shore hardness A 64, autoclavable, good general chemical resistance, excellent resistance to acid, alkali and oxidation, impermeable to light and UV radiation.



### Tygon® 2001

Ultra-pure tube free of softeners for applications in the food industry and aggressive media.

**Properties:**

transparent, temperature resistance from -78 to 57 °C, Shore hardness A 69, autoclavable, broad chemical resistance, free of softeners.



### Norprene® Chemical

The tube for chemical applications.

**Properties:**

beige-coloured, temperature resistance from -60 to 74 °C, Shore hardness A 61, autoclavable, very high chemical resistance to acids, bases, salts, ketones, alcohols.



### Tygon® 3350

Sanitary silicon tube.

**Properties:**

translucent, temperature resistance from -80 to 200 °C, Shore hardness A 50, platinum-cured silicon tube, ultra smooth inner wall, non-toxic, non-haemolytic, non-pyrogenic.



### Silicon Peroxide

Silicon tube for industrial use.

**Properties:**

translucent, temperature resistance from -51 to 238 °C, Shore hardness A 55, autoclavable, silicon tube with organic peroxide, non-toxic, resistant to ozone and sunlight.

Constant flow



**Tygon® F-4040-A**

The tube for hydrocarbons and mineral oil products

**Properties:**

yellow transparent, temperature resistance from -40 to 75 °C, Shore hardness A 57, low gas permeability, ozone resistant.



**Fluran® F-5500-A**

The tube for extreme environmental conditions

**Properties:**

black, temperature resistance from -51 to 204 °C, Shore hardness A 60, high chemical resistance, resistant to ozone, sunlight and the weather, extremely tear resistant, high flexibility and elasticity.



**Norprene® A-60-G**

The tube for industrial applications.

**Properties:**

black, temperature resistance from -60 to 135°C, Shore hardness A 61, outstanding bending fatigue strength, good abrasion resistance, low gas permeability when compared to rubber tubes.





# rotarus® The HiClass pump family

Ordering data		
Order number	Designation	Brief description
950 13 22	rotarus® standard 50	precise delivery pump for small delivery volumes and high viscosities, IP 54 speed can be programmed directly on the unit
950 13 24	rotarus® standard 50i	precise delivery pump for small delivery volumes and high viscosities, IP 65 speed can be programmed directly on the unit
950 11 39	rotarus® smart 30	Precision delivery pump for small volumes, IP43 saves space, thanks to small platform, low torque
950 12 39	rotarus® smart 40	Powerful delivery pump also of viscous liquids, IP43 saves space, thanks to small platform, high torque
950 13 42	rotarus® flow 50	precise delivery pump for small delivery volumes and high viscosities, IP 54 speed and flow rate can be programmed directly via control module
950 13 44	rotarus® flow 50i	precise delivery pump for small delivery volumes and high viscosities, IP 65 speed and flow rate can be programmed directly via control module
950 13 62	rotarus® volume 50	precise delivery pump for small delivery volumes and high viscosities, IP 54 an be programmed very comfortably and comprehensively via control module
950 13 64	rotarus® volume 50i	precise delivery pump for small delivery volumes and high viscosities, IP 65 an be programmed very comfortably and comprehensively via control module
950 15 22	rotarus® standard 100	rapid delivery pump for high flow rates, IP 54 speed can be programmed on the unit
950 15 24	rotarus® standard 100i	rapid delivery pump for high flow rates, IP 65 speed can be programmed on the unit
950 15 42	rotarus® flow 100	rapid delivery pump for high flow rates, IP 54 speed and flow rate can be programmed via control module
950 15 44	rotarus® flow 100i	rapid delivery pump for high flow rates, IP 65 speed and flow rate can be programmed via control module
950 15 62	rotarus® volume 100	rapid dispensing pump for high flow rates, IP 54 can be programmed very comfortably and comprehensively via control module
950 15 64	rotarus® volume 100i	rapid dispensing pump for high flow rates, IP 65 can be programmed very comfortably and comprehensively via control module
950 18 72	rotarus® fast 80	rapid and precise dispensing pump, IP 54 can be programmed very comfortably and comprehensively via control module
950 18 74	rotarus® fast 80i	rapid and precise dispensing pump, IP 65 can be programmed very comfortably and comprehensively via control module

Scope of delivery
<ul style="list-style-type: none"> <li>• rotarus®</li> <li>• external power-supply unit</li> <li>• junction cable for EU, UK, US</li> <li>• control module when flow- or volume-model is ordered</li> </ul>

Technical data sheets available as download at  
[www.hirschmannlab.com/en/Info-Center/Downloads/Datenblaetter](http://www.hirschmannlab.com/en/Info-Center/Downloads/Datenblaetter)



rotarus® HiClass non stop

## rotarus® peristaltic pump heads

Ordering data				
Order number	Article designation	No. of channels	No. of rolls	Gear mechanism
951 10 20 20	rotarus® PK 10-16, single-channel pump head for tubes with wall thickness 1.6 mm	1	3	-
951 10 20 21	rotarus® PK 10-24, single-channel pump head for tubes with wall thickness 2.4 mm	1	3	-
951 10 80 20	rotarus® MKF 4-8, multichannel pump head for stopper tubes	4	8	-
951 10 80 21	rotarus® MKF 8-4, multichannel pump head for stopper tubes	8	4	-
951 10 80 22	rotarus® MKF 12-8, multichannel pump head for stopper tubes	12	8	5:1

## rotarus® piston pump heads

Bestelldaten		
Order number	Article designation	Adjustable stroke volume
951 30 61 21	rotarus® TKF RH00 CKC-LF	2,5-25 µl
951 30 61 41	rotarus® TKF RHO CKC	5,0-50 µl
951 30 61 43	rotarus® TKF RHO CTC	5,0-50 µl
951 30 61 61	rotarus® TKF RH1 CKC	10,0-100 µl
951 30 61 63	rotarus® TKF RH1 CTC	10,0-100 µl
951 30 62 31	rotarus® TKF QP-Q1 CKC	12,8-320 µl
951 30 62 32	rotarus® TKF QP-Q1 CSC	12,8-320 µl
951 306251	rotarus® TKF QP-Q2 CKC	28,8-720 µl
951 30 62 52	rotarus® TKF QP-Q2 CSC	28,8-720 µl
951 30 62 71	rotarus® TKF QP-Q3 CKC	51,2-1280 µl
951 30 62 72	rotarus® TKF QP-Q3 CSC	51,2-1280 µl

**HIRSCHMANN®**

Hirschmann Laborgeräte GmbH & Co. KG  
Hauptstraße 7-15 • 74246 Eberstadt Germany  
Fon +49 7134 511-0 • Fax +49 7134 511-990  
[www.hirschmannlab.com](http://www.hirschmannlab.com) • [info@hirschmannlab.com](mailto:info@hirschmannlab.com)



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