Especially for Combinatorical Chemistry

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VARIOMAG®

Reaction Blocks

- STIRRING
- HEATING
- COOLING

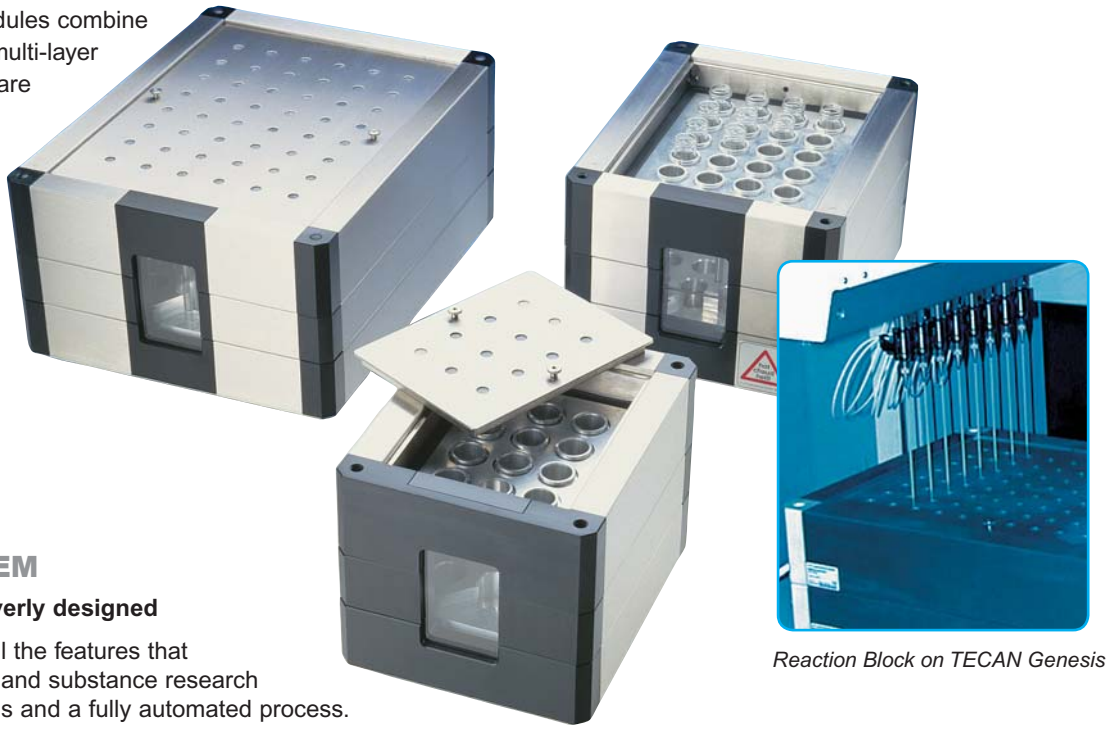
- Well-proven VARIOMAG multi-position stirring drive: motorless, robust, wear-free
- Flat design from 150 mm total height
- Highly effective reflux condenser system with contact rings
- Closed block system with inert gas protection

VARIOMAG REACTION BLOCKS

THE NEXT GENERATION

Our familiar blue REACTION BLOCKS with their proven modular design have spawned a whole range of new products:
The new generation of Reaction Blocks has been specially designed to serve the needs of automation technology. Only two modules combine all the functions of their multi-layer siblings. The new blocks are not only easy to care for and easy to operate, but they have become so flat that they are easily integrated with your pipette robot (liquid handler).

Over 20 years of experience in the production of heated magnetic stirrers and continuous improvement have given rise to the development of the VARIOMAG Reaction Blocks. This allows chemical process to be elegantly modelled on a small scale.



Reaction Block on TECAN Genesis

MODULAR SYSTEM

Multifunctional and cleverly designed

A proven system offers all the features that Combinatorial Chemistry and substance research demand: parallel synthesis and a fully automated process.

Heating/cooling block with Magnetic Stirrer

- The basic module stirs and heats the reaction vessels synchronously in up to 96 reaction vessels.
- Possible temperatures range from -80 °C with a powerful cryostat up to +200 °C using the integrated electrical heater.

Reflux condenser with contact rings

- The cover module contains the reflux cooler, very effective - more than ten times thanks to the contact rings.

Inert gas protection

- The inert gas cover creates a closed system with controlled atmosphere.
- The septate portions of the cover can be perforated to add reagents or take samples.

TELEMODUL 40 CT control unit

- Easy, intuitive and safe operation

VARIOMAG MAGNETIC STIRRERS

The VARIOMAG Magnetic Stirrer below the heating/cooling block stir directly in each reaction vessel. By contrast with conventional magnetic stirrers, these stirrers are motorless. Variable currents pass through stationary magnetic coils, creating a rotating electromagnetic field. This magnetic drive is completely wear-free because it operates without any moving parts such as belts, bearings or motors. The hermetically sealed drive unit is resistant even to aggressive liquids and gases. The new-generation magnetic stirring drive is ideal for heavy-duty tasks such as highly viscous or hard-to-mix media.

- Powerful high-speed stirring drive
- Hermetically sealed magnetic stirring drive with no moving parts
- Identical speeds at all stirring points
- Samples 100 % comparable
- Adjustable stirring power
- Maintenance-free
- Wear-free

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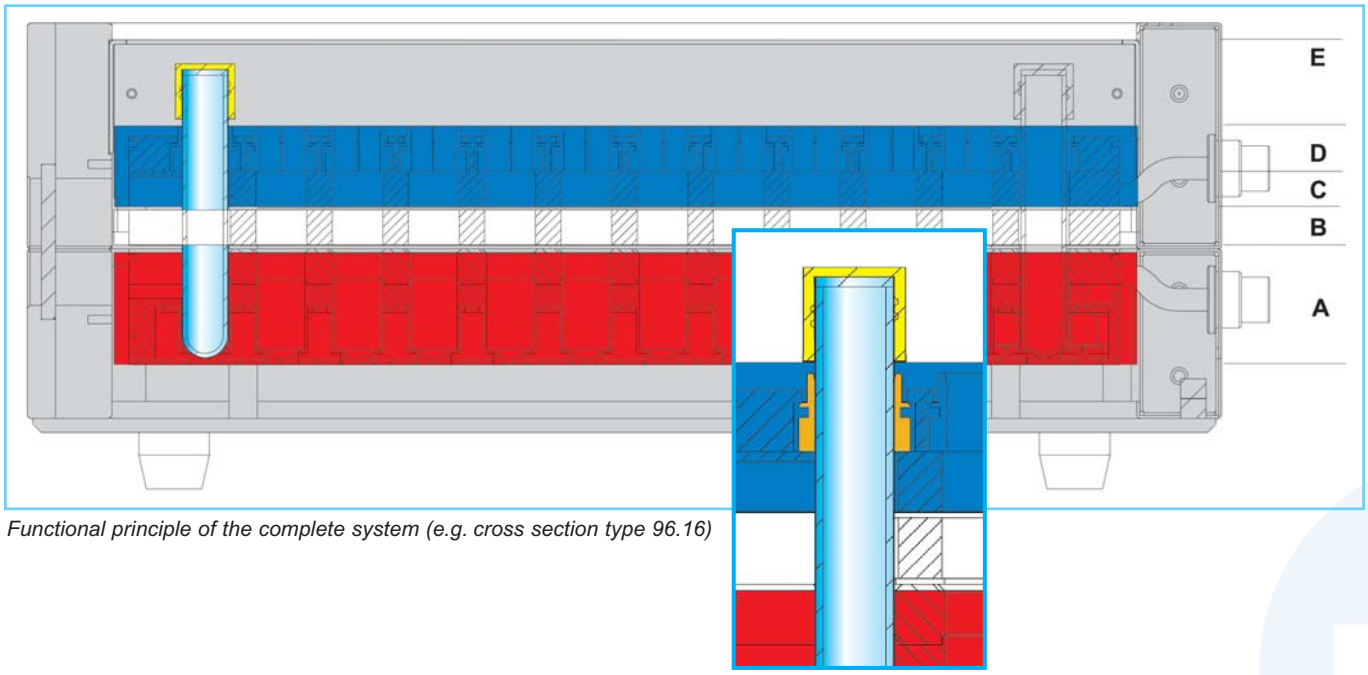
STIRRED FROM -80 TO +200 °C

SYSTEM VARIANTS

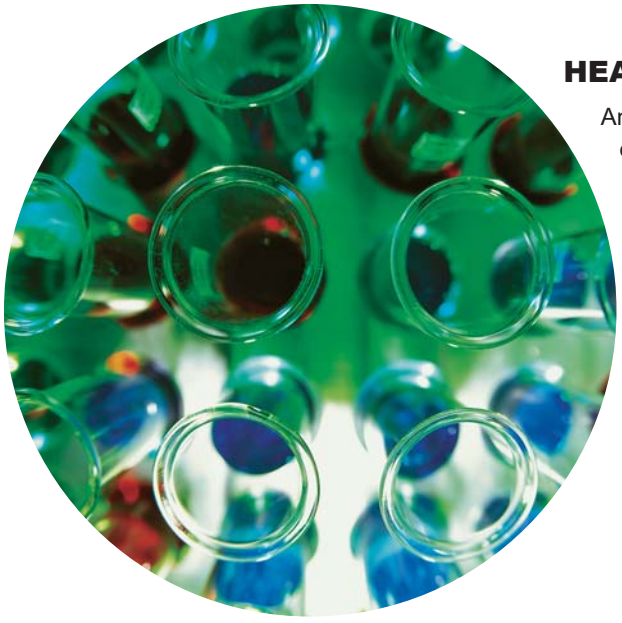
Reaction block modules come in three frame sizes. Standard designs are available for all three sizes. They standardize the number of stirring positions and the diameters and depths of the wells. Vessels that do not conform to standard sizes (see table) can be fitted in larger wells by using reducing sleeves. Or the diameter and depth of the bores can be modified to match the design of the vessels used. Block bores are based on the standard 96-well laboratory pattern.

A	Heating / Cooling	(36 mm)
B	Insulation layer	(15 mm)
C	Pre-cooling	(12 mm)
D	Intensive cooling with contact rings	(15 mm)
E	Inert gas atmosphere	



Functional principle of the complete system (e.g. cross section type 96.16)

Contact ring in reflux cooler



HEATING / COOLING BLOCK

An electric heater integrated in the aluminium block facilitates fast and cost-effective heating to up to +200 °C. Water or coolant flows through the copper coils to cool the samples. All that is required is for the block to be connected to a regular cold-water supply or a circulation cooler.

A powerful cryostat can even cool the block to -80 °C. The heating/cooling block features a fully insulated frame, resulting in very homogenous temperature distributions as well as short heating and cooling times. In addition, particularly hot or cold areas are effectively protected from touch.

- Broad temperature range (-80 up to +200 °C)
- Metal block with fully insulated stainless-steel frame
- Homogenous temperature distribution within the block
- Fast heating and cooling
- No electronic components inside the reaction block
- Separate overtemperatur protection (safety loop)

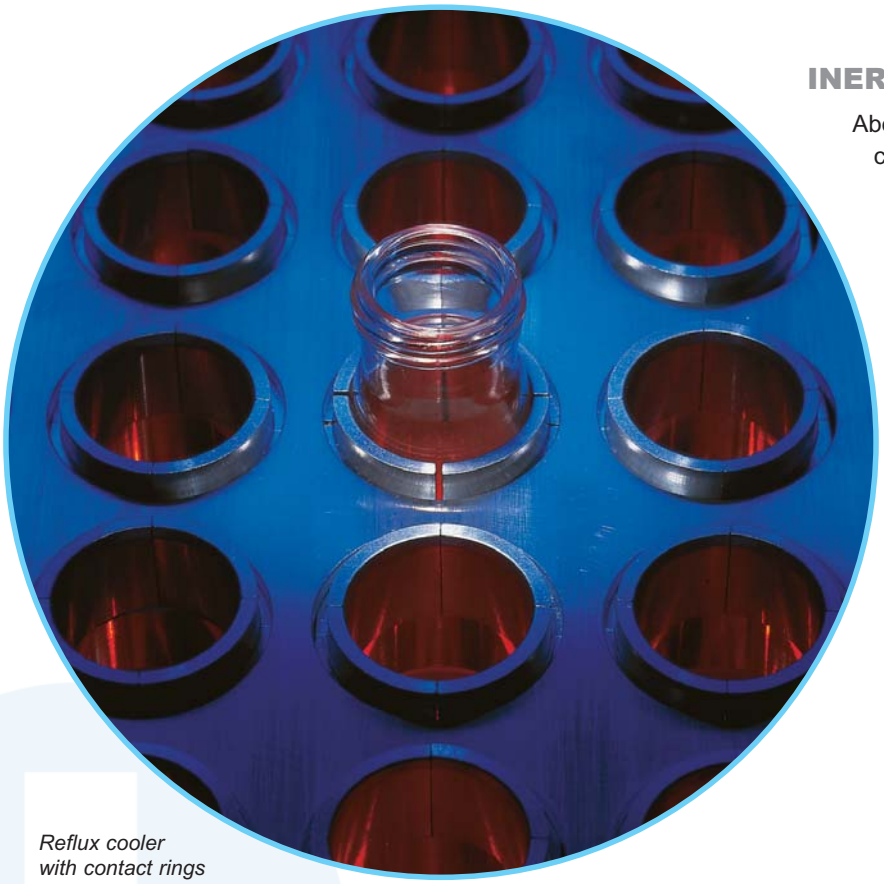
REFLUX COOLER

The powerful reflux condenser keeps solvents from evaporating. It is easy to operate and characterized by high-power condensation results.

The cooling block with its stainless-steel frame is easy to care for and ready to use within seconds: just place it on top of the reaction block and connect it to a recirculation cooler or a cold-water line. **Contact rings** adapt the reflux condenser to the test tube diameter, leaving no gaps and maximizing the transmitted cooling power.

- High efficiency by gapless heat transmission (contact rings)
- Compact design
- Easy operation

VARIOMAG Reaction Block with reflux cooler, connections for heat/cooling circuit, reflux condenser, inert gas and control lines



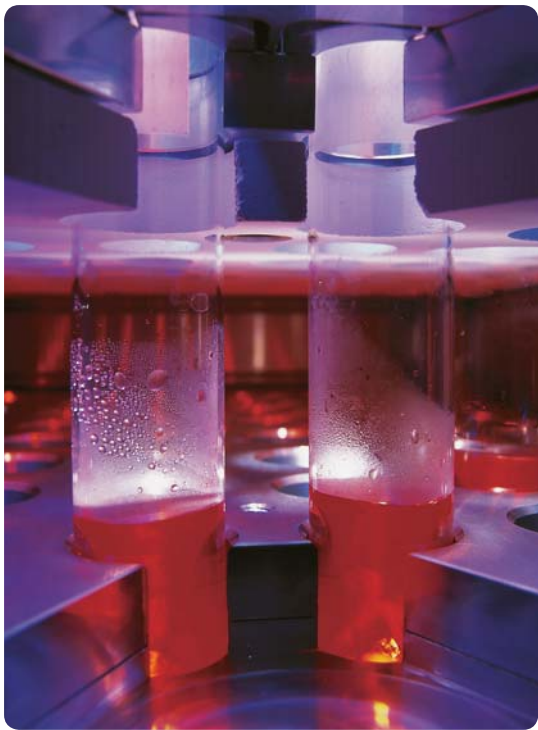
Reflux cooler with contact rings

INERT GAS PROTECTION

Above each sample, the septate cover of the reflux condenser has slot apertures that can be perforated. The cover affords inert gas protection: A controlled atmosphere can be created around the mouths of the reaction vessels. Rinsing with inert gases prevents extraneous reactions with moisture or oxygen. In addition, these gases prevent the formation of condensate and ice during the cooling process.

Inert gas covers and hoods with individual self-closing flaps for robot-operated systems with automated placement of test tubes are available on request.

View through inspection glass



INSPECTION GLASS

An optional viewing window can be integrated in the stainless-steel frame.

This enables the operator to view at least two reference samples in an otherwise completely sealed reaction block to observe mixing behaviour, colour changes, precipitation, or flowback effects.

The new Reaction Block family elegant and efficient

ACCESSORIES

SUPPORT ROD
For attaching a sample temperature sensor above the reaction block. Stainless steel, 400 mm in length and 12 mm in diameter. The frame of the reaction block has four M10-threaded bores for support rods.
Order No. 66144

SAMPLE TEMPERATURE SENSOR
Pt 100 stainless-steel temperature sensors for temperature control in reaction vessels.
Fits **TELEMODUL 40 CT**.
Order No.: 66152

CONNECTOR SET
Two stainless-steel hose stems < Ø 14 mm with M16 x 1 coupling nuts.
Order No.: 67001

ADAPTER
Adapter for reaction block (separate connectors for control and heating) to the rectangular socket of the **TELEMODUL 40 CT** control unit.
Order No.: 66153

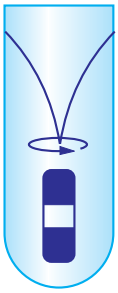
KOMET

MAGNETIC STIRRING DISCS AND RINGS
For the first time, thanks to the flat KOMET Magnetic Discs, excellent stirring results across the entire filling level are now possible even in test tubes. The stirring discs made from the high-energy magnetic material (SmCo) utilise the characteristics of the magnetic field to stand erect during the stirring process, stirring with exceptional power and efficiency.

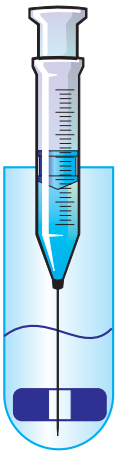
MAGNETIC STIRRING BARS
Alternatively, KOMET Stirring Bars 15 or 30 mm in length may be used.

KOMET 8 S
KOMET 8 S is suitable for use in reaction vessels of at least 12 mm in diameter.

KOMET 16 R
KOMET 16 R is suitable for vessels of 20 mm diameter and above. The KOMET 16 R is annular in shape with a central bore, allowing samples to be retrieved from the bottom of the vessel by guiding a needle through the aperture.



Operating position



Resting position

Vessel Ø 16 mm with KOMET 8 S

TECHNICAL DATA

	KOMET			
Type	**8 S**	**16 R**	**15**	**30**
Dimensions (ØxH) in mm	8 x 4	14 x 8	9 x 15	12 x 30
Material (PTFE coated)	SmCo	SmCo	SmCo	SmCo
Packing	5 pcs.	5 pcs.	5 pcs.	5 pcs.
Order No.	**90708**	**90714**	**90715**	**90730**

CONTROL UNIT

TELEMODUL 40 CT

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TELEMODUL 40 CT

Powerful control unit with 40 Watt rated power (stirrer) and electronic temperature control for electric heaters at up to +200 °C, suitable for VARIOMAG Reaction Blocks

- Microprocessor-controlled, user-friendly, menu-driven settings
- Single hand operation - just turn and press the adjustment wheel
- Large graphic display - all settings visible at a glance
- Three individually programable program keys for rapid startup - the last settings in effect are stored automatically
- RS 232 interface for PC control
- User interface in four languages (German, English, French and Spanish)

HEATING CONTROL

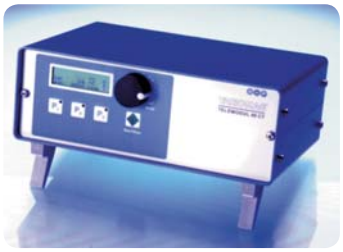
- Electrical heating unit up to +200 °C in 1 K increments
- Additional independent temperature control loop, mechanically adjustable at the back of the unit (safety loop for unattended operation)
- Temperature control by optional sample temperature sensor (temperature sensor order No. 66152)
- Control hysteresis between 0.5 K and 10 K in 0.5 K increments
- Timer for block operation up to 8 h (in one-second increments)

STIRRER CONTROL

- Intermittent operation with freely adjustable stirring and pause times and rotation sense inversion (5 s - 1 h)
- Interval operation with automatic gathering mechanism fo recentering the stirring bars
- Start / Stop key for recentering, safe starting, and rapid stopping of the stirring bar
- Vertical mixing (shake mode)
- Adjustable speed range 100 - 2.000 rpm in 5 rpm increments
- Stirring bar rotates evenly, even at low speeds
- Three different settings (1x, 2x, 4x) for assured startup acceleration of the stirring bar, even in highly viscous liquids
- 8 different power settings (30 to 100 %) with more power for larger quantities and more viscous liquids and reduced power for long-term operation without heat generation

TECHNICAL DATA

		TELEMODUL 40 CT	
		Designer	High-power
Speed range	(1/min)	100 - 2.000	
Speed constancy	(%)	+/- 1	
Rated power	(W)	12 - 40 (8 levels)	
Maximum heating power	(W)	up to 1.000 (115 VAC = 500)	up to 2.000 (115 VAC = 1.000)
Dimensions WxDxH	(mm)	155 x 270 x100	255 x 180 x 90
Weight	(kg)	1,7	
Ambient temperature	(°C)	0 up to +40 at 80% relative humidity	
Supply voltage		100 - 240 VAC / 50 - 60 Hz	
Output voltage	(VDC)	36	
Mark of conformity		protection class 1 IP 30	
Stirring times		5 s up to 60 min	
Pause times		5 s up to 60 min	
Starting time		3 levels	
Order No.		**60690 (115 V = 90690 U)**	**90691 (115 V = 90691 U)**



Housing for 1.000 W (230 V) and 500 W (115 V) heating power

ACCESSORIES

PT 100 TEMPERATURE SENSOR
for sample temperature control

TECHNICAL SPECIFICATIONS FOR STANDARD REACTION BLOCKS

VARIOMAG REACTION BLOCKS SERIES 57

Reaktionsblock	Type	06.57	12.57
Number of stirring points		6 (2 x 3)	12 (3 x 4)
Stirring point distance	(mm)	70	70
Block bore diameter	(mm)	57.5	57.5
Block bore depth	(mm)	48	48
Dimensions (WxD)	(mm)	318 x 253	318 x 418
Block height (Reaction block)	(mm)	120	120
Electrical heating power	(W)	530	1000
Heating rate	(K/min)	5	5
Connections for heat/cooling circuit		M16 x 1	M16 x 1
Max. filling volume reaction vessel	(ml)	100	100
Vessel type		Laboratory flask	Laboratory flask
Order No.		**65728**	**65729**
Reflux cooler		**not possible**	**not possible**
Inert gas cover with exchangeable septa*			
Connection for inert gas		DN 6	DN 6
Height of frame	(mm)	30	30
Order No.		**65768**	**65769**

* Inert gas cover with self-closing flaps for robot systems on request

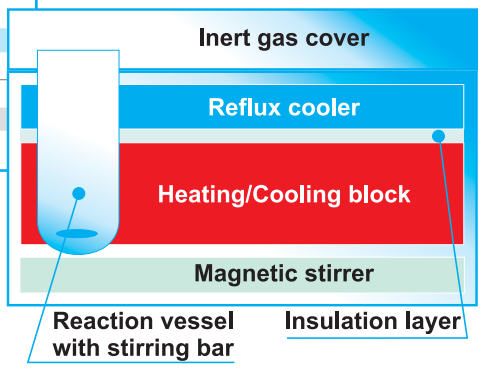
Nomenclature of the Reaction Blocks

e.g.

Type 12.57

=

12 stirring points Ø 57 mm for block bore diameter



Cross section: Reaction block with reflux cooler and inert gas cover

Individual APPLICATIONS require individual SOLUTIONS

Special sizes available on request

VARIOMAG REACTION BLOCKS SERIES 42

Reaction Block	Type	06.42	12.42	24.42
Number of stirring points		6 (2 x 3)	12 (3 x 4)	24 (4 x 6)
Stirring point distance	[mm]	55	55	55
Block bore diameter	(mm)	42	42	42
Block bore depth	(mm)	78	78	78
Dimensions Reaction block (WxD)	(mm)	208 x 253	318 x 253	318 x 418
Block height (Reaction block)	(mm)	150	150	150
Electrical heating power	(W)	270	530	1000
Heating rate	(K/min)	5	5	5
Connections for heat/cooling circuit		M16 x 1	M16 x 1	M16 x 1
Max. filling volume reaction vessel	(ml)	< 100	< 100	< 100
Vessel type (ØxL)	(mm)	COD-Reaction vessel 40 x 200 with standard cut		
Order No.		**64227**	**64228**	**64229**
Reflux cooler with contact ring, incl. distance frame				
Connections for heat/cooling circuit		M16 x 1	M16 x 1	M16 x 1
Height of frame with distance frame	(mm)	80	80	80
Order No.		**64257**	**64258**	**64259**
Inert gas cover with exchangeable septa*				
Connection for inert gas		DN 6	DN 6	DN 6
Height of frame	(mm)	30	30	30
Order No.		**64267**	**64268**	**64269**

* Inert gas cover with self-closing flaps for robot systems on request

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VARIOMAG REACTION BLOCKS **SERIES 25**

Reaction Block	Type	12.25	24.25	48.25
Number of stirring points:		12 (3 x 4)	24 (4 x 6)	48 (6 x 8)
Stirring point distance:	(mm)	38	38	38
Block bore diameter:	(mm)	25.5	25.5	25.5
Block bore depth:	(mm)	34	34	34
Dimensions Reaction block (WxD):	(mm)	213 x 261	261 x 327	327 x 423
Block height (Reaction block):	(mm)	85	85	85
Electrical heating power:	(W)	320	500	1000
Heating rate:	(K/min)	5	5	5
Connections for heat/cooling circuit:		M16 x 1	M16 x 1	M16 x 1
Max. filling volume reaction vessel:	(ml)	< 20	< 20	< 20
Vessel type (ØxL):	(mm)	Test tubes 25 x 150 with screw top		
Order No.:		**62527**	**62528**	**62529**
Reflux cooler with and inert gas cover (with exchangeable septa) incl. spacer frame				
Connections for heat/cooling circuit:		M16 x 1	M16 x 1	M16 x 1
Connection for inert gas:		DN 6	DN 6	DN 6
Height of frame with distance frame:	(mm)	130	130	130
Order No.:		**62567**	**62568**	**62569**

Individual APPLICATIONS require individual SOLUTIONS

Special sizes available on request

H+P Labortechnik GmbH

- A „Plus“ in **Quality**
- A „Plus“ in **Innovation**
- A „Plus“ in **Service**

VARIOMAG REACTION BLOCKS **SERIES 16**

Reaction Block	Type	24.16	48.16	96.16
Number of stirring points:		24 (4 x 6)	48 (6 x 8)	96 (8 x 12)
Stirring point distance:	(mm)	27	27	27
Block bore diameter:	(mm)	16.5	16.5	16.5
Block bore depth:	(mm)	36	36	36
Dimensions Reaction block (WxD):	(mm)	213 x 261	261 x 327	327 x 423
Block height (Reaction block):	(mm)	85	85	85
Electrical heating power:	(W)	320	500	1000
Heating rate:	(K/min)	5	5	5
Connections for heat/cooling circuit:		M16 x 1	M16 x 1	M16 x 1
Max. filling volume reaction vessel:	(ml)	< 6	< 6	< 6
Vessel type (ØxL):		Test tubes 16 x 100 with screw top		
Order No.:		**61627**	**61628**	**61629**
Reflux cooler with inert gas cover (with exchangeable septa)				
Connections for heat/cooling circuit:		M16 x 1	M16 x 1	M16 x 1
Connection for inert gas:		DN 6	DN 6	DN 6
Height of frame:	(mm)	80	80	80
Order No.:		**61667**	**61668**	**61669**

Our Product Range:

VARIOKLAV Steam Sterilizers
VARIOKLAV Steam Pots
VARIOKLAV Steam Generators
VARIOKLAV Waste-Water Sterilizers
MOBILE HAND-WASHING-UNIT

VARIOMAG Magnetic Stirrers
VARIOMAG Reaction Blocks
VARIOMAG Magnetic Shakers
SAPROMAT BOD Measuring Unit

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