

**h.e.l**

# Ambient Pressure PolyBLOCK & AutoMATE

Reactors, consumables and spares



# Contents

This catalog provides a comprehensive overview of the ambient pressure reactors for the H.E.L PolyBLOCK and AutoMATE product range, offering essential details to help customers make informed decisions. Inside, you'll find key product specifications, including product names, HEL numbers, and attributes related to reactors, adaptors, and stirrers.

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# Parallel reaction platforms



**Small footprint** (Excluding circulators, pumps, and other optional accessories)  
PolyBLOCK 8 (left): 36cm x 21cm x 20cm  
PolyBLOCK 4 (right): 36cm x 25cm x 21cm

## PolyBLOCK

### Compact, High-Throughput Parallel Reaction Station

Designed for labs where bench space is limited, PolyBLOCK enables up to 8 independent reactions simultaneously (2 mL to 500 mL).

- Flexible and reliable, ideal for specific applications.
- Independent stirring and temperature control (-40°C to 200°C) for reproducible results.
- Optimize and scale in one system—no need to switch platforms.
- Space-saving design for efficient lab use.

## AutoMATE

### High-Performance Linear Parallel Reaction Platform

Designed for more complex applications, offering a fully automated, versatile system with extensive functionality.

- Linear parallel design for advanced reaction screening and optimization.
- Wide temperature range (-40°C to +250°C, +350°C optional) over 100°C variation between reactors.
- Supports vials, flasks, and custom reactors (2 mL to 500 mL), all interchangeable.
- Selectable overhead and/or magnetic agitation for precise control.
- Expandable features: calorimetry, distillation, multiple feeds, hydrogenation, crystallization, and more.
- Fits efficiently within a standard fume hood.

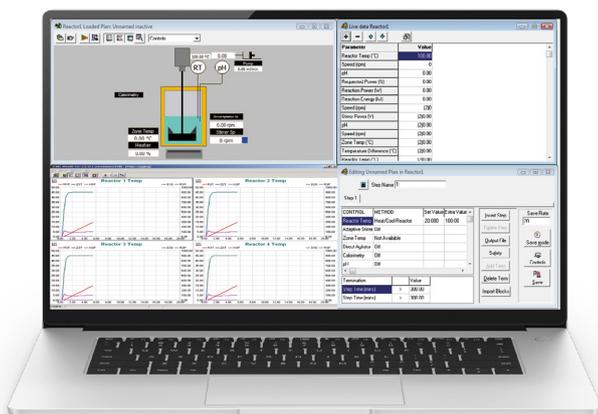


**Linear design** (Excluding circulators, pumps, and other optional accessories)  
AutoMATE:1050 x 500 x 900 mm (Height dependent on motors)

## Bringing effortless efficiency to your laboratory automation

Empowering proactive experimentation designed around the user experience, WinISO combines:

- Easy to use, powerful software designed both advanced users and beginners.
- Fully automated, unattended experiments
- Real-time data monitoring and control
- User-friendly interface for easy operation
- Seamless integration with third-party devices
- Optimized for high productivity and efficiency



# Automated parallel synthesis

The H.E.L PolyBLOCK and AutoMATE provide solutions for small-scale process development and Design of Experiment (DoE). These systems offer essential features for screening and process optimization within a single platform, including:

## Stirring

Suspended magnetic agitation and overhead agitation options both available with a variety of impellor options.

## Temperature Control

Temperature ranging from  $-40^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$ , with over  $100^{\circ}\text{C}$  range between zones. Optional higher temperature range upto  $+350^{\circ}\text{C}$  on AutoMATE.

## Probes

Range of probes (pH, turbidity, temperature, pressure, etc) for monitoring multiple reactors,



## Interchangeable Reactors

Variety of vials, tubes and flat bottom flasks ranging from 2ml to 500ml. All of these come with different lid options based on the size of vessel.

## Liquid Feeds

pump options, such as syringe and peri pumps. pH monitoring and control (with suitable pump).

# Configurable and customizable reactors

With the H.E.L PloyBLOCK's and AutoMATE systems you can mix and match reactors to suit your needs. Below is a compatibility chart for the different reactors outlined in this catalog.

	Open top vials (2-5ml)	Closed top vials (10-30ml)	Reaction vessels (100-200ml)	Reaction vessels (350-500ml)
PolyBLOCK 4	✓	✓	✓	✓
PolyBLOCK 8	✓	✓	✓	
AutoMATE	✓	✓	✓	✓
Magnetic Agitation	✓			
Suspended agitation		✓	✓	✓
Overhead Agitation			✓	✓
5-port PTFE lids			✓	
7-port glass lid				✓
Condensing and inerting manifold			✓	✓
Aluminum condensing/inerting block		✓	✓	✓
Accessories- Temperature, pH and turbidity probes, etc	✓*	✓	✓	✓

\*Vial dependent



# Open top reaction vials

These reaction vessels come in 2, 4, and 5ml vials. The different vial sizes and relevant accessories are detailed in the tables below, all magnetic flea stirrer options are detailed on page 10.

## 2ml glass vials



1

Description	Size	Material	Qty per pack	HEL number
2ml crimp top vials (figure 1)	12mm x 32mm	Glass	100	HEL005801
Adaptors for PolyBLOCK 8 (figure 1)	8 vials, 12mm	Aluminum	1	HEL001330
Adaptor for PolyBLOCK 4 & AutoMATE	30 vials, 12mm	Aluminum	1	HEL011118

## 4ml glass vials



2

Description	Size	Material	Qty per pack	HEL number
4ml crimp top vials (figure 2)	15mm x 46mm	Glass	500	HEL001327
Adaptors for PolyBLOCK 8 (figure 2)	7 vials, 15mm	Aluminum	1	HEL002101
Adaptor for PolyBLOCK 4 & AutoMATE	20 vials, 15mm	Aluminum	1	HEL001332

## 5ml glass vials

For 5ml vials open-top reaction tubes, a reflux head featuring cold fingers can be added as an optional extra. This enables the condensation or inerting of all samples using a single adapter block (HEL019119).



3

Description	Size	Material	Qty per pack	HEL number
5ml flat base open top vials (figure 3)	12 x 100mm	Glass	100	HEL011592
Push cap for (12 x 100mm) tubes incl. o-ring seal and 3 x blank	100mm	Glass	100	HEL001323
Adaptors for PolyBLOCK 8	3 vial, 12mm	PTFE	1	HEL001382
Adaptors for PolyBLOCK 8	1 vial, 12mm	Aluminum	1	HEL014754
Adapter for PolyBLOCK 8 (figure 3)	7 vials, 12mm	Aluminum	1	HEL001336
Adaptor for inert gas purging to each vial	7 vials, 12mm	Aluminum	1	HEL019119



4

When using setup for PolyBLOCK 8 in PolyBLOCK 4/AutoMATE

PolyBLOCK 8 insert adapter for PolyBLOCK 4 & AutoMATE (figure 4)	51.5mm	Aluminum	1	HEL001356
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# Closed glass vials 10 and 30ml

These tall flat bottom reaction tubes or vials with 19/26 ground glass joints are 25mm in diameter. They come in two sizes 10 or 30ml, agitation is provided using a suspended stirrer with u-anchor geometry. 30ml vials can be used directly with the condensing block, smaller 10ml vials will require tube condenser.

## 10ml glass vials

Description	Size	Material	Qty per pack	HEL number
Flat bottom complete unit (figure 5)	10ml		1	HEL002102
→ Flat bottom 25mm ground joint vial	10ml	Glass	1	HEL001322
→ Plug with 4 X 1/8 inch ports plus stirrer	25mm	PTFE	1	HEL001385

## 30ml glass vials

Description	Size	Material	Qty per pack	HEL number
Flat bottom complete unit (figure 6)	30ml		1	HEL034396
→ Flat bottom 25mm ground joint vial	30ml	Glass	1	HEL007153
→ Plug with 4 X 1/8 inch ports plus stirrer	25mm	PTFE	1	HEL001385



5

6

## Adaptors and accessories

Description	Size	Material	Qty per pack	HEL number
Adaptors for PolyBLOCK 8	1 vial, 25mm	Aluminum	1	HEL001333
Adaptor for PolyBLOCK 4 & AutoMATE	3 vials, 25mm	Aluminum	1	HEL001340
Condenser block adapter for PolyBLOCK 8	1 vial, 25mm	Aluminum	1	HEL001449
Small magnetic fleas for 12mm tubes	5 x 2mm	PTFE	10	HEL001070
Medium magnetic fleas for 25mm tubes	20 x 6mm	PTFE	10	HEL003002



# Reaction vessels

## 100 and 200ml – 51.5mm OD, Glass Reactors

- Fully stirred reaction vessels designed for use with PolyBLOCK 8 or PolyBLOCK 4 and AutoMATE systems.
- PTFE lids feature 1 x B14, 1 x B19, and 4 Omni fit ports.
- Superior agitation is achieved with a suspended stirrer design, and the complete unit includes a down-flow impeller for optimal mixing. **Note:** other impellor options on page 11
- Compatible with both midi-condensers and maxi condensers. (page 12)
- The complete unit comes with a PTFE lid, clamp ring, O-ring, Hastelloy shaft, and suspended PTFE stirrer.  
**Note:** Thermocouple and condenser need to be purchased separately.

### 100ml glass reactors

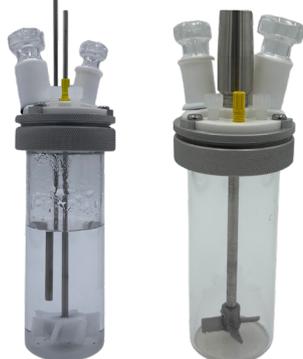


1

2

Description	Size	Material	Qty per pack	HEL number
Flat bottom reactor with suspended (magnetic) agitation complete unit (figure 1)	100ml		1	HEL029512
→ Flat bottom reactor 51.5mm OD and 65mm high	100 ml	Glass	1	HEL019503
→ 51.5 mm OD indirect agitation lid with stirrer shaft 200mm length	6 ports	PTFE/Hastelloy	1	HEL021041
Flat bottom reactor with overhead (direct) agitation complete unit (figure 2)	100 ml		1	HEL030750
→ Flat bottom reactor 51.5mm OD and 65mm high	100 m	Glass	1	HEL019503
→ 51.5 mm OD direct agitation lid (2 x M16, 2 x 1/4 inch ports and central stirrer port)	5 ports	PTFE	1	HEL001366

### 200ml glass reactors



3

4

Description	Size	Material	Qty per pack	HEL number
Flat bottom reactor with suspended (magnetic) agitation complete unit (figure 3)	200ml		1	HEL032018
→ Flat bottom reactor 51.5mm OD and 120mm high	200ml	Glass	1	HEL019504
→ 51.5 mm OD indirect agitation lid with stirrer shaft 200mm length	200 ml	PTFE/Hastelloy	1	HEL021041
Flat bottom reactor with overhead (direct) agitation complete unit (figure 4)	200 ml		1	HEL033227
→ Flat bottom reactor 51.5mm OD and 65mm high	200ml	Glass	1	HEL021041
→ 51.5 mm OD overhead agitation lid (2 x M16, 2 x 1/4 inch ports and central stirrer port)	5 ports	PTFE	1	HEL001366

### Accessories: Clamp and adaptors



5

Description	Size	Material	Qty per pack	HEL number
Clamp ring for lid to 51.5 mm OD reactor	M60	Aluminum	1	HEL015526
PB4& AutoMATE to PB8 insert adapter (figure 5)		Aluminum	1	HEL001356

## 350 to 500ml with DN60 lid

- Fully stirred reaction vessels designed for use with PolyBLOCK 4 and AutoMATE. Both PTFE and glass lids are available, each with multiple ports, and fit a standard DN60 flange secured by a simple metal clamp.
- The suspended stirrer design ensures excellent agitation, and the vessels are compatible with midi or maxi condensers (page 12). The suspended down-flow stirrer operates typically at up to 800 rpm for standard liquids.
- The complete unit includes a standard 5-port PTFE lid or optional 7-port glass lid, PTFE O-ring, metal clamp, Hastelloy shaft, and a suspended universal stirrer. Note: Thermocouple and condenser are not included.



9



10



11

### Flat bottom systems and vessels

Description	Size	Material	Qty per pack	HEL number
DN60 Flat bottom reactor with suspended (magnetic) agitation complete unit with PTFE lid (figure 9)	350 ml	Glass/PTFE	1	HEL029510
	500 ml	Glass/PTFE	1	HEL035257
DN60 Flat bottom reactor with suspended (magnetic) agitation complete unit with 7 port glass lid (image 10)	350 ml	Glass	1	HEL032885
	500 ml	Glass	1	HEL028786
DN60 Flat bottom reactor with overhead (direct) agitation complete unit with PTFE lid (figure 11)	350 ml	Glass/PFTE	1	HEL033216
	500 ml	Glass/PFTE	1	HEL035192
→ DN60 Flat bottom reaction vessel 85mm x 90mm	350 ml	Glass	1	HEL016851
→ DN60 Flat bottom reaction vessel 85mm x130mm	500 ml	Glass	1	HEL026128

### Lids & accessories for DN60 reaction vessels

Description	Material	Qty per pack	HEL number
DN60 suspended agitation lid assembly, M105 dia. (image 12)	PTFE	1	HEL025006
→ O-Ring for DN60 PTFE lid	Perlast	1	HEL007544
DN60 suspended agitation lid assembly, custom made with typically 7 ports (3 x B14/23 ports and 3 x B19/26 ports plus B29 central port)	Glass	1	HEL019050
→ O-ring for DN60 glass lid	PFA coated silicon	1	HEL002161
DN60 overhead agitation lid assembly with 7 ports (1 x M18, 1 x M16, 4 x 1/4 inch and central stirrer port)	PTFE	1	HEL026733



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# Stirring options



## Suspended stirrer options and magnetic fleas

Description	Size	Material	Qty per pack	HEL number
Down-flow turbine (figure 1)	32 x 12 mm	PTFE	1	HEL001408
Up-flow turbine	32 x 12 mm	PTFE	1	HEL001407
Rushton	32 x 12 mm	PTFE	1	HEL001405
Down-flow marine (figure 2)	32 x 12mm	PTFE	1	HEL003137
Up-flow marine	32 x 12mm	PTFE	1	HEL003138
Anchor	16 x 15mm	PTFE	1	HEL001409
Small magnetic fleas for HPLC and 12mm tubes (figure 3)	5 x 2 mm	PTFE	10	HEL001070
Medium magnetic fleas for 25mm tubes	20 x 6 mm	PTFE	10	HEL003002
Large magnetic fleas for flat bottom flasks	30 x 6 mm	PTFE	10	HEL003003

## Suspended agitation: stirrers shafts

Unique design that allows excellent agitation without the need for overhead motors. A range of stirrer types have been developed that consist of magnets encased in PTFE which can be suspended on stirrer shafts. This magnet is able to couple with the magnets inside the PolyBLOCK and AutoMATE (at the bottom of each zone) – thus allowing mechanical stirring inside each vessel.

Description	Size	Material	Qty per pack	HEL number
Stirrer shafts for suspended stirrer without end nut (1/8 inch diameter)	200mm long	Hastelloy	1	HEL009391
Stirrer shafts for suspended stirrer without end nut (1/8 inch diameter)	260mm long	Hastelloy	1	HEL009392
Stirrer shafts for suspended stirrer without end nut (1/8 inch diameter)	300mm long	Hastelloy	1	HEL006400
End nut for Hastelloy shaft		Hastelloy	1	HEL009394
Washer for end of Hastelloy shaft	6mm OD	PTFE	1	HEL011284

## Overhead stirring: glass reactors

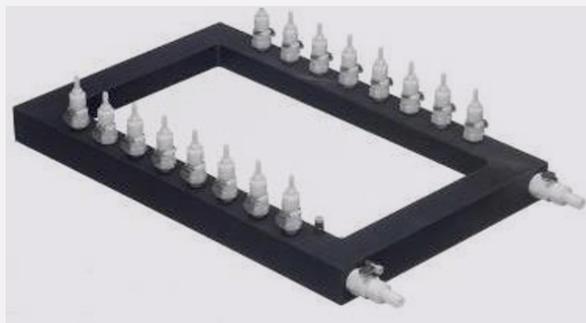
Independent overhead stirring systems are ideal for highly viscous materials, offering ease of use with the ability to connect the motors without the need for tools. Stirrer motors, electronics, and software for overhead agitation are common to all reactor types, hence, any motor will fit any of the vessels. Overhead agitation is only suitable for reactors with a volume range from 100 to 500 ml.

A complete unit includes: a vessel, lid, seals, coupling, Hastelloy stirrer shaft, and Hastelloy down flow impellor. **Note:** Motor, control, and electronics not included.

The choices below are for two reactor sizes with volumes between 100ml and 500ml, complete with magnetic drives. The same motor/electronics/software can be used for any reactor, including glass vessels.

5	Description	Material	Qty per pack	HEL number
	<b>4 blade down flow impellor for overhead agitation units - 35mm OD. Suitable for 75ml to 500ml vessels. To suit 6mm shaft (figure 5)</b>	Stainless Steel	1	HEL003466
		Hastelloy	1	HEL005382
	<b>Anchor stirrer 38mm OD - 2 blade to suit 6mm shaft (figure 6)</b>	Stainless Steel	1	HEL001415
		Hastelloy	1	HEL001414
	<b>6mm Dia. Overhead agitation stirrer shaft 175mm, suitable for a 500ml reactor</b>	Stainless Steel	1	HEL017333
		Hastelloy	1	HEL015267
	<b>6mm Dia Overhead agitation stirrer shaft 137mm, suitable for 350ml reactors</b>	Stainless Steel	1	HEL035473
		Hastelloy	1	HEL035269
	<b>6mm Dia Overhead agitation stirrer shaft 165mm, suitable 200ml reactors</b>	Stainless Steel	1	HEL017315
		Hastelloy	1	HEL015265
	<b>6mm Dia Overhead agitation stirrer shaft 112.5mm, suitable for 100ml reactor (figure 7)</b>	Stainless Steel	1	HEL017311
		Hastelloy	1	HEL017310
	<b>High torque stirrer motor with Tacho 5.3:1 gearbox 1000rpm</b>		1	HEL024023
	<b>High speed Stirrer Motor with Tacho and 5.3:1 Gearbox (24V - 1500 RPM)</b>		1	HEL017559
	<b>Overhead agitation assembly - adapts motor to lid</b>		1	HEL019354

# Condensing and inerting manifold



Condenser manifold for use with reactors employing conventional jacketed condensers. Quick connection couplings allow coolant flow to be connected/disconnected between the manifold and condensers. The same is true for reactor inerting – very easy and very simple. The manifold helps to minimize leakages and allows reactors to be added/removed from the system with ease. Note: these are not used for the open reaction vial, cold fingers used for these.

Description	Material	Qty per pack	HEL number
PolyBLOCK 4 condenser manifold with inert purge. Supplied with 8 quick connectors for coolant (1/4 inch dia.) and 4 sets of inert connectors. Extra sets of connectors and different sizes are available.	Nylon	1	HEL004428
AutoMATE condenser manifold with inert purge. Supplied with 8 quick connectors for coolant (1/4 inch dia.) and 4 sets of inert connectors. Extra sets of connectors and different sizes are available.	Nylon	1	HEL004946
PolyBLOCK 8 condenser manifold with inert purge. Supplied with 16 quick connectors for coolant (1/4 inch dia.) and 8 sets of inert connectors. Extra sets of connectors and different sizes available.	Nylon	1	HEL008827
Midi condenser with connections to B19/23 to fit reactor and GL14 connections for coolant and purge (ideal for 75ml, 125ml, and 200ml vessels.)	Glass	1	HEL001453
Maxi condenser: larger version of midi (ideal for >200ml reactors)	Glass	1	HEL001454
Barbed hose fittings for midi condensers		10	HEL003143
Silicone 4.8mm bore tubing for midi and maxi condensers		3M	HEL001446
1/8 inch Tubing for inert connections on condensing manifold. 1/8 inch Screw fitting at one end only – Pack of 10		2M	HEL002169
Quick connector for water connections 3/8 inch		1	HEL001441
Quick connector for water connections 1/4 inch		1	HEL001445
Quick connector for water connections 1/8 inch		1	HEL003147

# Aluminum condensing/ inerting block

The aluminum condensing block can be used with open-top vials, 10 or 30ml vials, and 25 or 50ml flasks to provide reflux and purging. The block directly contacts the glass and condenses the vapors. The user connects a coolant inlet/ outlet, which then cools the block. Hence, there are no individual pipes or leaks. The block also has connections for inert gas, so any or all vessels can be inerted by connecting to the block.



Description	Material	Qty per pack	HEL number
PolyBLOCK 8 condenser block	Al	1	HEL000466
PolyBLOCK 4 & AutoMATE condenser block	Al	1	HEL012809
Single 30ml vial tube condenser block adapter	Al	1	HEL001449
7 x 12mm vial condenser block adapter	Al	1	HEL019119



# Temperature, pH and turbidity probes

Range of probes (pH, turbidity, temperature, pressure, etc) for monitoring multiple reactors, fully integrated into software.

By default, the PolyBLOCK 4 and AutoMATE systems are paired with K-type thermocouples, while the PolyBLOCK 8 is paired with PT100 thermocouples.

Integration with other probes and PAT is possible, contact your local sales representative to learn more.



Description	Material	Qty per pack	HEL number
K-type thermocouple (3.18mm dia. x 230mm length) <i>This probe should be used with 500ml or 200ml reactor</i>	Hastelloy	1	HEL004214
	Stainless Steel	1	HEL004171
K-type thermocouple for reactors (1.5mm dia. x 200mm length) <i>This probe should be used with 350ml and 100ml reactor</i>	Hastelloy	1	HEL018467
K-Type thermocouple (3.18mm dia.x 150mm length) <i>This probe should be used for reactors with volume below 75ml</i>	Hastelloy	1	HEL018467
K-type thermocouple for reactors equal to 30ml (1.5mm dia. x 150mm length)	Hastelloy		HEL003102
PT100 temperature sensor (2mm dia. x 200mm length) Lemo connector	Hastelloy	1	HEL009119
PH Probe, Combination Electrode (6mm dia. x 255mm length) Flatted Bulb <i>Default PH probe for all H.E.L reactors</i>	Glass	1	HEL010425
Turbidity Probe (3.18mm dia. x 210mm length) Tip (threaded)	Stainless Steel	1	HEL00624
	Hastelloy	1	HEL00633

## Adapters and seals for PTFE lids

Description	Qty	HEL number
1/8 inch blank plug	2	HEL000478
Cone inverted 1/16 inch bore	10	HEL000480
Cone inverted 1/8 inch bore	10	HEL000479
Omnifit - 1/16 inch bore and 1/4 inch-28 Unf Thread - Green	10	HEL004339
Omnifit - Fitting 1/8 inch bore and 1/4 inch-28 Unf Thread - Yellow	1	HEL007951

# Upgrades, support and training

We understand that your needs can change over time and you may require:

- A system upgrade
- Training for new team members
- Support on your processes
- To book some time with our service team

Our dedicated service team and highly knowledgeable technical staff will work with you to find the right solution.



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## About H.E.L Group

H.E.L Group's mission is to work together with chemistry, safety and biotechnology experts to engineer and unleash the full potential of the scientific community. To this end, H.E.L develops and manufactures innovative scientific instruments and software designed to optimize the efficiency, safety and productivity of key processes in chemistry and biology applications.

The H.E.L team includes highly skilled process and software engineers, based at their extensive research and manufacturing facilities in the UK, as well as sales and support offices around the world.

H.E.L has a long history of solving complex challenges for customers. For more than 30 years the company has worked with businesses and laboratories globally, providing proprietary automated solutions for the pharma, biotechnology, chemical, battery and petrochemical sectors.

H.E.L is accredited with ISO 9001 : 2015 and ISO 14001 : 2015.

- With a strong focus on the customer, our **service and support** enables our customers to keep working efficiently
- Our **wide range of customizable products** put the customer at the heart of what we do, with solutions designed around their needs

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