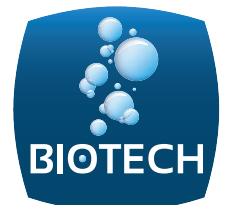




BIOTECH

DEGASI

ELIMINATES TROUBLES
WITH BUBBLES





NO TROUBLES WITH BUBBLES ANYMORE

*– prevent bubble formation in your fluidic system with
BIOTECH DEGASi line of degassers.*

Dissolved gasses in a fluidic system can often cause troubles. When the pressure or the temperature changes, the dissolved gasses can form bubbles which affect the accuracy, precision and performance of your equipment. On-line degassing is a very efficient way of removing dissolved gasses from the liquid and preventing bubble formation.

BIOTECH DEGASi SERIES ARE DESIGNED TO REMOVE DISSOLVED GASSES FROM A SOLVENT.

The degassers can be employed in all type of applications where gasses dissolved in the operating liquid may interfere with the use of the system. Degassing is an absolute requirement to get optimal performance out of your analytical instrumentation or chromatography system! The use of a BIOTECH DEGASi system will save you time and money by avoiding interruptions in your production.

The BIOTECH DEGASi line is easy to use and provides reliable continuous operation for many years. The extremely low internal volume of the Systec AF™ tubing used in the degasser provides for quick equilibration and very short startup times, compared to the use of a degasser which uses PTFE® degassing channels with the same degassing efficiency. The product range includes six different degassers where you select a model depending on the flow rate and what type of solvent used.

WHAT IS THE FUNDAMENTAL DIFFERENCE BETWEEN THE DEGASSER AND DEBUBBLER?

.....
The Degasser removes gasses dissolved in the mobile phase/flow systems. The Debubbler catches and removes bubbles visible to your eyes. For further information regarding debubblers - contact us!

LET THE FLOW VOLUME GUIDE
THE CHOICE OF DEGASi



ANALYTICAL INSTRUMENTATION DEGASSING

Get the best performance out of your instrumentation.
Wide range of application areas.

- Chromatography - HPLC/UHPLC - GPC- Preparative
- Biosensor applications
- Biotechnology

A BIOTECH DEGASi FOR EVERY APPLICATION

| | | | | | | |
|--|------------------------|-------------------|-----------------------|------------------|--------------------|----------------------------|
| | | | | | | |
| | GENERAL PURPOSE | GPC ELUENT | LIMITED VOLUME | SEMI PREP | HI-END PREP | COMPACT APPLICATION |

| | | | | | | |
|---|--------|--------|--------|--------|------------------|---------|
| System AF™ Internal Volume | 480 µl | 480 µl | 100 µl | 925 µl | 8.4 ml / 13.8 ml | 285 µl |
| No of Channels | 2-5 | 2-5 | 2-5 | 2-5 | 2 | 2, 4, 6 |
| Biocompatible Flow Path | Y | N | Y | Y | Y | Y |
| Approximately Max Flow Per Channel (ml/min) | 3 | 3 | 0.5 | 6 | 25 / 50 | 2 |
| Inner Dimension Flow Path (mm) | 1.14 | 1.14 | 1.14 | 1.14 | 1.91 | 0.89 |



GET RID OF DISSOLVED GASSES WITH OUR DEGASi-LINE

DEGASSING EXPLAINED

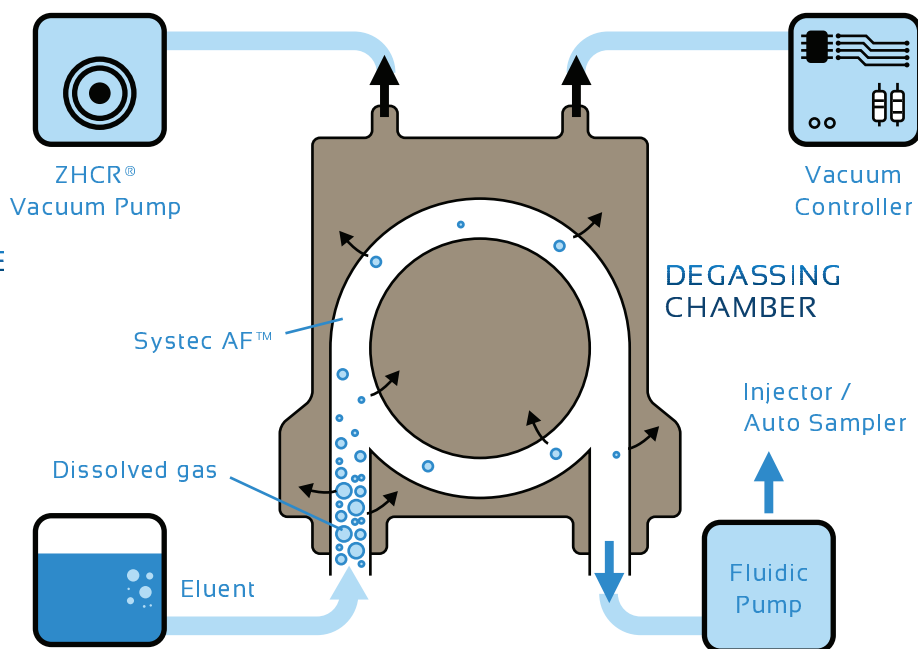
The critical component of the vacuum degasser is a short length of Systec AF™ tubing through which the solvent flows. This tubing is located in a chamber where a partial vacuum is maintained by a vacuum pump that is constantly running at a low speed. Dissolved gasses migrate across the tubing wall under a concentration gradient produced by the vacuum as the solvent flows within the tubing in accordance with Henry's law. The gasses are expelled from the system and the chamber is maintained at a constant, preset vacuum level by varying the vacuum

pump speed as needed. A special port in the vacuum pump continually flushes the pump head with a small "bleed" of air to remove any solvent vapors which may enter the pump from the vacuum chamber. This air bleed eliminates the need for any solenoid valves within the system. This patented design results in zero vacuum "hysteresis".

It is not necessary to totally eliminate the dissolved gas, it only needs to be reduced to a concentration that is below the saturation point of the mixture. Typically, ~50% must be removed.

THE PRINCIPLE OF OUR DEGASi-LINE

Dissolved gasses are actively removed from a flowing liquid stream by vacuum via the Systec AF™ membrane.



THE DEGASSING CHAMBER THE HEART OF OUR DEGASi-LINE

THE SECRET REVEALED

The Systec AF™ membrane is an essential part of the degassing process. Systec AF™ consists of an amorphous perfluorinated copolymer. Through the highly permeable membrane the dissolved gasses are removed, by applying vacuum on the outside of the membrane, while the liquid stays on the inside.

The flow path is inert and most of our different degassing chambers have a biocompatible flow path. Every vacuum chamber is manufactured with the highest quality and tested individually to ensure top-of-the-line performance.

Depending on your needs regarding conditions such as type of solvents and flow rates, we can help you determine the size of the vacuum chamber that will be optimal for your application.



INCREASE THE QUALITY USING SYSTEC ZHCR® AND SYSTEC AF™

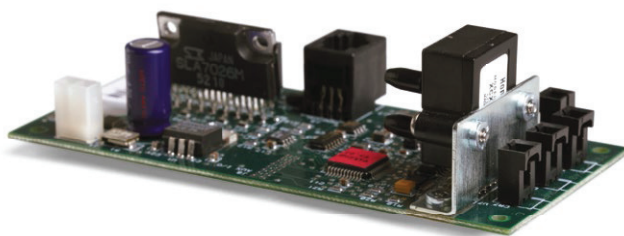


SYSTEC ZHCR® VACUUM PUMP

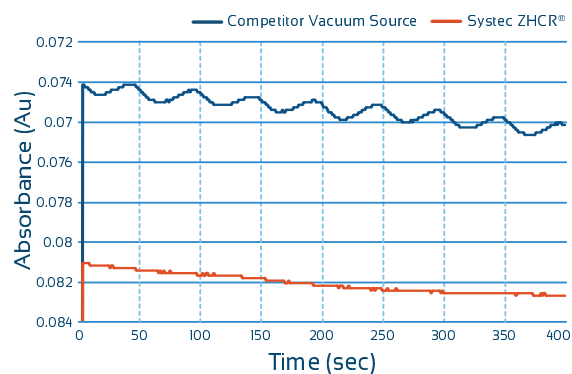
Introducing the ZHCR® (Zero Hysteresis Constant Run) stepper motor driven vacuum pump, specifically designed and developed for membrane degassing of HPLC mobile phase and other fluids used in Analytical Instrumentation.

Employing a micro-stepping closed loop vacuum control strategy permits the pump to maintain a constant vacuum level set-point* by varying the RPM of the stepper motor. The pump initially runs at a high speed which provides for a quick pull-down and, as it approaches the vacuum control point, the RPM is gradually reduced until the desired vacuum level is reached. This patented control strategy allows the On-Line Degasser to maintain a virtually constant vacuum that is unaffected by varying degassing loads. As a consequence, fluctuations in baseline due to vacuum hysteresis are eliminated by not having the pump repeatedly stop and start as is done in many older and existing systems.

*50 mmHg for most models and 80 mmHg for Prep.

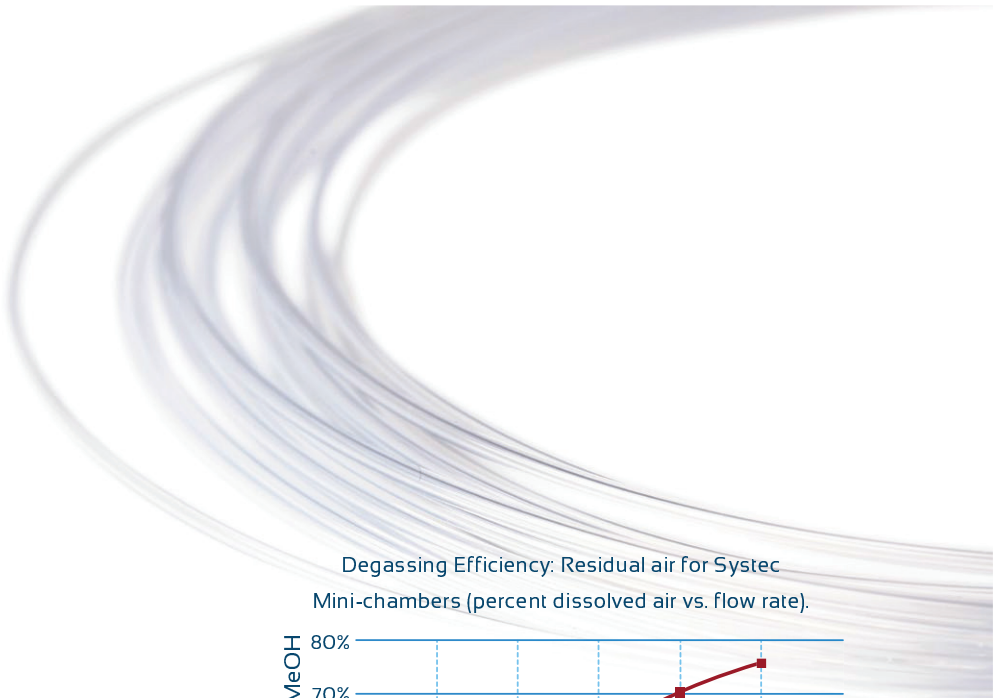


Typical Degassing Fluctuations from Vacuum Sources



Fluctuations in detector baseline of a single-speed pump compared to the patented technology of the Systec ZHCR® vacuum pump.* UV detector baseline fluctuations are minimal when compared to traditional stop and start vacuum sources.

*Vacuum chamber consists of 480 µl of Systec AF™ tubing; flow rate is 1 ml/min, eluent is methanol; wavelength is 215 nm.

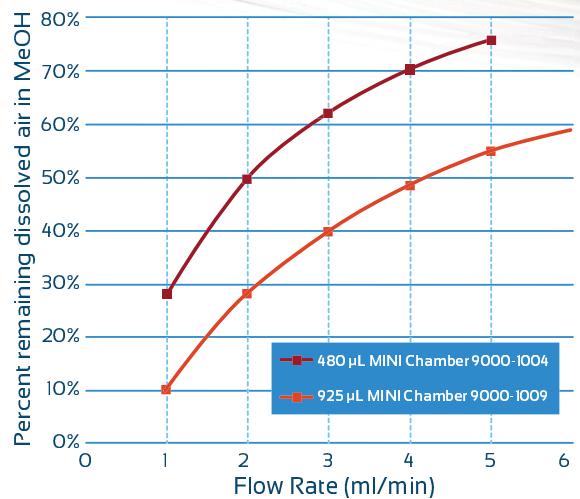


SYSTEC AF™ MEMBRANE

The new Systec AF™ membrane is 50x more permeable and outperforms the older Teflon® PTFE membranes used in many other degassing systems today. This translates into the ability to use shorter tubing for removal of dissolved gasses.

- Ultra-high degassing efficiency
- Low volume
- Considerably shorter equilibration times
- Very easy to prime
- Short vacuum pull-down times, typically 30 seconds
- Single lumen design for consistent degassing
- Inert flow path
- Excellent chemical compatibility flow path
- Long lifetime

Degassing Efficiency: Residual air for Systec Mini-chambers (percent dissolved air vs. flow rate).



Plot shows remaining dissolved air in methanol using a selection of Systec Mini-Chambers*. The range of chambers and specifications offered provide ample solutions for system designs.

* Water and Methanol mixtures between 30 % and 70 % methanol will outgas when more than 38 % dissolved air remains in each of the solvents. Other water and organic mobile phases being mixed using a low pressure gradient system will undergo similar outgassing.



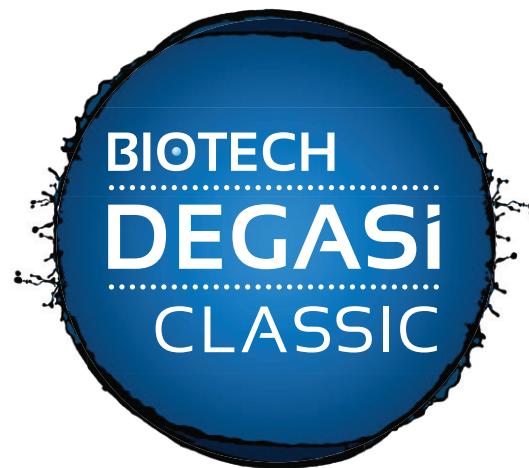
BIOTECH
DEGASI
CLASSIC

POWER STATUS VACUUM

A
B
C
D

DEGASi Classic is the first choice for most applications in analytical instrumentation and chromatography. This state-of-the-art stand alone degasser will provide you with trouble free and efficient degassing day after day.

“an all-round degasser for most applications in your lab...”



THE FIRST CHOICE

With the highly permeable Systec AF™ membrane an internal degasser chamber volume of only 480 µl is sufficient to give you excellent degassing efficiency up to flow rates of approximately 3 ml/min. The time the liquid spends inside the vacuum chamber is correlated to the degassing efficiency, so with higher flow rate the degassing efficiency will be lowered. In many cases the 480 µl vacuum chamber can be used at 5 ml/min with sufficient degassing.

| Part Number | Number of Channels | Internal Volume |
|-------------|--------------------|-----------------|
| 0001-6352-A | 2 | 480 µl |
| 0001-6353-A | 3 | 480 µl |
| 0001-6354-A | 4 | 480 µl |
| 0001-6355-A | 5 | 480 µl |

PRODUCT FEATURES

- Ultra-high degassing efficiency
- Fits every system
- Long life expectancy – 5+ years continuous (24/7) running capacity
- Easy to prime
- Extremely quiet
- Closed loop vacuum control means constant vacuum (variable RPM)
- ZHCR® patented control eliminates baseline fluctuations
- Excellent chemical compatibility flow path
- Biocompatible flow path
- Continuous vacuum system monitoring to ensure optimum operational conditions are maintained
- Advanced error and leak checking functions
- 2-pin vacuum level validation output
- CE & RoHS compliant

GENERAL SPECIFICATIONS

Degassing Channel Tubing:

Systec AF™ (0.045" ID)

Degassing Channel Pressure Rating:

70 PSI (testing pressure)

Wetted Materials:

Systec AF™, PEEK, Glass-filled PTFE

Liquid Connection:

1/4"-28 UNF threaded flat-bottom port

Size (L x H x B):

263 x 131 x 73 mm

POWER REQUIREMENT

USING SUPPLIED AC ADAPTER

100 to 240 VAC (±10 %), 1 A,

50 to 60 Hz (±3 Hz)

Wall Sockets: 4 supplied with AC Adapter, interchangeable: North America/Japan, U.K., Continental Europe, Australia



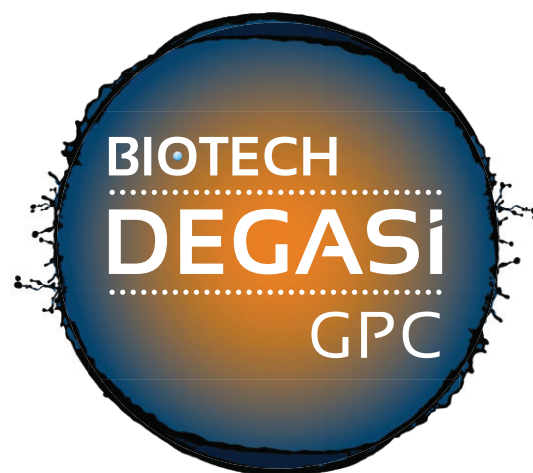
BIOTECH
DEGASi
GPC

POWER STATUS VACUUM

A

B

DEGASi GPC is the right choice of degasser if you are working with 100 % organic solvents in your fluidic line. Example of application areas where this degasser is successfully used are GPC (Gel Permeation Chromatography) and Normal Phase Chromatography.



“when you are using 100 % organic solvents in your fluidic line...”

WHAT IS UNIQUE

DEGASi GPC uses the same 480 µl Systec AF™ degassing membrane as used in DEGASi Classic. The main difference compared with the DEGASi Classic is that we use a stented version of the vacuum chamber in the DEGASi GPC.

The stent is a short piece of a stainless steel tube placed inside the ends of the degassing membrane, in order to make the internal ferrule in the bulkhead to get a better grip. This solution makes an even more secure internal connection when working with 100 % organic solvents in the fluidic line.

PRODUCT FEATURES

- Ultra-high degassing efficiency
- Fits every system
- Long life expectancy – 5+ years continuous (24/7) running capacity
- Easy to prime
- Extremely quiet
- Closed loop vacuum control means constant vacuum (variable RPM)
- ZHCR® patented control eliminates baseline fluctuations
- Excellent chemical compatibility flow path
- Continuous vacuum system monitoring to ensure optimum operational conditions are maintained
- Advanced error and leak checking functions
- 2-pin vacuum level validation output
- CE & RoHS compliant

GENERAL SPECIFICATIONS

Degassing Channel Tubing:

Systec AF™ (0.045" ID)

Degassing Channel Pressure Rating:

70 PSI (testing pressure)

Wetted Materials:

Systec AF™, PPS, Glass-filled PTFE, Stainless Steel

Liquid Connection:

1/4"-28 UNF threaded flat-bottom port

Size (L x H x B):

263 x 131 x 73 mm

POWER REQUIREMENT

USING SUPPLIED AC ADAPTER

100 to 240 VAC (±10 %), 1 A,

50 to 60 Hz (±3 Hz)

Wall Sockets: 4 supplied with AC Adapter, interchangeable: North America/Japan, U.K., Continental Europe, Australia

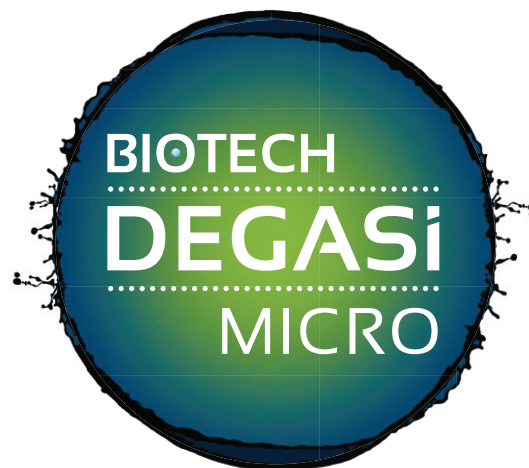
| Part Number | Number of Channels | Internal Volume |
|-------------|--------------------|-----------------|
| 0001-6622 | 2 | 480 µl |
| 0001-6623 | 3 | 480 µl |
| 0001-6624 | 4 | 480 µl |
| 0001-6625 | 5 | 480 µl |



Are you working with very small flow rates? Do you want to minimize the dead volumes inside your system?

Then DEGASi MICRO is your number one choice of degasser. With only 100 µl internal volume you minimize the internal volume while still keeping excellent degassing efficiency up to approximately 0.5 ml/min.

*“an outstanding degasser
for very small flow rates...”*



PRODUCT FEATURES

- Ultra-high degassing efficiency
- Fits every system
- Long life expectancy – 5+ years continuous (24/7) running capacity
- Easy to prime
- Extremely quiet
- Closed loop vacuum control means constant vacuum (variable RPM)
- ZHCR® patented control eliminates baseline fluctuations
- Excellent chemical compatibility flow path
- Biocompatible flow path
- Continuous vacuum system monitoring to ensure optimum operational conditions are maintained
- Advanced error and leak checking functions
- 2-pin vacuum level validation output
- CE & RoHS compliant

GENERAL SPECIFICATIONS

Degassing Channel Tubing:

Systec AF™ (0.045" ID)

Degassing Channel Pressure Rating:

70 PSI (testing pressure)

Wetted Materials:

Systec AF™, PEEK, Glass-filled PTFE

Liquid Connection:

1/4"-28 UNF threaded flat-bottom port

Size (L x H x B):

263 x 131 x 73 mm

POWER REQUIREMENT

USING SUPPLIED AC ADAPTER

100 to 240 VAC (±10 %), 1 A,

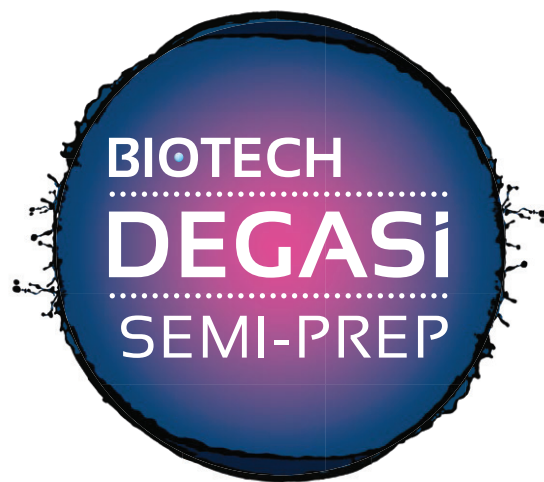
50 to 60 Hz (±3 Hz)

Wall Sockets: 4 supplied with AC Adapter, interchangeable: North America/Japan, U.K., Continental Europe, Australia

| Part Number | Number of Channels | Internal Volume |
|-------------|--------------------|-----------------|
| 0001-6352-S | 2 | 100 µl |
| 0001-6353-S | 3 | 100 µl |
| 0001-6354-S | 4 | 100 µl |
| 0001-6355-S | 5 | 100 µl |



When working with higher flow rates, up to 6 ml/min, we strongly recommend DEGASi SEMI-PREP equipped with 925 µl degassing chambers. These chambers can be used up to 10 ml/min but with a bit lower degassing efficiency.



“manages higher flow rates up to 6–10 ml/min...”

PRODUCT FEATURES

- Ultra-high degassing efficiency
- Fits every system
- Long life expectancy – 5+ years continuous (24/7) running capacity
- Easy to prime
- Extremely quiet
- Closed loop vacuum control means constant vacuum (variable RPM)
- ZHCR® patented control eliminates baseline fluctuations
- Excellent chemical compatibility flow path
- Biocompatible flow path
- Continuous vacuum system monitoring to ensure optimum operational conditions are maintained
- Advanced error and leak checking functions
- 2-pin vacuum level validation output
- CE & RoHS compliant

| Part Number | Number of Channels | Internal Volume |
|-------------|--------------------|-----------------|
| 0001-6352-L | 2 | 925 µl |
| 0001-6353-L | 3 | 925 µl |
| 0001-6354-L | 4 | 925 µl |
| 0001-6355-L | 5 | 925 µl |

GENERAL SPECIFICATIONS

Degassing Channel Tubing:

Systec AF™ (0.045" ID)

Degassing Channel Pressure Rating:

70 PSI (testing pressure)

Wetted Materials:

Systec AF™, PEEK, Glass-filled PTFE

Liquid Connection:

1/4"-28 UNF threaded flat-bottom port

Size (L x H x B):

263 x 131 x 73 mm

POWER REQUIREMENT

USING SUPPLIED AC ADAPTER

100 to 240 VAC (±10 %), 1 A,

50 to 60 Hz (±3 Hz)

Wall Sockets: 4 supplied with AC Adapter, interchangeable: North America/Japan, U.K., Continental Europe, Australia



BIOTECH
DEGASI
PREP

POWER STATUS VACUUM

A

B

The DEGASi PREP vacuum degassing system for analytical instrumentation and HPLC removes dissolved gasses at flow rates up to approximately 50 ml/min per channel. Built for the rigours of modern preparative and semi-prep scale HPLC, its unique design assures reliable continuous operation and the highest level of continuous performance available. The low internal volume of each Systec AF™ channel offers quick equilibration and short startup times compared with PTFE degassers.



“the best degassing efficiency for demanding applications”

PRODUCT FEATURES

- Ultra-high degassing efficiency
- Low volume, easy to prime
- Dual lumen design for low-flow resistance
- ZHCR® patented control eliminates baseline fluctuations
- Inert flow path
- Long life expectancy – 5+ years continuous (24/7) running capacity
- Continuous vacuum system monitoring to ensure optimum operational conditions are maintained

TIPS! We do supply degassing solutions for even higher flow rates. Please contact us for further information.



GENERAL SPECIFICATIONS

Degassing Channel Tubing:

Systec AF™ (0.075" ID)

Degassing Channel Pressure Rating:

70 PSI (testing pressure)

Wetted Materials:

Systec AF™, PPS, Glass-filled PTFE

Liquid Connection:

1/4"-28 UNF threaded flat-bottom port

Size (L x H x B):

296 x 163 x 79 mm

POWER REQUIREMENT

USING SUPPLIED AC ADAPTER

100 to 240 VAC (±10 %), 1 A,

50 to 60 Hz (±3 Hz)

Wall Sockets: 4 supplied with AC Adapter, interchangeable: North America/Japan, U.K., Continental Europe, Australia

| Part Number | Number of Channels | Channel Volume (ml) | Flow Rate Per Channel for 70% Gas Removed from 60% MeOH/40% water (ml/min) | Pressure Drop (mmHg/ml/min) |
|-------------|--------------------|---------------------|--|-----------------------------|
| 0001-6482 | 2 | 8.4 | 25 | 0.28 |
| 0001-6484 | 2 | 13.8 | 50 | 0.47 |



BIOTECH
DEGASI
COMPACT

Biotech DEGASi Compact is a new line of stand alone degassers which combine the cutting edge Systec technology with a very small footprint at an affordable cost.

“stand alone on-line degasser with the smallest footprint available”

DEGASi Compact is available with 2, 4 or 6 degassing channels in a housing with only 167 x 56 mm footprint.

This is possible due to the development of a new single stage vacuum pump with a small built in control board and new 285 µl Systec AF™ vacuum chambers.

Closed-loop control with a continuously running vacuum pump gives a very smooth baseline. The speed of the pump is varied to maintain an exact vacuum level inside the vacuum chambers.

The degasser is equipped with built in error detection functionalities. A bi-color diode on the front panel gives information about the performance. The extremely low internal volume of 285 µl provides very fast priming and start up. Despite the small size of the unit it has an expected life time of more than 6 years.



| Part Number | Number of channels | Internal volume |
|-------------|--------------------|-----------------|
| 0004-2285 | 2 | 285 µl |
| 0004-4285 | 4 | 285 µl |
| 0004-6285 | 6 | 285 µl |



GENERAL SPECIFICATIONS

Degassing Channel Tubing:

Systec AF™ (0.035" ID)

Degassing Channel Pressure Rating:

70 PSIG

Wetted Materials:

Systec AF™, PPS, PEEK and Glass-filled PTFE

Vacuum Housing Material:

Glass-filled PPS (Polyphenylene Sulfide)

Liquid Connections:

1/4" - 28 UNF-1B

Degasser Nominal Performance:

2 ml/min per channel

Expected Lifetime:

>6 years (continuous run @ 100 RPM
12 hours/day 365 days/year)

GO WITH A HIGH FLOW

INTRODUCING THE ALL NEW

DEGASi PREP+



The world's first high flow rate, in-line degasser, for organic solvents

Biotech in co-operation with IDEX H&S are proud to announce the world's first in-line, membrane degasser ready to use with aggressive media and

organic solvents, while maintaining flow-rates up to 150ml/min and above.* Available configurations: Stand alone, OEM open frame and 1-4 channels.

* 150ml/min is only a guideline value, the degasser will in many application work with flow rates well above this guideline. The degasser comes with 2-channels as standard, where each channels recommended flow rate is 75 ml/min, connecting these chambers in series will allow for a combined flow rate of 150 ml/min.



INNOVATIVE PRODUCTS FOR FLUIDIC SYSTEMS

BIOTECH AB • Råövågen 300, SE-43992 ONSALA, SWEDEN

TEL +46 (0)300-56 91 80 • info@biotech.se • www.biotech.se

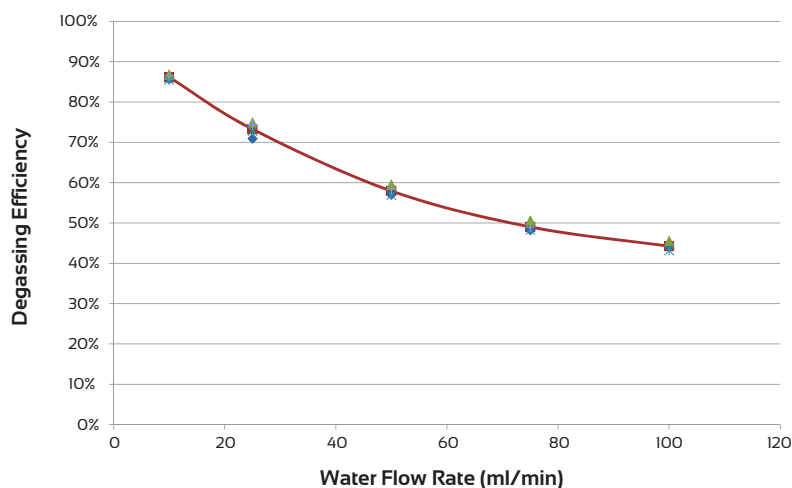
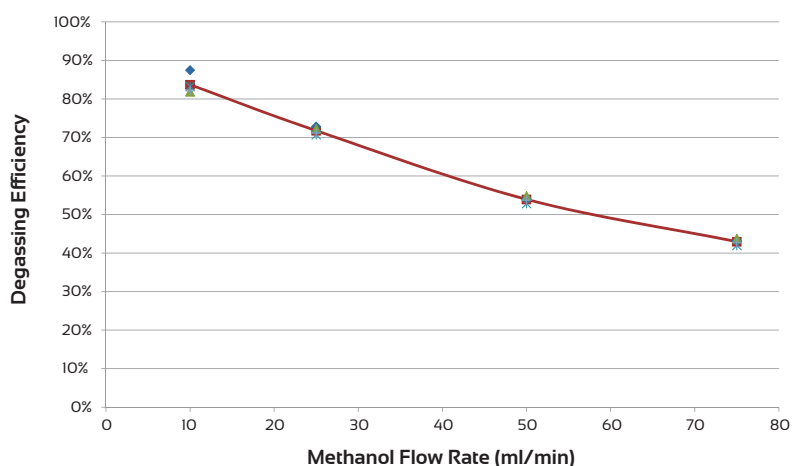
www.biotech.se

DEGASi Prep+ Degasser enables efficient degassing of many types of liquids at high flow rates, up to 75ml/min, per chamber.

The world's first high flow rate, in-line degasser, for organic solvents

APPLICATIONS

- Preparative HPLC
- Flash Chromatography
- High-throughput applications
- Clinical chemistry analysers
- Dispensing applications
- Ink degassing



GENERAL SPECIFICATIONS

Recommended Flow Rate:

75 mL/min (per channel)

Maximum Channel Pressure:

TBA

Wetted Materials:

System AF®, PPS

Liquid Connection:

1/4-28 Female Port.

Degassing Efficiency:

See graph to the left

Pressure Drop (kPa/mL/min):

0.053 kPa/ml/min

Dimensions (mm):

L: 258 W: 150 H: 98

Weight:

TBA

POWER REQUIREMENT

24V Power supply Included

Required input to power supply:

100-240V 50/60Hz

| Part Number | Number of Channels | Internal Volume |
|-------------|--------------------|-----------------|
| 0001-0120 | 1 | 20 ml |
| 0001-0220 | 2 | 20 ml |
| 0001-0420 | 4 | 20 ml |

The listed part numbers are for our DEGASi series of Stand-Alone degassers, OEM configurations with customizable options are also available, please contact us for more information.

Retention time test

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