DISCLAIMER

The performance characteristics of the products described in this catalog are only examples of measurements and are not guaranteed. If using our products under operating conditions outside those given in this catalog, determining their suitability is the responsibility of the user, notwithstanding examples of test results or data obtained under similar operating conditions provided by AGC ENGINEERING. Any material provided by AGC ENGINEERING is for reference only, and application is subject to the user's own judgment and responsibility.

Warranty and Limited Warranty Terms and Conditions

AGC ENGINEERING Co., Ltd. warrants all of its products to be free of defects in materials and workmanship for a period of one year after the date of delivery, provided the use, installation, application, maintenance, and storage of the products are in accordance with the specifications and description in the instruction manuals and catalogs provided by AGC ENGINEERING.

Under this warranty, the obligation of AGC ENGINEERING to provide compensation for any defect is limited only to repairing or replacing the defective product at the discretion of AGC ENGINEERING, and only if the defective product is returned unaltered to AGC ENGINEERING and the defect can be verified by AGC ENGINEERING.

Any claim shall be presented to and processed by AGC ENGINEERING's established claim procedure.

AGC ENGINEERING reserves the right to discontinue manufacturing any products, or to change materials, designs, and specifications without prior notice.

Except for the above warranty, AGC ENGINEERING makes no warranties written, expressed, or implied.

Warning to System Designers and End Users

To prevent danger or injury resulting from improper use of our products, system designers and end users must read the following precautions carefully before designing, installing, and using the system into which our products are incorporated. All of our products must be designed, installed, and used to comply with the specifications and the description in the instruction manuals and catalogs. System designers and end users must read carefully the warnings described in the instruction manual shipped with our product. System designers are obliged to provide information on our products and warnings to end users to help them properly understand how to use our products safely.

Under certain circumstances, normal operation of a device is prevented by improper use, malfunction, or the device's life span. Users of our products should take this into consideration in their application, intended use, system design, installation, and operation, and should provide adequate safeguards to protect life and property even in the event of a malfunction or deterioration of the product fluid.

In the instruction manual of the system, the system designer should provide all end users with a warning that malfunction is still possible even if the system is carefully designed.

Under no circumstances should our products be used for life support devices, vehicle control devices, aircraft, or other devices that have the potential to pose a serious hazard to life and property.

Before attempting to connect, disconnect, replace, or repair our product, all system lines supplying fluid or energy to our products must be shut off or removed. Repair is subject to the procedures previously recommended by AGC ENGINEERING.

Our products are designed for industrial systems. For nonindustrial applications and other applications beyond AGC ENGINEERING specifications with respect to the temperature, pressure, flow rate, and fluid, please consult your distributor.

The specifications published in this catalog are subject to change without notification and the data published in this catalog are for reference purposes only and do not represent a guarantee of product performance. Formal specification sheets will be submitted on request.

● 本カタログ記載の仕様は改良のため予告なく変更される場合がありますので、あらかじめご了承下さい。
又、本カタログ記載データはあくまでも参考値であり製品を保証するものではありません。
ご要望により正規仕様書を提出致します。

The specifications published in this catalog are subject to change without notice and the data published in this catalog are for reference purposes only and are not a guarantee of product performance.
Formal specification sheets will be submitted upon request.

安全に関するご注意 **Safety Warning**

ご使用にあたっては、本製品に付属する取扱説明書の注意事項を必ず守ってください。
Before using the products, please be sure to read and observe the cautions printed in the user's manual.

Environmaintenance for a Blue Planet

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AGC ENGINEERING CO., LTD.

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GV April 2014

AGC Chemicals
Chemistry for a Blue Planet

MEMBRANE GAS DRYER 膜式ドライヤー

sunsep™

サンセップ®

sunsep™

膜式ドライヤー　MEMBRANE GAS DRYER

サンセップ®はAGC旭硝子が開発したフッ素系樹脂 "フレミオン®" を用いた製品です。
sunsep™ utilizes Flemion™, a fluorine-containing resin developed by Asahi Glass Company (AGC).

水と空気　地球になくてはならない大切なものです。
しかし、水は扱い方次第で災いのもとにもなります。
サンセップ®はさまざまな産業分野において、水分トラブルでお困りのお客様に優れた解決策を提供し、コストの低減をお約束します。

Both water and air are precious resources, but humidity can occasionally cause problems. sunsep™ offers an outstanding solution to this problem for a range of industrial applications and helps to reduce costs.

フレミオン®はAGC旭硝子の登録商標です。
Flemion™ is a registered trademark of AGC.

FEATURES

電源不要
No Power Source
- 配線の必要なし
  No wiring
- 防爆エリアへ
  Explosion-proof

簡単なパージ流量調整
Easy Adjustment of the Flow Rate
- パージ流量調整回路内蔵(SWCシリーズ)
  The SWC series is equipped with a value for adjusting the purge flow rate for easy adjusting of the flow rate.

メンテナンスフリー
Maintenance-Free
- 機械的／電気的なメンテナンス不要
  No mechanical/electrical parts to wear out and replace.

環境に優しい
Eco-Friendly
- 吸着剤･フロン･冷媒は使用していません
  No desiccant, CFC gas, or refrigerants
- ドレン発生なし
  No drainage generated

sunsep™

高い水蒸気選択性
High Water Vapor Selectivity
- 非多孔質膜
  Nonporous membrane
- 水蒸気以外の透過は殆どなし
  Almost no penetration of gases other than moisture

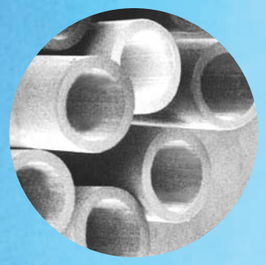
幅広いラインナップ
Wide Range of the Products
- ラボ用途から大流量まで
  From lab scale to high flow
- 特別仕様、OEMにも対応
  Special models and OEM-acceptable

アプリケーション
Broad Application
- 空気以外のガスや加湿用途としても使用可能
  Suitable for gases other than air and ideal for humidification use

小型･軽量
Small and Light
- 取付姿勢に制限なし
  No installation limitations
- 省スペース
  Space-saving design

サンセップとは
Principles of sunsep™

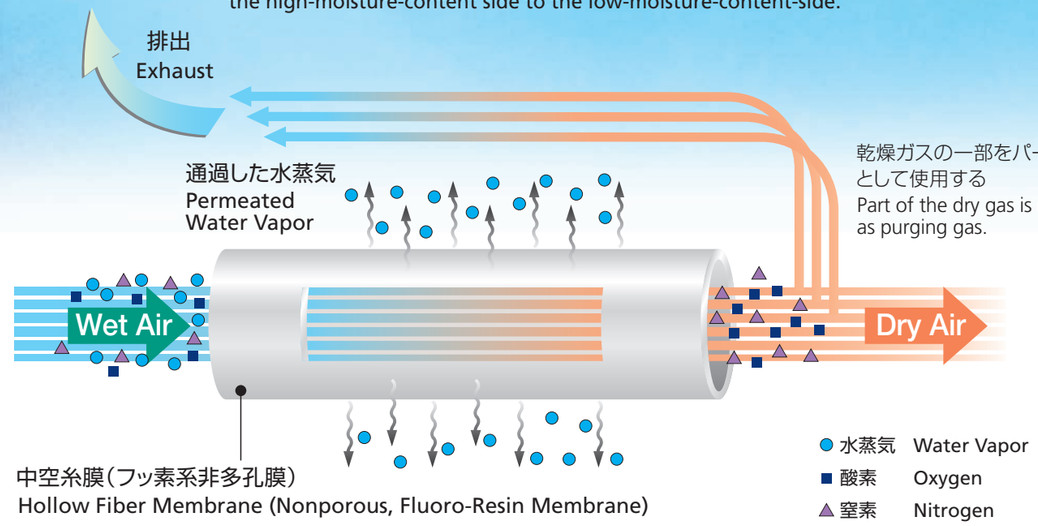
サンセップ®は、フッ素系樹脂フレミオン®製の中空糸膜を使用したドライヤーです。
中空糸膜の内側に湿潤ガス、外側に乾燥ガス(パージガス)を供給するだけで、膜を介して効率良く水分のみを透過しガスを除湿･加湿することができる、クリーンでコンパクトな製品です。
sunsep™ is a clean gas dryer made from the fluorine-containing resin Flemion™.
sunsep™ hollow fibers efficiently transfer only moisture through their surface from the high-moisture-content side to the low-moisture-content.
sunsep™ requires only wet air and dry air to work.



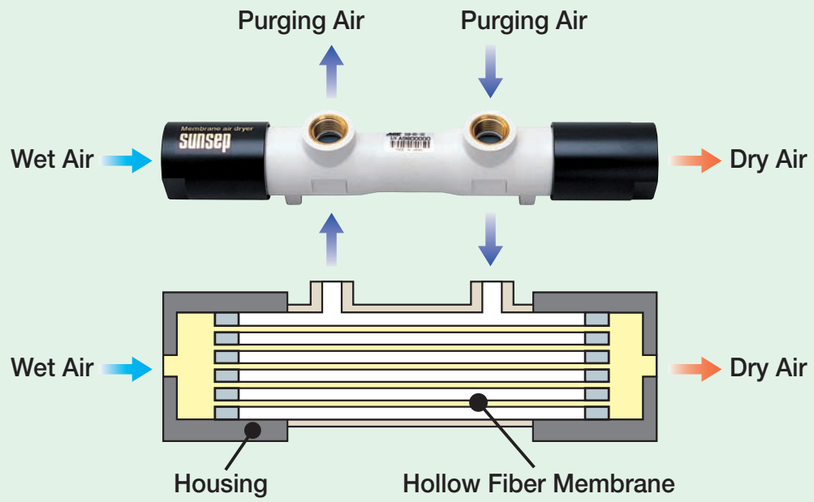
中空糸膜･拡大写真
Hollow Fiber Membranes SEM Image

サンセップのしくみ
Mechanism of sunsep™

サンセップ®の原料であるフッ素系樹脂フレミオン®は、水分子との親和力を有しております。
中空糸膜の内側と外側を通るガスに水分濃度差が生じると、膜中に濃度差を均等にしようとする力が発生します。その力をドライビングフォースとして、湿潤ガス中の水分を乾燥ガス側へ連続的に透過させます。
Flemion™ is a fluorine-containing resin with a high affinity to water molecules.
When differences in moisture concentration arise between the inside and outside of a hollow fiber membrane, the membrane transfers moisture through its surface to equalize moisture concentration. sunsep™ utilizes this action and continuously transfers moisture from the high-moisture-content side to the low-moisture-content-side.

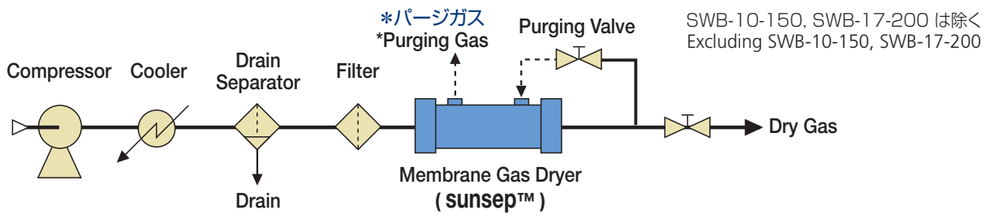


sunsep™ Module Example (SWB-05-100)

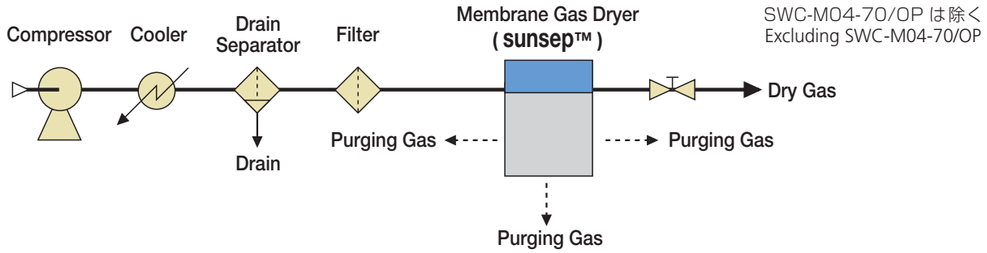


BASIC FLOW

SWB & SWF Series



SWC Series



● パージガスとは：中空糸膜を透過した水蒸気を排出するために、生成した乾燥ガスの一部を中空糸外側に流します。
このガスをパージガスといいます。

*Purging Gas: Part of the dry gas produced returns to the outside of the hollow fiber membranes as purging gas that exhausts water vapor.

● パージ率とは　：供給ガス流量に対するパージガス流量の割合をパージ率といいます。

$$\text{パージ率 (\%)} = \frac{\text{パージガス流量}}{\text{供給ガス流量}} \times 100$$

サンセップ®の標準パージ流量比率は、供給ガス流量の10～20%程度です。
すなわち除湿されたガスの生成比率は供給ガス流量の80～90%となります。

*Purging Gas: Flow Ratio The purging gas flow ratio is defined as follows:

$$\text{Purging Gas Flow Ratio (\%)} = \frac{\text{Flow Rate of Purging Gas}}{\text{Flow Rate of Supply Gas}} \times 100$$

The typical purging gas flow ratio for sunsep™ is about 10-20% of the flow rate of the supply gas. In other words, the production ratio of dehumidified gas is 80-90% of the rate of the supply gas.

● パージ回路内蔵モデル：
SWB-10-150, SWB-17-200, SWCシリーズ（SWC-M04-70/OPを除く）は、パージ回路を内蔵しておりますので、ドライヤーの外側にパージ配管を設ける必要がなく簡便にご使用いただけます。（16ページのパージ空気流量表をご参照下さい。）
パージガスはハウジングの下部若しくはパージガス出口より排出されます。パージガスはパージガス出口に配管接続することにより、別の場所へ排出することも可能です。
又、パージガス入口に別のガスを配管接続するにより、外部パージ方式としてもご使用いただけます。
ご検討の際には、お近くの販売店へご相談ください。

Model with Built-In Purging Circuits
The SWB-10-150, SWB-17-200, and SWC series (excluding SWC-M04-70/OP) are equipped with built-in purging circuits, allowing ease of use without the purging line outside the unit. (Please refer to the table of flow rates of purging air on page 16.) The purging gas exhaust is from the slit at the lower part of the housing or from the purging gas outlet. It is also possible to exhaust the purging gas into a separate location by connecting a pipeline to the purging gas outlet. In addition, an external purging system can be used by containing a pipeline of another gas to the purging gas inlet. Please consult your distributor if required.

SWB SWC SWF Series

圧縮ガス除湿用ドライヤー
Products for Drying Compressed Gas

配管にそのまま接続して、すぐに除湿が可能なドライヤーシリーズです。
設置スペースや流量、用途に応じて、さまざまな形状とサイズをラインナップしております。
The SWB/C/F Series can dry gases by simply installing in a gas line.
Also the SWB/C/F series has a wide variety of sizes and shapes to satisfy each customer's needs.

COMMON SPECIFICATIONS

使用及び適用 Use and Applicable Fluid	非腐食ガスの除湿 Dehumidification of Compressed Noncorrosive Gas	備　考 Notes
流体温度 (T_{inlet}) Fluid Temp. (min. to max.)	−20 ～ +55℃（凍結なきこと） – 4 to +131˚F (Not Frozen)	除湿性能を維持する為に、流体温度 (T_{inlet})を低くし次の範囲でご使用を推奨します。 $\lvert T_{inlet}-T_{ambient}\rvert \leq 5$℃ To maintain satisfactory dehumidifying performance, we recommend use at the lower Tin value and within the following range: $\lvert T_{inlet}-T_{ambient}\rvert \leq 41$˚F
周囲温度 ($T_{ambient}$) Ambient Temp. (min. to max.)	−20 ～ +55℃（凍結なきこと） – 4 to +131˚F (Not Frozen)	
圧力範囲 Pressure Range. (min. to max.)	圧縮ガス入口-出口：0 MPa (Gauge)～0.85MPa (Gauge) Compressed Gas Inlet to Outlet: 0 to 120 psig	
	パージガス入口-出口：0 MPa (Gauge)～0.05MPa (Gauge) Purging Gas Inlet to Outlet: 0 to 7 psig	

STANDARD SPECIFICATIONS

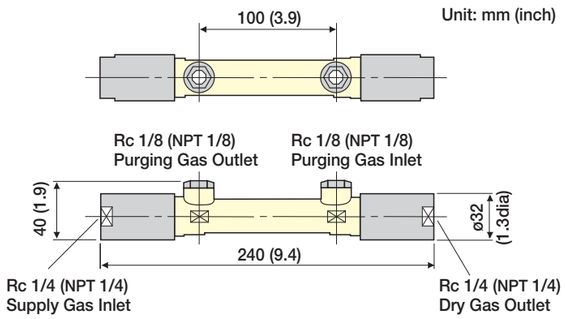
型式 Model	供給空気流量 Supply Air Flow Rate L/min (ANR) (scfm)	寸法 Dimensions mm (inch)			継手サイズ Connector Size 供給ガス入口 / 出口 Supply Gas Inlet / Outlet	継手サイズ Connector Size パージガス入口 / 出口 Purging Gas Inlet / Outlet	質量 Weight gf (lbs)	パージ方式 Purging System
SWB-01-100	～150 (～5.3)	Dia.=32 (1.3)		L=240 (9.4)	Rc1/4 (NPT1/4)	Rc1/8 (NPT1/8)	220 (0.49)	—
SWB-01-200	～100 (～3.5)	Dia.=32 (1.3)		L=340 (13.4)			275 (0.60)	—
SWB-02-100	～300 (～10.6)	Dia.=50 (2.0)		L=310 (12.2)	Rc3/8 (NPT3/8)	Rc1/2 (Applicable to NPT1/2)	625 (1.38)	—
SWB-05-100	～600 (～21.2)						600 (1.33)	—
SWB-10-150	～1200 (～42.4)	Dia.=75 (3.0)		L=340 (13.4)	Rc1/2 (NPT1/2)	—	1400 (3.09)	Built-in purging circuit
SWB-17-200	～1800 (～63.6)	Dia.=110 (4.3)		L=370 (14.6)	Rc1 (NPT1)	—	4810 (10.61)	
SWC-M04-70/OP	～15 (～0.5)	W=36 (1.4)	H=75 (3.0)	D=15 (0.6)	M5 (Female)	M5 (Female)	50 (0.11)	—
SWC-M04-70/IP						—		Built-in purging circuit
SWC-M08-100	～50 (～1.8)	W=61 (2.4)	H=112 (4.4)	D=31 (1.2)	Rc1/8 (NPT1/8)	—	270 (0.59)	Built-in purging circuit
SWC-M08-100/H*1								
SWC-M15-100	～80 (～2.8)	W=61 (2.4)	H=112 (4.4)	D=31 (1.2)	Rc1/8 (NPT1/8)	—	270 (0.60)	Built-in purging circuit
SWC-M15-100/H*1								
SWC-01-150	～150 (～5.3)	W=70 (2.8)	H=153 (6.0)	D=40 (1.6)	Rc1/4 (NPT1/4)	—	345 (0.76)	Built-in purging circuits
SWC-02-250	～300 (～10.6)	W=100 (3.9)	H=200 (7.9)	D=50 (2.0)	Rc3/8 (NPT3/8)	—	680 (1.50)	Built-in purging circuits
SWC-03-250	～450 (～15.9)						725 (1.59)	Built-in purging circuits
SWC-03-250/H*1								
SWF-M06-400	～30 (～1.1)	Dia=25 (1.0)		L=516 (20.3)	Rc1/4 (NPT1/4)	Rc1/8 (NPT1/8)	120 (0.27)	—

※供給空気流量の欄に記載の数値は、供給空気圧力が0.7MPaにおいて、供給空気入･出口間の圧力損失が0.035MPa以下である流量を示します。
The supply air flow rate data are based on the following working conditions : Supply air pressure:102 psig, pressure loss between supply air inlet and outlet ≦ 5.1 psig

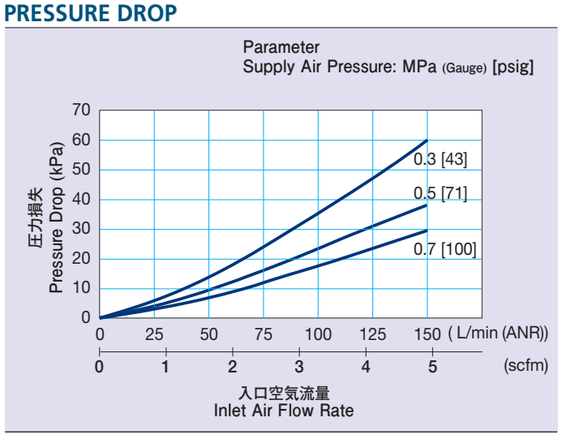
*1 低パージ仕様です。　Products for a low purge gas flow.

SWB-01-100

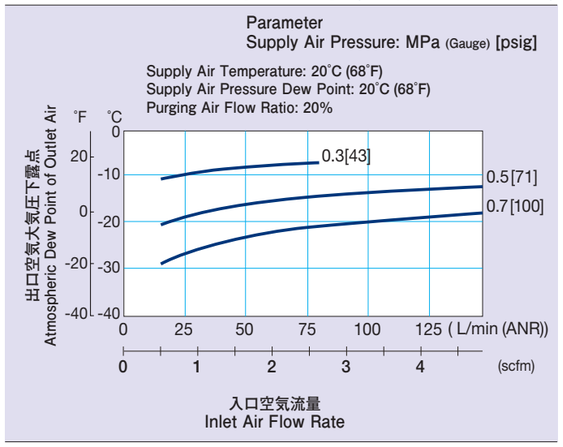
DIMENSIONS (APPROX.)



PRESSURE DROP

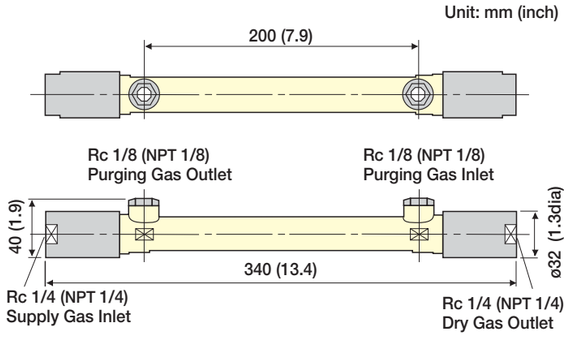


DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



SWB-01-200

DIMENSIONS (APPROX.)



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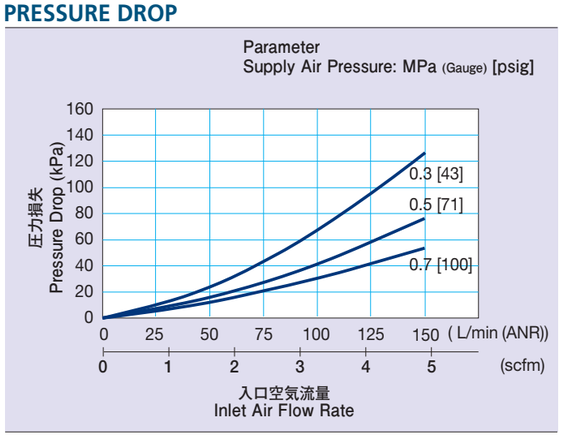

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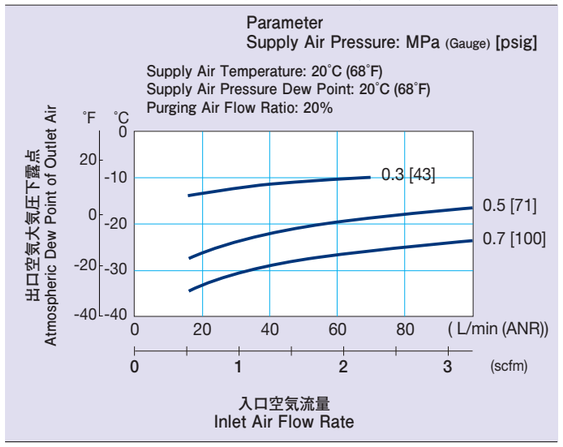

SWB-02-100

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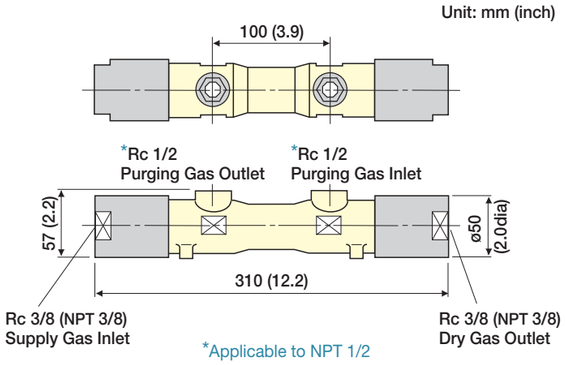

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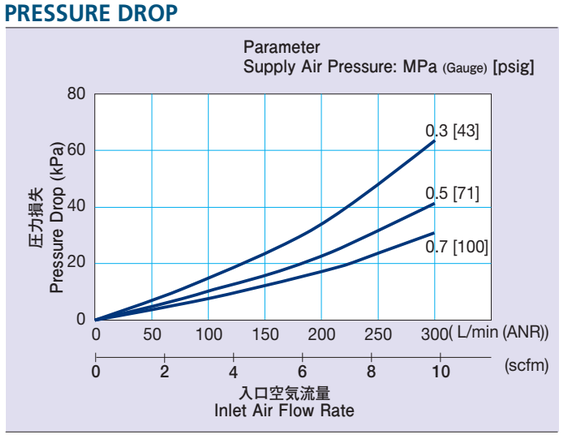

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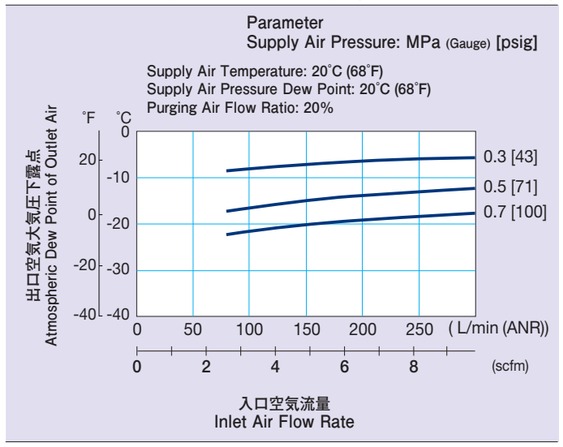

SWB-05-100

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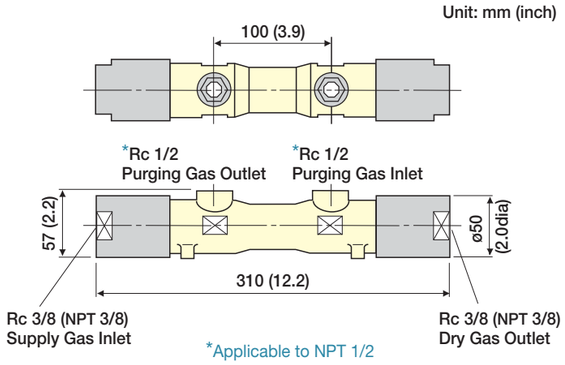

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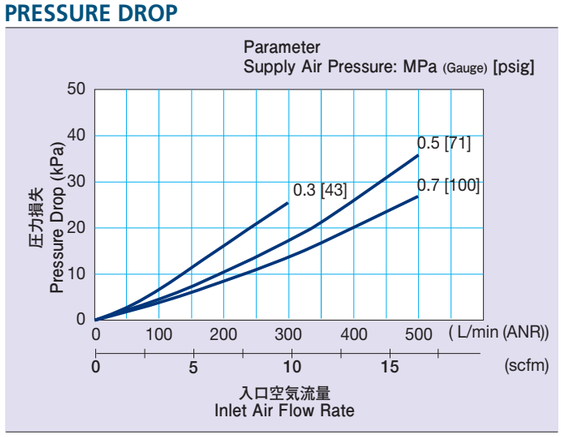

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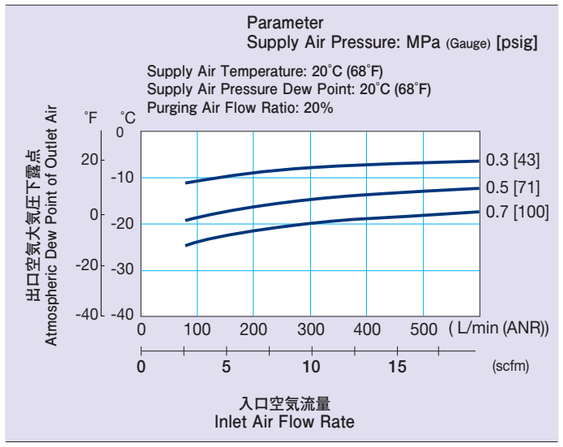
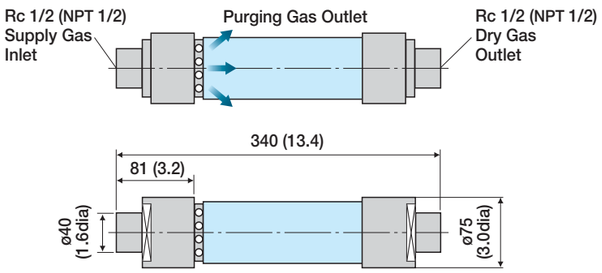


SWB-10-150

DIMENSIONS (APPROX.)

Unit: mm (inch)



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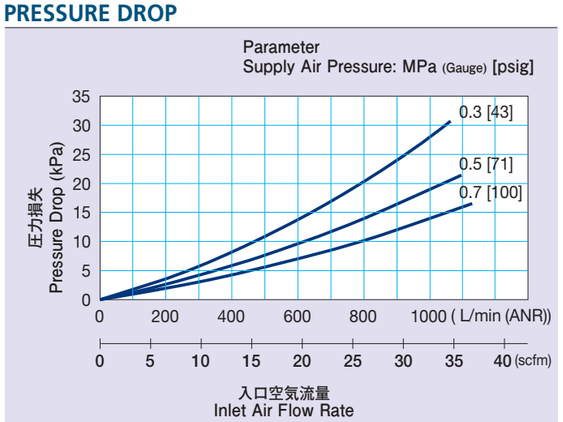
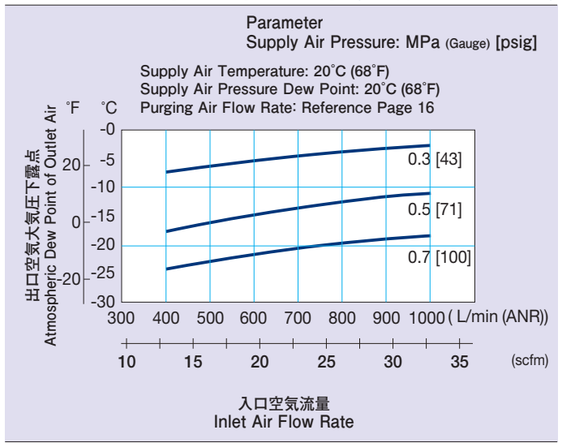


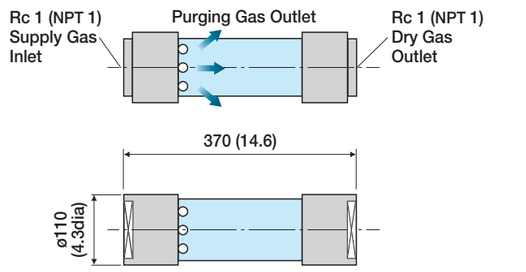
DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



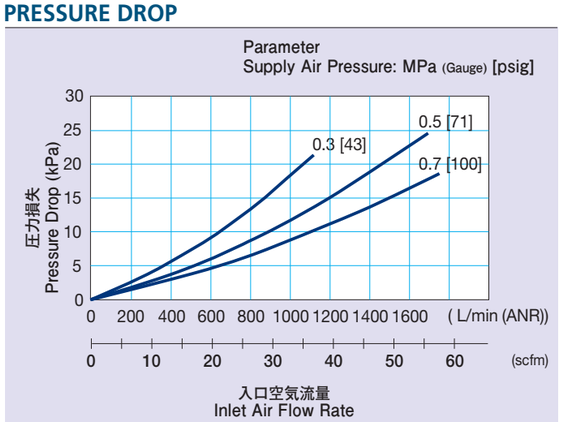
SWB-17-200

DIMENSIONS (APPROX.)

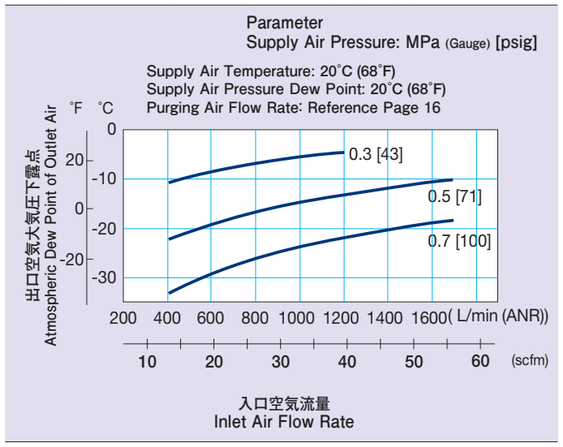
Unit: mm (inch)



PRESSURE DROP



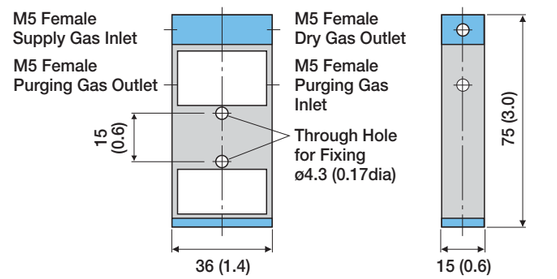
DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



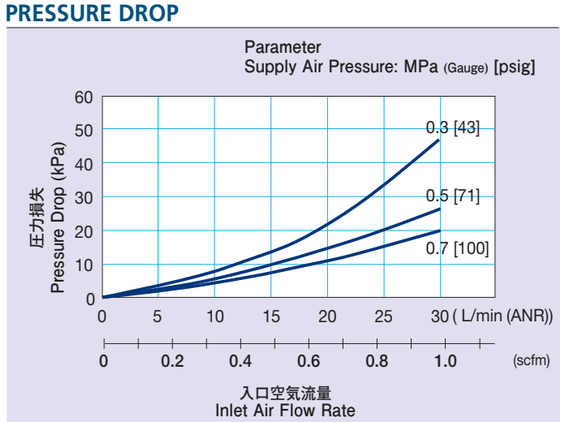
SWC-M04-70/OP

DIMENSIONS (APPROX.)

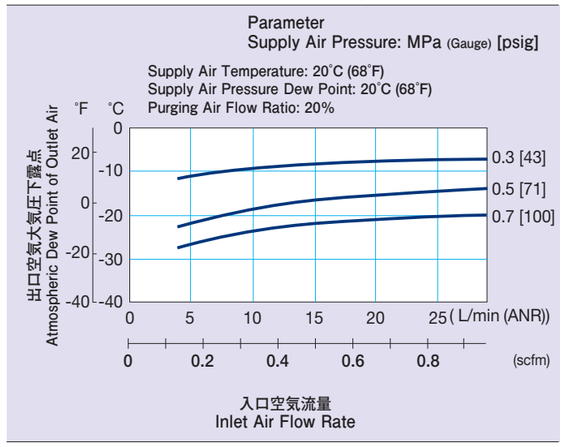
Unit: mm (inch)



PRESSURE DROP



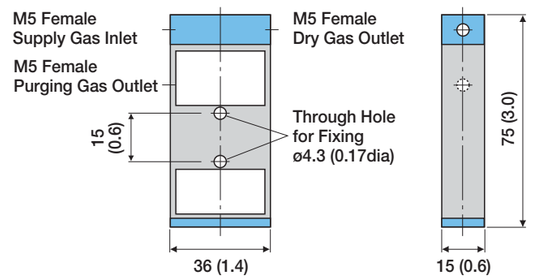
DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



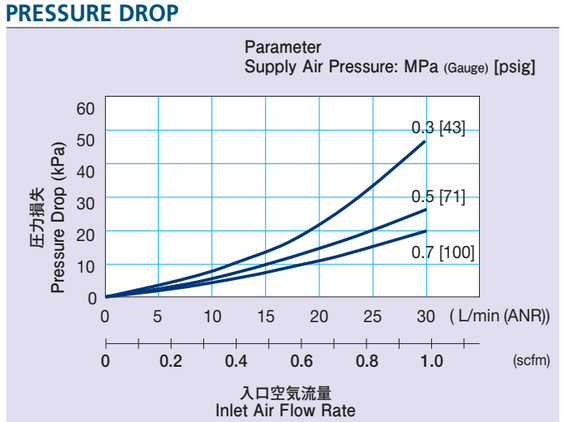
SWC-M04-70/IP

DIMENSIONS (APPROX.)

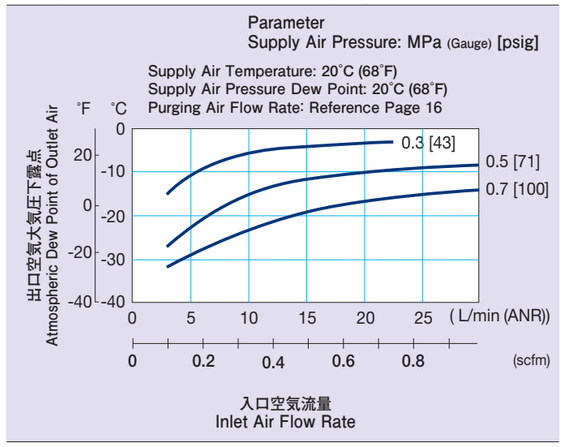
Unit: mm (inch)



PRESSURE DROP



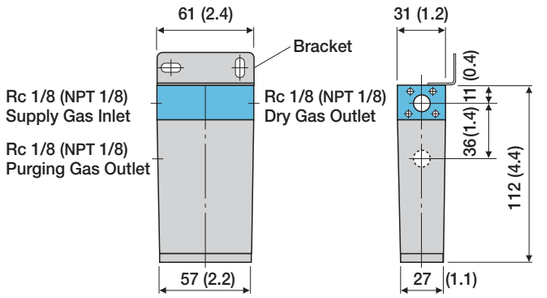
DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



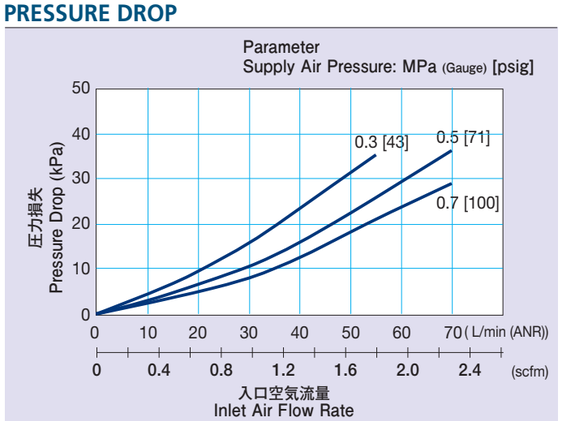
SWC-M08-100

DIMENSIONS (APPROX.)

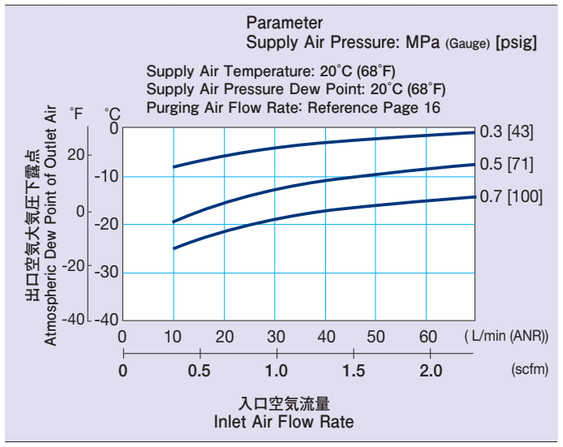
Unit: mm (inch)



PRESSURE DROP



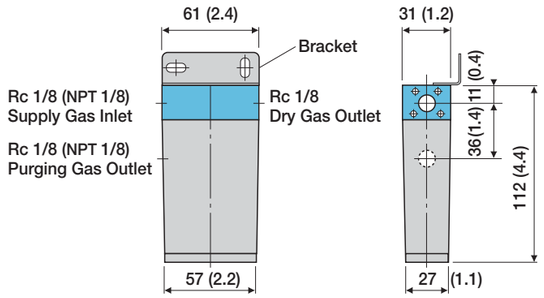
DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



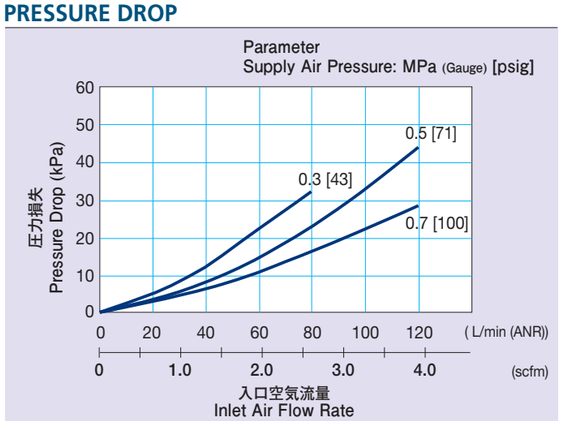
SWC-M15-100

DIMENSIONS (APPROX.)

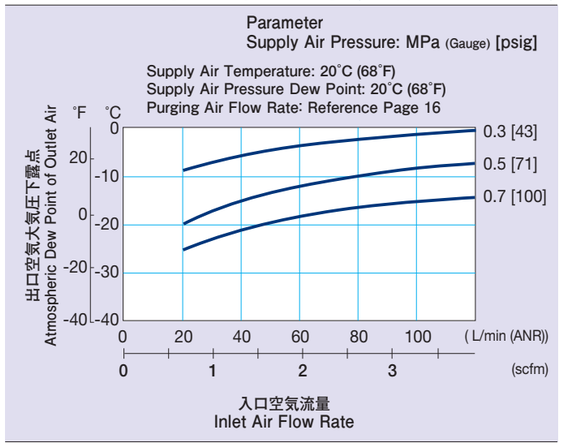
Unit: mm (inch)



PRESSURE DROP



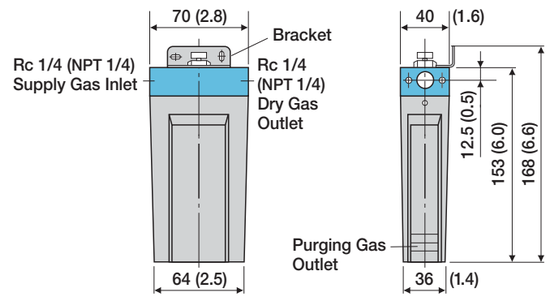
DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



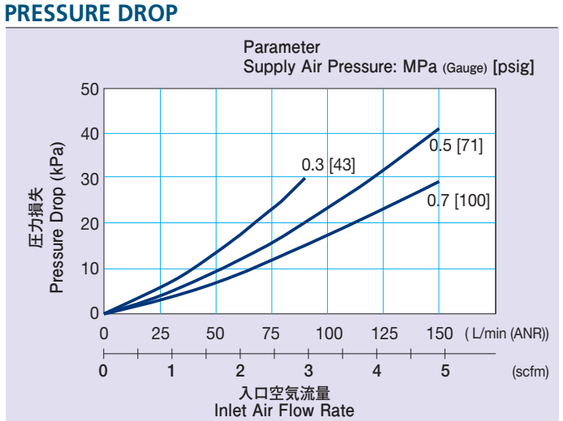
SWC-01-150

DIMENSIONS (APPROX.)

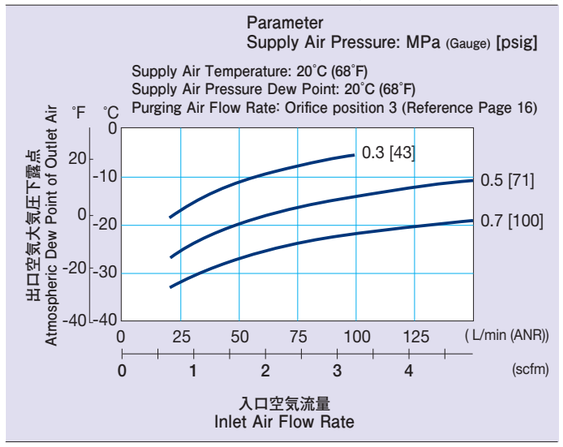
Unit: mm (inch)



PRESSURE DROP



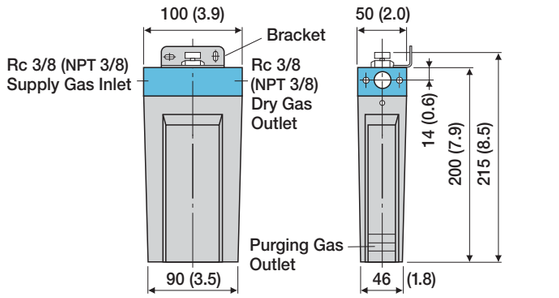
DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



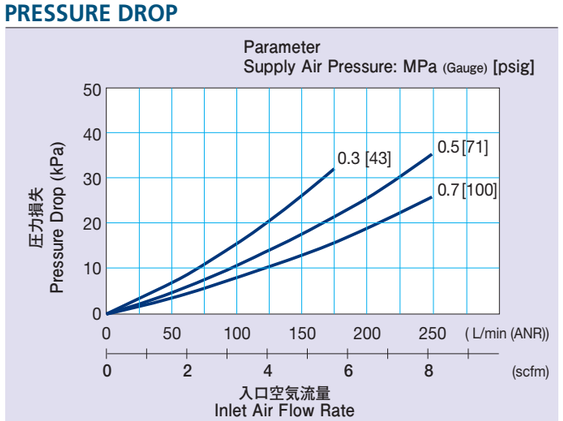
SWC-02-250

DIMENSIONS (APPROX.)

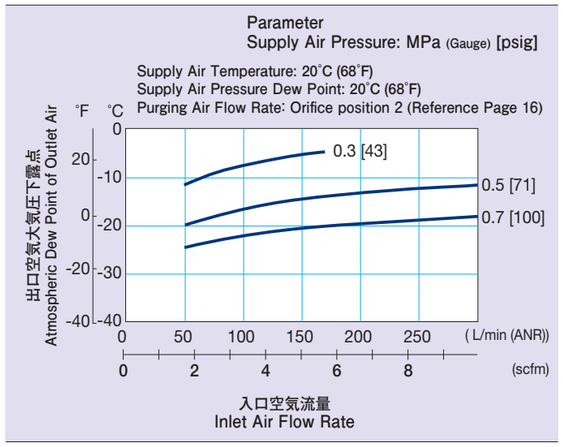
Unit: mm (inch)



PRESSURE DROP



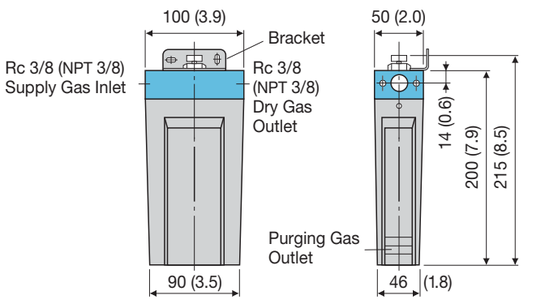
DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



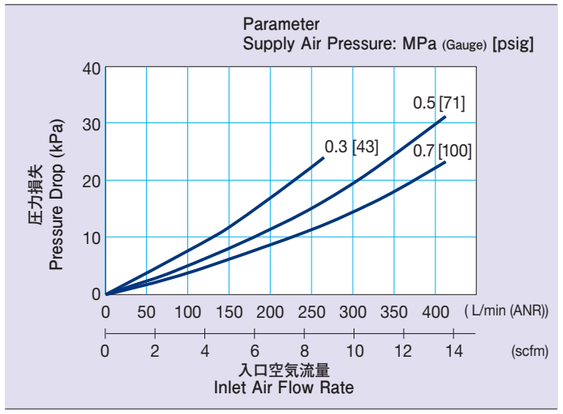
SWC-03-250

DIMENSIONS (APPROX.)

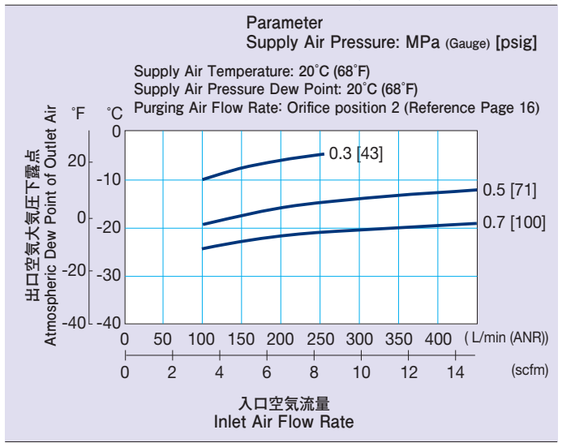
Unit: mm (inch)



PRESSURE DROP



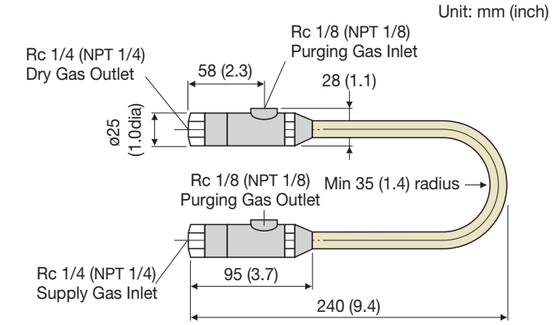
DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



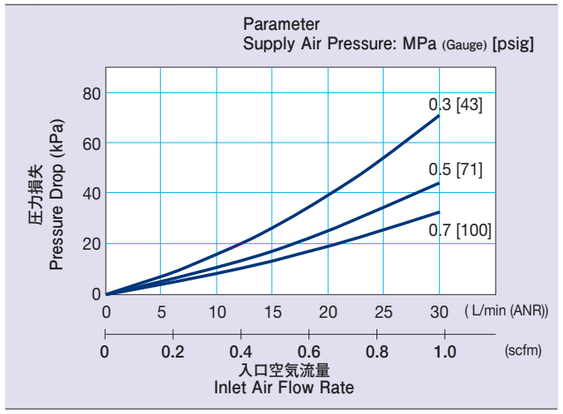
SWF-M06-400

DIMENSIONS (APPROX.)

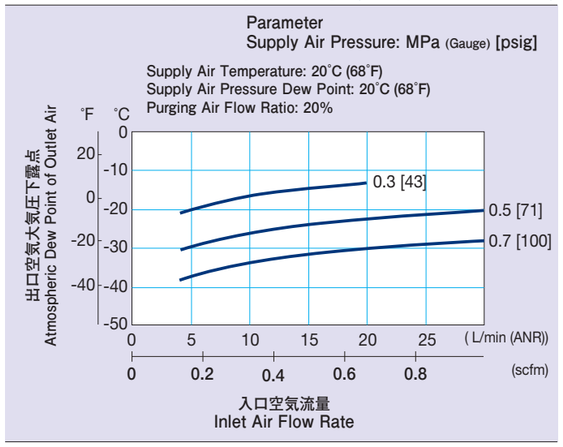
Unit: mm (inch)



PRESSURE DROP



DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



sunsep™

SWG Series

ガス分析計へのサンプルガス除湿用ドライヤー
Drying Sample Gas for Gas Analyzers

分析ラインに接続するだけで、測定対象成分を損なわずに除湿が可能です。
ご使用条件に応じて材質や長さをお選びいただけます。
The SWG series can dry gases without losing the measurement target by simply installing in a gas line.

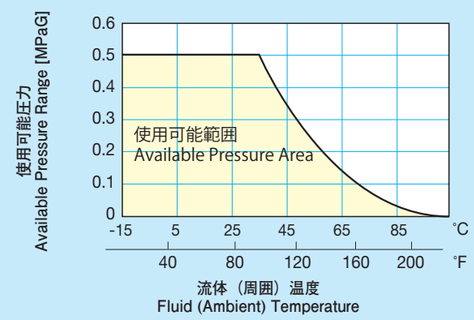
COMMON SPECIFICATIONS

使用及び適用 Use and Applicable Fluid	ガス分析用サンプルガスの除湿 Dehumidification of Sample Gas for Gas Analyzers		備　考 Notes
SWG-A01 Series			除湿性能を維持する為に、流体温度 (T_{inlet}) を低くし次の範囲でご使用を推奨します。 $\lvert T_{inlet}-T_{ambient}\rvert \leq 5℃$ To maintain satisfactory dehumidifying performance, we recommend use at the lower T_{inlet} value and within the following range: $\lvert T_{inlet}-T_{ambient}\rvert \leq 9°F$
流体温度 (T_{inlet}) Fluid Temp. (min. to max.)	PP Series	−15 ～ +80℃（凍結なきこと） 5 to +176˚F (Not Frozen)	
	KF Series	−15 ～ +100℃（凍結なきこと） 5 to +212˚F (Not Frozen)	
周囲温度 ($T_{ambient}$) Ambient Temp. (min. to max.)	PP Series	−15 ～ +80℃（凍結なきこと） 5 to +176˚F (Not Frozen)	
	KF Series	−15 ～ +100℃（凍結なきこと） 5 to +212˚F (Not Frozen)	
SWG-035, 100 Series			
流体温度 (T_{inlet}) Fluid Temp. (min. to max.) 周囲温度 ($T_{ambient}$) Ambient Temp. (min. to max.)	PP Series PS Series SS Series	−15 ～ +60℃（凍結なきこと） 5 to +140˚F (Not Frozen)	
圧力範囲 Pressure Range (min. to max.)	＊ 圧縮ガス入口-出口：−0.04MPa (Gauge)～0.5MPa (Gauge) at 25℃（中空糸乾燥状態） * Compressed Gas Inlet to Outlet：−6.0 to 72psig at 25˚C (Under Dry Conditions)		
	＊ パージガス入口-出口：−0.04MPa (Gauge)～0.05MPa (Gauge) at 25℃（中空糸乾燥状態） * Purging Gas Inlet to Outlet：−6.0 to 7.1psig at 25˚C (Under Dry Conditions)		

＊上記圧力範囲は中空糸の湿潤状態やご使用温度により変化します。（下記グラフを参照ください）
* The above pressure range changes according to the wetness of the hollow fibers and the operating temperature. (Please refer to the graph below.)

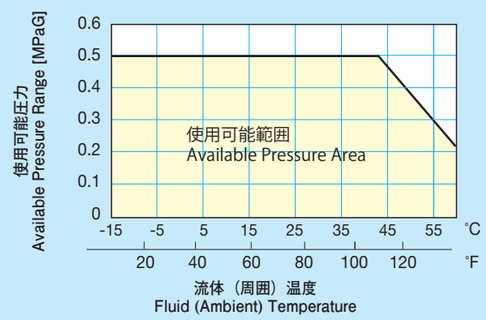
Available Pressure Range

SWG-A01 Series



Available Pressure Range

SWG-035, 100 Series



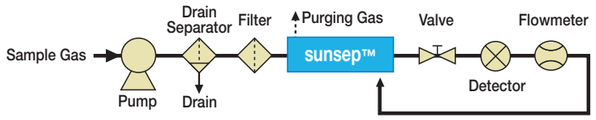
＊本グラフは中空糸のパージガスライン圧力をほぼ大気圧にて使用した場合です。パージガスラインを負圧又は加圧下にてご使用される場合は、販売店又は当社までご相談下さい。中空糸膜の湿潤状態や凝縮水の混入により使用可能圧力は変化しますので、目安としてお考え頂きますようお願いします。
* These graphs are based on data obtained when the purging gas pressure is set to around atmospheric pressure.
If you would like to set the purging gas pressure to a negative or positive value, please consult your distributor or AGC ENGINEERING.
The available pressure rate on the graph is only a guide. The pressure range changes with the wetness of the membrane or contamination caused by condensed water.

STANDARD SPECIFICATIONS

型式 Model	継手材質 Connector Material	標準流量 Standard Supply Flow Rate L/min. (ANR) (scfm)	長さ Length 全長 Total mm (inch)	長さ Length パージ口間 Purging Gas Port from Inlet to Outlet mm (inch)	継手サイズ Connector Size 供給ガス入口 / 出口 Supply Gas Inlet / Outlet	継手サイズ Connector Size パージガス入口 / 出口 Purging Gas Inlet / Outlet	質量 Weight gf (lbs)
SWG-A01-03/PP	PP	～2 (～0.07)	390 (15.4)	300 (11.8)	Ø6.35mm (Ø1/4inch)	Ø6.35mm (Ø1/4inch)	40 (0.09)
SWG-A01-03/KF	PVDF						55 (0.12)
SWG-A01-06/PP	PP		690 (27.2)	600 (23.6)			50 (0.12)
SWG-A01-06/KF	PVDF						65 (0.15)
SWG-A01-12/PP	PP		1290 (50.8)	1200 (47.2)			75 (0.17)
SWG-A01-12/KF	PVDF						90 (0.20)
SWG-A01-18/PP	PP		1890 (74.4)	1800 (70.9)			100 (0.22)
SWG-A01-18/KF	PVDF						115 (0.25)
SWG-A01-24/PP	PP		2490 (98.0)	2400 (94.5)			125 (0.27)
SWG-A01-24/KF	PVDF						140 (0.30)
SWG-A01-36/PP	PP		3690 (145.3)	3600 (141.8)			175 (0.38)
SWG-A01-36/KF	PVDF						185 (0.41)
SWG-035-06/PP	PP	～4 (～0.14)	714 (28.1)	600 (23.6)	Rc1/4 (NPT1/4)	Rc1/8 (NPT1/8)	240 (0.53)
SWG-035-12/PP	PP		1314 (51.7)	1200 (47.2)			350 (0.78)
SWG-100-06/PS	PP	～12 (～0.42)	714 (28.1)	600 (23.6)			1200 (2.65)
SWG-100-06/SS	SUS316						1450 (3.20)
SWG-100-12/PS	PP		1314 (51.7)	1200 (47.2)			1680 (3.71)
SWG-100-12/SS	SUS316						1925 (4.25)

使用例1:サンプルガスの全量をパージガスに使用

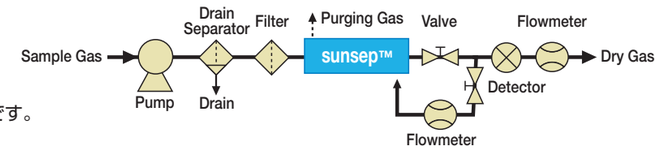
Example1 : Using all the sample gas as purging gas



▌サンプルガス流量が少ない場合に有効です。
Effective if the sample gas flow rate is relatively low.
▌パージガスを分析計経由で利用するため、分析機器側の圧力損失を考慮の上、供給圧力等をご検討下さい。
In this case, the sample gas passes through analyzers and loses its pressure. Please consider the pressure loss when deciding the supply pressure.

使用例2:生成ドライサンプルガスの一部をパージガスに使用

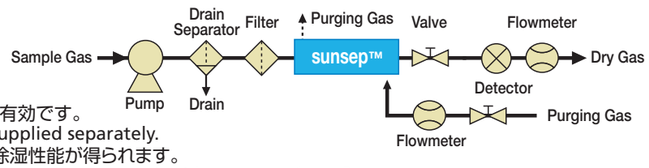
Example2 : Using a part of the sample gas as purging gas



▌サンプルガス流量が多い場合、供給圧が高い場合に有効です。
Effective if the sample gas flow rate is relatively high.

使用例3:パージ用ガスが別途供給される場合

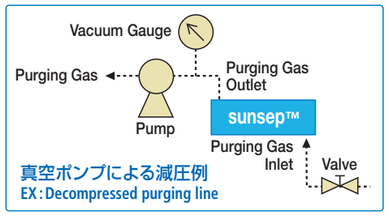
Example3 : Supplying purging gas separately



▌計装用空気あるいは乾燥窒素ガス等がご用意できる場合に有効です。
Effective if instrumentation air or dried nitrogen gas is supplied separately.
▌使用例1、2よりも比較的に元圧が低い場合でも、安定した除湿性能が得られます。
Shows stable performance even if the supply pressure is lower than usage that in example 1and 2.
▌パージガスの乾燥度により、除湿性能は異なります。
Dehumidification performance depends on the dryness of the supplied purging gas.

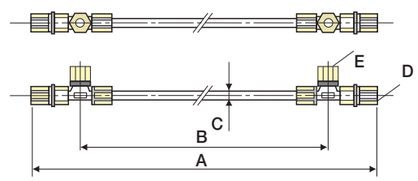
その他共通事項 Other Common Uses

● パージ出口は大気開放、または減圧とします。
The purging gas outlet should be exposed to the atmosphere or decompressed.
● 真空ポンプを使用した減圧例は右の図をご覧ください。
For an example of a decompressed purging line, please refer to the schematic on the right.
● パージガスあるいはサンプルガスの排気は、除害設備あるいは安全な場所へ排気して下さい。
The purging gas should be exhausted to safe place.
● パージ流量調整弁は、必ずパージガス入口の上流側に設置して下さい。
The Purging gas flow rate control valve must be attached on the upper stream on the inlet side.



SWG-A01-Series

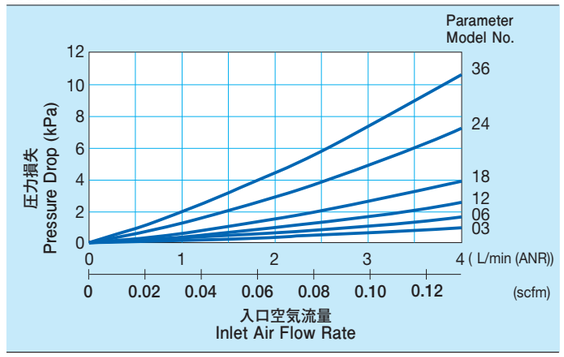
DIMENSIONS (APPROX.)



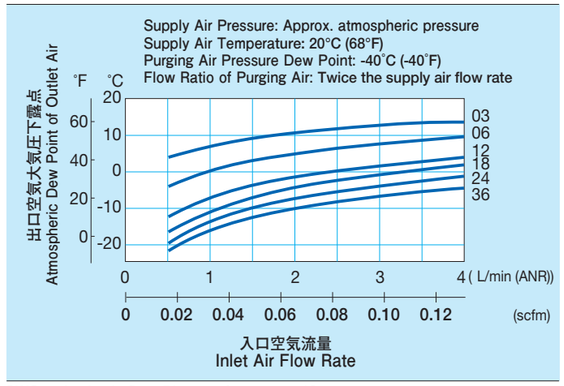
Unit: mm (inch)

Model	Dimensions A	Dimensions B	Dimensions C	Connector Size D	Connector Size E
-03	390 (15.4)	300 (11.8)	ø6.35 (0.25dia)	ø6.35 (0.25dia)	ø6.35 (0.25dia)
-06	690 (27.2)	600 (23.6)			
-12	1290 (50.8)	1200 (47.2)			
-18	1890 (74.4)	1800 (70.9)			
-24	2490 (98.0)	2400 (94.5)			
-36	3690 (145.3)	3600 (141.7)			

PRESSURE DROP



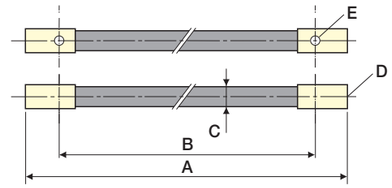
DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



SWG series basic flow: Please refer to page 13.

SWG-035, 100-Series

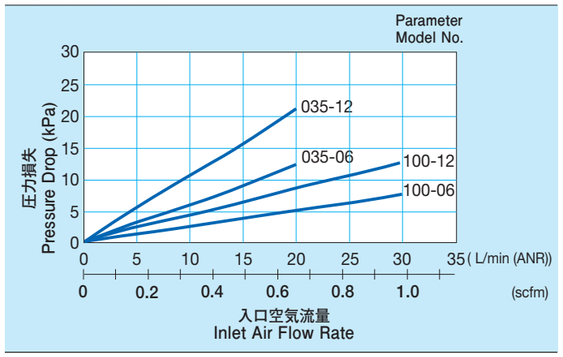
DIMENSIONS (APPROX.)



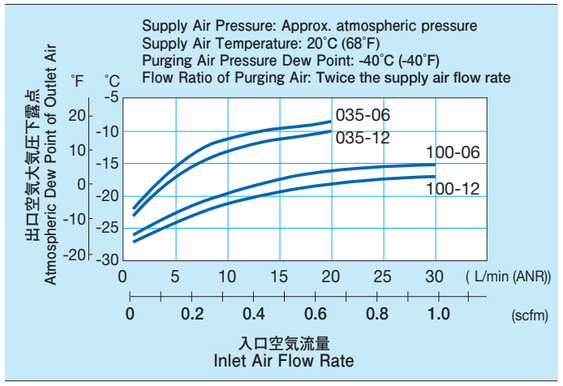
Unit: mm (inch)

Model	Dimensions A	Dimensions B	Dimensions C	Connector Size D	Connector Size E
-035-06	714 (28.1)	600 (23.6)	20 (0.8)	Rc1/4 (NPT1/4)	Rc1/8 (NPT1/8)
-035-12	1314 (51.7)	1200 (47.2)			
-100-06	714 (28.1)	600 (23.6)	19 (0.75)		
-100-12	1314 (51.7)	1200 (47.2)			

PRESSURE DROP



DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



SWT Series

アクアドライブ®
AQUADRIVE™

SWT-SERIES

SWTシリーズは、フレミオン®チューブを樹脂製ネットで被覆したものです。本構造により、フレミオン®チューブを保護しながら、周囲環境と自由に湿度交換することができます。パージガスを必要とせず周囲環境湿度差を利用して300mℓ/min以下の微小流量サンプルガスの除湿や加湿を可能とします。
呼気ガス分析装置や新陳代謝測定装置などに適用されます。

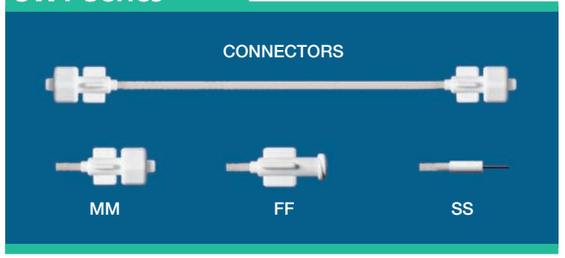
In the SWT series, a Flemion™ tube is surrounded with a plastic braided net. The braid net offers free humidity exchange with the ambient air, protecting the Flemion™ tube from damage. This enables the product to dry and humidify micro flow sample gases with a flow of less than 300 mℓ/min without purging gas by utilizing the difference in ambient humidity.
The SWT series is ideal for expiration gas analyzer and metabolism analyzer, etc.

- 小型・軽量
  Small and Light
- パージガス不要
  No Purge Gas
- 周囲湿度との調整
  Adjusts to Ambient Humidity

用途
Applications

- 呼気ガス分析計
  Expiration Gas Analyzer
- 代謝分析計
  Metabolism Analyzer
- 微小流量サンプルガスの除加湿など
  Drying or Humidifying for Minute Flux of a Sample Gas, etc.

SWT Series

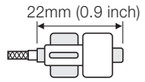


DIMENSIONS (APPROX.)

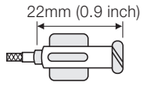
LINE-UP

CONNECTORS

MM: Male Locking Luer Fitting
(Fitting Material: Polypropylene)

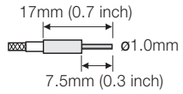


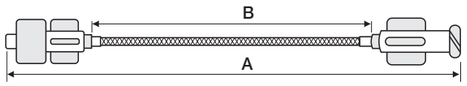
FF: Female Locking Luer Fitting
(Fitting Material: Polypropylene)



FM: Female-Male Locking Luer Fitting
(Fitting Material: Polypropylene)

SS: Stainless-Steel Tube in Plastic Header
(Fitting Material: Stainless Steel)



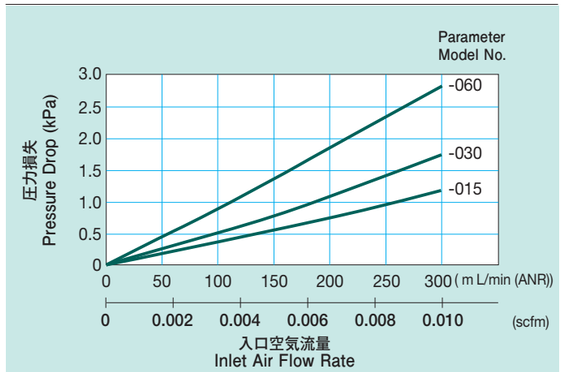


Unit: mm (inch)

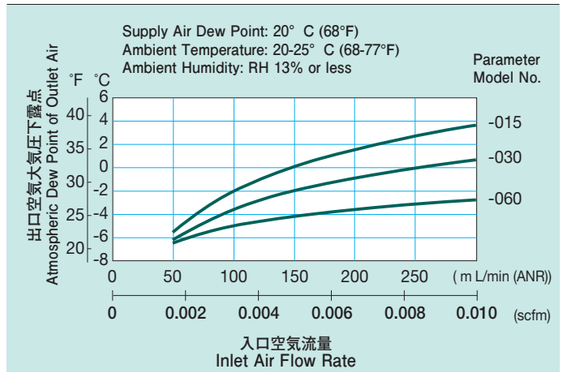
Model	Dimensions				
	A				B
	MM	FF	FM	SS	
SWT-1.3-015	194 (7.6)	194 (7.6)	194 (7.6)	184 (7.2)	150 (5.9)
SWT-1.3-030	344 (13.5)	344 (13.5)	344 (13.5)	334 (13.1)	300 (11.8)
SWT-1.3-060	644 (25.4)	644 (25.4)	644 (25.4)	634 (25.0)	600 (23.6)

別口径のモデルもございます。お気軽にお問い合わせください。
The models having different diameters are also available.
Please feel free to send inquiry.

PRESSURE DROP



DEHUMIDIFYING PERFORMANCE (MEASUREMENT EXAMPLE)



- 供給ガス中のドレンや異物などを取除くために、供給ガス入口配管に濾過度5μm以下のフィルターを設置して下さい。
  To remove drainage, dust, etc., we recommend that a filter (filtering capacity of less than 5 μm) be installed at the inlet line of the supply gas. Dehumidifying efficiency may decrease if drainage is mixed into the inlet line. We therefore recommend that an automatic drain system be installed at the supply gas inlet.
- 給油式圧縮機ラインに使用する場合には、供給ガス入口配管に濾過度0.3μm以下 (95%捕集粒径) のオイルミスト分離器を設置し、オイルミスト濃度を1mgf/Nm³として下さい。
  When a sunsep™ unit is used for the line from a lubricating compressor, we recommend that an automatic oil mist separator be installed at the supply gas inlet line. The oil mist separator must have an oil filterability capability of less than 0.3 μm (95% collection capability of dust diameter) and should also have an oil mist concentration of less than 1 mgf/Nm³.
- 供給ガスは清浄なものとし、ゴミ、腐食性ガス、有機溶剤、化学薬品などが混入しないようにして下さい。
  The supply gas should be clean and free of dust, corrosive gas, organic solvents and chemicals.
- パージガス入口/出口に過度な圧力を加えないようにして下さい。(max.0.05MPa (Gauge))
  Excessive pressure should not be applied to the purging gas inlet and outlet (max.7.1 psig).
- パージガスを10 L/min (ANR)以下の少量で使用する場合には、ニードル弁よりも固定オリフィスを使用されることをお薦めします。
  For operation with a small amount of purging gas (not more than 0.35 scfm), we recommend that a small aperture be used instead of a needle valve.
- 減圧弁をご使用になる場合には除湿効率を高めるために、乾燥ガス出口側に設置することをお薦めします。
  When installing a pressure-reducing valve, we recommend that the valve be installed at the outlet line of dry gas, which will increase dehumidifying efficiency.

Flow Rate of Purging Gas

Pressure	MPa (Gauge) [psig]	0.3 [43]		0.5 [71]		0.7 [100]	
Model	Position	Purging Gas Flow Rate					
	No.	L/min (ANR)	scfm	L/min (ANR)	scfm	L/min (ANR)	scfm
SWB-10-150	-	80	2.82	120	4.24	150	5.65
SWB-17-200	-	136	4.80	203	7.17	270	9.53
SWC-M04-70/IP	-	1	0.04	1.5	0.05	2	0.07
SWC-M08-100	-	3	0.11	5	0.18	6	0.21
SWC-M08-100/H*1	-	1.5	0.05	2	0.07	3	0.11
SWC-M15-100	-	6	0.21	9	0.32	12	0.42
SWC-M15-100/H*1	-	3	0.11	5	0.18	6	0.21
SWC-01-150	1	3	0.11	5	0.18	6	0.21
	2	6	0.21	9	0.32	12	0.42
	3	12	0.42	19	0.67	25	0.88
SWC-02-250	1	12	0.42	19	0.67	25	0.88
	2	25	0.88	38	1.34	50	1.77
	3	37	1.31	56	1.98	75	2.65
SWC-03-250	1	25	0.88	38	1.34	50	1.77
	2	37	1.31	56	1.98	75	2.65
	3	63	2.22	94	3.32	125	4.41
SWC-03-250/H*1	1	12	0.42	19	0.67	25	0.88
	2	25	0.88	38	1.34	50	1.77
	3	37	1.31	56	1.98	75	2.65

*1 低パージ仕様です。Low purge type products.

NOTES

露点とは?

結露水が生じ始める温度のことで、ガスの乾燥度の尺度として、よく使用されます。露点が低いほど水蒸気含有量が少なく、乾燥度が高いことを意味します。

What Does "Dew Point" Mean?

Dew point is defined as the temperature at which air including water vapor begins to dew. The term is often used as an indicator of the degree of dryness of a wet gas. The lower the dew point, the less water vapor is included, which means a higher degree of dryness.

露点を下げるには?

サンセップ®を使用して乾燥ガスの乾燥度を上げる(露点を下げる)ためには、以下の方法があります。

- 供給ガス入口温度を下げる。(水蒸気負荷低減)
- 供給ガス圧力を上げる。
- 供給ガス流量(処理ガス流量)を下げる。
- 生成乾燥ガス流量を下げる。
- パージガス流量を上げる。

How Is the Dew Point Decreased?

Methods to lower the dew point, or increase the dryness of dehumidified air with the use of the sunsep™ module, are as follows:

- Lower the temperature of the supply gas at the inlet. (Reduce the load of water vapor against the module.)
- Increase the pressure of the supply gas.
- Lower the flow rate of the supply gas.
- Decrease the product dry gas flow rate.
- Increase the purging gas flow rate.

供給ガス流量が変動する場合のパージガス流量について

サンセップ®の特長として、膜素材に含水性があるので相当大きな負荷変動がある場合でも、その周期が比較的短い場合には除湿性能は平均化されます。

How Is the Purging Gas Flow Rate Decided for a Fluctuating Dehumidified Gas Flow?

The sunsep™ membrane has a specific characteristic of retaining water in its material, absorbing even large load fluctuations, and the average dehumidifying performance is given if the fluctuation cycle is comparatively short. The flow rate of purging gas can therefore be selected using the average load of the product gas flow rate.

クリーンな加湿用途について

サンセップ®に使用している膜素材は高い水蒸気(水分子)選択透過性をもっているため、他のガス成分の透過は殆どありません。
中空糸膜の内側と外側に水分濃度差が生じると、その濃度差を均等にしようとする力が発生します。
水分はこの発生した力をドライビングフォースとして、低い水分濃度の方へ膜を透過し移動します。
このように、サンセップ®はクリーン加湿器としてもお使い頂けます。
中空糸膜内外のガスや流体が異なる場合でも使用が可能です。

Use of Clean Humidification

The material used for the sunsep™ membrane has high selectivity and high permeability of water vapor (water molecules), so the permeation of other gases is virtually non existent.

When differences in moisture concentration between the inside and outside of a hollow fiber membrane arise, sunsep™ acts to make the concentrations uniform by transferring moisture through the membrane in the direction of the lower moisture concentration. Thus, sunsep™ modules can be used for clean humidification if required.

The modules are also applicable if different types of gas or liquid are used on both sides of the membrane.

APPLICATIONS

1 圧縮ガス除湿用途 Dehumidification of Compressed Air

圧縮ガスを供給するだけで簡単に除湿ができ、ドレントラブルを解決します。
sunsep™ solves drainage problems by simply supplying compressed air.

工作機械 Machine Tools	エアベアリング	Air Bearings
	レーザー加工機・放電加工機	Laser Machining Tools, Electrical Discharge Machining (EDM) Tools
精密測定器 Precision Measuring Tools	三次元測定器	Three-Dimensional Measuring Instruments
	エアマイクロメーター	Air Micrometers
ガス発生装置 Gas Generators	オゾン・水素・窒素・酸素	Ozone, Hydrogen, Nitrogen and Oxygen Gases
	乾燥空気	Dry Air
自動化機器 Automation Machines	包装・製紙・食品・印刷機械	Packing, Papermaking, Food Processing and Printing Machines
	半導体製造装置	Semiconductor Manufacturing
空圧機器 Pneumatic Components	シリンダ・バルブ・チャック・アクチュエータ	Cylinders, Valves, Chucks and Pneumatic Actuators
乾燥雰囲気 Dry Atmosphere	乾燥保管庫・制御盤	Dry Storage, Control Panels

2 各種分析計用途 Dehumidification of Sample Gas for Analyzers

測定対象成分を損失させることなく、様々なサンプルガスの除湿が可能です。
sunsep™ selectively removes humidity from various sample gases, without any loss of the measurement target in the gas.

サンプルガス Sample Gases	赤外線・紫外線吸収式ガス分析計	Infrared / Ultraviolet Absorption Type Gas Analyzers
	硫黄分析計	Sulfur Analyzers
	TOC計	TOC Analyzers
	呼気ガス分析計	Expired Gas Analyzers
	オゾンモニタ・各種ガス検知器	Ozone Monitors, Gas Detectors
支燃ガス・キャリアーガス Flammable / Carrier Gases	原子吸光	Atomic Absorption
	FIDガスクロマトグラフ	FID Gas Chromatographs
	炎光光度計	Flame Photometers

3 加湿用途 Humidity Adjustment

温度・湿度のコントロールが安全かつ簡便に行えます。
sunsep™ enables easy and safe gas conditioning.

燃料電池 Fuel Cells	アノードガス(水素)・カソードガス(空気)	Anode Gas (Hydrogen), Cathode Gas (Air)
医療用機器 Medical Equipment	医療用ガス発生装置	Medical Gas Generators
	酸素濃縮器	Oxygen Concentrators
製造 Manufacturing	製薬	Medicine Manufacturing
	製鉄	Iron Manufacturing

特別仕様・OEMも承りますので、ご相談下さい。
Please consult your distributor when special specifications and an OEM contract are required.