

Hollow Fiber Membrane Filter Type Air Dryer with Built-in Push-In Fitting **Fiber Dry Series**

188

CTUATOR

 Hollow Fiber Membrane Filter Type Drier which does not require power supply.

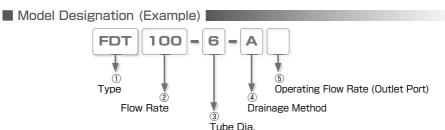
Connect in your pneumatic system as simple as a filter. Higher performance than a refrigeration air dryer.

Removed water is evacuated as a water vapor and Fiber Dry Series produce no drainage.

Purging flow is adjustable.

Push-In Fitting is equipped. Lightweight by a plastic body. Compact size is available in some of matel-made dryer.

Fiber Dry



1) Type

Code	Туре	Code	Туре	Code	Туре
FDT	Dryer and Filter Set	DMP	Dryer (Plastic Body)	DMM	Dryer (Metal Body)
DMB	Dryer (Union Straight)	DMF	Dryer (Flexible Type)	FFT	Filter

2 Flow Rate

Code	040	100	301	500
Flow Rate (#min(ANR))	40	100	300	500

③ Tube Dia.

	00
Tube Dia.(mm) Ø4 Ø6 Ø8 Ø10 Ø12 Ø16 No t	ube fitting

* When "00" is selected, thread port Rc1/4 is for 100 series and Rc3/8 is for 301 series.

④ Drainage Method(* Filter drain is selectable for FDT and FFT only.)

No Code : Manual Drain (Push type)

A : Auto Drain (Automatic drain type) (When internal pressure in the body is less than 0.05MPa, the auto drain function starts the operation)

(5) Operating Flow Rate (Outlet Port) (* DMM040 only)

- 1:16 *t*/min(ANR)
- 2:30 *t*/min(ANR)
- 3:40 *t*/min(ANR)

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Specifications

Fluid Medium	Air
Operating Pressure Range	Inside of hollow fiber $\stackrel{:}{_{_{_{_{}}}}}$ 0.3 \sim 0.85MPa
Operating Pressure hange	Outside of hollow fiber $\stackrel{:}{_{_{-}}}$ 0 \sim 0.05MPa
Fluid Medium Temp.	$0\sim40^\circ\!\!\mathbb{C}$ (No freezing)
Operating Temp. Range	$0 \sim 60^\circ \!\! \mathbb{C}$ (No freezing)

* When fluid medium other than air is used, contact us for details before using.

Basic Performance (For 100t/min(ANR))

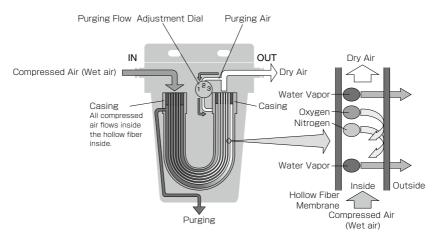
Pressure	0.7MPa	
Air Flow Rate	125	
Air Temp.	20°C	
Water Vapor Amount	Saturation	
Purge Rate	20% (purging circuit ÷ 3)	

Outlet Port Air

Air Flow Rate	100 t/min(ANR)		
Achieved Dew Point	-25 $^\circ\!\!\mathrm{C}$ or less (Atmospheric pressure)		

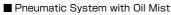
Mechanism of Dehumidification

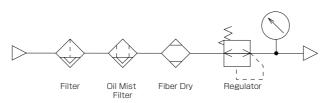
Only vapor in compressed air flows inside the hollow fiber films is discharged and purged to outside the system by the purging air (A part of dried air).



Fiber Dry

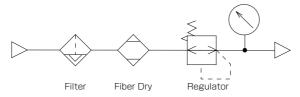
Piping Example





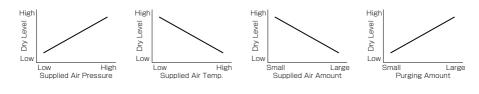
* Place a Dry Unit with Mist Filter for a pneumatic system containing oil mist.

Pneumatic System without Oil Mist

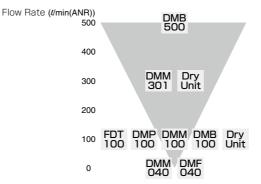


* Make sure to place a filter for a pneumatic system generating water drop.

Relation between Use Condition and Dry Level Refer to the following chart when you select Fiber Dry Series.



Classification by Flow Rate



▲ Detailed Safety Instructions

Before using PISCO products, be sure to read "Safety Instructions" and "Safety Instruction Manual" on page 17-21 and "Common Safety Instructions for Fiber Dry Series and Dry Unit Series" on page 171.

Caution

1. Be sure to turn Purging Flow Adjustment Dial to the correct direction as the marking on the body shows. Incorrect way can damage the product.

▲ Safety Rules for Use |

• Follow "Piping Example" to arrange a pneumatic system in order to maintain a stability and long life cycle of a Fiber Drier.

• Before piping, remove dust and pipe cutting powder inside.

• When a compressor is connected directly to Fiber Dry, make sure to place a Dryer and a Filter Set (Dryer Unit). (Or place a filter)

• Avoid using corrosive gas or organic solvent gas, and also do not use the product in the atmosphere of these asses.

• Do not apply an excessive pressure, temp. and impact to the product.

• Do not left dust, water, rust and oil, etc. enter the inside of the product.

• Use the product indoor in principal. Avoid exposing it to sunshine, rain or water.

Do not dismantled the product.

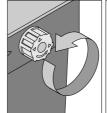
• At the start of each operation, please idle the dryer from 10 to 20 minutes prior to the actual operation.

Fiber Dry

SOLENOID Standard Size List Page to Tube O.D. 1 Tube O.D. 2(mm) Page to Tube O.D. 1 Tube O.D. 2(mm) Туре Туре refer (mm) 4 6 8 10 12 16 refer (mm) 4 6 8 10 12 16 FDT Dryer and Filter Set P.195 SMM Resin Body Drver P.197 4 6 . PREPALATION 6 301 Type 8 8 10 10 12 . DMP Resin Body Dryer P.195 16 . 4 DMM Resin Body Dryer P.197 100 Type 6 4 . 040 Type 6 8 10 . DME Union Straight Dryer P.198 4 . 100 Type FFT Filter P.196 6 . 4 . 6 . 8 8 10 • • 10 . DME Union Straight Dryer P.198 12 . Metal Body Dryer P.196 500 Type DME Flexible Type Dryer P.199 4 • 100 Type 6 4 . . 6 . 8 10 8

Adjustment Method of Purging Flow

- Purging Flow Adjustment Dial
 - When the amount of Purging Flow is large, turn the dial clockwise so that purging flow decreases. Turn the dial counterclockwise to increase the purging flow. But the temp. of dew point will be slightly up.
 - · Refer to Purging Flow Chart in order to select the best condition.
 - * Purging Adjustment is not available for DMM040.



FDT and DMP (Plastic Body)

DMM (Metal Body) DMB (Union Straight) DMF (Flexible Type)

How to insert and disconnect

1. How to insert and disconnect tubes

Tube installation

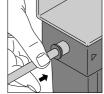
For Fiber Dry Series with built-in push-in fitting, insert a Push-In Fitting until it touches to the tube end which makes the lock-claws bite the tube to fix and the elastic sleeve seal around the tube.

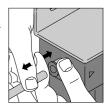
Refer to "2. Instructions for Tube Installation" under "Common Safety Instructions for Fittings" when installing a tube fitting.

2 Tube disconnection

The tube is disconnected by pushing the release-ring which releases the lockclaws.

Make sure to stop air supply before the tube disconnection.





2. How to fix Fiber Dry Series

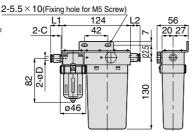
Tixing Fiber Dry Series

Fix M5 or M4 screws to bracket fixing holes which are equipped with Fiber Dry Series. (Refer to the dimensional drawings for the hole pitch and the screw size.)

Applicable Tube and Related Products Polyurethane Tube (Piping products catalog P.596) Nylon Tube (Piping products catalog P.608) ACTUATOR PLARAILCHAIN

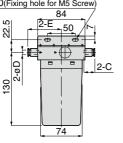
Fiber Dry

Example 1 Dryer and Filter Set 2-5.5 × 10(Fixing hole for M5 Screw) 2 - C2 - C



					0.1	
Model Code	Tube O.D. øD	L1	L2	С	Weight (g)	CAD file name
FDT100-4	4	0.5	9.5 6	11	443	CRFD-001
FDT100-4-A		9.0			445	CRFD-002
FDT100-6	6	12.5	.5 9	12	443	CRFD-001
FDT100-6-A		12.0			445	CRFD-002
FDT100-8	8	20.5	17	18.5	449	CRFD-001
FDT100-8-A		20.5 17	10.5	451	CRFD-002	
FDT100-10	10	25.5	22	21	459	CRFD-001
FDT100-10-A		20.0	22	21	461	CRFD-002

Resin Body Dryer



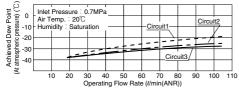


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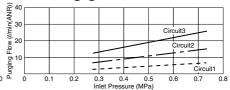
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In-line Filter

Dehumidifying Performance Chart(example)



FDT, DMP Purging Flow Chart



Unit∶mm

CAD

132 CRFD-004

132 CRFD-004

134 CRFD-005

145 CRFD-004

147 CRFD-005

164 CRFD-004

166 CRFD-005

134 CRFD-005

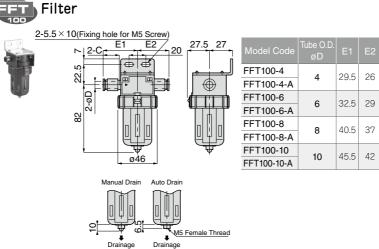
11

12

18.5

21

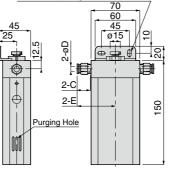
CAD Unit : mm





DMM Metal Body Dryer

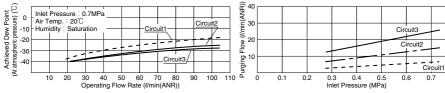




2-5.5 × 10(Fixing hole for M5 Screw)

Model Code	øD	С		(g)	file name
DMM100-4	4	15	50	442	
DMM100-6	6	17	53.5	444	
DMM100-8	8	18.5	55.5	440	CRFD-006
DMM100-10	10	21	59	450	
DMM100-00	-	-	-	410	

Dehumidifying Performance Chart (example) **Purging Flow Chart**



ARATION

CAD

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0.7 0.8

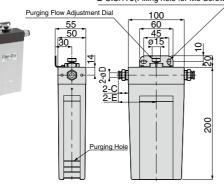


Fiber Dry

DMM Resin Body Dryer PREPALATION VALVE 301. 2-5.5×10(Fixing hole for M5 Screw)

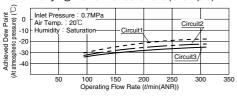
CAD Unit : mm

CAD Linit ' mm

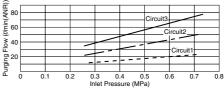


7					
Model Code	Tube O.D. øD	С	E	Weight (g)	CAD file name
DMM301-6	6	17	67	807	
DMM301-8	8	18	67.5	799	
DMM301-10	10	20	73	805	CRFD-007
DMM301-12	12	23.5	75.5	824	CRED-007
DMM301-16	16	25	83	872	
DMM301-00	-	-	-	753	
					1

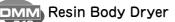
Dehumidifying Performance Chart (example)

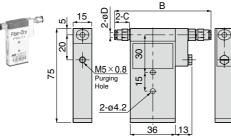


Purging Flow Chart



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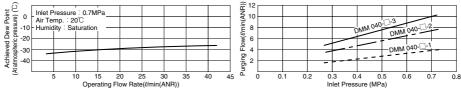


				01	nt - mini
Model Code	Tube O.D. øD		С	Weight (g)	CAD file name
DMM040-4-	4	77.5	11	65	CRFD-008
DMM040-6-	6	80.5	11.5	68	
* Duraina Flow Adjustment is not evailable for DMM040					

Purging Flow Adjustment is not available for DMM040. Refer to the following table to select the best item.

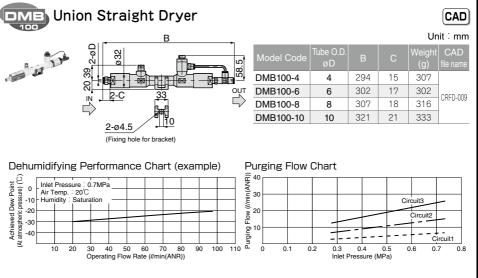
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Code	Operating Flow Rate (Outlet Port)
1	16t/min(ANR)
2	30t/min(ANR)
3	40ℓ/min(ANR)

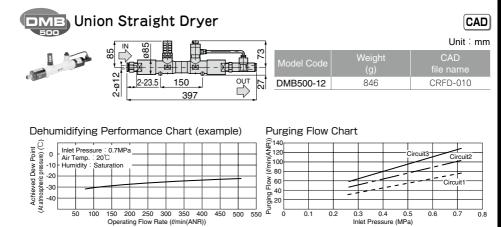




Purging Flow Chart



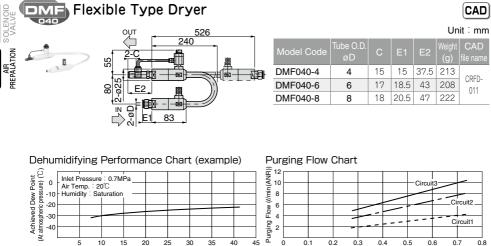




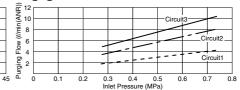
NTION ACTUATOR PLARAILCHAIN ROBOT PAR



Fiber Dry







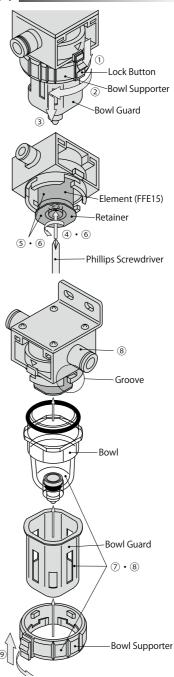


Filter Element Replacement of FDT and FFT

- Confirm the air pressure inside of Fiber Dry is released.
- ② Push down the red lock button to the arrowed direction.
- ③ Turn the bowl supporter left and pull it down. (Detach the bowl guard from the bowl supporter)
- 4 Take out the bowl.
- (5) Remove a screw at the bottom of the retainer with a Phillips screwdriver.
- ⑥ Detach the retainer from the element. Place a new element, attach the retainer and tighten them with the screw. (Recommended Torque Force: 0.3 to 0.5Nm)
- Place the bowl guard first and then the bowl in the bowl supporter.
- ⑧ Meet the position of the lock button and the groove on the Fiber Dry body and push up the bowl supporter until there is no space between the supporter and the body part. Turn the supporter right until the lock button comes to the proper position.
- I Push the lock button up in order to lock the bowl supporter.

Caution

Apply grease to O-ring when replacing an element.



Fiber Dry

▲ SAFETY Instructions

This safety instructions aim to prevent personal injury and damage to properties by requiring proper use of PISCO products.

Be certain to follow ISO 4414 and JIS B 8370

ISO 4414 : Pneumatic fluid power…Recomendations for the application of equipment to transmission and control systems.

JIS B $8370\ensuremath{\,\overset{\scriptstyle <}{\scriptstyle}}$ General rules and safety requirements for systems and their components.

This safety instructions is classified into "Danger", "Warning" and "Caution" depending on the degree of danger or damages caused by improper use of PISCO products.

Danger Hazardous conditions. It can cause death or serious personal injury.

Warning Hazardous conditions depending on usages. Improper use of PISCO products can cause death or serious personal injury.

Azardous conditions depending on usages. Improper use of PISCO products can cause personal injury or damages to properties.

\land Warning 🛛

1. Selection of pneumatic products

- ① A user who is a pneumatic system designer or has sufficient experience and technical expertise should select PISCO products.
- ② Due to wide variety of operating conditions and applications for PISCO products, carry out the analysis and evaluation on PISCO products. The pneumatic system designer is solely responsible for assuring that the user's requirements are met and that the application presents no health or safety hazards. All designers are required to fully understand the specifications of PISCO products and constitute all systems based on the latest catalog or information, considering any malfunctions.
- 2. Handle the pneumatic equipment with enough knowledge and experience
 - Improper use of compressed air is dangerous. Assembly, operation and maintenance of machines using pneumatic equipment should be conducted by a person with enough knowledge and experience.
- 3. Do not operate machine / equipment or remove pneumatic equipment until safety is confirmed.
 - Make sure that preventive measures against falling work-pieces or sudden movements of machine are completed before inspection or maintenance of these machine.
 - ② Make sure the above preventive measures are completed. A compressed air supply and the power supply to the machine must be off, and also the compressed air in the systems must be exhausted.
 - ③ Restart the machines with care after ensuring to take all preventive measures against sudden movements.



Disclaimer 🔳

- PISCO does not take any responsibility for any incidental or indirect loss, such as production line stop, interruption of business, loss of benefits, personal injury, etc., caused by any failure on use or application of PISCO products.
- PISCO does not take any responsibility for any loss caused by natural disasters, fires not related to PISCO products, acts by third parties, and intentional or accidental damages of PISCO products due to incorrect usage.
- 3. PISCO does not take any responsibility for any loss caused by improper usage of PISCO products such as exceeding the specification limit or not following the usage the published instructions and catalog allow.
- PISCO does not take any responsibility for any loss caused by remodeling of PISCO products, or by combinational use with non-PISCO products and other software systems.
- 5. The damages caused by the defect of Pisco products shall be covered but limited to the full amount of the PISCO products paid by the customer.

▲ SAFETY INSTRUCTION MANUAL

PISCO products are designed and manufactured for use in general industrial machines. Be sure to read and follow the instructions below.

\land Danger 🗖

- 1. Do not use PISCO products for the following applications.
 - ① Equipment used for maintaining / handling human life and body.
 - 2 Equipment used for moving / transporting human.
 - 3 Equipment specifically used for safety purposes.

▲ Warning |

- 1. Do not use PISCO products under the following conditions.
 - Beyond the specifications or conditions stated in the catalog, or the instructions.
 - ② Under the direct sunlight or outdoors.
 - ③ Excessive vibrations and impacts.
 - ④ Exposure / adhere to corrosive gas, inflammable gas, chemicals, seawater, water and vapor. *
 * Some products can be used under the condition above(④), refer to the details of specification and condition of each product.
- 2. Do not disassemble or modify PISCO products, which affect the performance, function, and basic structure of the product.
- 3. Turn off the power supply, stop the air supply to PISCO products, and make sure there is no residual air pressure in the pipes before maintenance and inspection.
- 4. Do not touch the release-ring of push-in fitting when there is a working pressure. The lock may be released by the physical contact, and tube may fly out or slip out.
- 5. Frequent switchover of compressed air may generate heat, and there is a risk of causing burn injury.
- 6. Avoid any load on PISCO products, such as a tensile strength, twisting and bending. Otherwise, there is a risk of causing damage to the products.
- 7. As for applications where threads or tubes swing / rotate, use Rotary Joints, High Rotary Joints or Multi-Circuit Rotary Block only. The other PISCO products can be damaged in these applications.
- 8. Use only Die Temperature Control Fitting Series, Tube Fitting Stainless SUS316 Series, Tube Fitting Stainless SUS316 Compression Fitting Series or Tube Fitting Brass Series under the condition of over 60°C (140° F) water or thermal oil. Other PISCO products can be damaged by heat and hydrolysis under the condition above.
- 9. As for the condition required to dissipate static electricity or provide an antistatic performance, use EG series fitting and antistatic products only, and do not use other PISCO products. There is a risk that static electricity can cause system defects or failures.
- 10. Use only Fittings with a characteristic of spatter-proof such as Antispatter or Brass series in a place where flame and weld spatter is produced. There is a risk of causing fire by sparks.
- 11. Turn off the power supply to PISCO products, and make sure there is no residual air pressure in the pipes and equipment before maintenance. Follow the instructions below in order to ensure safety.
 - Make sure the safety of all systems related to PISCO products before maintenance.
 - ② Restart of operation after maintenance shall be proceeded with care after ensuring safety of the system by preventive measures against unexpected movements of machines and devices where pneumatic equipment is used.
 - ③ Keep enough space for maintenance when designing a circuit.
- 12. Take safety measures such as providing a protection cover if there is a risk of causing damages or fires on machine / facilities by a fluid leakage.



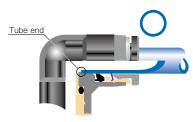
▲ Caution

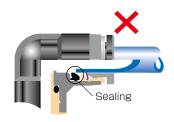
- 1. Remove dusts or drain before piping. They may get into the peripheral machine / facilities and cause malfunction.
- 2. When inserting an ultra-soft tube into push-in fitting, make sure to place an Insert Ring into the tube edge. There is a risk of causing the escape of tube and a fluid leakage without using an Insert Ring.
- 3. The product incorporating NBR as seal rubber material has a risk of malfunction caused by ozone crack. Ozone exists in high concentrations in static elimination air, clean-room, and near the high-voltage motors, etc. As a countermeasure, material change from NBR to HNBR or FKM is necessary. Consult with PISCO for more information.
- 4. Special option "Oil-free" products may cause a very small amount of a fluid leakage. When a fluid medium is liquid or the products are required to be used in harsh environments, contact us for further information.
- 5. In case of using non-PISCO brand tubes, make sure the tolerance of the outer tube diameter is within the limits of Table 1.

• • • • • • • • • • • • • • • • • • • •							
mm size	Nylon tube	Polyurethane tube	inch size	Nylon tube	Polyurethane tube		
Ø1.8mm	_	\pm 0.05mm	Ø1/8	\pm 0.1mm	\pm 0.15mm		
ø3mm	—	\pm 0.15mm	Ø5/32	\pm 0.1mm	\pm 0.15mm		
Ø4mm	\pm 0.1mm	\pm 0.15mm	Ø3/16	\pm 0.1mm	\pm 0.15mm		
Ø6mm	\pm 0.1mm	\pm 0.15mm	Ø1/4	\pm 0.1mm	± 0.15mm		
Ø8mm	\pm 0.1mm	\pm 0.15mm	Ø5/16	\pm 0.1mm	\pm 0.15mm		
Ø10mm	± 0.1mm	\pm 0.15mm	Ø3/8	\pm 0.1mm	\pm 0.15mm		
Ø12mm	\pm 0.1mm	± 0.15mm	Ø1/2	\pm 0.1mm	± 0.15mm		
Ø16mm	± 0.1mm	\pm 0.15mm	Ø5/8	\pm 0.1mm	± 0.15mm		

• Table 1. Tube O.D. Tolerance

- 6. Instructions for Tube Insertion
 - ① Make sure that the cut end surface of the tube is at right angle without a scratch on the surface and deformations.
 - ② When inserting a tube, the tube needs to be inserted fully into the pushin fitting until the tubing edge touches the tube end of the fitting as shown in the figure below. Otherwise, there is a risk of leakage.





Tube is not fully inserted up to tube end.

- ③ After inserting the tube, make sure it is inserted properly and not to be disconnected by pulling it moderately.
- **. When inserting tubes, Lock-claws may be hardly visible in the hole, observed from the front face of the release-ring. But it does not mean the tube will surely escape. Major causes of the tube escape are the followings;

①Shear drop of the lock-claws edge

② The problem of tube diameter (usually small)

Therefore, follow the above instructions from to , even lock-claws is hardly visible.

- 7. Instructions for Tube Disconnection
 - ① Make sure there is no air pressure inside of the tube, before disconnecting it.
 - ② Push the release-ring of the push-in fitting evenly and deeply enough to pull out the tube toward oneself. By insufficient pushing of the releasering, the tube may not be pulled out or damaged by scratch, and tube shavings may remain inside of the fitting, which may cause the leakage later.
- 8. Instructions for Installing a fitting
 - ① When installing a fitting, use proper tools to tighten a hexagonal-column or an inner hexagonal socket. When inserting a hex key into the inner hexagonal socket of the fitting, be careful so that the tool does not touch lock-claws. The deformation of lock-claws may result in a poor performance of systems or an escape of the tube.
 - ② Refer to Table 2 which shows the recommended tightening torque. Do not exceed these limits to tighten a thread. Excessive tightening may break the thread part or deform the gasket and cause a fluid leakage. Tightening thread with tightening torque lower than these limits may cause a loosened thread or a fluid leakage.
 - ③ Adjust the tube direction while tightening thread within these limits, since some PISCO products are not rotatable after the installation.
 - Table 2: Recommended tightening torque / Sealock color / Gasket materials

Thread type	Thread size	Tightening torque	Sealock color	Gasket materials	
Metric thread	M3 imes 0.5	0.7N [.] m		SUS304 NBR	
	M5 imes 0.8	1.0 ~ 1.5N [.] m			
	M6 imes 1	2 ~ 2.7N [.] m		NDN	
	M3 imes 0.5	0.5 ~ 0.6N [.] m			
	M5 imes 0.8	1 ~ 1.5N [.] m		РОМ	
	M6 imes 0.75	0.8 ~ 1N [.] m		POM	
	$M8 \times 0.75$	1 ~ 2N·m			
Taper pipe thread	R1/8	7 ~ 9N∙m			
	R1/4	12 ~ 14N·m White			
	R3/8	22 ~ 24N∙m	winte		
	R1/2	28 ~ 30N∙m			
Unified thread	No.10-32UNF	1.0 ~ 1.5N [.] m	—	SUS304、NBR	
National pipe thread taper	1/16-27NPT	(16-27NPT 7 ~ 9N·m			
	1/8-27NPT	7 ~ 9N∙m		—	
	1/4-18NPT	12 ~ 14N m	White		
ineau iapei	3/8-18NPT	22 ~ 24N∙m	22 ~ 24N·m		
	1/2-14NPT	28 ~ 30N·m			

- 9. Instructions for removing a fitting
 - ① When removing a fitting, use proper tools to loosen a hexagonal-column or an inner hex bolt.
 - ② Remove the sealant stuck on the mating equipment. The remained sealant may get into the peripheral equipment and cause malfunctions.
- 10. Arrange piping avoiding any load on fittings and tubes such as twist, tensile, moment load, shaking and physical impact. These may cause damages to fittings, tube deformations, bursting and the escape of tubes.

Common Safety Instructions for Fiber Dry Series and Dry Unit Series

Before selecting or using PISCO products, read the following instructions. Read the detailed instructions for individual series.

\land Warning

- 1. When installing the dryer, provide adequate support and fix it securely. Looseness or dropping off of the dryer may cause injuries.
- 2. Do not use the dryer without the explosion-proof casing (bowl guard). If the bowl breaks, the pieces may fly apart to cause injuries.
- 3. Make sure to set the lock lever on the filter, mist filter and micromist filter to "lock" before using. Otherwise, there is a risk of Bowl Guard or Bowl coming off which may cause injuries.
- 4. When conducting the maintenance, checkup, or replacement of the product, make sure to turn off the power and shut off the air supply. Confirm the residual pressure in the piping becomes zero before maintenance or replacement of expendables.
- 5. Do not use the dryer in a fluid or atmosphere containing corrosive gas or organic solvent gas. Such a use may deteriorate the dryer body which causes leakage or damage.

▲ Caution |

- 1. Air Filter and Micromist Filter shall be installed downward in a vertical direction. Improper installation may cause faulty draining.
- Drain in Air Filter, Mist Filter and Micromist Filter are discharged automatically at the air pressure less than 0.05MPa for the manual drain type and 0.15MPa for the auto drain type. When installing, consider the self-discharging of air and drain.
- 3. The dryer requires 10 to 20 minutes of initial drying operation (idling) before it reaches the designated performance.
- 4. When the manual drain type is selected, discharge drain before it reaches to the "MAX. DRAIN LEVEL". Otherwise, it may become the cause which the drain flows into a secondary side.
- 5. Do not operate Fiber Dry with Purging Flow Adjustment Dial "Zero". It may impair the dehumidification performance. Refer to the performance data in this calalog for the details of the dehumidification.
- 6. Check the IN side of air supply by the ▷mark. Wrong piping may impair the performance.
- 7. Do not apply back pressure to the purge hole. It may impair the performance.

