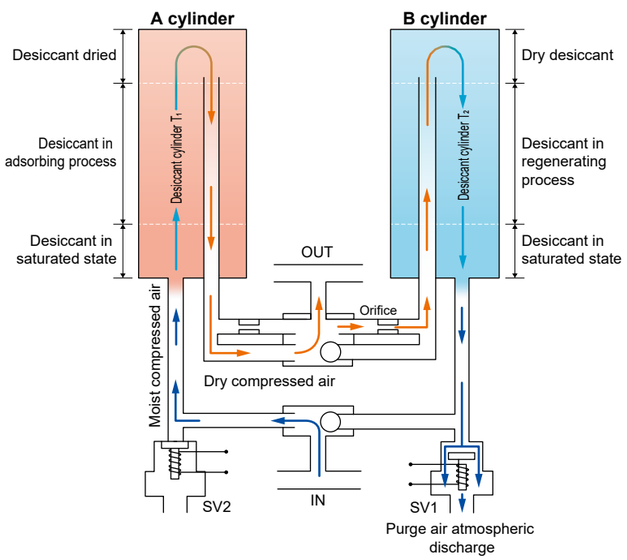
Desiccant Air Dryer (Heatless Dryer) HD Series (0.4 to 15kw)

A compact, self-regenerating heatless dryer that provides a stable, low dew point. This compact type can be installed at the end of a factory line or near equipment.

Suction Principle

The drying device supplies dry air by alternately repeating an adsorption step of having two cylinders and the desiccant adsorbing water vapor from the air, and a regeneration step of releasing the moisture from the desiccant by the dry air. Ultra-low dew point -60 to -72°C (at atmospheric pressure).



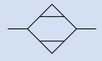
MEMO

Desiccant Air Dryer (Compact Heatless Dryer)

HD Series

Stable supply of ultra-dry air with atmospheric dew point -72°C.

●Processing air flow rate: 75 to 1235 L/min (ANR) (0.7 MPa, atmospheric dew point -72°C)

Circuit Diagram Symbol 

RoHS

Model No. Notation

HD - 0.5 - ( ) - AC100V

Model No. / ❶Flow Rate Category / ❷Option / ❸Voltage

*1: For lubrication compressors, mount an oil removal filter (oil mist filter) on the inlet side of the heatless dryer. Attach a filter with a filtration rating that suits the usage purpose on the OUT side.
*2: As the heatless dryer is equipped with a dew point monitoring device (moisture indicator), it is possible to check the drying status.
*3: Unit performance may not be attained if used at less than the selected pressure. Always select the model No. for the working pressure.

❶Flow Rate Category

Code	Description
0.5	0.5
1	1
1.5	1.5
2.	2.
4	4
6	6
9	9

❷Option

Code	Description
Blank	Standard
G	Voltage designation
H	English Language Specifications
H2	Stainless steel nameplate
Y2	Product Photo

Note: When ordering several options, indicate the required options in alphabetical order.

❸Voltage

Code	Description
AC100V	100 VAC
AC200V	200 VAC

Specifications

Item		HD-0.5	HD-1	HD-1.5	HD-2	HD-4	HD-6	HD-9
Port size	Rc	3/8						3/4
Inlet air pressure range	MPa	0.2 to 1.0						
Inlet air temperature range	°C	5 to 52						
Ambient temperature	°C	−1 to 52						
Regenerating system		Self-regeneration non-heating system						
RegenerationCycle		1 minute (0.5-minute switch)					4 minute (2-minute switch)	
Power supply	V	Single-phase 100 VAC, 200 VAC 50/60 Hz						
Power consumption	W	26						52
Desiccant		Synthetic zeolite						
Weight	kg	6.5	7.0	7.5	9.5	11.5	21.5	42.5
Desiccant cylinder No.		15-8771	15-8772	15-8773	15-8774	15-8775	F3-505026	F3-505026
Desiccant filling No.		15-8771-D	15-8772-D	15-8773-D	15-8774-D	15-8775-D	F3-505026-D	F3-505026-D
For dew point monitoringIndicator		Standard Equipment						
Silencer		Standard Equipment						

*1: In cases when the fluid contains oil, attach an oil removing filter (oil mist filter) on the inlet side. Attach a filter (5μm, 0.3μm, oil mist filter) with a filtration rating that suits the usage purpose on the OUT side.
*2: There are two IN and two OUT ports on each side, so blank plug the unused ports.
*3: The standard paint color is Quality Cool White (Munsell No.5GY7.5/0.5).
*4: For applications for use within clean rooms, consult with your CKD branch or dealer.

When placing an order

●The heatless dryer is adjusted to the required atmospheric dew point, flow rate, etc., at shipment. Always indicate the Items on the right when placing an order.

●Model No. ____
●Required outlet flow rate ____ L/min (ANR)
●Required atmospheric dew point ____ °C
●Inlet air pressure ____ MPa
●Inlet air temperature ____ °C

Selection Guide

●Reading the max. flow rate table
Two numbers are listed in each box in the max. flow rate table. The number on the top indicates the inlet air flow rate necessary to dry the flow rate listed on the bottom. The number on the bottom indicates the max. outlet flow rate of the dry air. The difference between the number on the top and the number on the bottom is the purge flow rate necessary for regenerative drying.

Max. flow rate table

Unit: L/min (ANR)

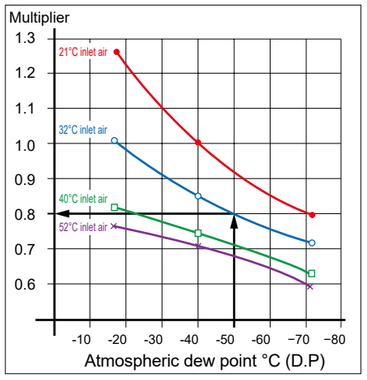
Model No.		Atmospheric dew point -17.5°C							Atmospheric dew point -40°C							Atmospheric dew point -72°C						
		HD-0.5	HD-1	HD-1.5	HD-2	HD-4	HD-6	HD-9	HD-0.5	HD-1	HD-1.5	HD-2	HD-4	HD-6	HD-9	HD-0.5	HD-1	HD-1.5	HD-2	HD-4	HD-6	HD-9
Inlet air pressure (MPa)	1.0	165	325	445	665	1,225	1,870	3,000	130	255	335	500	935	1,405	2,150	105	210	290	435	735	1,105	1,685
		145	280	380	570	1,085	1,645	2,605	110	210	270	405	795	1,180	1,830	85	165	225	340	595	880	1,345
	0.9	150	300	405	615	1,120	1,710	2,740	115	235	310	460	855	1,285	1,970	95	195	265	400	670	1,010	1,540
		130	255	340	520	980	1,485	2,345	95	190	245	365	715	1,060	1,650	75	150	200	305	530	785	1,200
	0.8	135	270	370	555	1,015	1,545	2,475	105	215	280	415	775	1,160	1,780	85	175	240	360	610	910	1,390
		115	225	305	460	875	1,320	2,080	85	170	215	320	635	935	1,460	65	130	175	265	470	685	1,050
	0.7	120	240	325	490	890	1,370	2,195	95	190	245	370	685	1,030	1,575	75	155	215	320	540	810	1,235
		100	195	260	395	750	1,145	1,800	75	145	180	275	545	805	1,255	55	110	150	225	400	585	895
	0.6	105	210	285	430	785	1,195	1,915	80	165	215	320	600	900	1,375	65	135	185	280	470	705	1,075
		85	165	220	335	645	970	1,520	60	120	150	225	460	675	1,055	45	90	120	185	330	480	735
	0.5	90	180	245	370	675	1,030	1,650	70	140	185	280	515	775	1,185	55	115	160	240	405	610	930
		70	135	180	275	535	805	1,255	50	95	120	185	375	550	865	35	70	95	145	265	385	590
	0.4	75	150	205	305	560	855	1,370	60	120	155	230	430	640	985	45	95	135	200	335	505	770
		55	105	140	210	420	630	975	40	75	90	135	290	415	665	25	50	70	105	195	280	430
	0.3	60	120	165	245	450	690	1,105	45	95	125	185	345	520	795	40	80	105	160	270	405	620
		40	75	100	150	310	465	710	25	50	60	90	205	295	475	20	35	40	65	130	180	280
	0.2	45	90	125	185	340	515	825	35	70	95	140	260	385	595	30	60	80	120	205	305	465
		25	45	60	90	200	290	430	15	25	30	45	120	160	275	10	15	15	25	65	80	125

Note: The above flow rate table is for conditions of an inlet air temperature of 21°C and an atmospheric dew point of -17.5°C, -40°C, and -72°C.

STEP 1 Confirm the working conditions and the rated values listed in the specifications.
Working Conditions: Inlet air pressure, inlet air temperature, required atmospheric dew point
If the conditions in the max. flow rate table are satisfied, read the flow rate in the table.

STEP 2 Check the correction factor for inlet air flow rate affected by inlet air temperature and atmospheric dew point.

(1) Temperature/dew point - flow rate correction factor



STEP 3 Find the inlet air flow rate from the rated inlet air flow rate of each model.

Inlet air flow rate at -40°C in the maximum flow table × (1) Temperature/dew point flow rate correction factor
= Corrected inlet air flow rate

STEP 4 **Find the outlet air flow rate from the purge flow rate and inlet air flow rate of each model.**

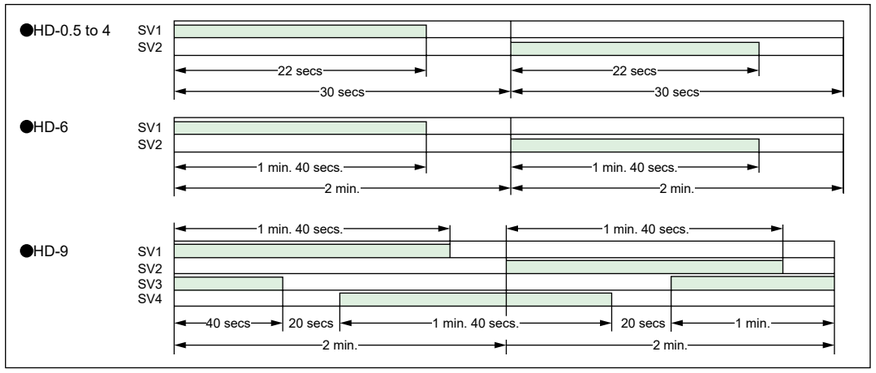
Difference between inlet air flow rate at -40°C and outlet air flow rate at -40°C in the max. flow table = Purge flow rate
Inlet air flow rate corrected by STEP 3 - Purge flow rate = Outlet air flow rate

Example of calculation

Conditions	Working Conditions	Selecting Conditions	Inlet flow rate Compensation coefficient
Inlet air pressure	0.5 to 0.55 MPa	0.5 MPa	-
Inlet air temperature	35 to 40 °C	40°C	0.75
Outlet atmospheric dew point	−40°C	−40°C	

Substitute the above conditions into the equation above to obtain the outlet air flow rate when using the HD-6.
Inlet air flow rate is 775 × 0.75 = 581 L/min (ANR)
Purge flow rate is 775 - 550 = 225 L/min (ANR)
In this case, the outlet air flow rate is 581 - 225 = 356 L/min (ANR).

Time Chart



*The number of seconds indicates the time of 60 Hz. When used at 50 Hz, it is about 1.2 times higher.

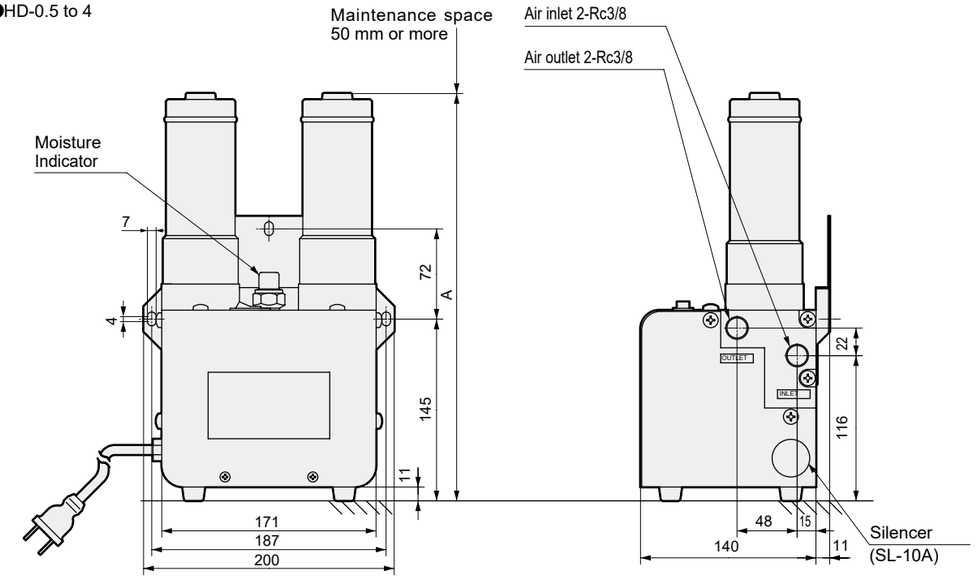
When a heatless dryer is installed

●When starting up a trial run after installation of the unit, flow at a rate of about 10 to 20% of the flow rate used and run for the following time.

Atmospheric dew point (°C)	-17.5	-40	-72
Time (h)	2.	6	72

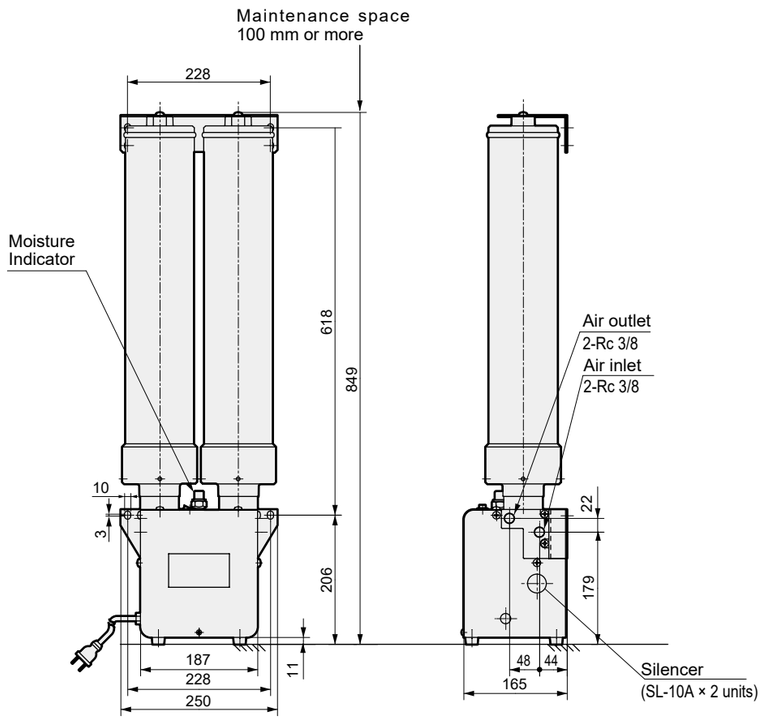
Dimensions

●HD-0.5 to 4



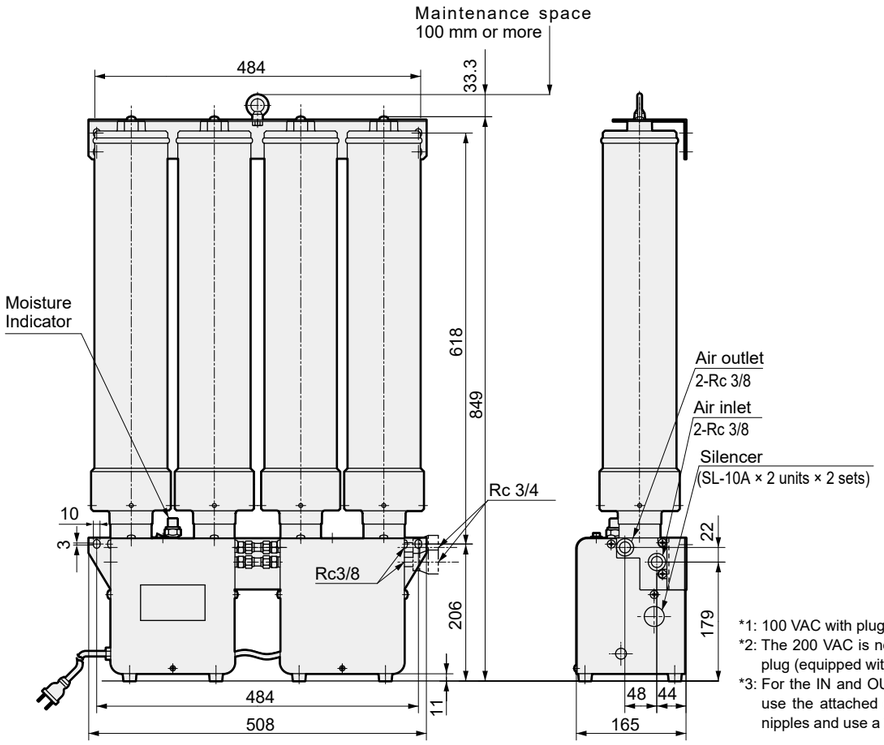
Model No.	Dimension A
HD-0.5	325
HD-1	440
HD-1.5	485
HD-2	467
HD-4	689

●HD-6



Dimensions

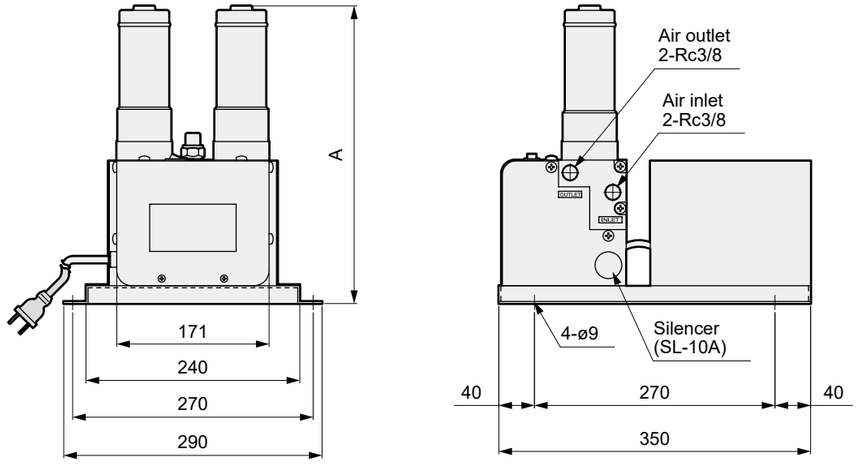
●HD-9



*1: 100 VAC with plug-in type plug (2.3 m)
*2: The 200 VAC is not equipped with a plug-in type plug (equipped with a cable 2.3m long)
*3: For the IN and OUT piping connections of HD-9, use the attached different diameter sockets and nipples and use a 3/4B connection bore.

●Voltage specification option

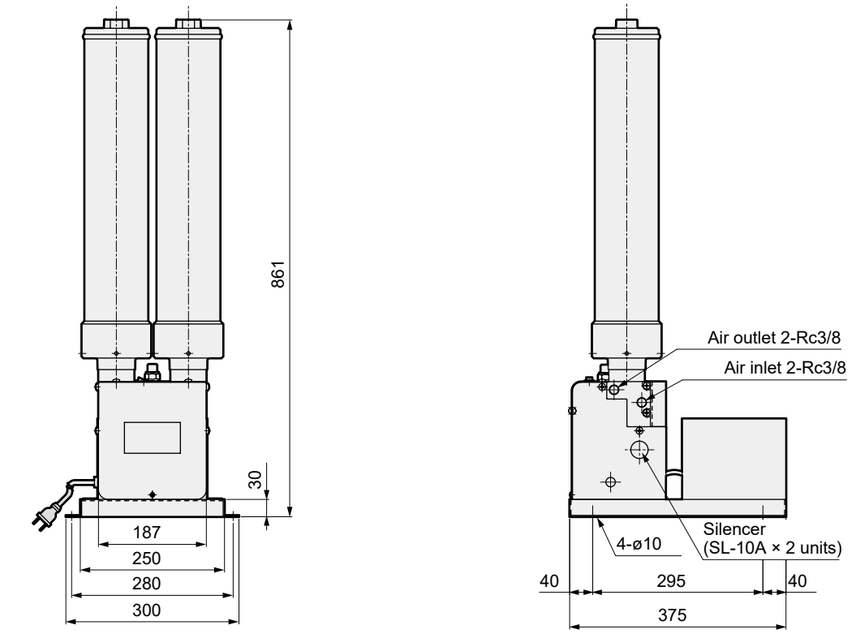
HD-0.5 to 4-G



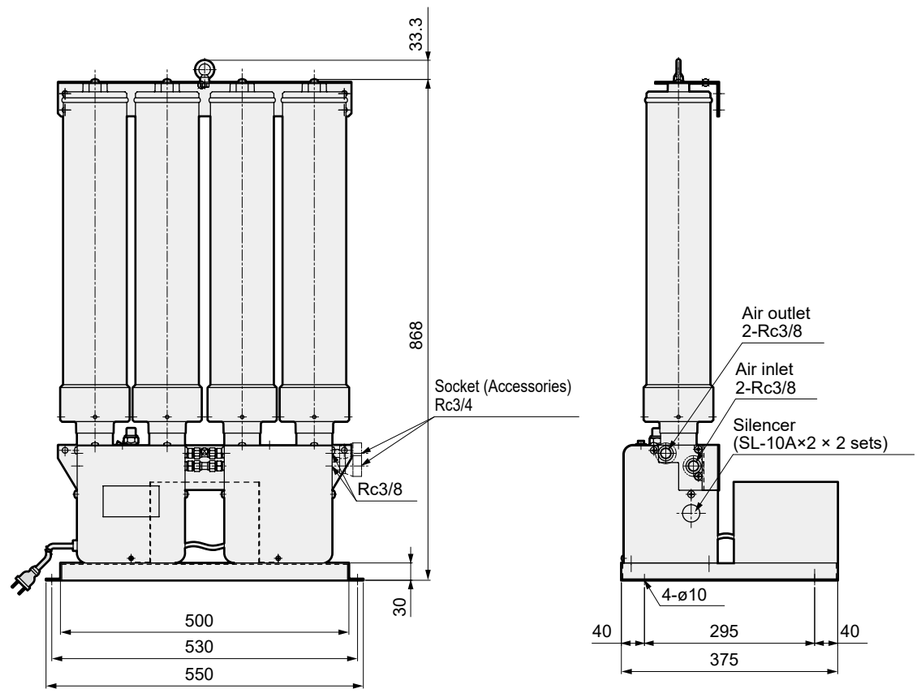
Model No.	Dimension A
HD-0.5	334
HD-1	449
HD-1.5	494
HD-2	476
HD-4	698

Dimensions

●HD-6-G



●HD-9-G



For maintenance parts, refer to the CKD Components Product site
Refer to (https://www.ckd.co.jp/kiki/en/)→ "Model No." →Maintenance Parts

Safety Precautions

Be sure to read this section before use.
For general precautions for pneumatic equipment, please refer to Intro 15.

Product-specific cautions: Heatless dryer HD Series

Manufacturer's Disclaimer

⚠WARNING

■The manufacturer cannot be held liable in the following Items:
- In the case where there are serious errors in the operator's use.
- Illegal modifications or repairs using non-standard parts by user.

Design / Selection

⚠WARNING

■Avoid direct sunlight and rain water.Resin parts may deteriorate and break.

■Do not use in locations with corrosive gases.

■Use this product within the range of the working temperature.

■Do not use the product where it could freeze.
There is a risk of damage to the product due to freezing of condensation water, etc. that have accumulated inside the product.

■Do not use in hazardous locations (e.g., potentially explosive atmospheres).

■Do not use this product in an ozone generating environment.

■We recommend keeping the inlet air temperature as low as possible.Adsorption performance of desiccants will be lower at high temperatures.

■Do not use when the inlet air contains corrosive gas, chemical solutions, organic solvents, or combustible gas.

■Carefully prevent water drops from entering inside.

For precautions regarding Installation and Adjustment, Use and Maintenance, refer to CKD Components Product website (https://www.ckd.co.jp/kiki/en/) → "Model No. →Instruction Manual

MEMO