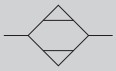


Desiccant air dryer (compact heatless dryer)

# 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)

JIS symbol 

RoHS CAD

## Specifications

| Descriptions | 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 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 monitorIndicator | 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. Filter with Degree of filtration that suits the OUT side (5 µm, 0.3 µm, oil mist filter).
*2: As the IN port and OUT port are provided at 2 locations each to the right and left, use a blanking plug with any port that will not be used.
*3: The standard paint color is quality cool white (Munsell No. 5 GY 7.5/0.5).
*4: For applications for use within clean rooms, consult with your CKD branch or dealer.

## How to order

HD - ○ - ○ - AC100V

Ⓐ Flow rate classification

| Code | Item |
|---|---|
| **Ⓐ Flow rate classification** | |
| 0.5 | |
| 1 | |
| 1.5 | |
| 2 | |
| 4 | |
| 6 | |
| 9 | |

Ⓑ Option *4

| | |
|---|---|
| **Ⓑ Option** | |
| **Blank** | Standard |
| **G** | Voltage specification |
| **H** | English language specifications |
| **H2** | Stainless steel nameplate |
| **Y2** | Product photo |

Ⓒ Voltage

| |
|---|
| **Ⓒ Voltage** |
| **AC100V** |
| **AC200V** |

## When placing an order

● The heatless dryer is adjusted to the required atmospheric dew point, flow rate, etc., at shipment. Always indicate the following items 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

## ⚠ Precautions for model No. selection

*1: For lubrication compressors, attach 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 air 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.
*4: When ordering several options, indicate the required options in alphabetical order.

## 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 regeneration 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 |

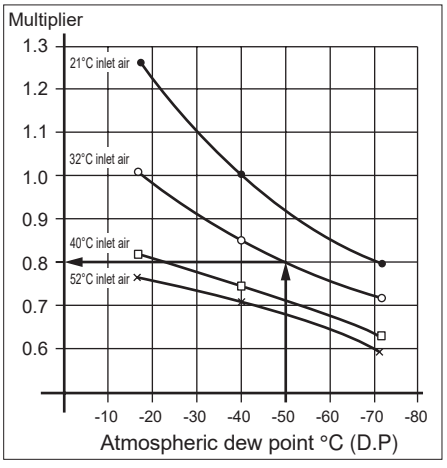
● Selection method

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. When conditions differ, determine the specifications by using the multiplier table below left.

Inlet air flow rate = (Inlet air flow rate listed in the max. flow rate table when the atmospheric dew point is -40°C) x multiplier

Purge flow rate = (Inlet air flow rate listed in the max. flow rate table when the atmospheric dew point is -40°C) - (Outlet air flow rate listed in the max. flow rate table when the atmospheric dew point is -40°C)

Outlet air flow rate = (Inlet air flow rate) - (Purge flow rate)



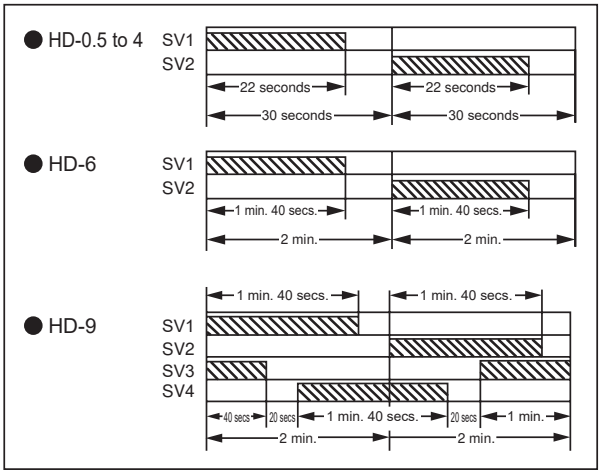

(Example) When pressure is 0.9 MPa, atmospheric dew point is -50°C, and inlet air temperature is 32°C, the inlet air flow rate, purge flow rate, and outlet air flow rate of HD-4 are,

Inlet air flow rate = 855 × 0.8 ≈ 684 ℓ/min

Purge flow rate = 855 - 715 = 140 ℓ/min

Outlet air flow rate = 684 - 140 = 544 ℓ/min

## Time chart



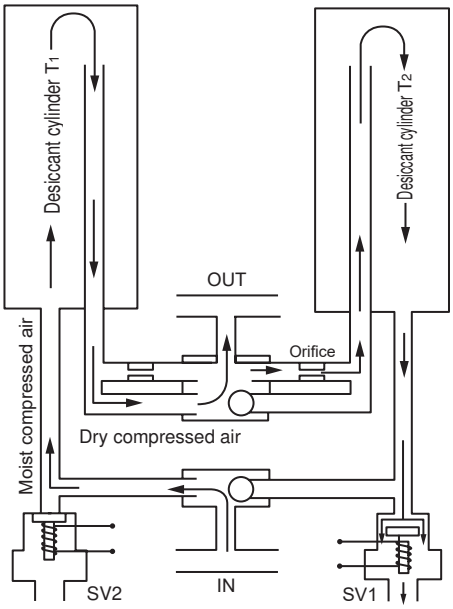

* Number of seconds is displayed at 60Hz.
Multiply by approx. 1.2 for 50 Hz.

## When a heatless dryer is installed

● When starting test operation after installation of this unit, operate the unit for the time below with a flow rate that is approximately 10 to 20% of the flow rate that will be used.

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

## Functions

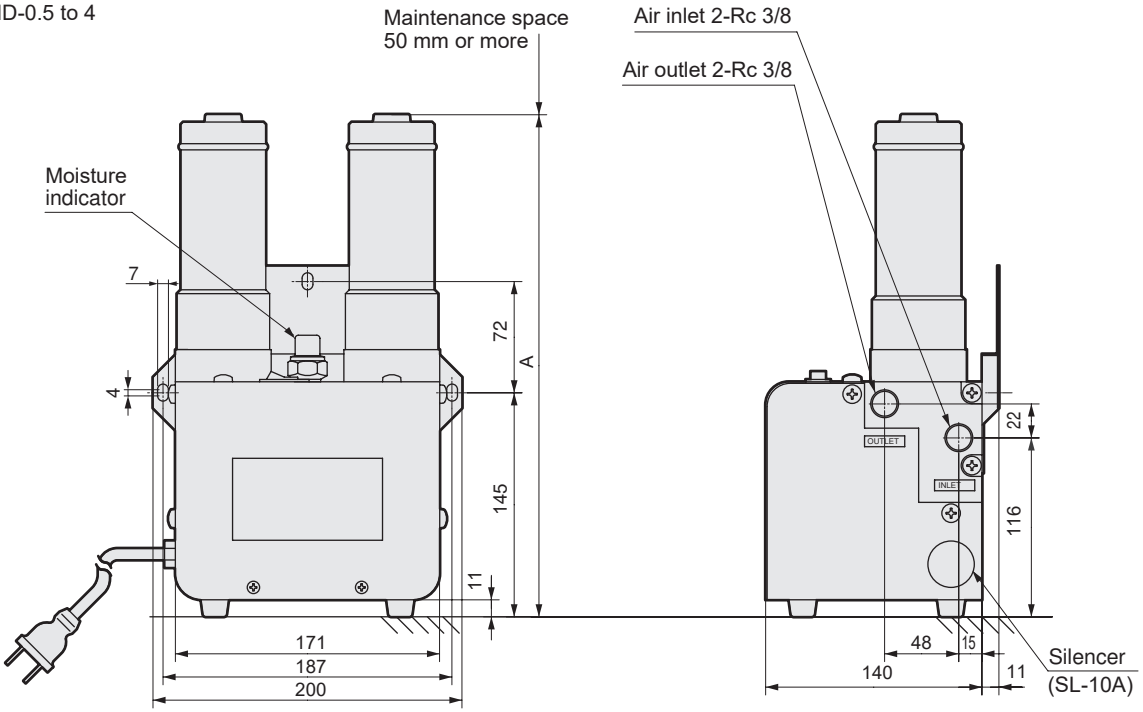



Moist compressed air coming in from IN goes through the shuttle valve and enters desiccant cylinder $T_1$. The moist compressed air evenly flows within the desiccant cylinder, the water vapor within the moist compressed air is adsorbed by the desiccant, and once transformed into ultra dry air, comes out of the OUTlet via the shuttle valve.
Part of the ultra dry air that has been reduced in pressure via the orifice enters the desiccant cylinder $T_2$, is used for the regeneration drying of the desiccant of desiccant cylinder $T_2$, and is then released into the air. With this drying and regeneration process, the switching is performed with a timing motor within the control box and ultra dry air is continuously supplied in a stable manner to the OUT side.

## Dimensions

CAD

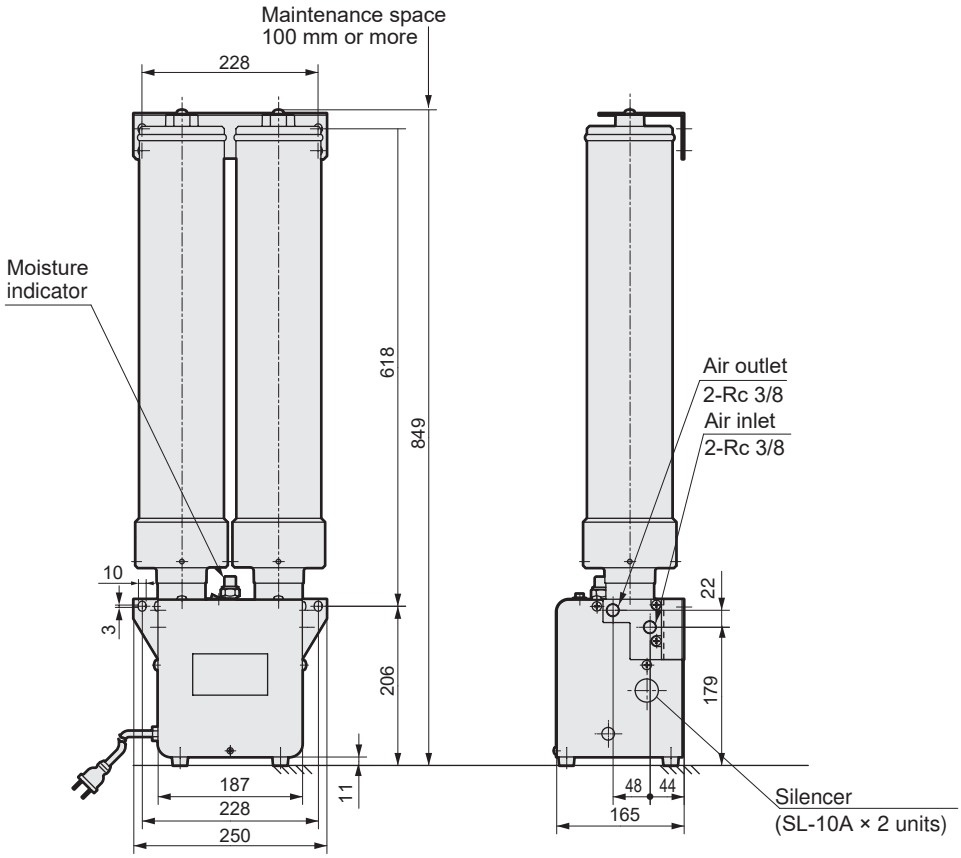
● HD-0.5 to 4




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

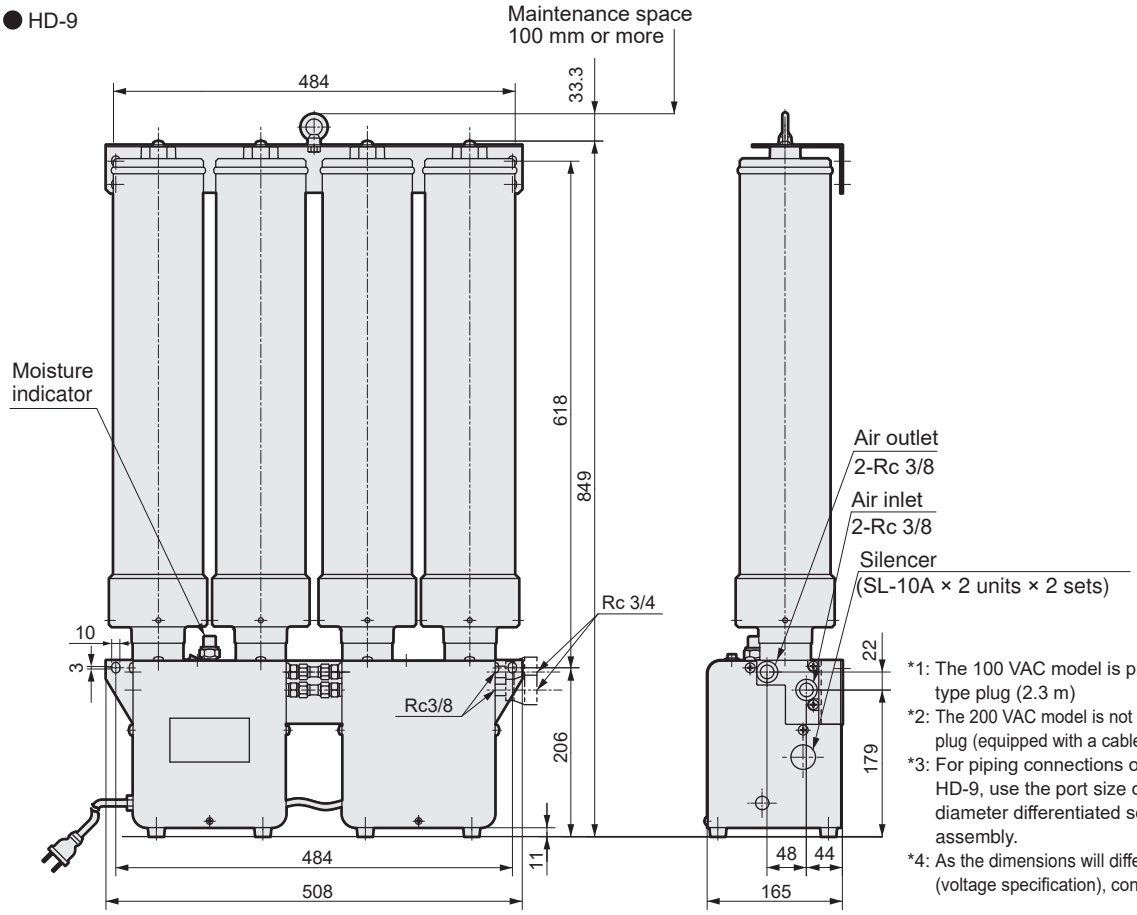
## Dimensions

● HD-6




## Dimensions

● HD-9




*1: The 100 VAC model is provided with a plug-in type plug (2.3 m)
*2: The 200 VAC model is not provided with a plug-in type plug (equipped with a cable 2.3 m long)
*3: For piping connections of the IN and OUT of HD-9, use the port size of 3/4B with the attached diameter differentiated socket and nipple assembly.
*4: As the dimensions will differ in the case of option G (voltage specification), contact CKD for details.