



KAWATA U.S.A. INC.

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# CHALLENGER IV DFC series GUIDE of KAWATA



KAWATA Dehumidifying Dryer DFC Series Brochure

Total Systems Engineer  
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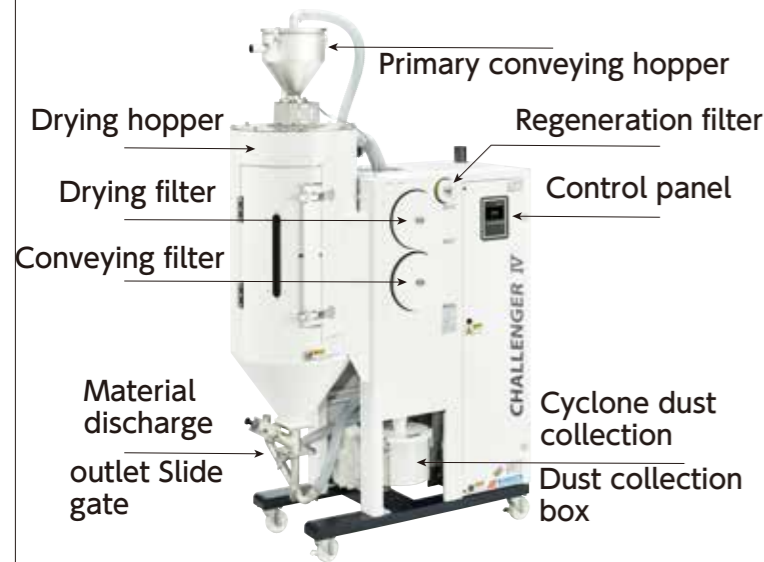
**PLANT**

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\*These specifications are subject to change without notice.  
\*Please read the instruction manual carefully before use.

# CHALLENGER IV DFC series

## Names of Departments



### Adoption of dry push transportation.

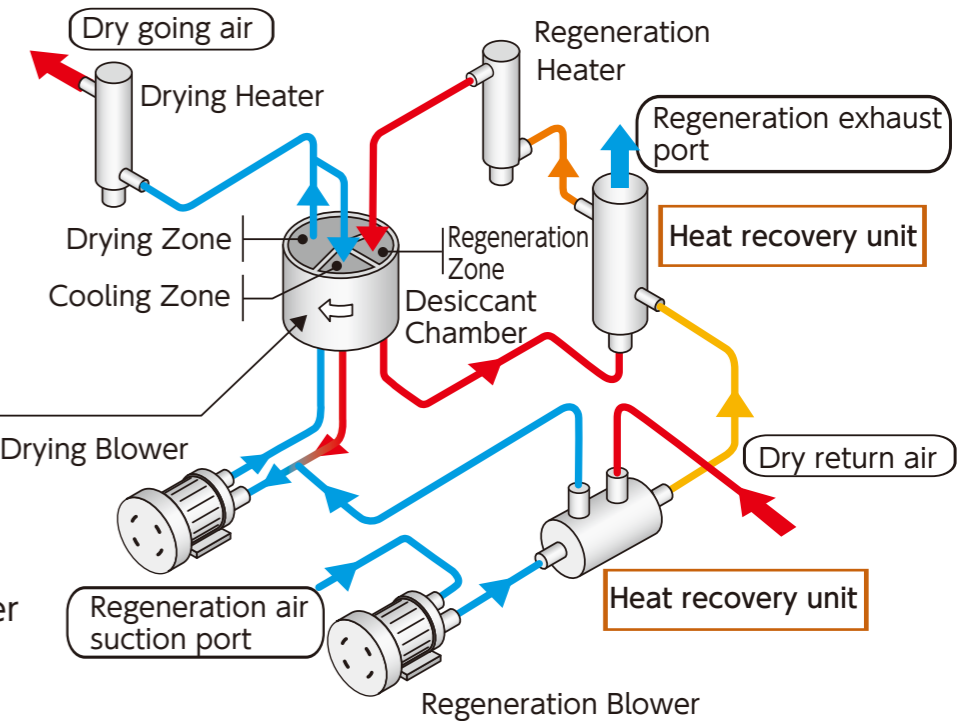
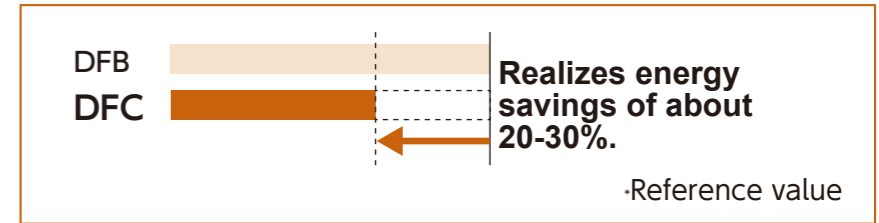
After secondary-side transport, a low dew point is achieved by controlling the supply-side and return-side valves.

KAWATA ORIGINAL

## High-efficiency grinding and energy-saving design

The heat from return air through the drying hopper is recovered from being used for honeycomb regeneration. Built-in 2 units of heat recovery, reduce waste heat, lighten the burden of air conditioner

**Insulation drying hopper**  
Applying two layers of hopper for the high heat insulation. Heat recovered through heat exchange is used to regenerate the adsorbent. Drying hopper heat insulation type. All models use an air-cooled aftercooler. The old type has the water-cooled for few models. However, we changed to all Air-cooled so no need to supply water.



**1** **Reduced energy consumption. Succeeded in improving the air conditioning environment in the factory.**

Heat recovered through heat exchange is used for adsorbent regeneration.

**2** **Adoption of dry push transportation.**

Adopted a transport method that prevents the inflow of outside air by using a circulation system for the transport route.

**3** **Color LCD touch panel for "easy operation."**

Automatic operation, alarm function, trend monitor, and recipe function.

**4** **60°C/140°F to 160°C/320°F**

Low-temperature drying of PET-G and other materials is now standard.

\*Outside air: 10°C/50°F to 35°C/95°F

**5** **Tilted sliding gate.**

The sealed gate reduces pellet bite and material residue. A sealed gate is adopted to reduce pellet biting and material residue. The temperature of the stagnant material in the lower part of the drying hopper is lowered to prevent undried during initial drying.

**6** **Improved maintainability.**

The new design places the drying, transport, and regeneration filters in a position that is easy to maintain.

**7** **Built-in cyclone dust collector.**

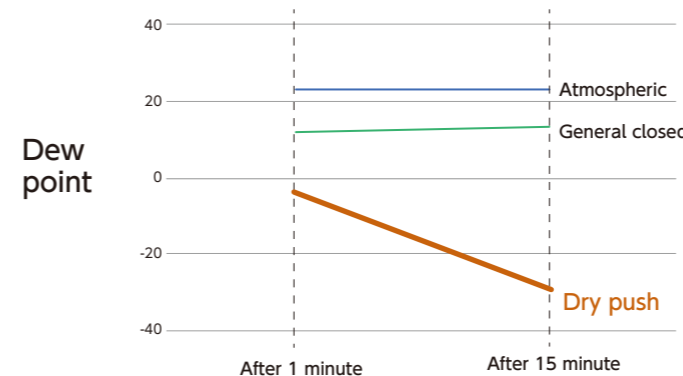
Built-in cyclone dust collector.

**8** **All models use an air-cooled aftercooler.**

No need water supply.

## Adopted a new method of dry push conveying

Atmospheric convey vs. general closed convey vs. dry push convey Comparison of dew point changes in the secondary-side transport hopper.



## Standard Drying Time by Type of Resin

Resin	Drying temperature °C/°F	Drying time h
ABS	80~90/176 - 194	2~4
PC-ABS	80~100/176 - 212	3~5
PMMA	80~90/176 - 194	4~6
PC	120~130/248 - 266	2~4
PET	140~160/284 - 320	2~4
PBT	110~160/230 - 320	4~6
PA (Natural)★	70~80/158 - 176	4~6
PA (Black)	80~120/176 - 248	3~4
TPU*	50~100/122 - 212	4~6
PPS	130~180/266 - 356	2~4
PPO	80~110/176 - 230	2~3
POM	80~110/176 - 230	3~4
PET-G★	65~70/149 - 176	4~6

\* The above table summarizes data for standard materials, and the capacities vary by the grade and shape of the resin.

★ Consult us separately if drying temperature is 79°C/174.2°F or less or 161°C/321.8°F or more.

# CHALLENGER IV DFC series

## Color LCD touch panel



Display current status by background color

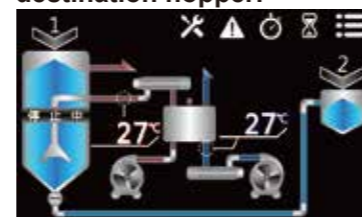


Display of operation history, error history, and maintenance history



### Flow Monitor

Display operating status, drying temperature, and regeneration temperature. It is possible to display empty/full in the drying hopper and secondary transportation destination hopper.



### Trend Monitor

Also, check the set temperature graph. Furthermore, CSV data can be saved to the SD card.



### Troubleshooting

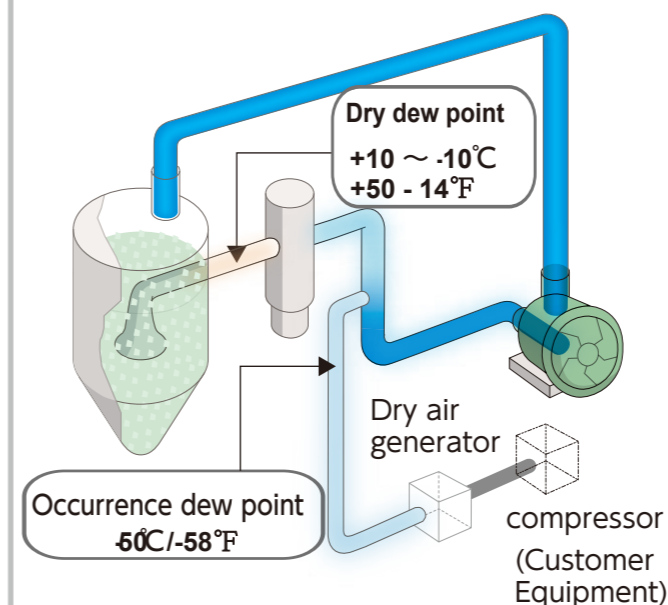
Touch the contents of the error history to display the cause and remedy.



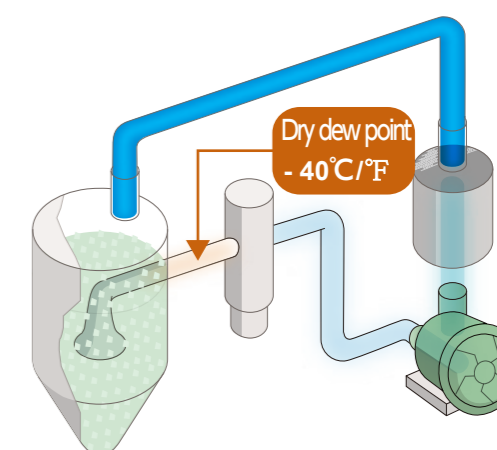
## Touch panel introduction and drying line comparison

### Drying line comparison by dehumidification method

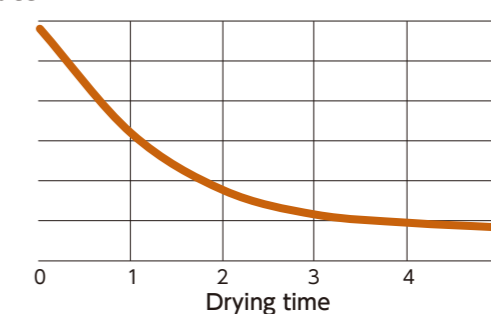
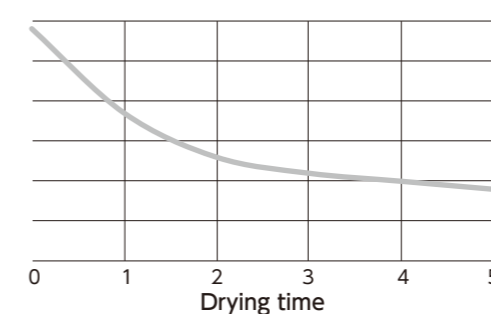
Drying line comparison by dehumidification method



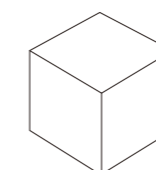
DFC (Honeycomb method)



### Moisture rate



Compressor air volume As 100kg (220lb) stocking size



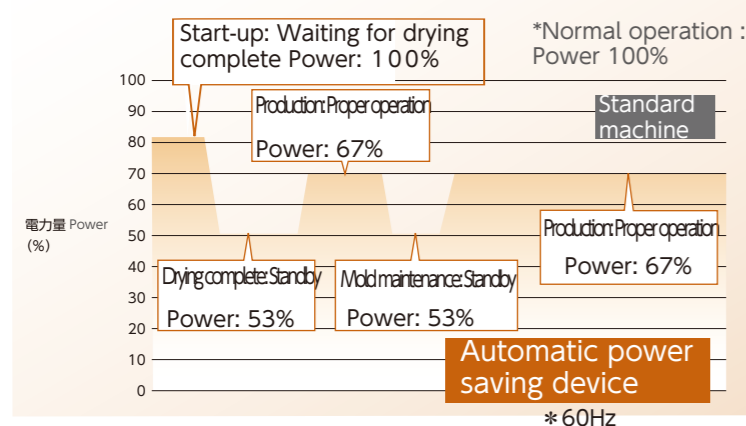
Approx. 300L/min (79.3gal/min)



Approx. 5L/min (1.3gal/min)

### Options

Automatic power-saving functional additional 47% (approx.) power with already power save drying machines Recognize drying condition and automatically control energy

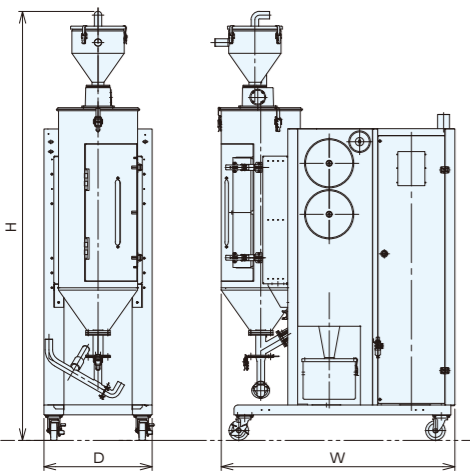


- MODBUS/SPI communication Weekly timer
- Power consumption display Support for different voltages Wear-resistant nozzle
- Magnetic separator
- XENOFILTER
- Attachments for molding machines

Verity of attachment for the injection molding machine (Each manufacturer's molding machine and mount plate for mounting the secondary side hopper can provide the vertical injection machine.)

**Dew Point**  
As an object is gradually cooled in the air, the temperature of the surrounding atmosphere also drops. The temperature in which water vapor in the air condenses at a specific temperature and adheres to the surface as dew. In other words, the lower the dew point, the more dry the air. Kawata's dryer uses a honeycomb method and a unique transportation method. The temperature at which the water vapor in the air becomes saturated, and condensation begins. Kawata dryer can keep the dew point and keep drying after secondary-side transport. With the Honeycomb method and dry push transportation.

Dimensions



Much space saving, compared to DFB

Example

	DFB-100Z	DFC-100Z
W	1507/59.3	1350/53.1
D	753/29.6	550/21.7

Dimensions

Model	DFC-25Z	DFC-50Z	DFC-75Z	DFC-100Z	DFC-150Z	DFC-200Z	DFC-300Z
W (mm/inches)	1149/45.2	1189/46.8	1255/49.4	1350/53.1	1530/60.2	1598.2/62.9	1913.9/75.4
D (mm/inches)	550/21.7	550/21.7	550/21.7	550/21.7	800/31.5	800/31.5	850.5/33.5
H (mm/inches)	1971/77.6	2184/86	2280/89.8	2291/90.2	2496.1/98.3	2858.3/112.5	3099/122
Weight (kg)/(lb)	260/573.2	270/595.2	320/705.5	360/793.7	450/992.1	500/1102.3	600/1322.8

Specifications

Model	DFC-25Z	DFC-50Z	DFC-75Z	DFC-100Z	DFC-150Z	DFC-200Z	DFC-300Z
Dew Point (°C) / (°F)	-40 (max.) -40 Corrugated honeycomb * 1						
Drying Temperature (°C) / (°F)	60~160/140-320 * 2/						
Drying Blower Capacity (kW) (50/60Hz)	0.17/0.28	0.28/0.42	0.55/0.85		1.5/2.1		2.4/3.5
Regeneration Heater Capacity (kW)	2.4						6.0
Regeneration Blower Capacity (kW) (50/60Hz)	0.06/0.08			0.09/0.12		0.17/0.28	
Desiccant Chamber Motor Capacity	0.025						
Drying Hopper	Effective Capacity (L) / (gal)	42/11	84/22	126/33	167/44	250/66	333/88
	Feeding Volume (kg) / (lb)	25/55	50/110	75/165	100/220	150/330	200/441
	Drying Heater Capacity (kW)	2.7	4.0	6.0			12.0
	Standard	Dehumidified air circulation conveying, batch conveying, glass wool insulation (Energy-efficient structure)					
Convey-1	AL-07F-3				AL-15F-3		
Blower Capacity (kW) (50/60Hz)	0.55/0.85 (Concurrent use of blower with primary conveying Normally in 60Hz at 0.85)				1.3/1.9 (Concurrent use of blower with primary conveying Normally in 60Hz at 1.9)		
Covey-2	VL-02-3			VL-07-3			
	Concurrent use of blower with primary conveying Normally in 60Hz						
Power Supply (kVA)	7.2/8.6	8.6/10.2	11.1/13.4		14.0/16.8		25.2/30.6
(3Phase AC200V/200,220V 50/60Hz) (AT)	30	30	40		50		100
Compressed Air Requirement (L/min)/(gal/min)	5/1.32(0.4 ~ 0.6MPa)(Pipe size φ6mm(OD0.24 Inches))						
Accessories	PVC flexible hose(φ38mm(OD1.5 Inches)×15m(49.2 Feet)×1) , Suction pipe(φ38(OD1.5 Inches)×650mm(25.6 Inches)×1) , Control cable 5m(16.4 feet), Power cable 5m(16.4 feet)×1						
Weight (kg)/(lb)	260/573	270/595	320/705	360/794	450/992	500/1102	600/1323

\* 1. The dew point varies according to ambient air conditions.

\* 2. The above-listed specifications are subject to change depending on the material to be used and environmental conditions. The listed numerals are derived from our test data; use them for your reference.



Safety Instructions.



Would you please ask our service-field team or specialized worker for installation? Otherwise, it may cause electric shock or fire if installation work is not done correctly by the customer.



Proper power supply should be used. Secure appropriate spacing between control device wiring and power cables.



In case of repairing the unit, please ask our field service people. Improper repairing may cause electric shock or fire.



Electric work shall be carried out in accordance with standards, rules, and regulations of the state concerned and descriptions of this Manual.



Avoid sharing grounding with power cables; noise may interfere with proper operation.



Make sure to supply clean compressed air free from oil mist.

About laws and regulations regarding drying equipment

When installing or relocating drying equipment or changing the main structural parts, the operator must make 30 days before the start of construction. (Article 88 of the Industrial Safety and Health Act, Article 85 of the Safety and Health Regulations in Japan)  
The business operator appoints a drying facility work chief to prevent occupational accidents when a drying facility is installed.

It is obligatory to have the matters specified by the Ordinance of the Ministry of Labor performed. (Article 14 of the Industrial Safety and Health Act in Japan)

It is obligatory to notify the Minister of Health, Labor, and Welfare.

In addition, the target drying equipment is defined as follows. (Article 6 of the Industrial Safety and Health Act Enforcement Ordinance in Japan)

1. Of the drying equipment, equipment related to dangerous substances, etc. (meaning the hazardous substances listed in Attached Table 1 and the dried substances in which these dangerous substances are generated).

Those with an internal volume of 1 cubic meter or more

2. Those that use electric power as a heat source (those with a total rated power consumption of 10kW or more for drying / regenerating heaters)

Caution

When a drying facility is installed, the operator is obliged to carry out a self-inspection regularly and record the results. (Article 45 of the Industrial Safety and Health Act, Article 299 of the Safety and Health Regulations in Japan)

Depending on the municipality, installing drying equipment may be necessary to notify the fire department and keep a certain distance from combustible materials such as walls and ceilings.

It may be required.

Drying operation outside the specified temperature range is not possible.

The customer is responsible for setting the drying temperature range.

If material is heated at excessively high temperatures, material deterioration may be induced.

Minimize bends when arranging hose. Curvature radius shall be as follows:

φ38 (OD1.5 Inches): 400mm (15.7 Inches) or more

φ48.6 (OD1.9 Inches): 500mm (19.7 Inches) or more

φ60.5 (OD2.4 Inches): 600mm (23.6 Inches) or more

Do you have any of these symptoms? Please check the products you have used for many years!

Feel electric shock.

Big noise or strange noise of moter

Other abnormality or trouble.

If you experience any of these symptoms, be sure to turn off the power and contact us for inspection and repair in order to prevent accidents.

Full service throughout Japan even after purchase

We offer repair and consultation services for our products in 47 prefectures throughout Japan.

We value our relationship with our customers to use our products with peace of mind for a long time.

If you have any questions, please contact your local office or visit our website.

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