

LAUNCH
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DDM-VII

Desiccant Dryer Mobile

Drying of free-flowing granular plastic materials



Desiccant Dryer Mobile, DDM-VII

Introduction

Labotek's series of mobile desiccant dryers, DDM, is designed for the continuous drying of free-flowing plastic raw materials in granulate form.

The DDM has been energy optimized and is available as a complete desiccant drying and integrated dry air conveying system to processing machine, based on proven, reliable and energy saving design. The standard temperature range is 60 to 140°C with a preset deviation of $\pm 2^\circ\text{C}$.

A HT (High Temperature) model is also available with a temperature range of 60 to 180°C. Owing to the extremely accurate temperature control and a dew point of $< -35^\circ\text{C}$, a final moisture content of less than 0.02% can be achieved (HT model 0.002%).



Service friendly design

DDM series offers...

- Small footprint of only 0.76 m²
- Drying hopper capacities of 50, 100 and 220 litres
- Unique dry air conveying system to process machine
- Built-in 3 phase conveying system to dryer (SVR)
- Dew point connection gate
- A separate over temperature thermostat
- Comprehensive 3 year warranty, excluding wear parts
- Interior and exterior in AISI 304 stainless steel

Touch Screen Control

DDM is operated via the microprocessorbased, 6" colour touch screen control. The touch screen is menu driven, using basic symbols and enabling easy operator interface.

Furthermore the control features shortcuts to the most basic functions, i.e. drying temperature settings, drying time, start/stop timer for drying and conveying settings.



LESS – Labotek Energy Saving System

Labotek Energy Saving System has been designed to achieve energy savings of the drying air that is fed to the drying hopper, as well as providing protection against over drying.

The current drying temperature can be lowered by an optionally selected number of degrees from the set drying temperature. Lowering of the temperature and reset to normal drying temperature are automatically controlled by the return air temperature.

The LESS system in DDM, operates using relative lowering of drying temperature after reaching the set value. Temperature reduction will begin when the material has been dried.

Drying

The desiccant air blower (7) circulates the drying air in a closed system. The air is dried in one of the two desiccant beds (8) or (9), and the dew-point temperature is lowered to approx. -35°C . The dry air heating element (10) is used to heat the drying air to the required temperature before, via the air separator (6), it is distributed in the drying hopper DH (1).



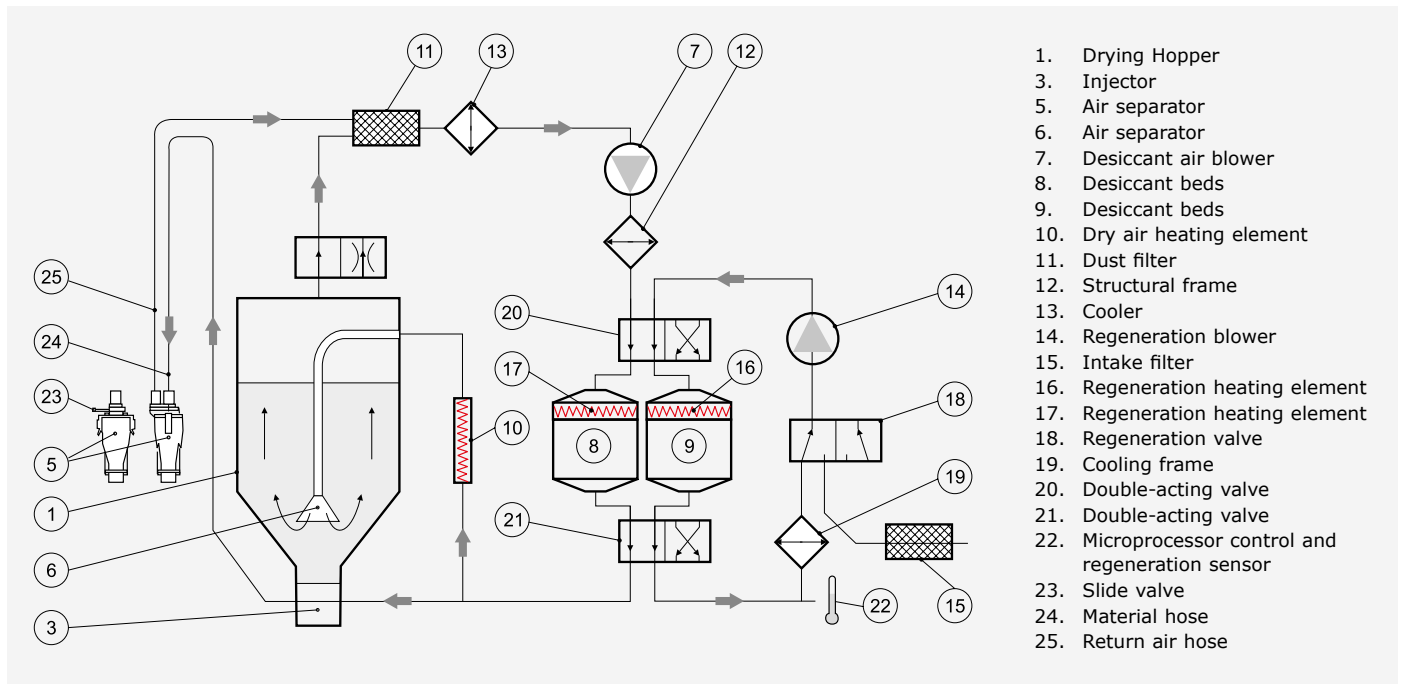
Large clean-out door for easy cleaning



Detachable air separator

After the drying air has heated the raw material and transformed the moisture to water vapour, it is led back through the dust filter (11) to the blower (7).

The humid air is cooled in the structural frame (12) of the machine just before it is led to one of the desiccant beds (8) and (9) which will adsorb the humidity. In HT units the air is cooled through the cooler (13).



Regeneration

The DDM dryer has two desiccant beds (8) and (9) with molecular sieves for dehumidification of the drying air. One of the beds is always operative in the drying cycle whereas the other is either regenerating in the regeneration cycle or, when fully regenerated, in standby mode.

Regeneration occurs when hot air passes through the desiccant bed (8) or (9).

The regeneration blower (14) takes in ambient air through the intake filter (15) and sends it to the regeneration heating element (16) or (17) where the air temperature is increased to approx. 140°C.

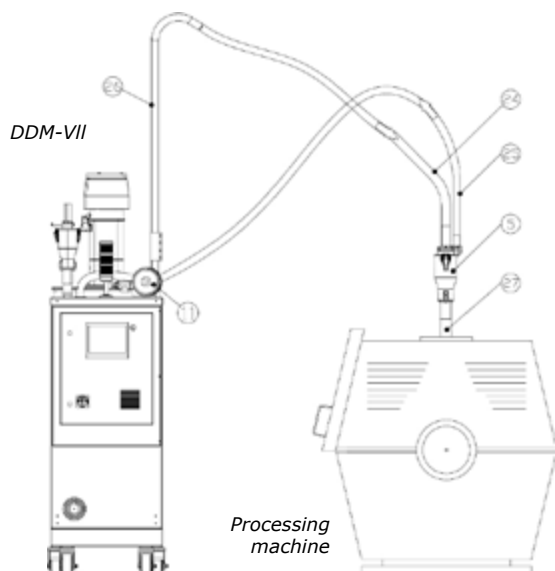
The moisture adsorbed in the desiccant bed is evaporated and forced into the ambient air in the form of water vapour. In the last phase of the regeneration cycle, the regeneration heating element (16) or (17) is disconnected and as the position of the regeneration valve (18) changes, the air is re-circulated in

a closed system. This is done to cool the molecular sieve through a cooling frame (19), and to lower the dew point temperature to approx. -35°C. In HT units the cooling frame (19) is cooled by water.

Two automatic, double-acting valve units (20) and (21) are placed at the inlet and the outlet of the desiccant beds ensuring that one of the desiccant beds is always operative in the drying cycle and the other in the regeneration cycle. Time between regenerations is variable and calculated according to moisture pick-up, monitored in microprocessor control and regeneration sensor (22).

Conveying

Raw material is fed automatically into the machine hopper proportional to the consumption of the processing machine.



Injector with clean-out door



The principle is that part of the blower (7) drying air is bypassed and sent to the injector (3) whereby the dried raw material is sucked from the drying hopper utilising the injector effect. The injector is adjustable. It can be adjusted to match size and shape of the granular material. Consequently, most types of regrind can be conveyed.

The raw material is blown from the injector (3) to the air separator (5) which is either located directly on the machine hopper or fitted on the barrel inlet using a special intermediate flange. Conveying is initiated by the slide valve (23) in side the air separator.

Conveying air is now fed from the material hose (24) into the return air hose (25). Conveying stops automatically when the machine hopper has been fully loaded, thus blocking the air passage between (24) and (25).

Technical Data

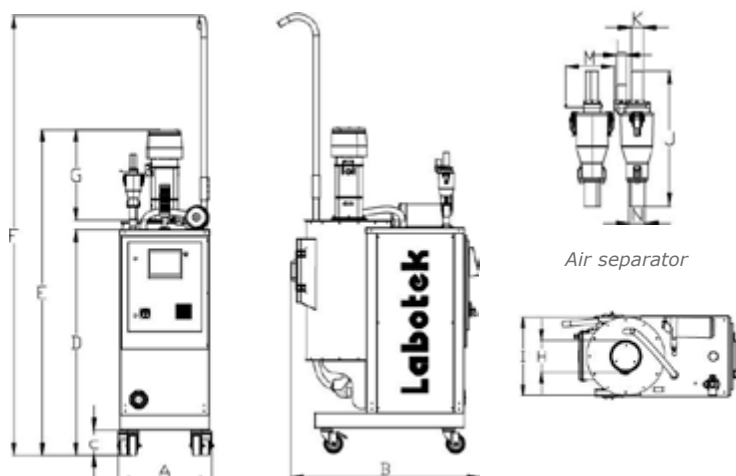
DDM Type	DDM 50	DDM 100	DDM 200
Supply voltage	3~50/60 Hz 415V		
Installed power [kW]	7.2	8.2	10/14
Blower motor, drying			
3-phase 50/60 Hz [kW]:	0.37	1.3	1.3
Air volume [m³/h] 50/60 Hz:	50	100	200
Blower motor, regeneration			
3-phase 50/60 Hz [kW]	0.28	0.28	0.28
Dew point temp. [°C]	-30	-30	-30
Heating element drying [kW]	3	3	5/9
Heating element regeneration [kW]	2x3.5	2x3.5	2x3.5
Noise level (dBA)	65	65	70
Raw material hopper			
Capacity/liters	50	100	200
Conveying hose, clearance [mm]	38	38	38
Conveying hose, length [m]	2.5	2.5	2.5
Return air hose, clearance [mm]	32	32	32
Return air hose, length [m]	3	3	3
Air separator	1	1	1
Connecting cable [m]	5	5	5
Net weight [kg]	220	280	320
Shipping weight [kg]	300	360	400
Shipping Dimensions [mm](LxWxH)	1500x850x1800	1500x850x2000	1500x850x2300
Shipping volume [m³]	2.29	2.55	2.93
Shipping volume [m³]	2.03	2.03 0.27	1.92 0.27
Shipping dimensions [mm]	1350 x 900 x 2250	1350 x 900 x 2250 870 / 570 / 550	1200 x 800 x 2000 870 / 570 / 550

Dimensions

	A	B	C	D	E	F	G
DDM 50L	642	1176	169	1504	2172	2931	604
DDM 100L	642	1256	169	1504	2172	2931	604
DDM 200L	642	1256	169	1504	2622	3431	604

	H	I	J	K	L	M	N
DDM 50L	238	594	432	Ø38	Ø32	155	Ø51
DDM 100L	238	594	432	Ø38	Ø32	155	Ø51
DDM 200L	238	594	432	Ø38	Ø32	155	Ø51

All measurements are in mm.



Air separator

Capacity table for desiccant dryers

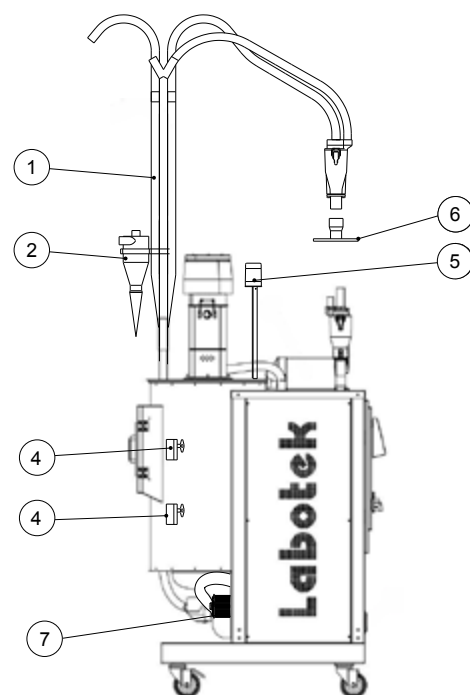
Raw material		Recommended dry time [h]	Recommended drying temp. °C	Drying capacity kg/h at bulk density 0.6		
				DDM 50	DDM 100	DDM 200
ABS	Acrylonitrile butadiene-styrene	2-3	80	15-10	30-20	60-40
PA	Polyamide 6/6.6/10	3	75-80	10	20	40
PA	Polyamide 11/12	4	75-80	8	15	30
PBTP	Polybutylene terephthalate	3	120	10	20	40
PC	Polycarbonate	2-3	120	15-10	30-20	60-40
PE	Polyethylene	1-2	80-90	30-15	60-30	120-60
PE	Polyethylene, black	3-4	90	14-8	28-15	58-30
PEC	Polyesters carbonate	4-5	130	8-7	15-14	30-28
PEEK	Polyaryletherketone	2-3	150	15-10	30-20	60-40
PE I	Polyetherimide	3-4	150	10-8	20-15	40-30
PET	Polyethylene terephthalate	4-6	170-180	8-5	15-10	30-20
PETG	Polyethylene terephthalate glycol	4	66	8	15	30
PETP	Thermoplastic polyester	2-3	120	15-10	30-20	60-40
PI	Polyimide	2-3	120	15-10	30-20	60-40
PMMA	Methyl methacrylate polymer	2-3	80	15-10	30-20	60-40
POM	Polyacetal	2-3	100	15-10	30-20	60-40
PP	Polypropylene	1-2	80-90	30-18	60-36	120-54
PPO	Polyphenylene oxide	2	110	18	36	54
PPS	Polyphenylene sulphone	3-4	150	10-8	20-15	40-30
PPSU	Polyether sulfone	3-4	120	10-8	20-15	40-30
PS	Polystyrene	1-2	80	30-15	60-30	120-60
PSU	Polysulfide	2-3	130	15-10	30-20	60-40
PUR	Polyurethane	2-3	90-100	15-10	30-20	60-40
PVC	Polyvinyl chloride	1	70	30	60	120
SAN	Styrene acrylonitrile	2-3	80	15-10	30-20	60-40
SB	Styrene butadiene (high impact)	1-2	80	30-15	60-30	120-60
TPE	Polyester elastomer	2-3	110	15-10	30-20	60-40
TPR	Thermoplastic rubber	3	75	10	20	40

The above capacity table states recommended values only, based on the drying of the specific materials down to a residual moisture content of 0.02% which, however, will vary depending on the type of material. The capacities are based on a general bulk density of 0.6 with the exception of PE and PETG to which a bulk density of 0.55 and 0.85 respectively forms basis.

Options

The DDM is prepared for a number of options to ensure optimal treatment of the material being processed.

Pos.	Description	LT no.
1	Double conveying 1-2 DDM	202885
2	Cyclone, dust separation, with plastic container	208861
4	Level Control	203671
5	Warning lamp, DDM, flash lamp, yellow/blinking, 24 V AC	208863
5	Warning lamp, DDM, flash lamp, yellow/blinking/sound, 24 V AC	208864
6	Flange for air separator Ø 50 mm, DDM	202500
7	By-Pass assembly for DDM	208865





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