

Double recuperative air conditioning unit with two-stage heat recovery

Dosolair



Automatically selects the most economical operating mode!



Dosolair 54 13 01 - simplified illustration

Dosolair 54

AIR VOLUME FLOW: 4,000 – 23,100 m³/h

Comes with our Eurovent certified MB 50 housing.



At a glance:

- ▶ For heat and cooling recovery
- ▶ Energy-saving EC fans
- ▶ Intelligent air bypass duct
- ▶ Two-stage supply air filtration
- ▶ Integrated defrosting function
- ▶ Compact design
- ▶ Integrated control and regulation system, compatible with all conventional building management systems
- ▶ Freely configurable HVAC system
- ▶ Fulfils the requirements of VDI 6022

Units in the Dosolair 54 series are ideally suited for return air from processes. The structural design allows a complete cleaning of the heat recovery system very easily. The recuperator of polypropylene is pollutant resistant, microbially not metabolisable and allows the use in many different areas, for example in industrial and kitchen applications.

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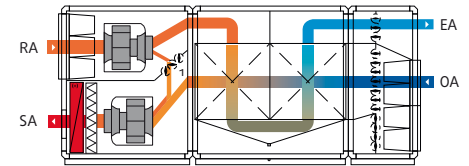
Further performance parameters and options:

- Filtering the air in any operating mode
 - Corrosion-free heat exchanger made from polypropylene
 - Pumped hot water heating coil
 - Thermal bridge factor TB1
 - Individually controllable performance parameters
 - Complete unit, ready to connect, contains all structural elements for comfort air conditioning, including all control and regulation fittings
 - Intensive quality inspection with factory test run
- Options
- Recirculation air heating damper
 - Pumped chilled water cooling coil
 - Pressure reversal
 - Attenuator
 - Outdoor installation
 - Remote maintenance
 - And many more

Functional description

Wintertime conditions

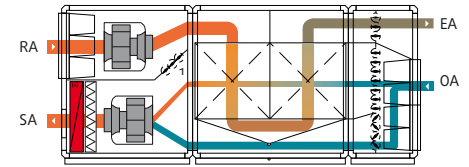
In case of low outside temperatures the system operates completely in heat recovery mode. The standard heating coil compensates for ventilation and transmission heat losses of the building as required.



Defrosting Circuit

All recuperative heat exchangers tend to ice over in the exhaust air section in case of low outside temperatures. In defrost operation, the OA-SA bypass opens, reducing the outside air flow rate going

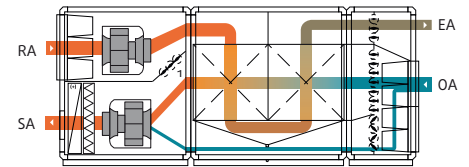
through the recuperator. The heat contained in the return air melts any ice in the heat exchanger, while the airflow rate routed past the recuperator is precisely regulated.



Transitional Period

As the outside air temperatures rise, the heat recovery requirement is reduced. The OA/SA bypass damper, which runs along the entire depth of the device, is

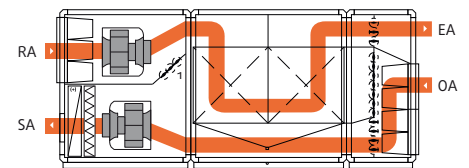
continuously regulated in order to achieve the desired supply air temperature.



Free cooling

If the outside temperatures continue to rise, the heat recovery is bypassed. The structural design of the OA/SA bypass ensures that the pressure losses within

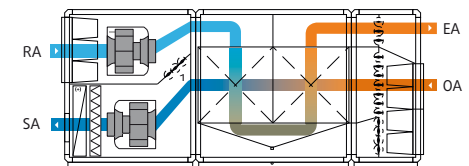
the unit are low and that the power consumption of both fans in bypass mode is also low.



Summertime conditions

If the outside temperature rises above the return temperature, the highly efficient heat exchanger is used as a "cooling recovery system".

The warm outside air is cooled by the return air.

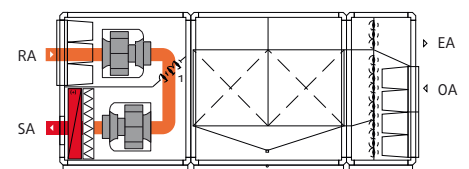


Recirculation Air Operation (heating)*

In recirculation air mode, the outdoor and exhaust air dampers are closed. The air is heated via the heating coil. Rooms which are not used all of the time, such as lecture halls or sports halls,

can therefore be quickly heated before being used.

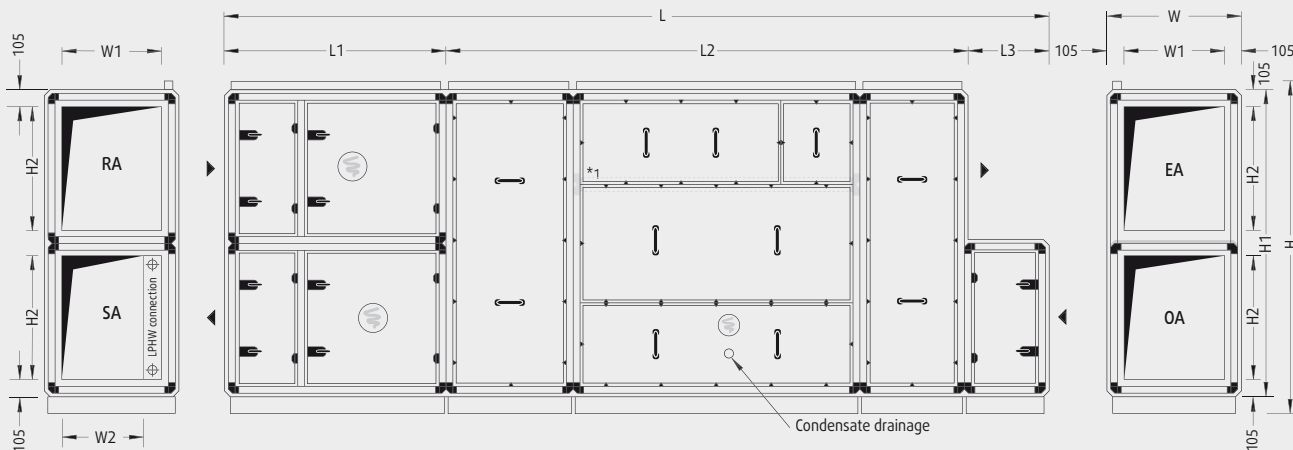
* only possible with optional recirculation air heating damper



1 Recirculation air heating damper (additional equipment)

Dosolair Type 54

System dimensions and weights



Important! Where a system is operated in parallel, the supply air and return air ducts of the two units have to be brought together.

Where units are run in parallel, each unit has a controls cabinet.

Mirror-image design possible.

Unit type	L ¹	W ²	H ³	L ¹	L ²	L ³	W ¹	W ²	H ¹	H ²	Weight ¹
54 06 01	5,630	790	2,340	1,400	3,630	600	580	420	2,160	900	1,500
54 10 01	5,630	1,110	2,340	1,400	3,630	600	900	740	2,160	900	1,800
54 13 01	5,790	1,430	2,340	1,560	3,630	600	1,220	1,060	2,160	900	2,150
54 16 01	5,790	1,750	2,340	1,560	3,630	600	1,540	1,380	2,160	900	2,450
54 19 01	5,790	2,070	2,340	1,560	3,630	600	1,860	1,700	2,160	900	2,750
54 25 01	6,430	2,070	2,980	1,560	4,270	600	1,860	1,700	2,800	1,220	3,650
54 32 01	7,230	2,070	3,620	1,560	5,070	600	1,860	1,700	3,440	1,540	4,500
54 36 01	7,230	2,390	3,620	1,560	5,070	600	2,180	2,020	3,440	1,540	5,400

For service work, a clearance corresponding to dimension W is required on the operating side of the unit. If dimension W is smaller than one metre, please leave a clearance of one metre. For service work above the unit, please allow 50 mm working height clearance above the cable duct.

Please comply with the dimensions for body size, air duct connections and electrical switch cabinet.

All lengths are given in mm, weights in kg, weight incl. controls cabinet.

- 1 May change depending on chosen option
- 2 Door fitting assembly increase unit width by 65 mm each operating side
- 2 Height incl. 120 mm base frame and 60 mm cable duct

3 transportation units are supplied, including controls cabinet. Further partitioning for smaller apertures possible (at extra cost).

Largest transport unit

Unit type	L ¹	W	H ³	Weight ¹
54 06 01	3,630	790	2,340	900
54 10 01	3,630	1,110	2,340	1,070
54 13 01	3,630	1,430	2,340	1,250
54 16 01	3,630	1,750	2,340	1,450
54 19 01	3,630	2,070	2,340	1,630
54 25 01	4,270	2,070	2,980	2,250
54 32 01	5,070	2,070	3,620	3,000
54 36 01	5,070	2,390	3,620	3,400

Controls cabinet

Unit Type	H x W x D ¹	Position at unit
54 06 01	1,120 x 640 x 210	SA/RA side
54 10 01	1,120 x 640 x 210	SA/RA side
54 13 01	1,120 x 640 x 210	SA/RA side
54 16 01	1,120 x 640 x 210	SA/RA side
54 19 01	1,120 x 640 x 210	SA/RA side
54 25 01	1,120 x 640 x 210	SA/RA side
54 32 01	1,120 x 640 x 210	SA/RA side
54 36 01	1,280 x 640 x 210	SA/RA side

Technical specifications and services

Unit Type		54 06 01	54 10 01	54 13 01	54 16 01	54 19 01	54 25 01	54 32 01	54 36 01	54 xx xx
Optimum flow rate	m ³ /h	4,000	6,000	7,900	9,800	11,800	15,800	19,900	23,100	< 40,800
Coefficient of power efficiency acc. to EN 13053:2012	%	67	67	68	68	68	68	70	70	
Heat recovery rate according to EN 308	%	70	70	70	71	71	70	73	73	
Total electrical power rating ¹	kW	2.55	3.59	4.50	5.79	8.05	10.42	15.28	17.46	
Max. current consumption ¹	A	8.0	9.6	16.0	16.0	17.4	32.0	32.0	37.6	
Operating voltage		3 / N / PE 400 V 50 Hz								
Ext. pressure loss										
Supply and fresh air channel	Pa	300	300	300	300	400	400	500	500	
Return and exhaust air channel	Pa	300	300	300	300	400	400	500	500	
Sound power level ²										
Supply air vent	dB(A)	66	71	67	72	80	71	78	80	
RA connection	dB(A)	64	68	64	67	73	67	74	78	
Outside air vent	dB(A)	57	62	57	61	66	61	66	70	
EA connection	dB(A)	61	66	62	66	73	66	75	79	
Acoustic pressure at distance of 1 m from device ²	dB(A)	52	57	53	58	65	57	65	69	
Fan units										
Rated motor input for supply air ³	kW	1.34	2.00	2.49	3.04	4.17	5.48	7.94	9.04	
Rated motor input for return air ³	kW	1.21	1.59	2.01	2.75	3.88	4.94	7.34	8.42	
SFP category supply air return air		1 2	1 2	1 1	1 2	1 3	1 2	2 3	2 3	
Nominal rating supply air return air	kW	2.5 2.5	2.9 2.9	5.0 5.0	5.0 5.0	6.0 5.0	10.0 10.0	10.0 10.0	12.0 12.0	
Inner specific fan power (SFP _{int}) ⁴	Ws/m ³	777	753	693	678	691	572	672	666	
Efficiency classes according to EN 13053:2012										
heat recovery class		H2	H2	H2	H2	H2	H2	H2	H2	
Power consumption of fan motors SA RA		P1 P1	P1 P1	P1 P1	P1 P1	P1 P1	P1 P1	P1 P1	P2 P1	
Air velocity class		V2	V2	V2	V2	V2	V2	V2	V2	
Filtration according to DIN EN 779										
Supply air Outside air		F7 M5								
Return Air		M5								
LPHW										
Heating capacity SA=22° C ⁵	kW	11.0	16.2	21.2	26.0	31.1	43.5	46.2	53.5	
Heating capacity SA=30° C ⁵	kW	21.7	32.4	42.7	52.5	62.8	86.0	99.6	115.7	
Heating capacity Defrost ^{5,6}	kW	10.9	16.3	21.3	26.6	31.9	41.3	52.2	60.8	
Water flow rate and pressure losses at heating capacity SA=22° C										
LPHW	m ³ /h kPa	0.89 4.4	1.39 4.0	2.14 3.3	2.13 3.8	2.14 4.4	3.87 3.6	4.76 3.3	4.79 3.6	
LPHW (pump warm water) valve	m ³ /h kPa	0.65 6.8	0.92 5.3	1.23 3.8	1.40 5.0	1.58 6.3	2.31 5.3	2.61 4.4	2.93 5.5	
Connections										
LPHW connection	DN	32	32	40	40	40	50	50	65	
LPHW control valve connection	DN	15	15	15	15	20	25	25	25	
Condensate drainage	DN	40	40	40	40	40	40	40	40	
LPCW (optional) ⁷										
Cooling capacity SA ≈ 18° C ⁸	kW	17.3	31.5	42.3	53.2	64.0	84.0	108.7	130.2	
LPCW connection	DN	40	50	50	65	80	80	80	100	
Water flow rate and pressure losses										
LPCW	m ³ /h kPa	2.48 6.1	4.51 20.0	6.05 23.3	7.61 22.3	9.15 21.9	12.01 27.5	15.55 23.1	18.62 35.0	
LPCW valve	m ³ /h kPa	2.48 6.1	4.51 20.3	6.05 23.4	7.61 22.6	9.15 32.7	12.01 36.1	15.55 24.4	18.62 55.5	

Specifications of technical data relate to the optimum flow rate and return air condition 22° C / 40% r.h., outside air condition -12° C / 90% r.h. and standard density (1.204 kg/m³), unless otherwise specified.

- depends on configuration of measurement and control system/unit
- at 250 Hz mid-band frequency
- with average filter contamination

⁴ according EU guideline No. 1253/2014 [Ecodesign guideline]

⁵ FL= 70° C

⁶ at OA=-15° C, SA=18° C, 66% optimum flow rate and active defrost function

⁷ note additional power consumption for supply air

⁸ FL = 6° C, RA = 26° C; 55% r.h. and OA = 32° C; 40% r.h.

Please seek approval of technical data and specifications prior to start of the planning process. With every single selection we do to your individual requirements our certified selection software automatically checks the Ecodesign compliance level 1 and 2.

Technical details upon request.

Dosolair