

## Double recuperative air conditioning unit with two-stage heat recovery



Dosolair 54 13 01 - simplified illustration

Dosolair

Automatically selects the most economical operating mode!



# Dosolair 54

AIR VOLUME FLOW: 4,000 – 55,200 m<sup>3</sup>/h

### At a glance:

- ▶ For heat and cooling recovery
- ▶ Over 75% temperature efficiency
- ▶ 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 achieve high heat recovery efficiency at medium to high air volume flow rates and can be used in a wide range of comfort air conditioning applications. The combination

of first-class components with precise control and regulation systems guarantees economical operation at all times, while ensuring the highest degree of comfort air conditioning.

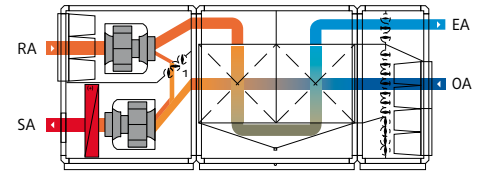
### Further performance parameters and options:

- 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

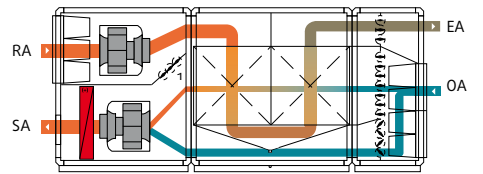
In case of low outside temperatures the system operates completely in heat recovery mode. The standard heating coil compensates for ventilation and transmission heat losses of the building as required.



### 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

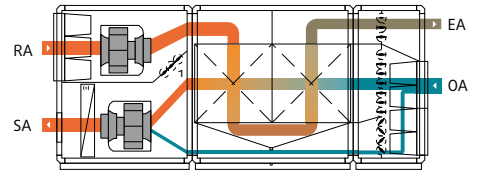
through the recuperator. The heat contained in the return air melts any ice in the heat exchanger, while the airflow rate routed past the recuperator is precisely regulated.



### 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

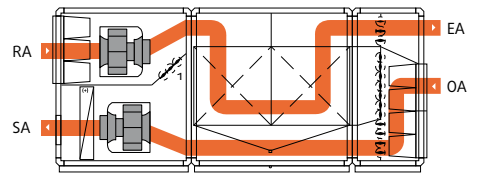
continuously regulated in order to achieve the desired supply air temperature.



### 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

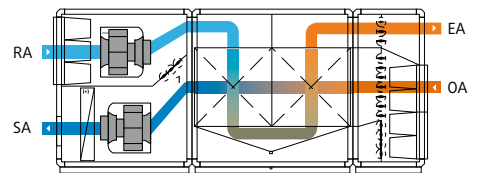
the unit are low and that the power consumption of both fans in bypass mode is also low.



### 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.

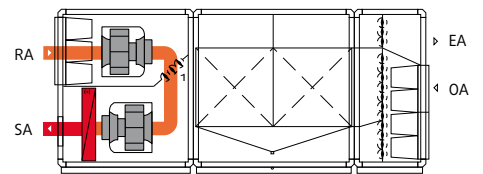


### Recirculation Air Operation (heating)\*

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.

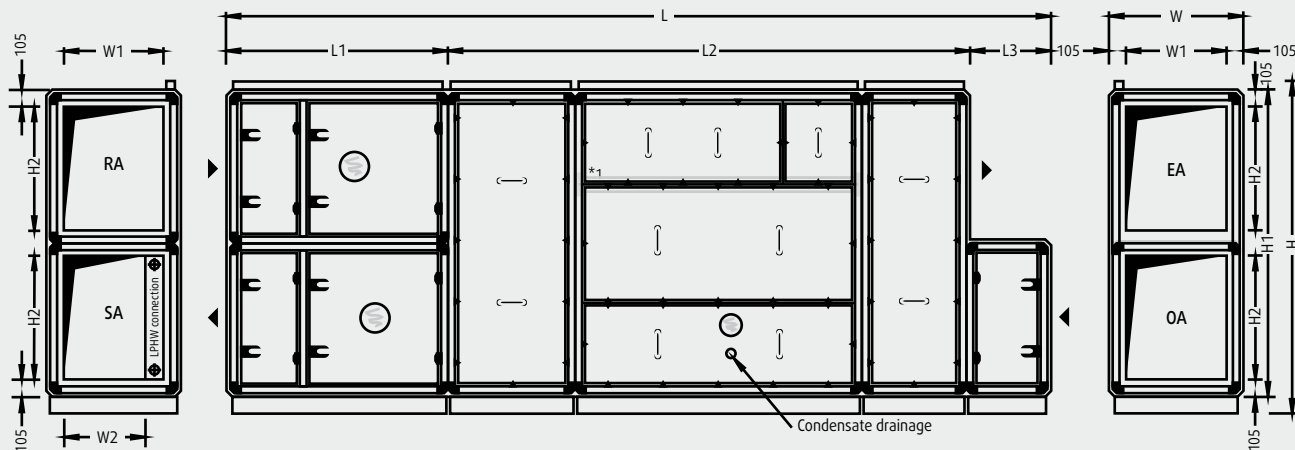
\* only possible with optional recirculation air heating damper



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	W	H <sup>2</sup>	L1	L2	L3	W1	W2	H1	H2	Weight
54 06 01	5,630	790	2,340	1,400	3,630	600	580	510	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	5,150

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 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	W	H <sup>2</sup>	Weight
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	3,500

### Controls cabinet

Unit Type	H x W x D	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 <sup>3</sup> /h	4,000	6,000	7,900	9,800	11,800	15,800	19,900	23,100	up to
Max. volume flow rate <sup>1</sup>	m <sup>3</sup> /h	5,400	8,100	10,900	13,500	16,300	21,500	27,600	31,000	55,200 *
Coefficient of power efficiency acc. to EN 13053:2012	%	72	72	72	73	73	73	75	75	
Total electrical power rating <sup>2</sup>	kW	2.61	3.85	4.62	5.54	6.25	10.32	15.18	17.61	
Current consumption <sup>2</sup>	A	7.2	9.2	14.6	14.6	16.5	29.2	31.4	39.8	
Operating voltage		3 / N / PE 400 V 50 Hz								
<b>Ext. pressure loss</b>										
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	
<b>Sound power level <sup>3</sup></b>										
Supply air vent	dB(A)	81	73	79	73	76	85	78	87	
RA connection	dB(A)	65	72	69	70	72	75	74	76	
Outside air vent	dB(A)	77	73	75	72	76	80	79	87	
EA connection	dB(A)	71	76	76	74	76	83	81	80	
Acoustic pressure at a distance of 1 m from the device <sup>3</sup>	dB(A)	65	59	64	58	62	69	64	72	
<b>Fan units</b>										
Rated motor input for supply air <sup>4</sup>	kW	1.49	2.11	2.61	3.08	4.44	5.74	8.50	9.87	
Rated motor input for return air <sup>4</sup>	kW	1.12	1.74	2.01	2.46	2.81	4.58	6.68	7.74	
SFP category supply air   return air		1   2	1   2	1   1	1   2	2   2	1   2	2   3	2   3	
Nominal rating supply air   return air	kW	3.0   1.7	3.0   3.0	4.7   4.7	4.7   4.7	6.0   4.7	9.4   9.4	11.0   9.4	16.5   9.4	
<b>Efficiency classes according to EN 13053:2012</b>										
heat recovery class		H1	H1	H1	H1	H1	H1	H1	H1	
Power consumption of fan motors SA   RA		P1   P1	P1   P1	P1   P1	P1   P1	P1   P1	P1   P1	P1   P1	P1   P1	
Air velocity class		V2	V2	V2	V2	V2	V2	V2	V2	
<b>Filtration according to DIN EN 779</b>										
Supply air   Outside air		F7   M5								
Return Air		M5								
<b>LPHW</b>										
Heating capacity SA=22°C <sup>5</sup>	kW	8.3	12.2	16.2	20.3	29.0	32.2	33.5	38.6	
Heating capacity SA=30°C <sup>5</sup>	kW	18.8	28.1	37.3	46.3	60.1	73.9	86.4	100.1	
Heating capacity Defrost <sup>5,6</sup>	kW	9.2	13.8	17.9	22.2	26.4	36.5	43.2	49.7	
<b>Water flow rate and pressure losses</b>										
LPHW	m <sup>3</sup> /h   kPa	0.89   4.8	1.38   4.3	2.14   3.6	2.16   4.3	2.13   4.8	3.85   3.9	4.75   3.5	4.75   3.9	
LPHW (pump warm water) valve	m <sup>3</sup> /h   kPa	0.54   4.7	0.77   9.5	1.04   6.7	1.21   9.2	1.51   5.7	1.92   3.7	2.21   4.9	2.48   6.2	
<b>Connections</b>										
LPHW connection	DN	32	32	40	40	40	50	50	65	
LPHW control valve connection	DN	15	15	15	15	20	25	25	25	
Water drain	DN	40	40	40	40	40	40	40	40	
<b>LPCW (optional) <sup>7</sup></b>										
Cooling capacity SA ≈ 17°C <sup>8</sup>	kW	20.3	32.0	45.5	56.7	67.3	89.0	111.1	134.1	
Additional power consumption for supply air	W	120	110	150	180	260	680	720	960	
LPCW connection	DN	40	50	50	65	80	80	80	100	
<b>Water flow rate and pressure losses</b>										
LPCW	m <sup>3</sup> /h   kPa	2.91   9.8	4.57   8.4	6.50   13.4	8.11   10.1	9.63   8.0	12.73   8.4	15.88   8.5	19.81   12.7	
LPCW valve	m <sup>3</sup> /h   kPa	2.91   21.3	4.57   20.9	6.50   16.5	8.11   10.5	9.63   14.8	12.73   10.1	15.88   15.8	19.81   23.0	

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 an altitude height of zero metres above sea level, unless otherwise specified

- 1 may require of alteration of technical equipment  
 2 dependent on configuration of measurement and control system/unit

- 3 at 250 Hz mid-band frequency  
 4 with average filter contamination  
 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, additional base frame required for condensate drain

- 8 FL = 6°C

Please seek approval of technical data and specifications prior to start of the planning process.

\* maximum possible volume flow rate

Technical details upon request.

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