

**Goedhart FC38S**



**Goedhart FC38D**



**Goedhart FC38L**



## **Goedhart FC38**

Standard air coolers

Cu/Al

R404A - Coolants



## Goedhart FC38

The range GEA Goedhart FC38 standard ceiling mounted air coolers are standard air coolers for cooling and freezing applications (FC38S), working/preparation rooms and storage rooms for humidity sensitive products (FC38D) and for cold storage rooms with height limitation (FC38L).

The standard FC38 aircoolers are suitable for all known refrigerants and not corrosive coolants, with the exception of NH3.

### Type description

#### FC38Si(dx) 6.2.40.7-230-E

FC38S = Ceiling mounted air coolers	2	= Number of fans
FC38D = Dual discharge air coolers		
FC38L = Extra low air cooler	40	= Fan diameter in cm
i = internally enhanced tubes	7	= Fin spacing
p = plain tubes		
(dx) = R404A	230	= 1x230V Fan tension
(G) = coolant	400	= 3x400V Fan tension
6 = number of tubes deep	E	= Electrical defrost
	H	= Hot gas defrost

### General features

#### Coil block

- Tube distance : 38x33 mm versprongen
- Tubes : 12mm o.d copper tube
- : I= internally enhanced tubes for refrigerants (dx)  
P= internally plain tubes for coolants(G) and refrigerants (dx)
- Fins : aluminium HT-fins
- Fin spacing : 4 mm : Suitable for applications with air temperatures above 0°C and with expected limited frost  
: 7 mm : Suitable for applications with air temperatures below 0°C and expected frost
- A good thermal with the fins contact because the copper tubes are mechanically expanded into fully collared aluminium fins.
- The suction header is executed with a Schröder valve for testing applications
- All coil blocks for refrigerants are pressure tested to 40 bars. All coil blocks for coolants are pressure tested to 15 bars.
- FC38 aircoolers are supplied with a light overpressure charge.

# Correction factors

## Correction factors DT1 (=Air-on)

The nominal capacities of the Goedhart FC38i(dx) and FC38p(dx) air coolers are based on R-404A direct expansion, DT1 and a RH of 85%. DT1 is the difference between air-on temperature and the evaporation temperature of the cooler. The evaporation temperature is the saturated temperature corresponding to the pressure at the suction outlet of the cooler.

The nominal capacities:

- (SC1)  $t_o = 0\text{ °C}$  and DT1= 10 K
- (SC2)  $t_o = -8\text{ °C}$  and DT1= 8 K
- (SC3)  $t_o = -25\text{ °C}$  and DT1= 7 K

Correction factors for various evaporation temperatures and temperature differences (DT1) are as indicated in the tables below. The requested capacity must be multiplied by a correction factor from the table, so that a cooler with the resulting nominal capacity can be chosen from the selection tables.

**Q nominal = factor x Q requested**

R404A										
DT1	Evaporation temperature (°C)									
K	+7	+6	+5	+4	+3	+2	+1	0	-1	-2
6	1,81	1,81	1,82	1,82	1,83	1,83	1,84	1,84	1,84	1,85
7	1,49	1,50	1,50	1,50	1,51	1,51	1,52	1,52	1,52	1,53
8	1,27	1,28	1,28	1,29	1,29	1,29	1,30	1,30	1,30	1,31
9	1,10	1,10	1,11	1,11	1,12	1,12	1,13	1,13	1,13	1,14
10	0,97	0,98	0,98	0,99	0,99	0,99	1,00	1,00	1,00	1,01
11	0,88	0,88	0,88	0,89	0,89	0,90	0,90	0,90	0,90	0,91
12	0,79	0,79	0,79	0,80	0,80	0,81	0,81	0,81	0,81	0,82

**SC1** DT1 = 10K  
Air on = 10°C (0/+10°C)

R404A										
DT1	Evaporation temperature (°C)									
K	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12
6	1,30	1,34	1,38	1,42	1,42	1,43	1,43	1,43	1,44	1,44
7	1,04	1,07	1,10	1,14	1,17	1,18	1,18	1,18	1,19	1,19
8	0,86	0,88	0,91	0,94	0,97	1,00	1,00	1,01	1,01	1,01
9	0,75	0,75	0,77	0,79	0,82	0,84	0,87	0,87	0,87	0,88
10	0,66	0,66	0,66	0,68	0,70	0,72	0,74	0,77	0,77	0,77
11	0,59	0,59	0,59	0,59	0,61	0,63	0,65	0,67	0,69	0,69
12	0,54	0,54	0,54	0,54	0,54	0,55	0,57	0,58	0,60	0,62

**SC2** DT1 = 8K  
Air on = 0°C (-8/0°C)

R404A										
DT1	Evaporation temperature (°C)									
K	-21	-22	-23	-24	-25	-26	-27	-28	-29	-30
6	1,20	1,20	1,21	1,21	1,21	1,22	1,22	1,23	1,23	1,23
7	0,99	0,99	0,99	1,00	1,00	1,00	1,00	1,01	1,01	1,02
8	0,84	0,84	0,84	0,85	0,85	0,85	0,85	0,86	0,86	0,86
9	0,73	0,73	0,73	0,73	0,73	0,74	0,74	0,74	0,74	0,75
10	0,64	0,64	0,64	0,64	0,65	0,65	0,65	0,65	0,66	0,66
11	0,57	0,57	0,57	0,58	0,58	0,58	0,58	0,58	0,59	0,59
12	0,52	0,52	0,52	0,52	0,52	0,52	0,53	0,53	0,53	0,53

**SC3** DT1 = 7K  
Air on = -18°C (-25/-18°C)

## Capacity optimization

To achieve the best possible combination of application, refrigerant and capacity, Goedhart can optimise the coil circuiting, depending on the specific conditions under which the products will be used. FC38 is a standard product to ensure shorter delivery times. The circuiting of these evaporators has been optimized according to the most commonly used coolants/refrigerants and conditions. Specific applications can vary from this, our sales department is there to assist you in selecting the best circuiting for your application.

## Correction factors for coolants

The nominal capacities of the Goedhart FC38p(G) air coolers are based on an air-on temperature of 12°C, a RH of 85% and:

- Water : in / out temperatuur = +1/+5°C
- E-Glycol : in / out temperatuur = - 2/+3°C
- P-Glycol : in / out temperatuur = - 2/+3°C
- Pekasol : in / out temperatuur = - 2/+3°C
- Freezium : in / out temperatuur = - 2/+3°C

Correction factors for various air-on temperatures and refrigerants or secondary coolants are as indicated in the tables below. The requested capacity must be multiplied by a correction factor from the table, so that a cooler with the resulting nominal capacity can be chosen from the selection tables.

**Q nominal = faktor x Q requested**

Water										
in/out	Air-on temperature (°C)									
°C	+8	+9	+10	+11	+12	+13	+14	+15	+16	
1 / 5	1,99	1,59	1,32	1,14	1,00	0,88	0,78	0,72	0,66	
2 / 6		1,95	1,57	1,30	1,12	0,98	0,87	0,78	0,71	
3 / 7			1,92	1,54	1,28	1,11	0,97	0,86	0,77	
4 / 8				1,94	1,56	1,31	1,13	0,98	0,87	
5 / 9					1,86	1,49	1,25	1,07	0,94	

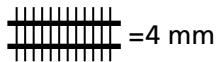
E-Glycol 28%										
in/out	Air-on temperature (°C)									
°C	+8	+9	+10	+11	+12	+13	+14	+15	+16	
-2 / 3	1,81	1,46	1,34	1,16	1,00	0,88	0,82	0,81	0,69	
-1 / 4	2,35	1,72	1,41	1,28	1,10	0,96	0,85	0,79	0,75	
0 / 5	2,43	2,30	1,64	1,40	1,24	1,06	0,93	0,84	0,76	
1 / 6		2,38	2,28	1,59	1,37	1,21	1,05	0,92	0,82	
2 / 7			2,28	2,09	1,55	1,35	1,17	1,03	0,91	

P-Glycol 28%										
in/out	Air-on temperature (°C)									
°C	+8	+9	+10	+11	+12	+13	+14	+15	+16	
-2 / 3	1,66	1,45	1,26	1,11	1,00	0,91	0,83	0,76	0,70	
-1 / 4	2,00	1,65	1,42	1,24	1,11	1,01	0,90	0,81	0,77	
0 / 5	2,48	1,94	1,65	1,41	1,23	1,14	1,00	0,91	0,85	
1 / 6		2,46	1,97	1,64	1,42	1,29	1,12	1,00	0,92	
2 / 7			2,45	1,96	1,63	1,42	1,28	1,11	1,00	

Pekasol 50%										
in/out	Air-on temperature (°C)									
°C	+8	+9	+10	+11	+12	+13	+14	+15	+16	
-2 / 3	1,68	1,42	1,26	1,11	1,00	0,90	0,82	0,77	0,70	
-1 / 4	2,02	1,65	1,42	1,24	1,10	0,98	0,89	0,81	0,76	
0 / 5	2,39	1,96	1,62	1,39	1,22	1,07	0,96	0,87	0,80	
1 / 6		2,36	1,93	1,60	1,37	1,20	1,06	0,94	0,86	
2 / 7			2,32	1,89	1,57	1,35	1,18	1,05	0,94	

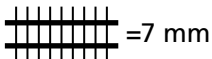
Freezium 24%										
in/out	Air-on temperature (°C)									
°C	+8	+9	+10	+11	+12	+13	+14	+15	+16	
-2 / 3	1,66	1,44	1,25	1,11	1,00	0,91	0,83	0,77	0,71	
-1 / 4	1,94	1,62	1,42	1,23	1,09	0,98	0,89	0,82	0,76	
0 / 5	2,38	1,91	1,59	1,39	1,21	1,07	0,97	0,88	0,81	
1 / 6		2,34	1,88	1,57	1,37	1,20	1,06	0,95	0,86	
2 / 7			2,30	1,86	1,55	1,35	1,18	1,05	0,94	

# Goedhart FC38Dp(dx) - R404A



Type	Fan diameter	1x230V-50Hz-4 pole					1x230V-50Hz-6 pole					Surface	Connections		Weight	Internal volume
		SC1	SC2				SC1	SC2					I	K		
FC38D	mm	DT1 = 10K Air on =10°C 0 / +10	DT1 = 8K Air on =0°C -8 / 0	Air volume	LpA @ 3 m (+/- 2 dB(A))*	DT1 = 10K Air on =10°C 0 / +10	DT1 = 8K Air on =0°C -8 / 0	Air volume	LpA @ 3 m (+/- 2 dB(A))*	m <sup>2</sup>	mm	mm	kg	dm <sup>3</sup>		
6.1.30.4	1x300	3,4	2,2	954	43,7					16	12	12	54	4		
6.1.35.4	1x350	5,7	3,9	1597	53,5					20	12	22	66	6		
6.2.30.4	2x300	6,4	4,2	1858	46,5					30	12	22	82	8		
6.2.35.4	2x350	10	6,7	2908	56,3					34	12	22	92	8		
6.2.40.4	2x400	16,9	11,4	4697	57,1	13,2	9,0	3326	49,1	61	16	28	123	14		
6.2.45.4	2x450	30,2	20,2	9276	61,0	22,9	15,6	5919	49,5	95	16	35	161	20		
6.3.30.4	3x300	11,2	7,7	2873	48,1					48	12	22	114	10		
6.3.35.4	3x350	14,2	9,5	4150	57,8					48	12	22	116	10		
6.3.40.4	3x400	23,6	15,4	7051	58,6	20,1	13,7	4993	50,6	91	16	35	169	20		
6.3.45.4	3x450	47,3	31,3	14031	62,5	35,1	23,7	8964	51,0	146	16	35	228	32		
6.4.30.4	4x300	14,4	9,8	3721	49,2					61	16	28	138	14		
6.4.35.4	4x350	18,7	12,5	5376	58,9					61	16	28	139	14		
6.4.40.4	4x400	31,3	20,9	8832	59,7	24,1	16,1	6262	51,7	110	16	35	200	24		

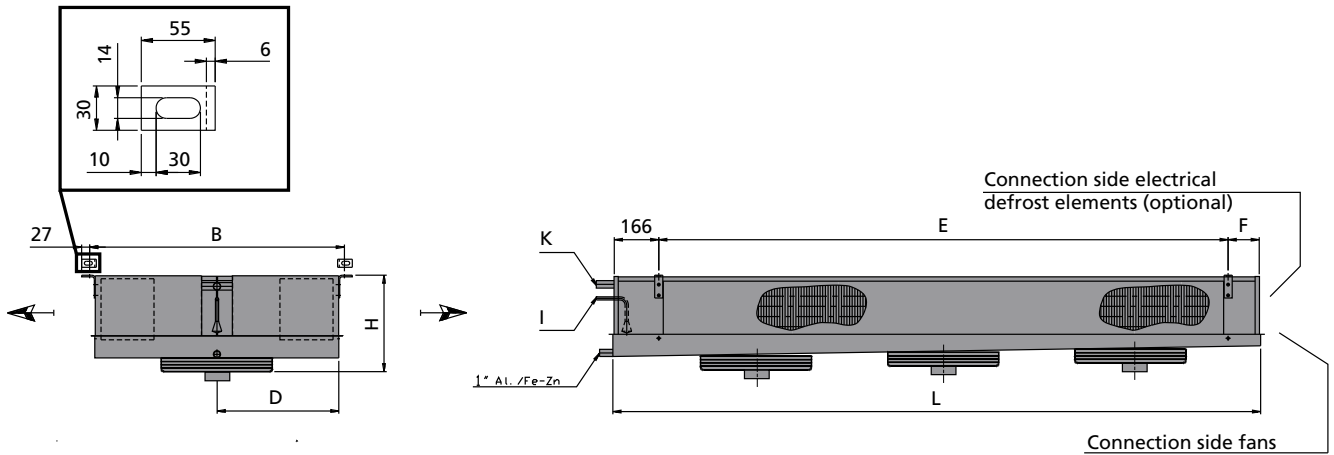
\* = Sound pressure indication (LpA) at 3 m distance each air cooler (+/- 2 dB(A)), free field conditions, according EN13487



Type	Fan diameter	1x230V-50Hz-4 pole					1x230V-50Hz-6 pole					Surface	Connections		Weight	Internal volume
		SC1	SC2				SC1	SC2					I	K		
FC38D	mm	DT1 = 10K Air on =10°C 0 / +10	DT1 = 8K Air on =0°C -8 / 0	Air volume	LpA @ 3 m (+/- 2 dB(A))*	DT1 = 10K Air on =10°C 0 / +10	DT1 = 8K Air on =0°C -8 / 0	Air volume	LpA @ 3 m (+/- 2 dB(A))*	m <sup>2</sup>	mm	mm	kg	dm <sup>3</sup>		
6.1.30.7	1x300	2,7	1,7	1167	43,7					10	12	12	51	4		
6.1.35.7	1x350	4,7	3,1	1918	53,5					12	12	22	62	6		
6.2.30.7	2x300	5,1	4,2	2288	46,5					18	12	22	77	8		
6.2.35.7	2x350	8,1	5,2	3562	56,3					21	12	22	87	8		
6.2.40.7	2x400	13,9	9,2	5625	57,1	11,4	7,8	3976	49,1	36	12	22	114	14		
6.2.45.7	2x450	24,6	16,4	10479	61,0	19,0	12,9	6804	49,5	57	16	28	145	20		
6.3.30.7	3x300	9,7	6,6	3509	48,1					29	12	22	107	10		
6.3.35.7	3x350	12,1	8,1	5131	57,8					29	12	22	109	10		
6.3.40.7	3x400	21,3	14,2	8441	58,6	17,3	11,7	5967	50,6	55	16	28	154	20		
6.3.45.7	3x450	37,6	24,9	15801	62,5	29,1	19,6	10266	51,0	88	16	35	203	32		
6.4.30.7	4x300	12,4	8,4	4581	49,2					36	12	22	128	14		
6.4.35.7	4x350	15,5	10,3	6682	58,9					36	16	22	129	14		
6.4.40.7	4x400	25,4	16,7	10796	59,7	21,8	14,7	7630	51,7	66	16	28	181	24		

\* = Sound pressure indication (LpA) at 3 m distance each air cooler (+/- 2 dB(A)), free field conditions, according EN13487

# Goedhart FC38Dp(dx) - R404A

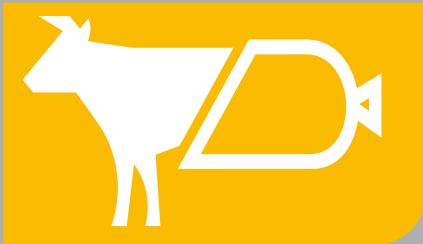
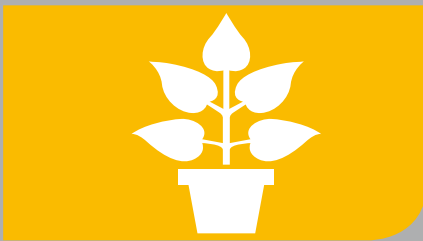


Fans mounted to the outside of the driptray!

## Declarations

Connection  $\leq 35$  mm : Declaration of incorporation (SEP)  
 Connection 42mm and 54 mm : module A  
 Group of fluid : 2  
 PS : 28 bar  
 TS : +55 / -40 °C

Type	Dimensions						Electrical defrost at 3x400V-50Hz				Standard	Light	Dimensions & Electrical defrost		
	L	B	H	D	E	F	Coil block		Drip tray					kW	kW**
							number	O [mm]	number	O [mm]					
FC38D	mm	mm	mm	mm	mm	mm									
6.1.30.*	925	850	305	405	575	166	2x L=1600	132	2x L=1600	150	2,5				
6.1.35.*	1080	850	330	405	730	166	2x L=1900	132	2x L=1900	150	3,0				
6.2.30.*	1425	850	325	405	1075	166	2x L=2500	132	2x L=2500	150	4,1				
6.2.35.*	1570	850	350	405	1220	166	2x L=2800	132	2x L=2800	150	4,6				
6.2.40.*	1775	950	420	455	1425	166	4x L=3100	132	2x L=3400	150	8	6,1			
6.2.45.*	2025	1000	520	480	1675	166	4x L=3700	132	2x L=3700	150	9,3	7,0			
6.3.30.*	2025	850	325	405	1675	166	2x L=3700	132	2x L=3700	150	6,2				
6.3.35.*	2025	850	350	405	1675	166	2x L=3700	132	2x L=3700	150	6,2				
6.3.40.*	2475	950	420	455	2125	166	4x L=4600	132	2x L=4600	150	11,6	8,8			
6.3.45.*	2850	1000	520	480	2550	116	4x L=5500	132	2x L=5500	150	14,0	10,6			
6.4.30.*	2475	850	325	405	2125	166	2x L=4600	132	2x L=4600	150	7,8				
6.4.35.*	2475	850	350	455	2125	166	2x L=4600	132	2x L=4600	150	7,8				
6.4.40.*	2850	950	420	480	2550	116	4x L=5500	132	2x L=5500	150	14,0	10,6			



For Contractors and Original Equipment Manufacturers (OEM) related to the industrial refrigeration industry, GEA Goedhart B.V. offers an unlimited range of air coolers and air cooled condensers in several configurations.

Depending on the application, the optimum configuration will be selected in close cooperation with our customers.

### Configurations

The following material combinations are available in various tube pitches and various fin spacing:

Tube material	Fin material
Copper (Cu)	Aluminium (Al)
Stainless steel (Stst)	Aluminium (Al)
Stainless steel (Stst)	Stainless steel (Stst)
Aluminium (Al)	Aluminium (Al)
Hot dipped galvanized steel (FeZn)	Hot dipped galvanized steel (FeZn)

### Options on aluminium fins

- Goldlack coated fins
- Seawater resistant aluminium fins (AlMg)

### Applications

Cooling	Freezing
Cold stores / Distribution centres	Cold stores / Distribution centres
Food processing rooms	Tunnel / spiral freezers
Fruit storage	Slaughter houses
Banana ripening storage	Automotive testing rooms
Greenhouse conditioning	Ski domes

### Pressure Equipment Directive (P.E.D.)

All aircoolers produced by Goedhart comply with the Pressure Equipment Directive 97/23/EC. PED certificates can be downloaded from [www.goedhart.nl](http://www.goedhart.nl).

## GEA Goedhart air coolers for every application





Excellence

Passion

Integrity

Responsibility

GEA-versity

GEA Group is a global mechanical engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881 the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX Europe 600 Index.



## GEA Heat Exchangers

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