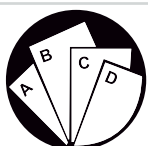


DK/DF

V-SHAPED DRY COOLER WITH AXIAL FANS FOR OUTDOOR USE



Multiple instructions:
Consult the specific part



Read and understand the
instructions before underta-
king any work on the unit

RETAIN FOR FUTURE REFERENCE

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Declaration of conformity

We declare under our own responsibility that the below equipment complies in all parts with the CEE and EN directives. The declaration of conformity is enclosed to the technical booklet enclosed with the unit.

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1. INTRODUCTION

1.1 General information

These installation, operation and maintenance instructions are given as a guide to good practice in the installation, putting into service, operation, and maintenance by the user of 'DK/DF' units.

They do not contain full service procedures necessary for the continued successful operation of this equipment. The services of a qualified technician should be employed through the medium of a maintenance contract with a reputable service company.

1.2 Cautions & Warnings

Cautions and warnings appear at appropriate places in this instruction manual. Your personal safety and the proper operation of this machine require that you follow them carefully. The manufacturer assumes no liability for installations or servicing performed by unqualified personnel.

1.3 Reception & inspection of the unit

On arrival, inspect the unit before signing the delivery note. Specify any damage on the delivery note, and send a registered letter of protest to the last carrier of the goods within 72 hours of delivery.

Notify immediately to the company. The unit should be totally inspected within 7 days of delivery. If any concealed damage is discovered, send a registered letter of protest to the carrier within 7 days of delivery and Notify immediately to the company. Units are shipped with 1.5 bar of Nitrogen and should be examined pressing the schrader valve and hearing the sound of charge of nitrogen or with an electronic leak detector to determine the hermetic integrity of the unit.

1.4 Refrigerant

The unit is sent without refrigerant. The refrigerant charge must be done by a certified company and qualified personnel. After the installation of the system, this must be checked for any possible leak by qualified personnel. Not complying with any of these requirements, or not justifying them with the compulsory data registration in the units will void the warranty.

1.5 Warranty

Warranty is based on the general terms and conditions of the attached ENEX TECHNOLOGIES warranty policy for Authorized Dealers of ENEX TECHNOLOGIES. The warranty is void if the equipment is repaired or modified without the written approval of ENEX TECHNOLOGIES, if the operating limits are exceeded or if the control system or the electrical wiring is modified.

Damage due to misuse, lack of maintenance or failure to comply with the manufacturer's instructions or recommendations is not covered by the warranty obligation. If the user does not conform to the rules of chapter "Maintenance", it may entail cancellation of warranty and liabilities by ENEX TECHNOLOGIES.

1.6 Unit identification

Each unit has a rating plate that provides key information regarding the machine. The rating plate may differ from the one shown below as the example is for a standard unit without accessories. For all electrical information not provided on the label, refer to the wiring diagram. A facsimile of the label is shown below:

			
		Directive 2014/68/UE	
MODEL			
MODEL REF			
SERIAL NUMBER			
Fluid group / type			
Internal volume			L
Range of temperature			°C
PS / PT			bar(g)
Weight			Kg
ELECTRICAL MOTOR DATA			
Conn.	N°	V/Ph/Hz	A
			kW
ELECTRICAL DEFROSTING			
Conn.	N°	V/Ph/Hz	A
			kW

2. ABOUT PRODUCT

2.1 DK/DF unit description

2.1.1 Finned coils

- Built with copper tubes Ø 12mm and Ø5/8", manufactured in compliance with the CUPROCLIMA specifications
- The staggered arrangement of copper tubes across self-spaced fins, the accurate link between tubes and fins as well as the use of corrugated fins, all this configuration allows our coils to reach the highest performance.
- FLOATING PACK SYSTEM that allows the coils to levitate to avoid leaks.
- All coils are subjected to a resistance & leakage test under a rated pressure of 40 bar and pressurized using nitrogen at 2.5 bar to avoid the corrosion of the inner surface of the copper tubes.
- Copper headers with Aluminum slip-on Flanges - Nominal Pressure 10 - DIN2633 (as standard)
- Copper headers with SS slip-on Flanges - Nominal Pressure 10 - DIN2633 (as optional).
- Copper headers with brass screw connection (as optional).

2.1.2 Casework

- The case structure of the unit is manufactured in galvanized steel with external surface painted epoxy-polyester and then baked and cured at 180° C, giving it a high protection against corrosion even in extreme environmental conditions.
- Internal separators to avoid the "by-pass" effect during sequential operation of fans.
- Also are prepared to easy handling.
- Only ready for truck transportation due to its dimensions.

2.1.3 Fans

- Fans' diameter is Ø 800/870/910/960 mm.
- Axial fans with external rotor (380-480V III @ 50/60Hz).
- Equipped as standard with EC fan motors. These fans can modulate the rotation speed depending on requirements, with excellent acoustic performance. Providing the optimal operation of the installation.

2.2 Nomenclature

	D	K	96	D	9	2	6	A	EC
Typology									
Module									
Fan Diameter									
Fin Spacing									
N° of fan per row									
N° of rows									
N° of coil rows									
Circuit									
Type of fan									

2.2 OPTIONS & ACCESORIES

2.3.1 Coil

- Copper headers with brass screw connection
- Copper headers with SS slip-on Flanges - Nominal Pressure 10 - DIN2633
- Stainless steel tubes ('F' Module)
- Copper Fins
- Coated Fins
- AquaAero treatment
- Blygold treatment
- Other coil surface treatment

2.3.2 Casing/structure

- AquaAero protection casing
- Silentblocks
- Internal inspection walkway

2.3.3 Electrical options

- Main service switch
- Basic electrical wiring (WE)
 - Individual service switch by fan
- Electrical standard panel (WEPP)
 - Individual service switch by fan
 - EC speed controller + temperature probes (basic)
- Electrical premium panel (WEPM)
 - Individual service switch by fan
 - EC speed controller + temperature probes (advanced)
 - Adiabatic control
 - BACnet router

2.3.4 Other

- Adiabatic spray system
- Adiabatic PAD system (Coming soon)
- Recirculation water system (Coming soon)

2.4 Technical data

Fan $\varnothing$ = 960 mm

Fin pitch = 2,1 mm, RPM = 1090 - Ultra high performance

Model	Capacity (kW)	Pressure Drop	Surface	Internal Volume	Air Flow	Noise Level	Fans Data			Weight
	SC20		m ²	dm ³	m ³ /h	dBA (10m)	N°	kW	A	kg
DK96D222 EC	272,0	81,0	531,5	72,1	144.643	57	4	10,8	16,8	685
DK96D223 EC	356,6	61,0	798,1	110,8	140.944	57	4	11,4	17,6	771
DK96D224 EC	422,0	82,0	1064,0	148,4	137.398	57	4	12,0	18,4	857
DK96D225 EC	472,7	57,0	1330,0	185,5	132.044	57	4	12,8	19,6	943
DK96D226 EC	503,1	72,0	1596,0	220,0	128.574	57	4	13,3	20,4	1.028
DK96D322 EC	405,1	54,0	798,3	111,3	216.965	59	6	16,2	25,2	1.022
DK96D323 EC	530,7	43,0	1197,0	167,0	211.416	59	6	17,1	26,4	1.150
DK96D324 EC	632,7	78,0	1597,0	222,6	206.097	59	6	18,0	27,6	1.278
DK96D325 EC	708,7	54,0	1996,0	278,3	198.066	58	6	19,2	29,4	1.406
DK96D326 EC	756,7	83,0	2394,0	332,4	192.861	58	6	20,0	30,6	1.534
DK96D422 EC	534,6	38,0	1064,0	148,4	289.286	60	8	21,5	33,6	1.359
DK96D423 EC	700,6	30,0	1597,0	222,6	281.887	59	8	22,8	35,2	1.529
DK96D424 EC	843,4	77,0	2129,0	296,8	274.796	59	8	24,0	36,8	1.699
DK96D425 EC	944,7	53,0	2661,0	371,0	264.088	59	8	25,7	39,2	1.869
DK96D426 EC	999,1	43,0	3193,0	445,2	257.148	59	8	26,6	40,8	2.039
DK96D522 EC	680,1	71,0	1330,0	185,5	361.607	60	10	26,9	42,0	1.697
DK96D523 EC	890,8	56,0	1996,0	278,3	352.359	60	10	28,6	44,0	1.909
DK96D524 EC	1043,0	45,0	2661,0	371,0	343.495	60	10	30,0	46,0	2.120
DK96D525 EC	1169,0	31,0	3326,0	463,8	330.110	60	10	32,1	49,0	2.332
DK96D526 EC	1261,0	79,0	3991,0	556,5	321.435	60	10	33,3	51,0	2.544
DK96D622 EC	778,2	16,0	1597,0	222,6	433.929	61	12	32,3	50,4	2.034
DK96D623 EC	1021,0	13,0	2395,0	333,9	422.831	61	12	34,3	52,8	2.288
DK96D624 EC	1265,0	75,0	3193,0	445,2	412.194	61	12	36,0	55,2	2.542
DK96D625 EC	1417,0	52,0	3991,0	556,5	396.132	61	12	38,5	58,8	2.795
DK96D626 EC	1498,0	42,0	4790,0	667,8	385.721	61	12	40,0	61,2	3.049
DK96D722 EC	923,2	25,0	1863,0	259,7	506.250	62	14	37,7	58,8	2371
DK96D723 EC	1210,0	20,0	2794,0	389,6	493.302	62	14	40,0	61,6	2667
DK96D724 EC	1419,0	16,0	3725,0	519,4	480.893	62	14	42,0	64,4	2963
DK96D725 EC	1665,0	80,0	4657,0	649,3	462.154	62	14	44,9	68,6	3259
DK96D726 EC	1760,0	64,0	5588,0	779,1	450.008	62	14	46,6	71,4	3555
DK96D822 EC	1068,0	37,0	2129,0	296,8	578.571	63	16	43,1	67,2	2709
DK96D823 EC	1400,0	29,0	3193,0	445,2	563.774	63	16	45,7	70,4	3047
DK96D824 EC	1640,0	23,0	4258,0	593,6	549.592	63	16	48,1	73,6	3384
DK96D825 EC	1841,0	16,0	5322,0	742,0	528.176	63	16	51,3	78,4	3722
DK96D826 EC	1950,0	13,0	6386,0	890,4	514.295	63	16	53,3	81,6	4060
DK96D922 EC	1214,0	51,0	2395,0	333,9	650.893	64	18	48,5	75,6	3046
DK96D923 EC	1590,0	41,0	3592,0	500,9	634.246	64	18	51,4	79,2	3426
DK96D924 EC	1862,0	32,0	4790,0	667,8	618.291	64	18	54,1	82,8	3806
DK96D925 EC	2088,0	23,0	5987,0	834,8	594.198	64	18	57,7	88,2	4185
DK96D926 EC	2211,0	18,0	7185,0	1001,7	578.582	64	18	59,9	91,8	4565
DK96DA22 EC	1360,0	70,0	2661,0	371,0	723.214	65	20	53,9	84,0	3383
DK96DA23 EC	1781,0	55,0	3991,0	556,5	704.718	65	20	57,1	88,0	3805
DK96DA24 EC	2084,0	44,0	5322,0	742,0	686.990	64	20	60,1	92,0	4227
DK96DA25 EC	2336,0	30,0	6652,0	927,5	660.220	64	20	64,2	98,0	4649
DK96DA26 EC	2473,0	25,0	7983,0	1113,0	642.869	64	20	66,6	102,0	5070

Fan ϕ = 960 mm

Fin pitch = 2,1 mm, RPM = 1090 - Ultra high performance

Model	Capacity	Pressure	Surface	Internal	Air Flow	Noise	Fans Data			Weight
	SC20	kPa	m ²	dm ³	m ³ /h	dBA (10m)	N°	kW	A	kg
DF96D222 EC	301,3	62,0	652,3	100,4	143.389	57	4	11,0	16,8	735
DF96D223 EC	391,7	70,0	979,9	156,1	139.115	57	4	11,7	18,0	846
DF96D224 EC	430,9	62,0	1306,0	208,2	129.085	57	4	13,3	20,4	957
DF96D225 EC	467,0	67,0	1633,0	259,3	124.302	57	4	13,9	21,2	1.068
DF96D226 EC	488,4	72,0	1958,0	306,7	119.874	57	4	14,4	22,0	1.179
DF96D322 EC	452,4	56,0	979,9	156,1	215.084	59	6	16,5	25,2	1.097
DF96D323 EC	589,5	84,0	1469,0	230,0	208.672	59	6	17,6	27,0	1.262
DF96D324 EC	649,8	84,0	1959,0	309,4	193.628	58	6	19,9	30,6	1.428
DF96D325 EC	700,0	65,0	2448,0	384,7	186.452	59	6	20,8	31,8	1.593
DF96D326 EC	733,9	77,0	2940,0	468,3	179.811	59	6	21,6	33,0	1.759
DF96D422 EC	602,6	56,0	1306,0	206,3	286.778	60	8	22,0	33,6	1.459
DF96D423 EC	773,9	42,0	1960,0	312,2	278.229	59	8	23,5	36,0	1.679
DF96D424 EC	861,0	58,0	2613,0	416,3	258.170	59	8	26,5	40,8	1.898
DF96D425 EC	937,8	84,0	3266,0	520,4	248.603	59	8	27,8	42,4	2.118
DF96D426 EC	976,5	66,0	3919,0	622,6	239.747	60	8	28,8	44,0	2.338
DF96D522 EC	741,0	32,0	1633,0	260,2	358.473	60	10	27,5	42,0	1.821
DF96D523 EC	982,6	79,0	2450,0	390,3	347.786	60	10	29,3	45,0	2.095
DF96D524 EC	1072,0	48,0	3265,0	515,7	322.712	60	10	33,1	51,0	2.369
DF96D525 EC	1172,0	83,0	4083,0	650,5	310.753	60	10	34,7	53,0	2.643
DF96D526 EC	1221,0	65,0	4899,0	780,6	299.684	60	10	36,0	55,0	2.917
DF96D622 EC	903,8	54,0	1960,0	312,2	430.167	61	12	33,0	50,4	2.183
DF96D623 EC	1160,0	41,0	2940,0	468,3	417.343	61	12	35,2	54,0	2.511
DF96D624 EC	1299,0	81,0	3918,0	618,9	387.255	61	12	39,8	61,2	2.840
DF96D625 EC	1400,0	62,0	4899,0	777,8	372.904	61	12	41,6	63,6	3.168
DF96D626 EC	1458,0	48,0	5879,0	936,7	359.621	61	12	43,2	66,0	3.496
DF96D722 EC	1067,0	84,0	2286,0	364,3	501.862	62	14	38,5	58,8	2545
DF96D723 EC	1369,0	64,0	3430,0	546,4	486.900	62	14	41,1	63,0	2928
DF96D724 EC	1494,0	39,0	4573,0	728,5	451.797	62	14	46,4	71,4	3310
DF96D725 EC	1611,0	30,0	5716,0	910,7	435.054	62	14	48,6	74,2	3693
DF96D726 EC	1712,0	73,0	6859,0	1092,8	419.558	62	14	50,4	77,0	4076
DF96D822 EC	1156,0	16,0	2613,0	416,3	573.556	63	16	44,0	67,2	2907
DF96D823 EC	1487,0	13,0	3919,0	624,5	556.457	63	16	46,9	72,0	3344
DF96D824 EC	1721,0	56,0	5226,0	832,6	516.339	63	16	53,0	81,6	3781
DF96D825 EC	1855,0	43,0	6532,0	1040,8	497.205	63	16	55,5	84,8	4218
DF96D826 EC	1934,0	34,0	7839,0	1248,9	479.494	63	16	57,6	88,0	4655
DF96D922 EC	1318,0	23,0	2940,0	468,3	645.251	64	18	49,5	75,6	3269
DF96D923 EC	1694,0	18,0	4409,0	702,5	626.014	64	18	52,8	81,0	3760
DF96D924 EC	1948,0	78,0	5879,0	936,7	580.882	64	18	59,6	91,8	4252
DF96D925 EC	2099,0	60,0	7349,0	1170,9	559.355	64	18	62,5	95,4	4743
DF96D926 EC	2187,0	47,0	8819,0	1405,0	539.431	64	18	64,8	99,0	5234
DF96DA22 EC	1481,0	31,0	3266,0	520,4	716.945	65	20	55,0	84,0	3631
DF96DA23 EC	1903,0	24,0	4899,0	780,6	695.571	64	20	58,7	90,0	4177
DF96DA24 EC	2080,0	15,0	6532,0	1040,8	645.424	64	20	66,3	102,0	4722
DF96DA25 EC	2343,0	81,0	8165,0	1301,0	621.506	64	20	69,4	106,0	5268
DF96DA26 EC	2440,0	63,0	9799,0	1561,1	599.368	65	20	72,0	110,0	5813

Fan $\varnothing$ = 870 mm

Fin pitch = 2,1 mm, RPM = 1.120 - High performance

Model	Capacity (kW)	Pressure Drop	Surface	Internal Volume	Air Flow	Noise Level	Fans Data			Weight
	SC20		m ²	dm ³	m ³ /h	dBA (10m)	N°	kW	A	kg
DK87D222 EC	256,7	61,0	531,5	72,1	122.747	56	4	9,4	14,4	685
DK87D223 EC	335,2	76,0	798,3	111,3	119.649	56	4	9,9	15,2	771
DK87D224 EC	387,1	59,0	1064,0	148,4	116.737	56	4	10,3	15,6	857
DK87D225 EC	437,1	79,0	1330,0	184,0	114.240	56	4	10,6	16,4	943
DK87D226 EC	458,9	63,0	1596,0	220,0	111.672	56	4	10,9	16,8	1.028
DK87D322 EC	382,3	41,0	798,3	111,3	184.120	58	6	14,1	21,6	1.022
DK87D323 EC	502,6	73,0	1197,0	167,0	179.473	58	6	14,8	22,8	1.150
DK87D324 EC	580,4	57,0	1597,0	222,6	175.106	58	6	15,4	23,4	1.278
DK87D325 EC	651,0	48,0	1996,0	278,3	171.359	57	6	15,9	24,6	1.406
DK87D326 EC	690,1	72,0	2394,0	332,4	167.507	57	6	16,4	25,2	1.534
DK87D422 EC	504,6	29,0	1064,0	148,4	245.493	58	8	18,8	28,8	1.359
DK87D423 EC	669,9	71,0	1597,0	222,6	239.297	58	8	19,8	30,4	1.529
DK87D424 EC	773,6	55,0	2129,0	296,8	233.474	58	8	20,6	31,2	1.699
DK87D425 EC	867,7	47,0	2661,0	371,0	228.479	58	8	21,2	32,8	1.869
DK87D426 EC	922,2	84,0	3193,0	445,2	223.343	58	8	21,8	33,6	2.039
DK87D522 EC	641,8	54,0	1330,0	185,5	306.866	59	10	23,5	36,0	1.697
DK87D523 EC	827,8	42,0	1996,0	278,3	299.121	59	10	24,7	38,0	1.909
DK87D524 EC	956,6	33,0	2661,0	371,0	291.842	59	10	25,7	39,0	2.120
DK87D525 EC	1074,0	28,0	3326,0	463,8	285.599	59	10	26,5	41,0	2.332
DK87D526 EC	1150,0	69,0	3991,0	556,5	279.178	59	10	27,3	42,0	2.544
DK87D622 EC	734,8	12,0	1597,0	222,6	368.239	60	12	28,2	43,2	2.034
DK87D623 EC	1005,0	70,0	2395,0	333,9	358.945	60	12	29,6	45,6	2.288
DK87D624 EC	1160,0	54,0	3193,0	445,2	350.211	60	12	30,9	46,8	2.542
DK87D625 EC	1301,0	46,0	3991,0	556,5	342.718	60	12	31,8	49,2	2.795
DK87D626 EC	1367,0	37,0	4790,0	667,8	335.014	60	12	32,8	50,4	3.049
DK87D722 EC	871,6	19,0	1863,0	259,7	429.612	61	14	32,9	50,4	2371
DK87D723 EC	1126,0	15,0	2794,0	389,6	418.769	61	14	34,6	53,2	2667
DK87D724 EC	1364,0	84,0	3725,0	519,4	408.579	61	14	36,0	54,6	2963
DK87D725 EC	1529,0	71,0	4657,0	649,3	399.838	61	14	37,2	57,4	3259
DK87D726 EC	1605,0	56,0	5588,0	779,1	390.849	61	14	38,2	58,8	3555
DK87D822 EC	1009,0	28,0	2129,0	296,8	490.986	62	16	37,6	57,6	2709
DK87D823 EC	1302,0	22,0	3193,0	445,2	478.593	62	16	39,5	60,8	3047
DK87D824 EC	1506,0	17,0	4258,0	593,6	466.947	62	16	41,2	62,4	3384
DK87D825 EC	1692,0	14,0	5322,0	742,0	456.958	62	16	42,5	65,6	3722
DK87D826 EC	1844,0	82,0	6386,0	890,4	446.685	62	16	43,7	67,2	4060
DK87D922 EC	1146,0	39,0	2395,0	333,9	552.359	63	18	42,3	64,8	3046
DK87D923 EC	1478,0	30,0	3592,0	500,9	538.417	63	18	44,5	68,4	3426
DK87D924 EC	1709,0	24,0	4790,0	667,8	525.316	63	18	46,3	70,2	3806
DK87D925 EC	1920,0	20,0	5987,0	834,8	514.077	63	18	47,8	73,8	4185
DK87D926 EC	2020,0	16,0	7185,0	1001,7	502.520	62	18	49,1	75,6	4565
DK87DA22 EC	1283,0	53,0	2661,0	371,0	613.732	64	20	47,0	72,0	3383
DK87DA23 EC	1655,0	41,0	3991,0	556,5	598.241	64	20	49,4	76,0	3805
DK87DA24 EC	1912,0	32,0	5322,0	742,0	583.684	63	20	51,5	78,0	4227
DK87DA25 EC	2147,0	27,0	6652,0	927,5	571.197	63	20	53,1	82,0	4649
DK87DA26 EC	2258,0	22,0	7983,0	1113,0	558.356	63	20	54,6	84,0	5070

Fan ϕ = 870 mm

Fin pitch = 2,1 mm, RPM = 1.120 - High performance

Model	Capacity (kW)	Pressure Drop	Surface	Internal Volume	Air Flow	Noise Level	Fans Data			Weight
	SC20	kPa	m ²	dm ³	m ³ /h	dBA (10m)	N°	kW	A	kg
DF87D222 EC	266,6	62,0	653,2	104,1	119.844	56	4	9,9	15,2	735
DF87D223 EC	340,9	68,0	979,9	156,1	115.602	56	4	10,4	16,0	846
DF87D224 EC	412,8	58,0	1306,0	208,2	111.702	56	4	10,9	16,8	957
DF87D225 EC	442,6	82,0	1633,0	260,2	108.095	56	4	11,3	17,2	1.068
DF87D226 EC	456,9	84,0	1958,0	306,7	104.743	56	4	11,6	17,6	1.179
DF87D322 EC	401,2	75,0	979,1	153,3	179.765	58	6	14,8	22,8	1.097
DF87D323 EC	508,8	56,0	1469,0	230,0	173.403	58	6	15,7	24,0	1.262
DF87D324 EC	622,3	79,0	1959,0	309,4	167.552	57	6	16,4	25,2	1.428
DF87D325 EC	660,6	60,0	2448,0	384,7	162.142	57	6	17,0	25,8	1.593
DF87D326 EC	684,3	69,0	2940,0	468,3	157.114	57	6	17,4	26,4	1.759
DF87D422 EC	537,3	85,0	1306,0	208,2	239.687	58	8	19,7	30,4	1.459
DF87D423 EC	681,2	64,0	1960,0	312,2	231.203	58	8	20,9	32,0	1.679
DF87D424 EC	824,9	54,0	2613,0	416,3	223.403	58	8	21,8	33,6	1.898
DF87D425 EC	884,7	77,0	3266,0	520,4	216.190	58	8	22,6	34,4	2.118
DF87D426 EC	910,6	59,0	3919,0	622,6	209.485	58	8	23,2	35,2	2.338
DF87D522 EC	668,4	71,0	1632,0	257,9	299.608	59	10	24,6	38,0	1.821
DF87D523 EC	848,0	52,0	2450,0	390,3	289.004	59	10	26,1	40,0	2.095
DF87D524 EC	1027,0	45,0	3265,0	515,7	279.254	59	10	27,3	42,0	2.369
DF87D525 EC	1106,0	76,0	4083,0	650,5	270.237	59	10	28,3	43,0	2.643
DF87D526 EC	1138,0	58,0	4899,0	780,6	261.856	59	10	29,0	44,0	2.917
DF87D622 EC	789,2	37,0	1960,0	312,2	359.530	60	12	29,6	45,6	2.183
DF87D623 EC	1002,0	27,0	2940,0	468,3	346.805	60	12	31,3	48,0	2.511
DF87D624 EC	1244,0	75,0	3918,0	618,9	335.104	60	12	32,7	50,4	2.840
DF87D625 EC	1321,0	56,0	4899,0	777,8	324.284	60	12	33,9	51,6	3.168
DF87D626 EC	1360,0	43,0	5879,0	936,7	314.228	60	12	34,8	52,8	3.496
DF87D722 EC	931,5	57,0	2286,0	364,3	419.451	61	14	34,5	53,2	2545
DF87D723 EC	1182,0	42,0	3430,0	546,4	404.605	61	14	36,5	56,0	2928
DF87D724 EC	1432,0	36,0	4573,0	728,5	390.955	61	14	38,2	58,8	3310
DF87D725 EC	1522,0	27,0	5716,0	910,7	378.332	61	14	39,6	60,2	3693
DF87D726 EC	1596,0	66,0	6859,0	1092,8	366.599	61	14	40,6	61,6	4076
DF87D822 EC	1074,0	83,0	2613,0	416,3	479.373	62	16	39,4	60,8	2907
DF87D823 EC	1362,0	62,0	3919,0	624,5	462.406	62	16	41,8	64,0	3344
DF87D824 EC	1649,0	53,0	5226,0	832,6	446.806	62	16	43,7	67,2	3781
DF87D825 EC	1752,0	40,0	6532,0	1040,8	432.379	62	16	45,2	68,8	4218
DF87D826 EC	1805,0	30,0	7839,0	1248,9	418.970	62	16	46,5	70,4	4655
DF87D922 EC	1152,0	16,0	2940,0	468,3	539.294	63	18	44,3	68,4	3269
DF87D923 EC	1464,0	12,0	4409,0	702,5	520.207	63	18	47,0	72,0	3760
DF87D924 EC	1866,0	73,0	5879,0	936,7	502.657	62	18	49,1	75,6	4252
DF87D925 EC	1981,0	55,0	7349,0	1170,9	486.426	62	18	50,9	77,4	4743
DF87D926 EC	2040,0	42,0	8819,0	1405,0	471.341	62	18	52,3	79,2	5234
DF87DA22 EC	1293,0	21,0	3266,0	520,4	599.216	64	20	49,3	76,0	3631
DF87DA23 EC	1643,0	16,0	4899,0	780,6	578.007	63	20	52,2	80,0	4177
DF87DA24 EC	1996,0	14,0	6532,0	1040,8	558.507	63	20	54,6	84,0	4722
DF87DA25 EC	2211,0	74,0	8165,0	1301,0	540.474	63	20	56,5	86,0	5268
DF87DA26 EC	2276,0	57,0	9799,0	1561,1	523.712	63	20	58,1	88,0	5813

Fan ϕ = 800 mm

Fin pitch = 2,1 mm, RPM = 950 - Low noise

Model	Capacity (kW)	Pressure Drop	Surface	Internal Volume	Air Flow	Noise Level	Fans Data			Weight
	SC20		m ²	dm ³	m ³ /h	dBA (10m)	N°	kW	A	kg
DK81D222 EC	233,2	85,0	532,2	74,2	92.312	53	4	5,8	9,2	836
DK81D223 EC	292,6	62,0	798,3	111,3	90.502	52	4	5,9	9,2	922
DK81D224 EC	333,1	72,0	1064,0	147,9	88.777	52	4	6,1	9,6	1.008
DK81D225 EC	358,8	80,0	1330,0	185,5	87.141	52	4	6,2	9,6	1.094
DK81D226 EC	373,2	63,0	1597,0	222,6	85.570	52	4	6,3	10,0	1.180
DK81D322 EC	349,7	82,0	798,3	111,3	138.467	54	6	8,7	13,8	1.249
DK81D323 EC	438,8	60,0	1197,0	167,0	135.753	54	6	8,9	13,8	1.377
DK81D324 EC	495,9	45,0	1597,0	222,6	133.165	54	6	9,1	14,4	1.505
DK81D325 EC	536,9	64,0	1996,0	278,3	130.711	54	6	9,3	14,4	1.633
DK81D326 EC	561,6	84,0	2395,0	333,9	128.355	54	6	9,4	15,0	1.760
DK81D422 EC	466,1	80,0	1064,0	148,4	184.623	55	8	11,6	18,4	1.662
DK81D423 EC	584,9	58,0	1597,0	222,6	181.004	55	8	11,9	18,4	1.832
DK81D424 EC	661,1	44,0	2129,0	296,8	177.553	55	8	12,1	19,2	2.001
DK81D425 EC	717,4	76,0	2661,0	371,0	174.281	55	8	12,4	19,2	2.171
DK81D426 EC	746,2	59,0	3193,0	445,2	171.140	54	8	12,6	20,0	2.341
DK81D522 EC	575,9	47,0	1330,0	185,5	230.778	56	10	14,5	23,0	2.075
DK81D523 EC	723,2	34,0	1996,0	278,3	226.255	56	10	14,8	23,0	2.287
DK81D524 EC	834,6	81,0	2661,0	371,0	221.941	56	10	15,2	24,0	2.498
DK81D525 EC	894,6	62,0	3326,0	463,8	217.851	55	10	15,5	24,0	2.710
DK81D526 EC	930,8	49,0	3991,0	556,5	213.925	55	10	15,7	25,0	2.922
DK81D622 EC	699,0	78,0	1597,0	222,6	276.934	57	12	17,3	27,6	2.488
DK81D623 EC	877,1	57,0	2395,0	333,9	271.506	57	12	17,8	27,6	2.741
DK81D624 EC	991,4	43,0	3193,0	445,2	266.329	56	12	18,2	28,8	2.995
DK81D625 EC	1064,0	33,0	3991,0	556,5	261.421	56	12	18,6	28,8	3.249
DK81D626 EC	1123,0	80,0	4790,0	667,8	256.710	56	12	18,9	30,0	3.503
DK81D722 EC	782,6	16,0	1863,0	259,7	323.089	58	14	20,2	32,2	2901
DK81D723 EC	984,7	12,0	2794,0	389,6	316.757	58	14	20,8	32,2	3196
DK81D724 EC	1165,0	66,0	3725,0	519,4	310.717	57	14	21,2	33,6	3492
DK81D725 EC	1249,0	51,0	4657,0	649,3	304.991	57	14	21,6	33,6	3788
DK81D726 EC	1300,0	39,0	5588,0	779,1	299.495	57	14	22,0	35,0	4084
DK81D822 EC	905,3	24,0	2129,0	296,8	369.245	59	16	23,1	36,8	3314
DK81D823 EC	1138,0	18,0	3193,0	445,2	362.008	58	16	23,7	36,8	3651
DK81D824 EC	1289,0	13,0	4258,0	593,6	355.105	58	16	24,3	38,4	3989
DK81D825 EC	1434,0	73,0	5322,0	742,0	348.562	58	16	24,7	38,4	4327
DK81D826 EC	1492,0	57,0	6386,0	890,4	342.280	58	16	25,2	40,0	4665
DK81D922 EC	1028,0	34,0	2395,0	333,9	415.401	60	18	26,0	41,4	3727
DK81D923 EC	1292,0	25,0	3592,0	500,9	407.259	59	18	26,7	41,4	4106
DK81D924 EC	1462,0	19,0	4790,0	667,8	399.493	59	18	27,3	43,2	4486
DK81D925 EC	1571,0	14,0	5987,0	834,8	392.132	59	18	27,8	43,2	4866
DK81D926 EC	1684,0	79,0	7185,0	1001,7	385.065	59	18	28,3	45,0	5245
DK81DA22 EC	1151,0	46,0	2661,0	371,0	461.556	61	20	28,9	46,0	4139
DK81DA23 EC	1446,0	33,0	3991,0	556,5	452.510	60	20	29,7	46,0	4561
DK81DA24 EC	1636,0	25,0	5322,0	742,0	443.881	60	20	30,3	48,0	4983
DK81DA25 EC	1756,0	19,0	6652,0	927,5	435.702	60	20	30,9	48,0	5405
DK81DA26 EC	1831,0	15,0	7983,0	1113,0	427.850	60	20	31,5	50,0	5826

Fan $\varnothing$ = 800 mm

Fin pitch = 2,1 mm, RPM = 950 - Low noise

Model	Capacity (kW)	Pressure Drop	Surface	Internal Volume	Air Flow	Noise Level	Fans Data			Weight
	SC20	kPa	m ²	dm ³	m ³ /h	dBA (10m)	N°	kW	A	kg
DF81D222 EC	239,7	76,0	653,2	104,1	90.629	52	4	5,9	9,2	886
DF81D223 EC	297,7	81,0	978,4	150,5	88.144	52	4	6,1	9,6	997
DF81D224 EC	333,3	77,0	1305,0	204,4	85.808	52	4	6,3	10,0	1.108
DF81D225 EC	353,8	75,0	1632,0	255,6	83.605	52	4	6,4	10,0	1.219
DF81D226 EC	364,6	71,0	1960,0	312,2	81.522	52	4	6,5	10,4	1.330
DF81D322 EC	357,7	63,0	979,1	153,3	135.944	54	6	8,9	13,8	1.324
DF81D323 EC	446,9	73,0	1470,0	234,2	132.216	54	6	9,2	14,4	1.489
DF81D324 EC	501,0	83,0	1960,0	312,2	128.712	54	6	9,4	15,0	1.654
DF81D325 EC	529,9	62,0	2450,0	390,3	125.408	53	6	9,6	15,0	1.820
DF81D326 EC	546,8	68,0	2940,0	468,3	122.283	53	6	9,8	15,6	1.985
DF81D422 EC	479,0	72,0	1306,0	208,2	181.258	55	8	11,8	18,4	1.761
DF81D423 EC	592,0	51,0	1960,0	312,2	176.288	55	8	12,2	19,2	1.981
DF81D424 EC	666,2	73,0	2611,0	408,9	171.616	54	8	12,5	20,0	2.201
DF81D425 EC	705,2	53,0	3266,0	520,4	167.210	54	8	12,8	20,0	2.420
DF81D426 EC	729,0	67,0	3919,0	624,5	163.044	54	8	13,1	20,8	2.640
DF81D522 EC	596,0	60,0	1632,0	257,9	226.573	56	10	14,8	23,0	2.199
DF81D523 EC	737,1	42,0	2450,0	390,3	220.360	55	10	15,3	24,0	2.473
DF81D524 EC	833,0	70,0	3266,0	520,4	214.520	55	10	15,7	25,0	2.747
DF81D525 EC	881,4	52,0	4083,0	650,5	209.013	55	10	16,0	25,0	3.021
DF81D526 EC	912,1	75,0	4899,0	778,3	203.805	55	10	16,3	26,0	3.295
DF81D622 EC	704,1	31,0	1960,0	312,2	271.887	57	12	17,8	27,6	2.637
DF81D623 EC	893,2	70,0	2940,0	468,3	264.432	56	12	18,3	28,8	2.965
DF81D624 EC	994,8	52,0	3918,0	618,9	257.423	56	12	18,8	30,0	3.293
DF81D625 EC	1053,0	39,0	4899,0	777,8	250.815	56	12	19,2	30,0	3.621
DF81D626 EC	1093,0	66,0	5879,0	936,7	244.565	56	12	19,6	31,2	3.950
DF81D722 EC	830,6	48,0	2286,0	364,3	317.202	58	14	20,7	32,2	3074
DF81D723 EC	1027,0	34,0	3430,0	546,4	308.504	57	14	21,4	33,6	3457
DF81D724 EC	1168,0	80,0	4571,0	722,0	300.327	57	14	22,0	35,0	3840
DF81D725 EC	1236,0	59,0	5715,0	907,4	292.617	57	14	22,5	35,0	4222
DF81D726 EC	1271,0	45,0	6859,0	1092,8	285.326	57	14	22,9	36,4	4605
DF81D822 EC	957,4	70,0	2613,0	416,3	362.516	58	16	23,7	36,8	3512
DF81D823 EC	1183,0	50,0	3919,0	624,5	352.576	58	16	24,4	38,4	3949
DF81D824 EC	1319,0	36,0	5226,0	832,6	343.231	58	16	25,1	40,0	4386
DF81D825 EC	1397,0	27,0	6532,0	1040,8	334.420	58	16	25,7	40,0	4823
DF81D826 EC	1458,0	65,0	7839,0	1248,9	326.087	58	16	26,1	41,6	5260
DF81D922 EC	1028,0	13,0	2940,0	468,3	407.830	59	18	26,6	41,4	3949
DF81D923 EC	1339,0	69,0	4409,0	702,5	396.647	59	18	27,5	43,2	4441
DF81D924 EC	1492,0	51,0	5879,0	936,7	386.135	59	18	28,2	45,0	4932
DF81D925 EC	1580,0	38,0	7349,0	1170,9	376.222	59	18	28,9	45,0	5423
DF81D926 EC	1625,0	29,0	8819,0	1405,0	366.848	59	18	29,4	46,8	5915
DF81DA22 EC	1154,0	18,0	3266,0	520,4	453.145	60	20	29,6	46,0	4387
DF81DA23 EC	1431,0	13,0	4899,0	780,6	440.719	60	20	30,6	48,0	4933
DF81DA24 EC	1665,0	68,0	6532,0	1040,8	429.039	60	20	31,4	50,0	5478
DF81DA25 EC	1762,0	51,0	8165,0	1301,0	418.025	60	20	32,1	50,0	6024
DF81DA26 EC	1812,0	39,0	9799,0	1561,1	407.609	60	20	32,7	52,0	6569

Fan $\varnothing$ = 910 mm

Fin pitch = 2,1 mm, RPM = 575 - Ultra low noise - Ultra efficiency

Model	Capacity (kW)	Pressure Drop	Surface	Internal Volume	Air Flow	Noise Level	Fans Data			Weight
	SC20		m ²	dm ³	m ³ /h	dBA (10m)	N°	kW	A	kg
DK91D222 EC	192,9	61,0	532,2	74,2	71.263	42	4	1,9	3,6	685
DK91D223 EC	236,4	69,0	797,2	108,2	68.402	42	4	2,0	3,6	771
DK91D224 EC	261,0	68,0	1064,0	148,4	65.791	42	4	2,1	4,0	857
DK91D225 EC	273,3	69,0	1330,0	185,5	63.394	41	4	2,2	4,0	943
DK91D226 EC	277,9	69,0	1596,0	221,6	61.179	41	4	2,3	4,0	1.028
DK91D322 EC	289,2	58,0	798,3	111,3	106.894	44	6	2,8	5,4	1.022
DK91D323 EC	355,8	77,0	1197,0	166,2	102.603	44	6	3,0	5,4	1.150
DK91D324 EC	390,4	55,0	1596,0	220,3	98.687	43	6	3,2	6,0	1.278
DK91D325 EC	409,8	66,0	1996,0	278,3	95.091	43	6	3,3	6,0	1.406
DK91D326 EC	417,1	77,0	2394,0	330,0	91.768	43	6	3,4	6,0	1.534
DK91D422 EC	385,5	57,0	1064,0	148,4	142.526	45	8	3,8	7,2	1.359
DK91D423 EC	469,5	40,0	1597,0	222,6	136.804	45	8	4,0	7,2	1.529
DK91D424 EC	521,8	64,0	2129,0	296,8	131.582	44	8	4,2	8,0	1.699
DK91D425 EC	544,5	47,0	2661,0	371,0	126.788	44	8	4,4	8,0	1.869
DK91D426 EC	555,6	65,0	3192,0	443,1	122.357	44	8	4,5	8,0	2.039
DK91D522 EC	476,5	34,0	1330,0	185,5	178.157	46	10	4,7	9,0	1.697
DK91D523 EC	592,8	74,0	1996,0	278,3	171.005	45	10	5,0	9,0	1.909
DK91D524 EC	650,7	53,0	2661,0	371,0	164.478	45	10	5,3	10,0	2.120
DK91D525 EC	679,1	38,0	3326,0	463,8	158.485	45	10	5,5	10,0	2.332
DK91D526 EC	694,5	64,0	3991,0	556,5	152.946	45	10	5,7	10,0	2.544
DK91D622 EC	578,1	56,0	1597,0	222,6	213.788	47	12	5,7	10,8	2.034
DK91D623 EC	704,0	39,0	2395,0	333,9	205.206	46	12	6,0	10,8	2.288
DK91D624 EC	773,5	28,0	3193,0	445,2	197.373	46	12	6,3	12,0	2.542
DK91D625 EC	819,4	64,0	3991,0	556,5	190.181	46	12	6,6	12,0	2.795
DK91D626 EC	831,3	47,0	4790,0	667,8	183.535	46	12	6,8	12,0	3.049
DK91D722 EC	648,1	12,0	1863,0	259,7	249.420	47	14	6,6	12,6	2371
DK91D723 EC	827,4	60,0	2794,0	389,6	239.407	47	14	7,0	12,6	2667
DK91D724 EC	908,4	43,0	3725,0	519,4	230.269	47	14	7,4	14,0	2963
DK91D725 EC	948,4	31,0	4657,0	649,3	221.878	47	14	7,7	14,0	3259
DK91D726 EC	973,2	72,0	5588,0	779,1	214.124	46	14	7,9	14,0	3555
DK91D822 EC	749,5	17,0	2129,0	296,8	285.051	48	16	7,5	14,4	2709
DK91D823 EC	914,6	12,0	3193,0	445,2	273.608	48	16	8,0	14,4	3047
DK91D824 EC	1043,0	62,0	4258,0	593,6	263.164	48	16	8,4	16,0	3384
DK91D825 EC	1089,0	45,0	5322,0	742,0	253.575	47	16	8,8	16,0	3722
DK91D826 EC	1105,0	34,0	6386,0	890,4	244.713	47	16	9,1	16,0	4060
DK91D922 EC	851,0	24,0	2395,0	333,9	320.682	49	18	8,5	16,2	3046
DK91D923 EC	1038,0	17,0	3592,0	500,9	307.809	49	18	9,0	16,2	3426
DK91D924 EC	1142,0	12,0	4790,0	667,8	296.059	48	18	9,5	18,0	3806
DK91D925 EC	1229,0	63,0	5987,0	834,8	285.272	48	18	9,9	18,0	4185
DK91D926 EC	1247,0	47,0	7185,0	1001,7	275.303	48	18	10,2	18,0	4565
DK91DA22 EC	952,5	33,0	2661,0	371,0	356.314	50	20	9,4	18,0	3383
DK91DA23 EC	1161,0	23,0	3991,0	556,5	342.010	50	20	10,0	18,0	3805
DK91DA24 EC	1277,0	16,0	5322,0	742,0	328.955	49	20	10,5	20,0	4227
DK91DA25 EC	1369,0	84,0	6652,0	927,5	316.969	49	20	11,0	20,0	4649
DK91DA26 EC	1389,0	63,0	7983,0	1113,0	305.892	49	20	11,3	20,0	5070

Fan ϕ = 910 mm

Fin pitch = 2,1 mm, RPM = 575 - Ultra low noise - Ultra efficiency

Model	Capacity (kW)	Pressure Drop	Surface	Internal Volume	Air Flow	Noise Level	Fans Data			Weight
	SC20	kPa	m ²	dm ³	m ³ /h	dBA (10m)	N°	kW	A	kg
DF91D222 EC	207,6	82,0	652,3	100,4	70.019	42	4	1,9	3,6	735
DF91D223 EC	247,3	75,0	977,9	148,7	66.718	42	4	2,1	3,6	846
DF91D224 EC	267,3	84,0	1305,0	200,7	63.749	41	4	2,2	4,0	957
DF91D225 EC	274,3	73,0	1631,0	253,7	61.055	41	4	2,3	4,0	1.068
DF91D226 EC	274,6	78,0	1958,0	306,7	58.558	41	4	2,4	4,0	1.179
DF91D322 EC	311,2	79,0	978,4	150,5	105.028	44	6	2,9	5,4	1.097
DF91D323 EC	372,0	76,0	1470,0	234,2	100.077	44	6	3,1	5,4	1.262
DF91D324 EC	401,1	76,0	1960,0	312,2	95.623	43	6	3,3	6,0	1.428
DF91D325 EC	411,9	75,0	2449,0	388,9	91.582	43	6	3,4	6,0	1.593
DF91D326 EC	411,9	75,0	2937,0	460,0	87.837	43	6	3,5	6,0	1.759
DF91D422 EC	412,7	52,0	1306,0	208,2	140.038	45	8	3,9	7,2	1.459
DF91D423 EC	494,6	67,0	1958,0	306,7	133.436	44	8	4,1	7,2	1.679
DF91D424 EC	534,6	76,0	2612,0	412,6	127.497	44	8	4,4	8,0	1.898
DF91D425 EC	549,6	81,0	3266,0	520,4	122.110	44	8	4,5	8,0	2.118
DF91D426 EC	549,8	85,0	3919,0	624,5	117.115	44	8	4,7	8,0	2.338
DF91D522 EC	513,6	44,0	1632,0	257,9	175.047	46	10	4,8	9,0	1.821
DF91D523 EC	618,5	64,0	2450,0	390,3	166.795	45	10	5,2	9,0	2.095
DF91D524 EC	668,9	85,0	3264,0	511,1	159.371	45	10	5,4	10,0	2.369
DF91D525 EC	685,1	58,0	4083,0	650,5	152.637	45	10	5,7	10,0	2.643
DF91D526 EC	686,5	70,0	4899,0	780,6	146.394	45	10	5,9	10,0	2.917
DF91D622 EC	622,7	73,0	1959,0	309,4	210.056	46	12	5,8	10,8	2.183
DF91D623 EC	738,7	47,0	2940,0	468,3	200.154	46	12	6,2	10,8	2.511
DF91D624 EC	801,9	73,0	3919,0	624,5	191.245	46	12	6,5	12,0	2.840
DF91D625 EC	821,2	52,0	4899,0	780,6	183.164	46	12	6,8	12,0	3.168
DF91D626 EC	823,7	70,0	5878,0	933,9	175.673	46	12	7,1	12,0	3.496
DF91D722 EC	716,0	35,0	2286,0	364,3	245.065	47	14	6,8	12,6	2545
DF91D723 EC	867,5	73,0	3430,0	546,4	233.513	47	14	7,2	12,6	2928
DF91D724 EC	931,2	51,0	4571,0	722,0	223.119	47	14	7,6	14,0	3310
DF91D725 EC	961,6	79,0	5716,0	910,7	213.692	46	14	7,9	14,0	3693
DF91D726 EC	959,8	57,0	6859,0	1092,8	204.951	46	14	8,2	14,0	4076
DF91D822 EC	825,0	51,0	2613,0	416,3	280.075	48	16	7,7	14,4	2907
DF91D823 EC	979,1	34,0	3919,0	624,5	266.871	48	16	8,3	14,4	3344
DF91D824 EC	1069,0	73,0	5224,0	825,2	254.993	47	16	8,7	16,0	3781
DF91D825 EC	1095,0	51,0	6531,0	1037,0	244.219	47	16	9,1	16,0	4218
DF91D826 EC	1099,0	82,0	7839,0	1248,9	234.230	47	16	9,4	16,0	4655
DF91D922 EC	934,1	70,0	2940,0	468,3	315.084	49	18	8,7	16,2	3269
DF91D923 EC	1108,0	47,0	4409,0	702,5	300.230	49	18	9,3	16,2	3760
DF91D924 EC	1190,0	32,0	5879,0	936,7	286.867	48	18	9,8	18,0	4252
DF91D925 EC	1235,0	71,0	7348,0	1166,7	274.746	48	18	10,2	18,0	4743
DF91D926 EC	1233,0	51,0	8819,0	1405,0	263.509	48	18	10,6	18,0	5234
DF91DA22 EC	996,1	13,0	3266,0	520,4	350.093	50	20	9,7	18,0	3631
DF91DA23 EC	1237,0	63,0	4899,0	780,6	333.589	49	20	10,3	18,0	4177
DF91DA24 EC	1328,0	43,0	6532,0	1040,8	318.741	49	20	10,9	20,0	4722
DF91DA25 EC	1361,0	30,0	8165,0	1301,0	305.273	49	20	11,4	20,0	5268
DF91DA26 EC	1373,0	68,0	9799,0	1561,1	292.788	49	20	11,8	20,0	5813

2.5 Heat exchanger information

The heat exchanger coils are manufactured according to state of art and to be incorporated to a product submitted to Machinery Directive 2006/42/EC.

- The heat exchanger is designed and manufactured under the EN-14276-2 norm in combination with section 5.2.2.2 of the EN-378-2 norm.
- The heat exchanger coil must be used correctly and for the purpose for which it has been designed.
- Care should be taken to avoid damage due to sharp edges, and excessive vibration should be avoided.
- The heat exchanger coil must be used within the operating limits of PS (maximum allowable pressure) and TS (maximum allowable temperature) as indicated on the unit's nameplate.
- Every single coil is tested under its corresponding PT (1,43 times its PS).
- We regularly carry out some bursting tests up to 3 times its PS.
- The heat exchanger will be protected by the regulatory safety elements in the design of an installation
- Periodic maintenance must be carried out on the installation to ensure correct working conditions, since cumulative dirt or possible leaks will lead to loss efficiency.
- Heat exchanger coils are fragile and must only be handled by a competent engineer, who should be suitably protected against the sharp edges of the coil (appropriate personnel protective equipment).

3. INSTALLATION

Installation responsibilities

Generally, the contractor must do the following when installing the unit:

1. Install the units on a flat foundation, level (within 1/4" [6 mm] across the length of the unit), and strong enough to support unit loading.
2. Install any optional sensors and make electrical connections when needed.
3. Connect the remote condenser unit to the system.
4. Provide and install field wiring.
5. Start the unit under the supervision of a qualified service technician.

Storage

If the unit is stored for a long period of time prior to installation, store the unit in a safe place sheltered from bad weather.

Bedplate

Provide rigid, non-warpage mounting pads for concrete foundation of sufficient strength and mass to support the unit's operating weight (that is, including completed piping, and full operating charges of refrigerant, oil, and water). After it is in place, the unit must be levelled within 1/4" (6 mm) over its length and width. Use shims if necessary.

The manufacturer is not responsible for equipment problems resulting from an improperly designed or constructed foundation.

The unit must be positioned so that the airflow through the condensation coils is not hindered by any obstacle. The condensation coils must be protected from side winds when their speed exceeds 16 km/h.

Never install, temporarily or permanently, objects over the unit (tarp or roof) over the unit, because recycling of hot air would reduce the capacity of the condensation coils. Discharged air from the fans must not be obstructed.

Releasing the Nitrogen Holding Charge

The nitrogen holding charge can be released into the atmosphere.

When releasing nitrogen holding charge, ventilate the room. Avoid breathing in the nitrogen.

Isolation

The most effective form of isolation is to locate the unit away from any sound-sensitive area. Structurally transmitted sound can be reduced by elastomeric vibration eliminators. Consult an acoustical engineer in critical sound applications. For maximum isolation effect, isolate electrical conduit. Wall sleeves and rubber-isolated piping hangers can be used to reduce the sound transmitted through refrigerant piping. To reduce the sound transmitted through electrical conduit, use flexible electrical conduit. State and local codes on sound emissions should always be considered.

3.1 Special Lifting and Moving Instructions

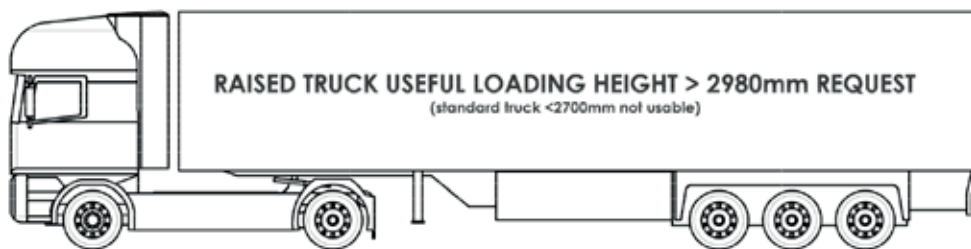
The following instructions comprehension is a must for transporting, manipulating and installing the condenser:

1. Limitations for transport and handling.
2. V-shaped lifting label position & center mass instructions. All V-shaped units have points (lifting brackets) designed for lifting/handling. These points are highlighted with labels. Only for 4-6-8 fans unit, the points for heavy fork lift use, highlighted with labels.



All lifting/handling procedures must be carefully carried out by qualified personnel, ensuring safety at all times.

1



TOTAL N° FANS	4	6	8	10	12	14	16	18	20
UNIT WEIGHT [kg]	1705~	2350~	2930~	3660~	4390~	6400~	7300~	8220~	9130~
LIFTING MACHINES									
 Heavy Forklift	✓	✓	✓	✗	✗	✗	✗	✗	✗
 Crane Truck	✓	✓	✓	✓	✓	✓	✓	✓	✓



Caution!!
Brackets and center of mass label for
overhead crane and crane truck use



Center of mass

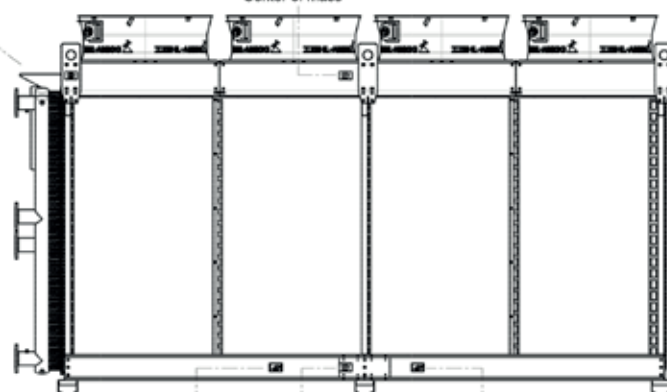
Caution!!
Position for fork lift label
(up to 8fans unit!!)



Center of mass



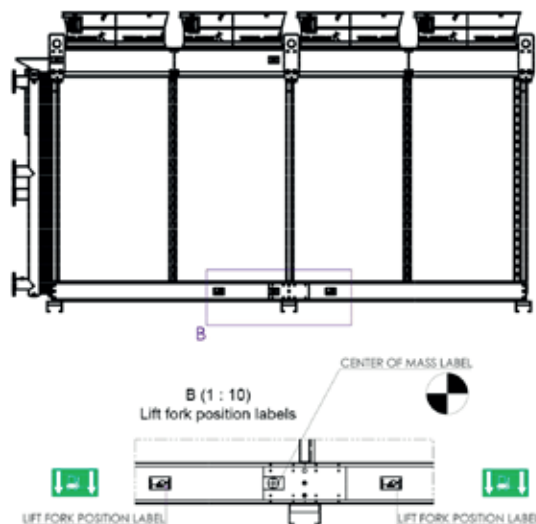
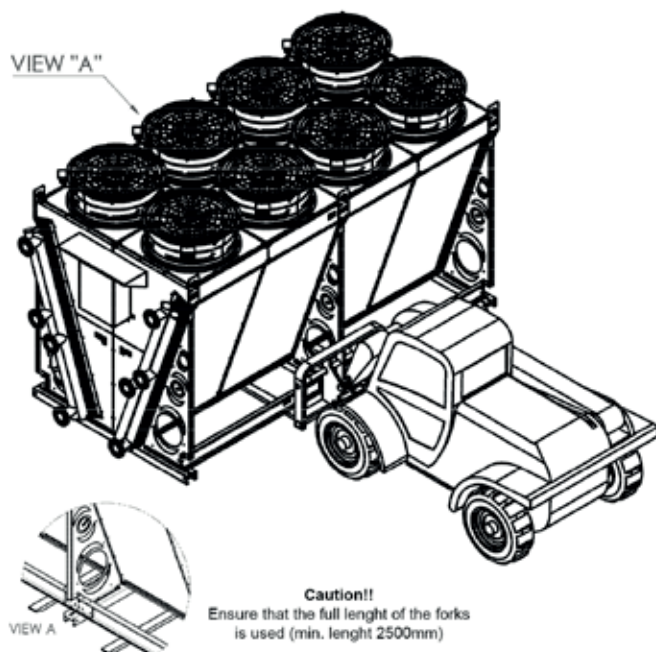
2



3.1.1 Lifting/handling instructions by heavy fork lift, ONLY for 4-6-8 fans units.



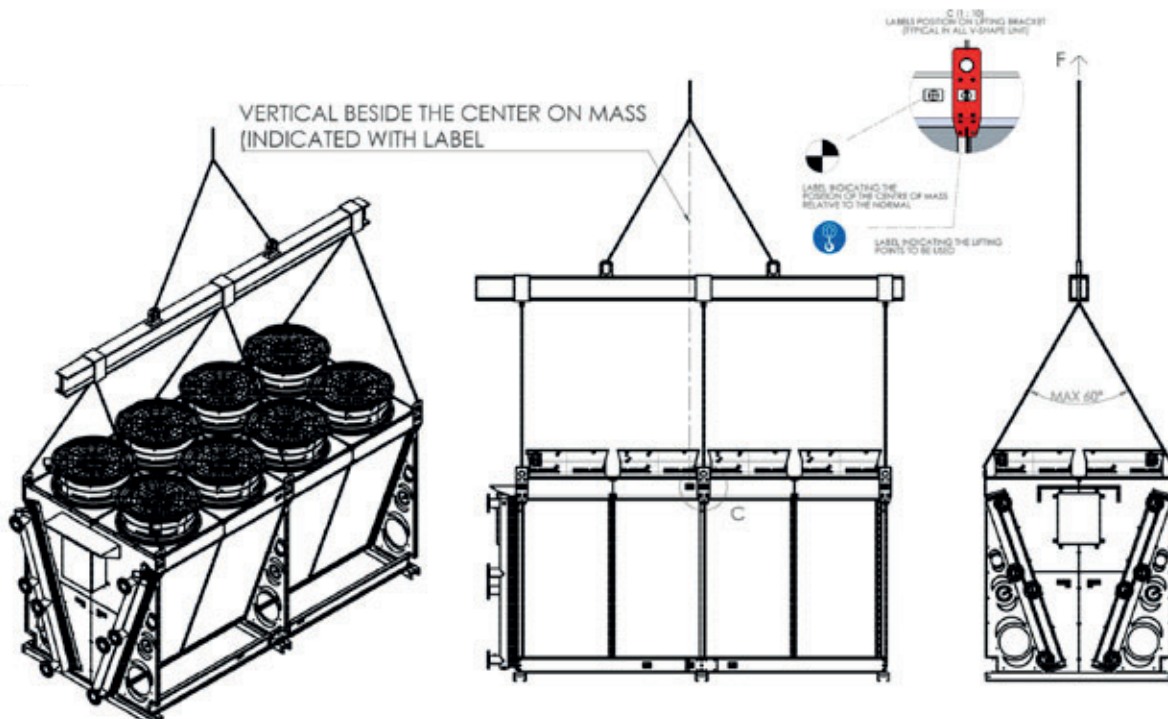
Handling possible only with suitable forklifts (that can support the V-shaped unit weight).



3.1.2 Lifting/handling instructions by crane or crane truck



When handling V-shaped, use all lifting brackets marked with the appropriate label. During lifting, be careful not to exceed the indicated angles (max. 60°) and center lifting equipment with the vertical beside the center of mass indicated by the appropriate label.

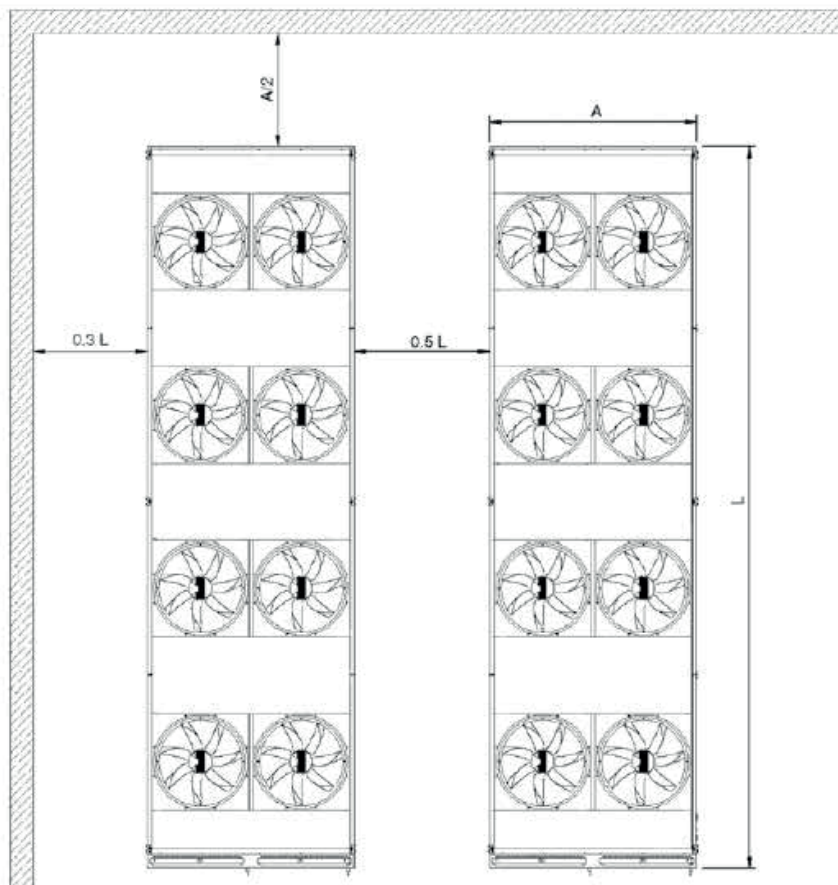


3.2 Installation advices

3.2.1 Maintenance spaces

Provide enough space around the unit to allow the installation and maintenance personnel unrestricted access to all service points. Unobstructed flow of condenser air is essential to maintain the capacity and operating efficiency.

When determining unit placement, give careful consideration to ensuring a sufficient flow of air across the condenser heat-transfer surface.



Recommended minimum clearances for installation of horizontal coil unit.

3.3 Recommendations for adiabatic spray system

3.3.1 Water specifications

Adiabatic Ramp can operate on untreated drinking water and demineralized water.

The particles of water sprayed by the nozzles don't evaporate completely before reaching the finned pack of the coil, both due to the short distance available, and the varying air conditions; consequently, the heat exchanger fins will be wetted, thus increasing the overall efficiency of the system. Following the evaporation process, the minerals dissolved in the supply water will partly be carried by the flow of air, in the form of fine dust, and will thus accumulate on the surface of the heat exchanger fins. The nature and quantity of minerals contained in the supply water affect the frequency of the routine maintenance operations required due to the formation of dirt and, in extreme cases, corrosion of the materials. These problems can be minimised by using demineralised water from reverse osmosis, as specified by the relevant standards, such as UNI 8884.

In particular, UNI 8884 "Characteristics and treatment of the water in cooling and humidification circuits" suggests that adiabatic humidifiers should be supplied with drinking water (as shown in directive 98/83/EC), with the following characteristics:

- Electrical conductivity $<100 \mu\text{S}/\text{cm}$;
- Total hardness $<5^\circ\text{fH}$ (50 ppm CaCO_3);
- $6.5 < \text{pH} < 8.5$;
- Chloride content $<20 \text{ mg/l}$;
- Silica content $<5 \text{ mg/l}$;

To limit accumulation of dirt on the surface of the coils when untreated water is used, operate Adiabatic Ramp only when necessary, and in any case no more than 200 hours a year. Upstream of the cabinet, connect the following to the water line:

- A water filter with a filter size no greater than 10μ ;
- An expansion vessel with a capacity of at least 5 litres, to avoid water hammer that may damage the installation.

4. ELECTRICAL CONNECTIONS

4.1 Electrical connections performed by the installer

All wiring must comply with local codes.

Specific electrical schematics and connection diagrams are shipped with the unit.

To connect fans, follow attached fan instructions and consider:

To avoid corrosion and overheating at terminal connections, use copper conductors only. Failure to do so may result in damage to the equipment. Do not allow conduit to interfere with other components, structural members or equipment. Control voltage (10 V) wiring in conduit must be separate from conduit carrying low voltage (<30 V) wiring. To prevent control malfunctions, do not run low voltage wiring (<30 V) in conduit with conductors carrying more than 30 V.

4.2 EC fan electrical connections

These fans are fitted with an electronic part which provides them with various safeties. For example, the fan will stop automatically in the following cases:

- If the voltage drops or surges outside the tolerance range.
- If consumption exceeds nominal (Due to power surges, jamming of blades, etc.).
- If a phase fails.
- If the internal temperature rises. The alarm contact must not be connected in series with the contactor coil.

Another important feature is that the fan will not turn in reverse, even if the phase sequence is changed.

Starting an EC fan requires, apart from connecting it to the network, a direct current signal. Without the power or the direct current signal, the fan won't work.

Although the fan is protected against overvoltages, overcurrents, etc., which avoid having to use motor protection switches, we must always take the low voltage regulations into account, and also protect the wires of the installation that supplies them, from short-circuits, etc. In other words, the fan itself is protected, but not the electrical installation "upstream".

If the condenser works in stages with fans at fixed speeds, they must be permanently powered on and the 0-10V signal will turn them on or off.

4.3 Junction boxes

4.3.1 Regulation

The fans, when powered by 200....277V, I, 50/60 Hz or 380... 480V, III, 50/60 Hz 3-phase AC voltage, provide a fixed 10-volt DC output. These outputs for each fan have been wired up to the terminals OUT1, OUT2.....OUTn.

These are usually used in electrical diagrams that provide for the self-supply of a direct current signal, in case the usual system fails. One of them is used to connect the regulation and control the pressure.

4.3.2 Alarms

Internally, each fan has an alarm relay with an NC contact.

These contacts must be put in series, with light indicators. If the fan stops, the contacts will toggle, turning the telltale on or off.

4.3.3 Mains (Power)

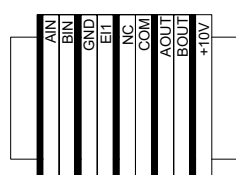
They admit a wide range of supply voltages:

200....277V, I, 50/60 Hz,

380....480V, III, 50/60 Hz,

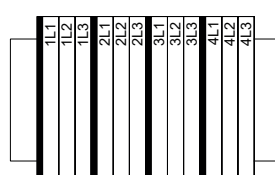
Apart from the three voltage wires, there is the earth connection.

Alarm + Regulation = Signal :



XSE

Main (Power):

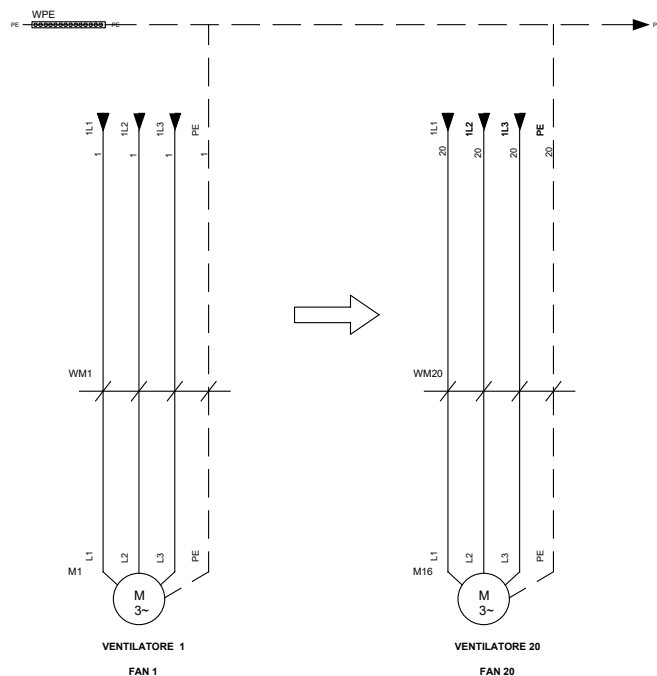


XPO

4.3.4 Connections map - EC 400v / III / 50-60HZ

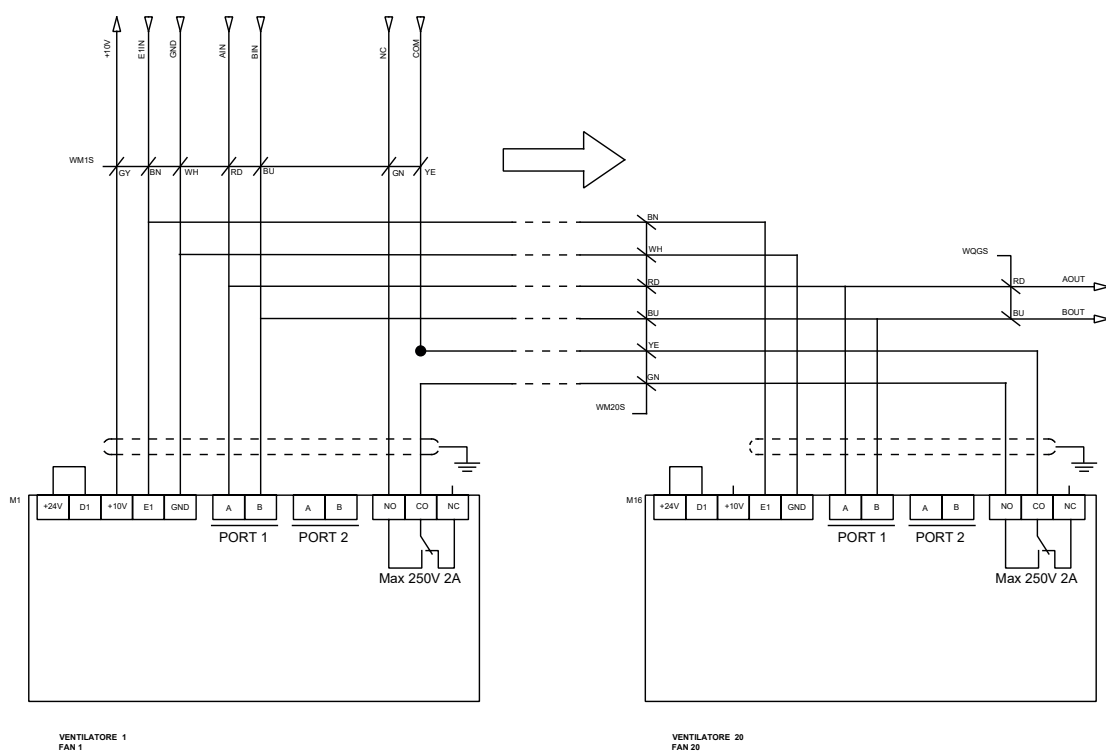
EC standard motor fans POWER wiring diagram.

DK/DF - (800/870/910/960 mm - from 4 fans up to 20)



EC standard motor fans SIGNAL (regulation + alarms) wiring diagram.

DK/DF - (800/870/910/960 mm - from 4 fans up to 20)



4.4 Connecting the remote unit to the system

Danger of injuries and damage to property with escaping refrigerant.

Incorrect installation risks working fluid escaping when the unit is operated, causing injuries or damage to property.

Prevent working fluid from escaping from the unit into the environment.

- Secure all working fluid carrying lines against mechanical damage.
- In areas that are used for internal traffic, only lay the pipelines to and from the unit with connections and fittings that cannot be removed.

Ensure that the on site connections do not exercise any forces upon the distribution and header points. This can cause leaks on the working fluid connection points of the unit and on connection points of the on-site pipe-laying.

Danger of injuries and damage to property.

Improper connection to the the system causes hazards:

- Leaks result in escaping refrigerant.
- Soldering and welding work on pressurised parts can result in fires or explosions.
- Ensure that stresses and vibrations from the system are not passed on to the unit.
- Only lay working fluid side connections stress free. The on site pipeline system must be braced before connecting to the unit.
- Soldering and welding work is only permitted on unpressurised units.
- Ensure that the unit's level of dryness corresponds with the low permissible water content in a refrigeration system.
- The use of open fire at the installation site is forbidden. Fire extinguishers and extinguishing agents used to protect the equipment and the operating staff must comply with the requirements of EN 378-3.

Install the pipes in acc. with EN 378-1 and EN 378-3. Ensure here: Avoid transmitting vibrations to the unit via conduits or pipes. If necessary, use vibration dampers.



Low permissible water content in a refrigeration system! Ensure that the unit's level of dryness corresponds with the low permissible water content in a refrigeration system!

5. START UP

5.1 Pre-start checks

When installation is complete, but prior to putting the unit into service, the following pre-start procedures must be reviewed and verified:

- Inspect all wiring connections to be sure they are clean and tight.
- Disconnect all electric power, including remote disconnects, before servicing. Failure to disconnect power before servicing can cause severe personal injury or death.

5.2 Unit Voltage Imbalance

Excessive voltage imbalance between the phases of a threephase system can cause motors to overheat and eventually fail. The maximum allowable imbalance is 2%.

Voltage imbalance is determined using the following calculations:

- $\% \text{ Imbalance} = [(V_x - V_{\text{ave}}) \times 100] / V_{\text{ave}}$
- $V_{\text{ave}} = (V_1 + V_2 + V_3) / 3$
- V_x = phase with the greatest difference from V_{ave} (without regard to the sign)

For example, if the three measured voltages are 391, 407, and 402 volts, the average would be:

- $(391 + 407 + 402) / 3 = 400$

The percentage of the imbalance is then:

- $[100(400 - 391)] / 400 = 2.25\%$
- This exceeds the maximum allowable (2%) by 0.25%

6. MAINTENANCE

6.1 Coil Maintenance

Because coastal applications are considered to be a "dirty" environment for unit coils, it is logical that the coils will need to be cleaned more often than a coil located inland. Cleaning four times a year may be required or even more if conditions are very poor or if corrosion damage begins to occur. To clean the coils, use a soft brush and a sprayer (garden pumpup type). A high-quality detergent is recommended for both standard and coils with aluminum coating. Follow the directions included with the detergent.

6.2 Caution!

If the detergent used is strongly alkaline (pH greater than 8.5), an inhibitor must be added. Rinse the coil thoroughly after cleaning. Failure to completely flush the detergent from the coil can result in accelerated coil corrosion. Blow excess water from the coil using low-pressure air. The water used to clean the coils should always be clean, fresh water (it should not be brackish, or contain excessive dissolved minerals, chlorine, or water softener salts).

6.3 Safety recommendations

To avoid accidents and damage, the following recommendations should be observed during maintenance and service visits.

- Disconnect the main supply before any servicing on the unit.
- Service work on the refrigeration system and the electrical system should be carried out only by qualified and experienced personnel.

6.4 Maintenance contract

It is strongly recommended that you sign a maintenance contract with your local Service Agency. This contract provides regular maintenance of your installation by a specialist in our equipment. Regular maintenance ensures that any malfunction is detected and corrected in good time and minimizes the possibility that serious damage will occur. Finally, regular maintenance ensures the maximum operating life of your equipment. We would remind you that failure to respect these installation and maintenance instructions may result in immediate cancellation of the warranty.

7. SERVICE & AFTER SALES

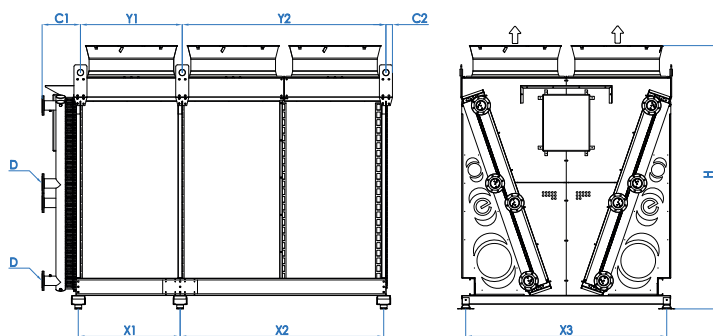
7.1 Spare parts

Spare Part	Code
EC fan Ø 800mm	2202101340
EC fan Ø 870mm	2202101341
EC fan Ø 910mm	2202101418
EC fan Ø 960mm	2202101338

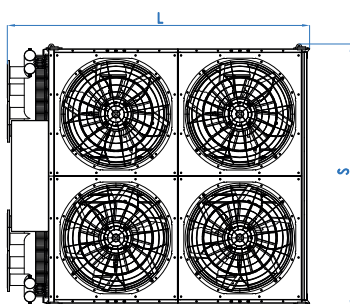
7.1 Contacts

For any information related to maintenance and support, please contact our team via email at: service@enextechnologies.com

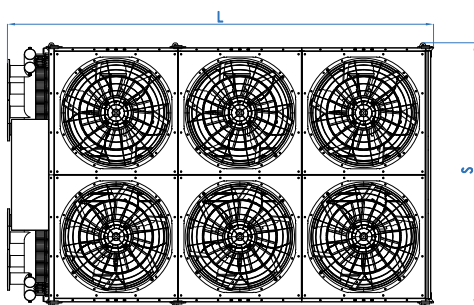
8. DRAWINGS



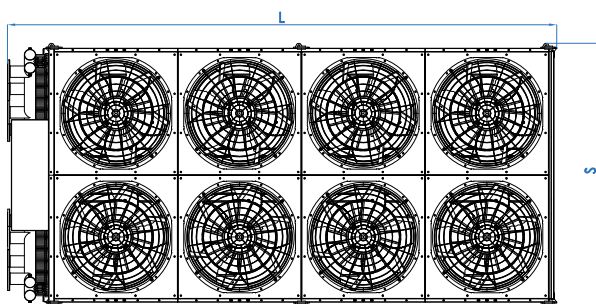
N° Fans	C1	C2	Y1	Y2	X1	X2	X3	H
4	441	75	2340	-	2340	-	2310	3028
6	441	75	1170	2340	1170	2340	2310	3028
8	441	75	2340	-	2340	-	2310	3028
10	441	75	2340	1170	2340	1170	2310	3028
12	441	75	2340	-	2340	-	2310	3028
14	441	75	1170	2340	1170	2340	2310	3028
16	441	75	2340	-	2340	-	2310	3028
18	441	75	1170	2340	1170	2340	2310	3028
20	441	75	2340	-	2340	-	2310	3028



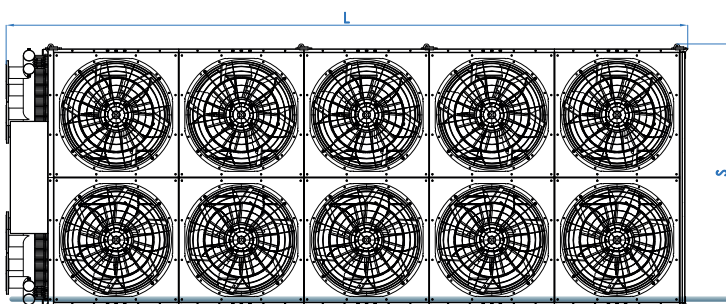
MODEL	L	S
D*96_22	2857	2496
D*87_22	2857	2496
D*80_22	2857	2496
D*91_22	2857	2496



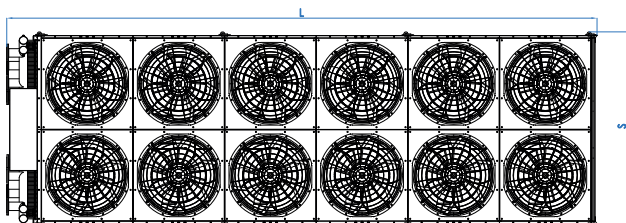
MODEL	L	S
D*96_23	4026	2496
D*87_23	4026	2496
D*80_23	4026	2496
D*91_23	4026	2496



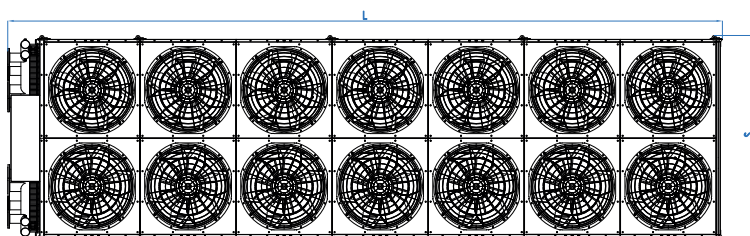
MODEL	L	S
D*96_24	5198	2496
D*87_24	5198	2496
D*80_24	5198	2496
D*91_24	5198	2496



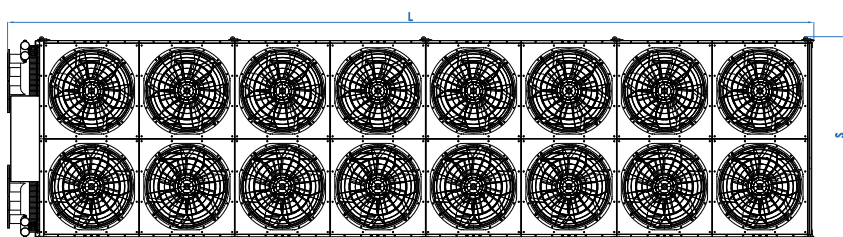
MODEL	L	S
D*96_25	6366	2496
D*87_25	6366	2496
D*80_25	6366	2496
D*91_25	6366	2496



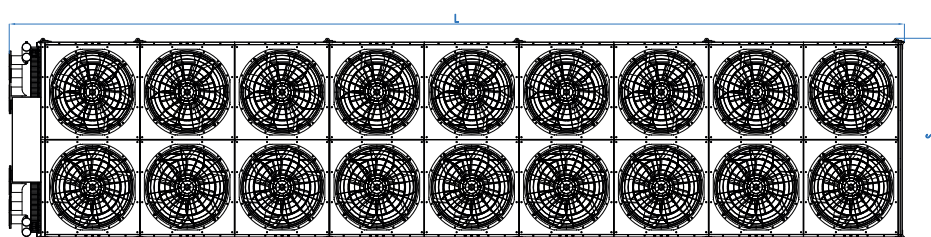
MODEL	L	S
D*96_26	7536	2496
D*87_26	7536	2496
D*80_26	7536	2496
D*91_26	7536	2496



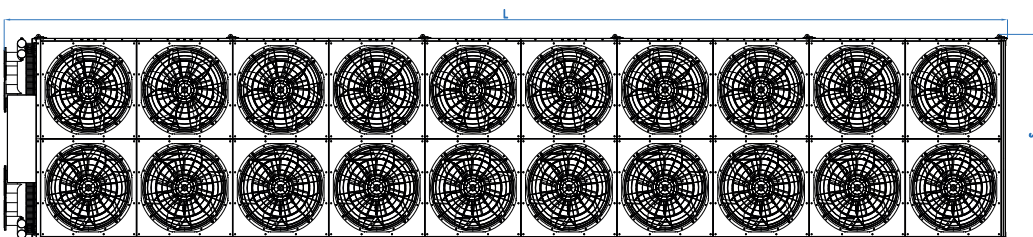
	L	S
D*96_27	8707	2496
D*87_27	8707	2496
D*80_27	8707	2496
D*91_27	8707	2496



MODEL	L	S
D*96_28	9876	2496
D*87_28	9876	2496
D*80_28	9876	2496
D*91_28	9876	2496



MODEL	L	S
D*96_29	11047	2496
D*87_29	11047	2496
D*80_29	11047	2496
D*91_29	11047	2496



MODEL	L	S
D*96_A2	12214	2496
D*87_A2	12214	2496
D*80_A2	12214	2496
D*91_A2	12214	2496



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The Company shall have the right to introduce at any time whatever modifications necessary to the improvement of the product.
The reference languages for the whole documentation are Italian and English. The other languages are to be considered only as guidelines.

