



## APPLICATION BENEFITS / FEATURES

### HIGH EFFICIENCY HEAT EXCHANGER COIL

- Optimised 'fin to fan' ratio
- Large heat exchange surface area and seamless inner grooved tube
- Reduction of internal refrigerant circuit volume
- All coils are degreased and Leak Tested at 3100 Kpa pressure
- Floating coil technology eliminates tube contact with the condenser frame
- Suspended coil protected against damage in transit, installation and vibration when in operation
- Epoxy Aluminium Gold Fins
- 2.2 mm fin spacing
- Protective enclosure for both manifolds and U-bends
- Designed for low pressure drop through coil.

### FANS



- Ziehl Abegg brand motors as standard
- AC motors as standard – low motor power input
- High Speed as standard (Delta connection)
- Low Speed for low noise by changing motor connections from Delta to Star
- High Efficiency Fan nozzle/ shroud designed for maximum air flow, air throw, fan efficiency and noise reduction
- Motor: IP 54 protection class
- F-Class motor windings
- Motors:
  - Extremely quiet motors
  - Life-lubricated
  - Motors and fans are statically and dynamically balanced
  - Fan motors wired to the electrical junction box
  - Fan guards conform to most stringent European standards
  - Separate chamber for each fan ensures more uniform air distribution and minimises decrease in performance if one fan fails
  - High performance – low energy consumption
  - Thermally protected

### STRUCTURE

- Units designed for outdoor installation
- Durable, rigid materials in Galvanised steel
- Hard gloss, Epoxy-Polyester powder coated finish – corrosion resistant
- Reduced unit weight

### CAPACITY RATINGS

- Based on 25°C Ambient/ 40°C Saturated Condensing Temperature on R404A at Sea Level

### CAPACITY RANGE – STANDARD C1 SERIES

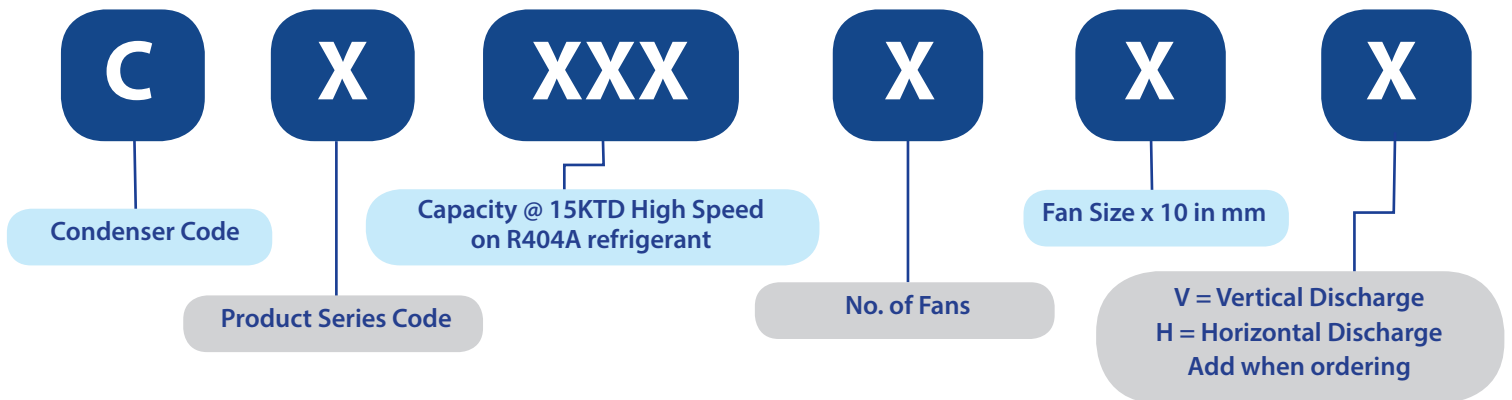
- High Fan Speed: 9kW to 1135kW
- Low Fan Speed: 16kW to 818kW

### STATE OF THE ART DESIGN SOFTWARE

### OPTIONS

- EC Motors
- Customised solutions with fan selection
- Stainless Steel Casing
- Copper/ Copper coils
- Special anti-corrosive coatings
- Multiple circuits & special circuiting for various applications and fluids
- Sub-Cooling circuits
- Special Applications on request:-
  - o Dry Coolers
  - o Oil Coolers
  - o Hydro-Spray
  - o Pre-Cooler modules

## NOMENCLATURE GREENHALGH C1 CONDENSERS



### Example: C1-010-1.35

#### Nomenclature

- C = Condenser Code
- 1 = Series Code
- 010 = Capacity @ 15KTD (010 = Nominal 10kW)
- 1 = Number of Fans
- 35 = Fan diameter x 10 in mm (350mm)

## DEW POINT

Popular refrigerants used today have significant glide and do not have a definite saturated pressure/temperature relationship, meaning that although the pressure remains constant the saturated gas and saturated liquid temperatures are not the same.

The 100% saturated gas condition is known as the dew point, whilst the 100% saturated liquid condition is known as the bubble point.

The capacities specified in this catalogue have been calculated using the refrigerants dew point condition. The dew point is the pressure/temperature condition at which a refrigerant gas begins condensing.

The calculation of condenser capacities on this basis will result in slightly conservative but advantageous ratings.





## AIR COOLED CONDENSER C1 SERIES

MODEL	CAPACITY IN KW @ 15KTD								AIRFLOW		Power Supply	Fan Qty x Ømm
	R404A		R134A		R407C		R22		l/s			
	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed		
<b>C1 SERIES</b>												
C1-010-1.35		9.6		9.2		8.1		9.34		748	240/1/50	1x350
C1-011-1.35		11.0		10.6		9.3		10.65		705		1x350
C1-012-1.35		12.3		11.7		10.2		11.7		637		1x350
C1-017-1.45	15.5	17.1		16.8		14.8	15.2	16.89	1354	1588	415/3/50	1x450
C1-020-1.45	18.0	20.0		19.6		17.1	17.5	19.58	1287	1481		1x450
C1-023-1.45	20.7	23.1		20.0		19.3	19.7	22.15	1172	1311		1x450
C1-025-1.50	22.7	25.4		24.6		21.6	22.1	24.87	1809	2139		1x500
C1-029-1.50	26.1	29.4		28.9		25.2	25.4	28.71	1774	2057		1x500
C1-035-1.50	30.8	34.7		33.4		29.0	29.4	33.14	1696	1899		1x500
C1-049-1.63	38.3	49.0	37.5	47.9	32.8	42.3	37.6	48.52	3208	4947		1x630
C1-059-1.63	44.5	58.6	43.4	57.2	37.8	50.3	43.3	57.6	3080	4707		1x630
C1-070-1.63	50.5	70.1	48.2	66.4	41.9	58.7	48.2	67.53	2804	4287		1x630
C1-095-2.63	74.7	95.0	73.4	93.4	64.1	82.3	73.6	94.46	6411	9895		2x630
C1-114-2.63	87.1	113.9	85.2	111.8	74.2	98.0	85.0	112.48	6155	9414		2x630
C1-137-2.63	99.6	137.4	95.3	130.8	82.7	115.4	95.3	132.9	5604	8576		2x630
C1-172-3.63	131.8	172.3	124.3	158.9	109.3	142.5	126.0	164.26	9235	14121		3x630
C1-207-3.63	149.2	207.1	141.9	194.2	123.1	171.1	141.8	197.14	8406	12863		3x630
C1-228-4.63	174.3	227.9	170.4	223.6	148.3	196.1	170.0	224.96	12309	18828		4x630
C1-275-4.63	199.2	274.7	190.6	261.7	165.5	230.8	190.6	265.81	11208	17151		4x630
C1-345-6.63	263.6	344.6	248.6	317.8	218.6	284.9	252.1	328.51	18469	28242	6x630	
C1-414-6.63	298.4	414.2	283.7	388.4	246.2	342.1	283.6	394.27	16811	25726	6x630	
C1-471-8.63	355.7	471.5	333.5	434.9	290.6	384.9	333.2	441.41	24635	37652	8x630	
C1-550-8.63	399.7	550.0	366.3	486.4	322.4	441.0	372.2	508.34	22419	34302	8x630	
C1-599-10.63	451.9	598.7	413.0	536.7	367.8	486.6	423.0	559.66	30810	47063	10x630	
C1-711-10.63	506.3	710.8	469.7	647.1	410.6	576.8	471.9	662.9	28038	42869	10x630	
C1-858-12.63	612.3	858.4	563.0	773.4	495.0	694.2	570.0	799.16	33655	51440	12x630	
C1-1000-14.63	716.3	1000.4	653.8	888.3	577.7	806.7	666.0	929.13	39268	60014	14x630	
C1-1135-16.63	817.7	1134.7	738.9	989.0	658.0	912.2	759.0	1050.55	44876	68591	16x630	



## AIR COOLED CONDENSER C1 SERIES

MODEL	FAN MOTOR DATA				SOUND PRESSURE LEVEL		REFRIGERANT CONNS		WEIGHT	DIMENSIONS (MM)		
	Watts		Amps		DB (A) at 10m		Inlet	Outlet	kg	Length	Width	Height
	Low Speed	High Speed	Low Speed	High Speed	Low Speed	High Speed	Ømm	Ømm		mm	mm	mm
<b>C1 SERIES</b>												
C1-010-1.35		175		0.77		31	15.88	15.88	32	878	522	752
C1-011-1.35		175		0.77		31	15.88	15.88	35	878	522	752
C1-012-1.35		175		0.77		31	15.88	15.88	40	878	522	752
C1-017-1.45	380	540	0.68	1.05	38	43	22.22	15.88	46	1028	625	796
C1-020-1.45	380	540	0.68	1.05	38	43	22.22	19.05	50	1028	625	796
C1-23-1.45	380	540	0.68	1.05	38	43	22.22	19.05	56	1028	625	796
C1-025-1.50	490	790	0.89	1.45	43	49	22.22	22.22	63	1228	828	876
C1-029-1.50	490	790	0.89	1.45	43	49	28.58	22.22	69	1228	828	876
C1-035-1.50	490	790	0.89	1.45	43	49	28.58	22.22	76	1228	828	876
C1-049-1.63	1600	2600	2.7	4.8	52	59	34.92	28.58	110	1528	1032	920
C1-059-1.63	1600	2600	2.7	4.8	52	59	34.92	28.58	115	1528	1032	920
C1-070-1.63	1600	2600	2.7	4.8	52	59	41.28	34.92	130	1528	1032	920
C1-095-2.63	3200	5200	5.4	9.6	54	61	41.28	34.92	198	2828	1032	920
C1-114-2.63	3200	5200	5.4	9.6	54	61	53.98	41.28	218	2828	1032	920
C1-137-2.63	3200	5200	5.4	9.6	54	61	53.98	41.28	253	2828	1032	920
C1-172-3.63	4800	7800	8.1	14.4	56	63	63.5	53.98	316	4128	1032	920
C1-207-3.63	4800	7800	8.1	14.4	56	63	63.5	53.98	370	4128	1032	920
C1-228-4.63	6400	10400	10.8	19.2	57	64	63.5	53.98	450	2828	2100	920
C1-275-4.63	6400	10400	10.8	19.2	57	64	76.2	63.5	590	2828	2100	920
C1-345-6.63	9600	15600	16.2	28.8	59	66	76.2	63.5	625	4128	2100	920
C1-414-6.63	9600	15600	16.2	28.8	59	66	88.9	76.2	735	4128	2100	920
C1-471-8.63	12800	20800	21.6	38.4	60	67	88.9	76.2	923	5480	2100	920
C1-550-8.63	12800	20800	21.6	38.4	60	67	104.7	88.9	992	5480	2100	920
C1-599-10.63	16000	26000	27	48	61	68	104.7	88.9	1132	6780	2100	920
C1-711-10.63	16000	26000	27	48	61	68	114.3	88.9	1208	6780	2100	920
C1-858-12.63	19200	31200	32.4	57.6	62	69	2x88.9	2x76.2	1420	8080	2100	920
C1-1000-14.63	22400	31200	37.8	67.2	63	70	2x104.7	2x76.2	1625	9380	2100	920
C1-1135-16.63	25600	41600	43.2	76.8	64	71	2x104.7	2x88.9	1832	10680	2100	920

**GREENHALGH CONDENSER CAPACITIES ARE RATED AT 15KTD:  
GREENHALGH CONDENSER CAPACITIES ARE RATED WITH  
ALUMINIUM FINS AND COPPER TUBES**

## Method to re-rate capacity at other TD's

TD is the difference between the refrigerant saturation temperature and the air ambient temperature.

The condensers are rated at 15KTD. To determine condenser capacity for applications at other temperature differences multiply the rated capacity by the temperature difference correction factor shown in the table below.

Temperature Difference ~ TD					
8K	10k	12k	15k	17k	20k
0.53	0.67	0.80	1.00	1.13	1.33

**Example:** Condenser model C1-137.2.63 has a rated capacity of 137.4kW at 15KTD, on high fan speed, on R404A refrigerant. At a temperature difference of 10K the condenser is re-rated as follows:  $137.4\text{kW} \times 0.67$  (factor for 10K) = 96.06kW

## GREENHALGH CONDENSER SOUND PRESSURE LEVELS ARE RATED AT 10m:

### Method to determine sound pressure levels at other distances other than 10m

Table 3 Sound Pressure Levels - Correction for Distance					
Distance from Unit (m)	5	10	20	40	60
Change in dB(A)	+6	0	-6	-12	-15

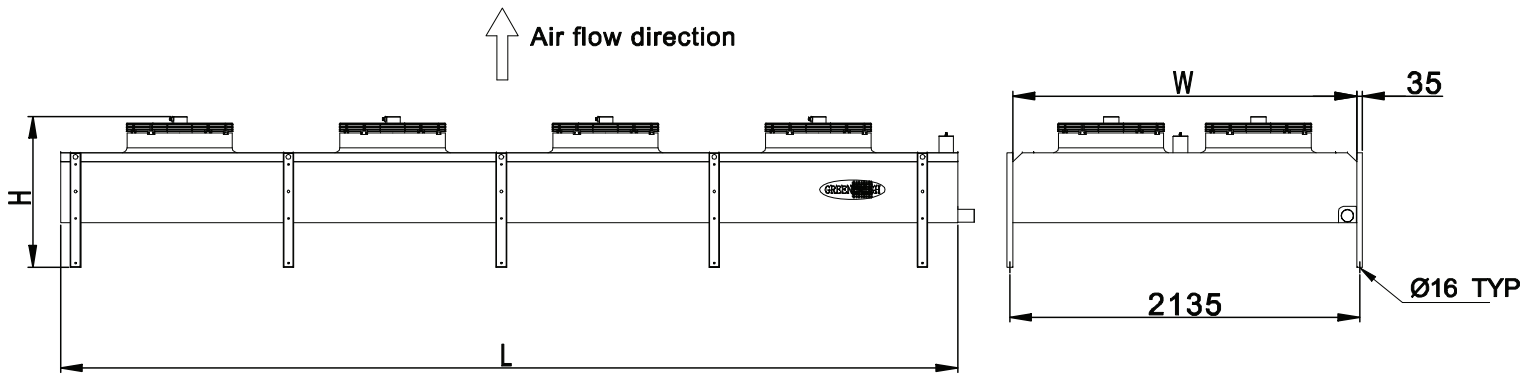
For approximate Sound Pressure Levels at distances other than the rating add or subtract the values shown in the table.

### Method to determine noise level at other distances

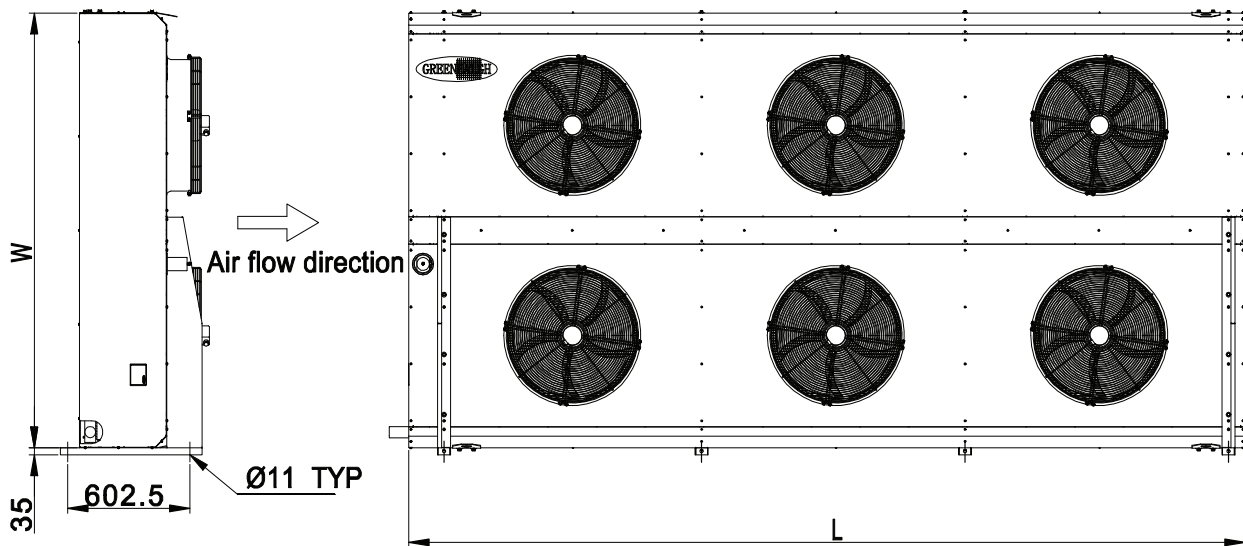
Greenhalgh Condenser Sound Pressure Levels Ratings are measured at 10m from the source.

For approximate Sound Pressure Levels at distances other than the rating – add or subtract the values in Table 3.

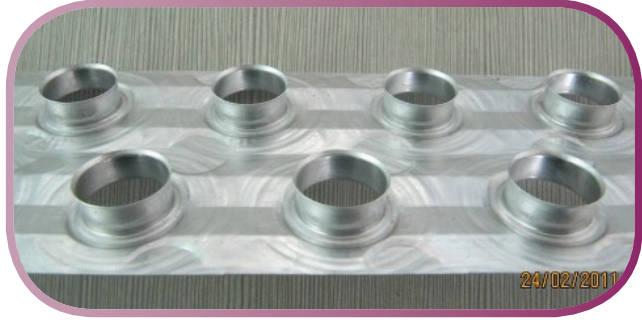
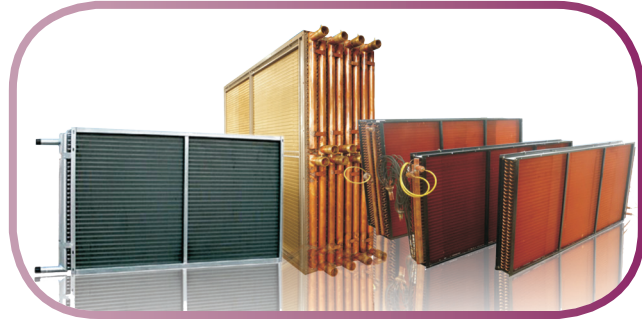
Dimensions Diagram



Dimensions Diagram







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