



Kirby® WRC Remote Condensers

Powerful technology that delivers
energy efficiency and power savings



Kirby WRC Remote Condenser Introduction



The Kirby WRC Remote Condenser is recognised for its technical excellence and efficiency by the Australian Institute of Refrigeration, Airconditioning and Heating (AIRAH). The Kirby WRC has been specifically designed for supermarkets and other cold storage applications with low noise or energy savings in mind.

The WRC offers significant energy efficiency and power savings as a result of having an optimised coil surface to fan ratio. This ensures even air distribution at reduced pressure drop across a wide fan speed range, which in turn reduces electricity consumption and operating costs.



Kirby WRC Remote Condenser - Nomenclature Data

WRC	XXX	B	LN
			Fan Type Blank: 6 Pole Motor - Standard LN: 8 Pole Low Noise Motor
			Material Finish B = KIRBY BLUE KOTE Standard case is powder coated steel (RAL7035)
			Capacity Watts/K divided by 100
			Unit Type WRC Condenser Series

Note: For EC Fan configuration see WRC Axitop® brochure

Kirby WRC Remote Condenser Product Overview



Features & Benefits

The Kirby WRC Remote Condenser features:

- Floating coil technology with 'split length fins' vastly improves the life of the condenser
- Vertical or horizontal air discharge
- Range from 11.2kW to 61.3kW (R404A W/KTD)
- Attractive powder coated steel casing and end plates
- Rifle bore tube for improved heat transfer
- 2 speed, 3 phase external rotor fans with internal thermal protection
- Fan speed selection for low noise and power consumption consideration:
 - 6 Pole - Standard (880/660 R.P.M.)
 - 8 Pole - Low noise and reduced power consumption (680/530 R.P.M.)

- Dual refrigerant circuits with header protection covers where circuiting is standard (twin coil model only)
- Positive air seal between all fans
- Fans are pre-wired to (IP55) junction box with individual fan isolating switches
- Kirby Blue Kote Fin Protection

Options

- Multiple circuit configuration
- Sub-cooling circuits
- Blygold coil treatment
- Special application on request (Dry coolers/oil coolers/Glycol circuiting)
- EC Fans option (see WRC Axitop® brochure)



Kirby WRC Remote Condenser

Performance Data

Standard Range 6 Pole



MODEL NUMBER	TOTAL HEAT REJECTION CAPACITY								NOISE DATA #		
	Watts/K based on 32°C AMB, 50°C COND, 0K S/C								POWER	PRESS.	PRESS.
	R404A	R22	R134a	AIRFLOW	R404A	R22	R134a	AIRFLOW	LwA	LpA @3m	LpA @10m
	WATTS/K			L/S	WATTS/K			L/S	dB(A) HI/LO SPD	AS/ISO	AS/ISO
	HIGH SPEED				LOW SPEED					dB (A) HI/LO SPD	dB (A) HI/LO SPD
SINGLE COIL											
WRC112B	11210	10650	10430	11360	9190	8730	8550	8440	86/81	66/61	55/50
WRC123B	12310	11690	11450	10010	9850	9350	9160	7260			
WRC167B	16740	15900	15570	17040	13730	13040	12770	12660	88/83	68/63	57/52
WRC185B	18460	17540	17170	15010	14770	14030	13740	10880			
WRC225B	22470	21350	20900	22720	18430	17510	17140	16880	89/84	69/64	58/53
WRC247B	24650	23420	22920	20010	19720	18740	18340	14510			
WRC277B	27680	26300	25740	28400	22700	21570	21110	21100	90/85	70/65	59/54
WRC307B	30690	29160	28540	25010	24550	23330	22830	18130			
DOUBLE COIL											
WRC224B	22420	21300	20850	22720	18380	17470	17090	16880	89/84	69/64	58/53
WRC246B	24630	23400	22910	20010	19700	18720	18320	14510			
WRC335B	33480	31810	31140	34080	27450	26080	25530	25310	91/86	71/66	60/55
WRC369B	36920	35070	34340	30020	29540	28060	27470	21770			
WRC449B	44940	42690	41790	45450	36850	35010	34270	33760	91/86	71/66	60/55
WRC493B	49290	46830	45840	40020	39430	37460	36670	29020			
WRC554B	55360	52600	51480	56800	45400	43140	42220	42200	93/88	73/68	62/57
WRC614B	61380	58310	57080	50030	49100	46650	45660	36270			

Total Heat Rejection

- Based on zero subcooling and 100°C discharge temperature at 32°C Ambient, with zero suction superheat assumed. For other ambients, discharge temps, and subcooling refer to correction factors given on page 11. Capacity will vary only slightly with other suction and superheat conditions.
- KTD is defined as the saturated liquid temp at the condenser outlet minus the air on (amb.) temp. (Coils are in counterflow)
- Capacity is given for continuous full airflow, ie no fan cycling.

Sound Power

Tests were done with a Sound Intensity meter generally in accordance with the methods of ISO9614-1:1993 (measured at discrete points). Tests were conducted at 20°C ambient temp with only the fan(s) running & no refrigerant flow. Actual results may vary due to refrigerant flow noise & other factors. Sound Pressure level at 3 metres and 10 meters has been calculated in a Free Field condition (Location 1) Refer page 11 "Kirby WRC Remote Condenser - Performance Data."

Unit Input Watts & Rated Load Amps

Based on external rotor motor manufacturers nominal rated values at maximum load conditions. Values may vary depending on power supply and coil configuration and cleanliness.

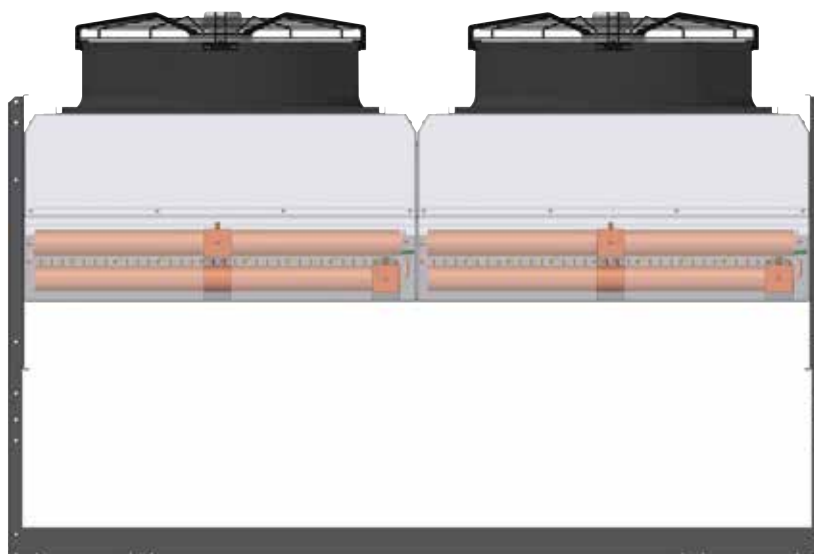
Kirby WRC Remote Condenser

Performance Data

Low Noise Range - 8 Pole



MODEL NUMBER	TOTAL HEAT REJECTION CAPACITY								NOISE DATA #		
	Watts/K based on 32°C AMB, 50°C COND, 0K S/C								POWER	PRESS.	PRESS.
	R404A	R22	R134a	AIRFLOW	R404A	R22	R134a	AIRFLOW	LwA	LpA @3m	LpA @10m
	WATTS/K			L/S	WATTS/K			L/S	dB(A) HI/LO SPD	AS/ISO	AS/ISO
	HIGH SPEED				LOW SPEED					dB (A) HI/LO SPD	dB (A) HI/LO SPD
SINGLE COIL											
WRC112BLN	9490	9020	8830	8760	8190	7790	7620	6850	79/76	59/56	48/45
WRC123BLN	9990	9490	9290	7640	8380	7960	7790	5810			
WRC167BLN	14220	13510	13220	13140	12270	11660	11410	10270	81/78	61/58	50/47
WRC185BLN	15010	14260	13960	11460	12600	11970	11720	8720			
WRC225BLN	19000	18050	17670	17520	16400	15580	15250	13700	82/79	62/59	51/48
WRC247BLN	19990	18990	18590	15280	16780	15940	15610	11620			
WRC277BLN	23590	22410	21940	21800	20370	19350	18940	17050	83/80	63/30	52/49
WRC307BLN	25010	23760	23260	19110	20990	19940	19520	14540			
DOUBLE COIL											
WRC224BLN	18970	18020	17640	17520	16370	15550	15220	13700	82/79	62/59	51/48
WRC246BLN	19980	18980	18580	15280	16770	15930	15600	11620			
WRC335BLN	28430	27010	26440	26280	24540	23310	22820	20550	84/81	64/61	53/50
WRC369BLN	30020	28520	27920	22930	25190	23930	23430	17440			
WRC449BLN	38010	36110	35350	35040	32810	31170	30510	27400	85/82	65/62	54/51
WRC493BLN	39990	37990	37190	30570	33560	31880	31210	23250			
WRC554BLN	47180	44820	43880	43600	40740	38700	37890	34100	86/83	66/63	55/52
WRC614BLN	50020	47520	46520	38210	41980	39880	39040	29060			



Kirby WRC Remote Condenser

Technical Data



MODEL NUM- BER	COIL DETAILS	MOTOR DATA (415V/3Ph 2Spd)			UNIT DATA				APPROX. WEIGHT kg	
		QTY	Amps/Ph (EA)		TOTAL WATTS		RLA Amps/Ph		UNPACKED	PACKED
			(Hi-Spd)	(Lo-Spd)	(Hi-Spd)	(Lo-Spd)	(Hi-Spd)	(Lo-Spd)	PROVISIONAL	
STANDARD RANGE – SINGLE COIL										
WRC112B	2 Fan 4 Row	2	4	2.30	4000	2500	8	4.6	430	460
WRC123B	2 Fan 6 Row	2	4	2.30	4000	2500	8	4.6	500	530
WRC167B	3 Fan 4 Row	3	4	2.30	6000	3750	12	6.9	610	650
WRC185B	3 Fan 6 Row	3	4	2.30	6000	3750	12	6.9	710	750
WRC225B	4 Fan 4 Row	4	4	2.30	8000	5000	16	9.2	820	880
WRC247B	4 Fan 6 Row	4	4	2.30	8000	5000	16	9.2	960	1020
WRC277B	5 Fan 4 Row	5	4	2.30	10000	6250	20	11.5	1035	1115
WRC307B	5 Fan 6 Row	5	4	2.30	10000	6250	20	11.5	1210	1290
STANDARD RANGE – DOUBLE COIL										
WRC224B	2x2 Fan 4 Row	4	4	2.30	8000	5000	16	9.2	810	840
WRC246B	2x2 Fan 6 Row	4	4	2.30	8000	5000	16	9.2	950	980
WRC335B	2x3 Fan 4 Row	6	4	2.30	12000	7500	24	13.8	1170	1210
WRC369B	2x3 Fan 6 Row	6	4	2.30	12000	7500	24	13.8	1370	1420
WRC449B	2x4 Fan 4 Row	8	4	2.30	16000	10000	32	18.4	1570	1630
WRC493B	2x4 Fan 6 Row	8	4	2.30	16000	10000	32	18.4	1830	1890
WRC554B	2x5 Fan 4 Row	10	4	2.30	20000	12500	40	23	1975	2055
WRC614B	2x5 Fan 6 Row	10	4	2.30	20000	12500	40	23	2300	2380

NOTE- SUGGESTED CONTACTORS AND OVERLOADS FOR STD MOTOR FANS (FE080-SDQ.6N.5) | HIGH SPEED- CONTACTOR 6A, OVERLOAD 5.5A.

LOW NOISE RANGE – SINGLE COIL										
WRC112BLN	2 Fan 4 Row	2	2.4	1.50	2100	1540	4.8	3	430	460
WRC123BLN	2 Fan 6 Row	2	2.4	1.50	2100	1540	4.8	3	500	530
WRC167BLN	3 Fan 4 Row	3	2.4	1.50	3150	2310	7.2	4.5	610	650
WRC185BLN	3 Fan 6 Row	3	2.4	1.50	3150	2310	7.2	4.5	710	750
WRC225BLN	4 Fan 4 Row	4	2.4	1.50	4200	3080	9.6	6	820	880
WRC247BLN	4 Fan 6 Row	4	2.4	1.50	4200	3080	9.6	6	960	1020
WRC277BLN	5 Fan 4 Row	5	2.4	1.50	5250	3850	12	7.5	1035	1115
WRC307BLN	5 Fan 6 Row	5	2.4	1.50	5250	3850	12	7.5	1210	1290
LOW NOISE RANGE – DOUBLE COIL										
WRC224BLN	2x2 Fan 4 Row	4	2.4	1.50	4200	3080	9.6	6	810	840
WRC246BLN	2x2 Fan 6 Row	4	2.4	1.50	4200	3080	9.6	6	950	980
WRC335BLN	2x3 Fan 4 Row	6	2.4	1.50	6300	4620	14.4	9	1170	1210
WRC369BLN	2x3 Fan 6 Row	6	2.4	1.50	6300	4620	14.4	9	1370	1420
WRC449BLN	2x4 Fan 4 Row	8	2.4	1.50	8400	6160	19.2	12	1570	1630
WRC493BLN	2x4 Fan 6 Row	8	2.4	1.50	8400	6160	19.2	12	1830	1890
WRC554BLN	2x5 Fan 4 Row	10	2.4	1.50	10500	7700	24	15	1975	2055
WRC614BLN	2x5 Fan 6 Row	10	2.4	1.50	10500	7700	24	15	2300	2380

NOTE- SUGGESTED CONTACTORS AND OVERLOADS FOR LN MOTOR (FE080-ADQ.6N.5) FANS | HIGH SPEED- CONTACTOR 3A, OVERLOAD 2.9A.

Kirby WRC Remote Condenser

Technical Data



MODEL NUM- BER	COIL DATA			DIMENSIONAL DATA (MM)				SHIPPING VOLUME
	CHARGE	CONN'S ODS (mm)						
	R404A kg*	GAS	LIQUID	L	W	H max	H min	m³
SINGLE COIL INSTALLED WITH HORIZONTAL AIR FLOW (See page over)								
WRC112B	37	54.4	54.4	3260	1136	1250	1250	6.7
WRC123B	53	54.4	54.4	3260	1136	1250	1250	6.7
WRC167B	55	66.7	66.7	4660	1136	1250	1250	8.7
WRC185B	79	66.7	66.7	4660	1136	1250	1250	8.7
WRC225B	70	66.7	66.7	6068	1136	1250	1250	11.7
WRC247B	102	66.7	66.7	6068	1136	1250	1250	11.7
WRC277B	87	66.7	66.7	7469	1136	1250	1250	13.7
WRC307B	126	66.7	66.7	7469	1136	1250	1250	13.7
DOUBLE COIL INSTALLED WITH HORIZONTAL AIR FLOW								
WRC224B	73	2 x 54.4	2 x 54.4	3260	1136	2406	2406	11.2
WRC246B	105	2 x 54.4	2 x 54.4	3260	1136	2406	2406	11.2
WRC335B	109	2 x 66.7	2 x 66.7	4660	1136	2406	2406	15.2
WRC369B	157	2 x 66.7	2 x 66.7	4660	1136	2406	2406	15.2
WRC449B	141	2 x 66.7	2 x 66.7	6068	1136	2406	2406	20.2
WRC493B	204	2 x 66.7	2 x 66.7	6068	1136	2406	2406	20.2
WRC554B	173	2 x 66.7	2 x 66.7	7469	1136	2406	2406	24.2
WRC614B	252	2 x 66.7	2 x 66.7	7469	1136	2406	2406	24.2

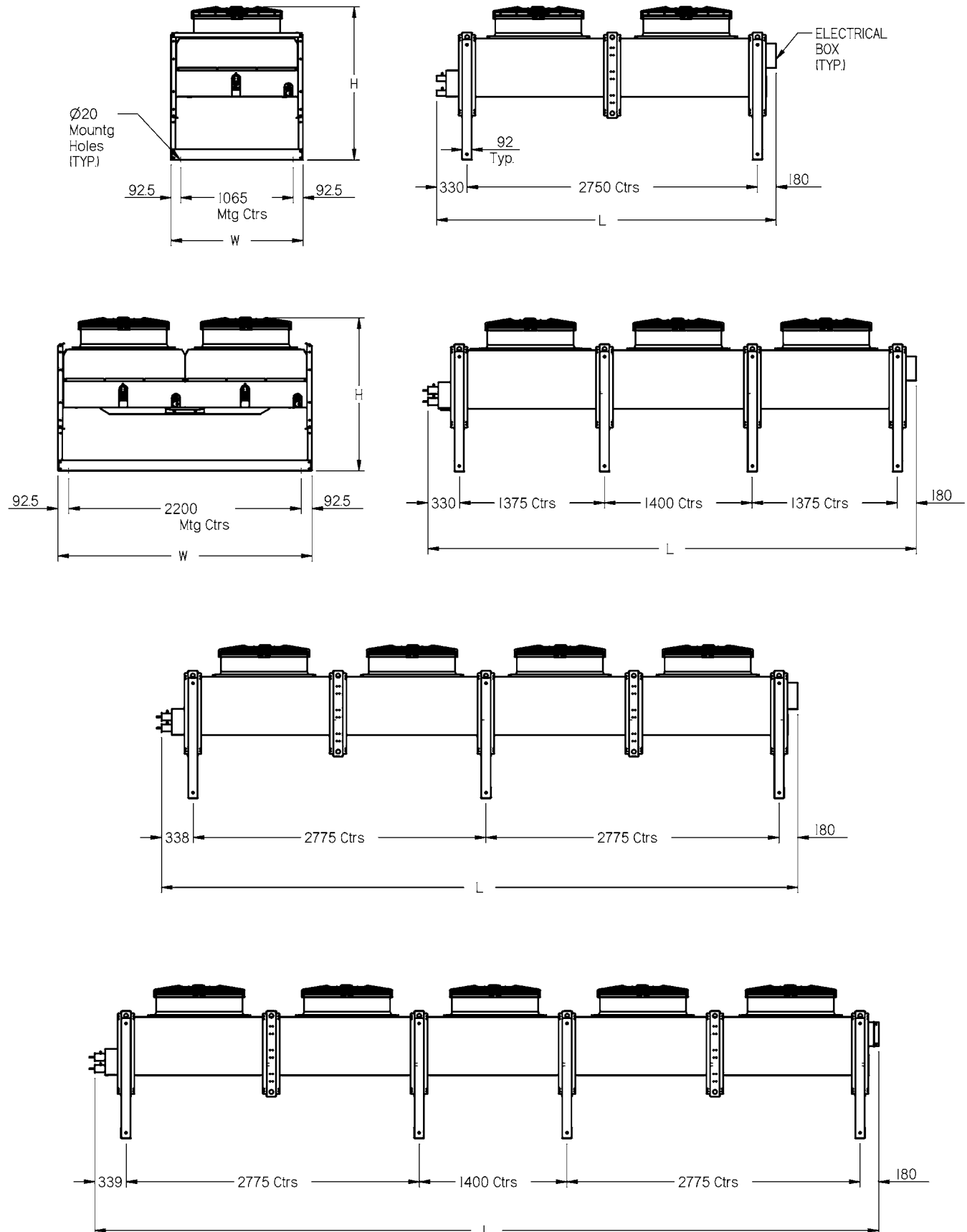
SINGLE COIL INSTALLED WITH VERTICAL AIR FLOW (See page over)								
WRC112B	37	54.4	54.4	3260	1250	1585	1410	6.7
WRC123B	53	54.4	54.4	3260	1250	1585	1410	6.7
WRC167B	55	66.7	66.7	4660	1250	1585	1410	8.7
WRC185B	79	66.7	66.7	4660	1250	1585	1410	8.7
WRC225B	70	66.7	66.7	6068	1250	1585	1410	11.7
WRC247B	102	66.7	66.7	6068	1250	1585	1410	11.7
WRC277B	87	66.7	66.7	7469	1250	1585	1410	13.7
WRC307B	126	66.7	66.7	7469	1250	1585	1410	13.7
DOUBLE COIL INSTALLED WITH VERTICAL AIR FLOW (See page over)								
WRC224B	73	2 x 54.4	2 x 54.4	3260	2406	1585	1410	11.2
WRC246B	105	2 x 54.4	2 x 54.4	3260	2406	1585	1410	11.2
WRC335B	109	2 x 66.7	2 x 66.7	4660	2406	1585	1410	15.2
WRC369B	157	2 x 66.7	2 x 66.7	4660	2406	1585	1410	15.2
WRC449B	141	2 x 66.7	2 x 66.7	6068	2406	1585	1410	20.2
WRC493B	204	2 x 66.7	2 x 66.7	6068	2406	1585	1410	20.2
WRC554B	173	2 x 66.7	2 x 66.7	7469	2406	1585	1410	24.2
WRC614B	252	2 x 66.7	2 x 66.7	7469	2406	1585	1410	24.2

PUMPDOWN CHARGE CONVERSION FACTORS TO R404A								
REFRIGERANT	R22	R134a	R407C	R404A	R407B	R502	R507	
FACTOR	1.22	1.24	1.13	1.00	1.13	1.22	1.05	
RATIO OF OPERATING CHARGE @ -5°C SST & 40°C SCT TO PUMPDOWN CHARGE								
REFRIGERANT	R22	R134a	R407C	R404A	R407B	R502	R507	
FACTOR	0.24	0.21	0.26	0.34	0.32	0.30	0.35	

Kirby WRC Remote Condenser

Physical Specifications

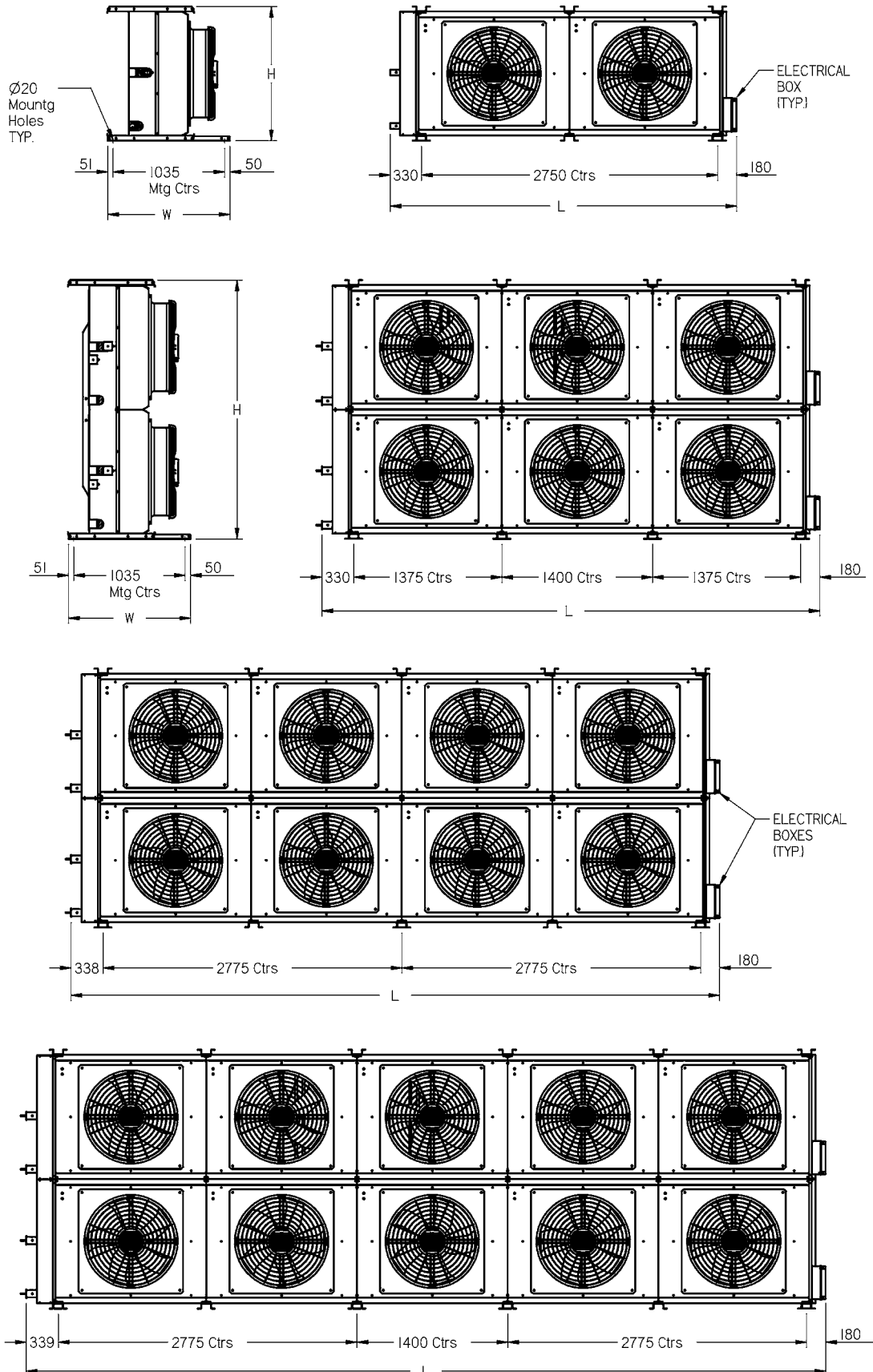
Horizontal Air Flow



Kirby WRC Remote Condenser

Physical Specifications

Vertical Air Flow



Kirby WRC Remote Condenser Sound Data



FANS	125	250	500	1000	2000	4000	8000	Noise Rating NR	Sound Press @ 3m dB(a) #
Linear Sound Power dB @ Centre Frequency Hz - 6 Pole Hi Speed									
2	83	80	81	83	80	71	62	65	66
3	85	82	83	85	82	73	64	67	68
4	86	83	84	86	83	74	65	69	69
5	87	84	85	87	84	75	66	69	70
6	88	85	86	88	85	76	67	70	71
8	89	86	87	89	86	77	68	72	72
10	90	87	88	90	87	78	69	72	73
Linear Sound Power dB @ Centre Frequency Hz - 6 Pole Lo Speed									
2	78	77	76	79	72	63	54	61	61
3	80	79	78	81	74	65	56	63	63
4	81	80	79	82	75	66	57	65	64
5	82	81	80	83	76	67	58	65	65
6	83	82	81	84	77	68	59	66	66
8	84	83	82	85	78	69	60	68	67
10	85	84	83	86	79	70	61	68	68
Linear Sound Power dB @ Centre Frequency Hz - 8 Pole Hi Speed									
2	76	77	75	76	71	63	57	58	59
3	78	79	77	78	73	65	59	60	61
4	79	80	78	79	74	66	60	61	62
5	80	81	79	80	75	67	61	62	63
6	81	82	80	81	76	68	62	63	64
8	82	83	81	82	77	69	63	64	65
10	83	84	82	83	78	70	64	65	66
Linear Sound Power dB @ Centre Frequency Hz - 8 Pole Lo Speed									
2	73	73	74	73	65	57	49	55	56
3	75	75	76	75	67	59	51	57	58
4	76	76	77	76	68	60	52	58	59
5	77	77	78	77	69	61	53	59	60
6	78	78	79	78	70	62	54	60	61
8	79	79	80	79	71	63	55	61	62
10	80	80	81	80	72	64	56	62	63

The Sound Pressure Level at 3 metres has been calculated in a Free Field Condition (Location 1) refer page 11 - Kirby WRC Remote Condenser - Rating Data

Kirby WRC Remote Condenser Performance Data



AMBIENT CORRECTION FACTORS (K1)							
AMB. °C	15	20	25	30	35	40	45
FACTOR	0.979	0.986	0.992	0.998	1.003	1.008	1.013

Divide the calculated THR at required ambient by the appropriate factor to find the required THR at the rating condition (32°C)

ALTITUDE CORRECTION FACTOR (K2)							
ALT. m	0	600	800	1000	1200	1400	1600
FACTOR	1	1.04	1.06	1.075	1.09	1.11	1.12

Multiply the calculated THR at altitude by the appropriate factor to find the required THR at the rating condition (sea level)

INTEGRAL SUBCOOLING CORRECTION FACTORS (K3)					
S/C	KTD				
K	3	5	10	15	20
2	0.966	0.976	0.989	0.994	0.996
4		0.934	0.975	0.986	0.990
6			0.946	0.972	0.980
8			0.898	0.960	0.966

Multiply the rated THR at zero subcooling by the factor at the required KTD and degree of subcooling to give the new THR

SEPARATE SUB-COOLING CORRECTION FACTORS					
SUBCOOLING	2K	4K	6K	8K	10K
FACTOR	0.96	0.950	0.930	0.910	0.880

Multiply the rated THR by the integral subcooling factor at the required subcooling (K), and then multiply by the separate subcooling factor to find the THR of the condensing only section.

Use the condensing only THR as basis of selection. Condensing only THR implies zero subcooling as per usual rating condition.

Notes to Performance Data

- * Integral sub-cooling is defined as achieving the required degree of subcooling using the standard coil circuiting.
- In this case the subcooling is achieved at the end of each circuit and subcooled liquid exits the condenser to the receiver.
- For separate sub-cooling, there is a section of the coil used separately to sub-cool liquid coming from the receiver. This is available as an extra cost special circuiting option. The percentage of coil area required depends on the degree of subcooling and the design KTD. The factors listed for integral subcooling are used in conjunction with the separate subcooling factors above.

REFRIGERANT CAPACITY CORRECTION FACTORS- Ratio to R404A (K4)					
REFRIGERANT	R134a	R22	R507	R407B	R407C
FACTOR	0.93	0.95	0.976	0.92	0.90

Divide the calculated THR by the appropriate factor to find the required THR at rating condition (R404A)

REFRIGERANT CORRECTION FACTORS

Factors are an average of all models and may vary slightly over the range of KTD, however the above figures are sufficiently accurate for most system selection purposes.

DISCHARGE TEMPERATURE CORRECTION FACTORS			
Refrigerant	R404A	R134a	R22
85°C Discharge	0.978	0.97	0.988

Factors at 32°C ambient, 50°C SCT. Factor will not vary significantly within the allowable KTD. Multiply the rated THR by the factor to get THR at reduced discharge gas temp. Capacity Ratio to 100°C discharge.

SOUND POWER

Tests were done with a Sound Intensity meter generally in accordance with the methods of ISO9614-1:1993 (measured at discrete points). Tests were conducted at 20°C ambient temp with only the fan(s) running & no refrigerant flow. Actual results may vary due to refrigerant flow noise & other factors. Sound pressure level at 3m distance from the unit can be estimated using various deductions depending on the location of the unit in the room.

Unit Locations	Location 1	Location 2	Location 3	Location 4
Lw - Lp (dB(A)) (3m)	20.5	17.5	14.5	11.5

Location 1: Unit located with no hard surfaces to reflect the sound (Free Field conditions).

Location 2: Unit located with 1 hard surface to reflect the sound.

Location 3: Unit located with 2 hard surfaces to reflect the sound.

Location 4: Unit located with 3 hard surfaces to reflect the sound.

Lw: Sound power level, dB(A).

Lp: Sound pressure level, dB(A).

Important: All data is approximate, and to be used only as a guide.





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