VCL Refrigerant condensers





BA



Key benefits

- Low height
- Easy installation
- Quiet

VCL characteristics

- Counter flow, centrifugal fan, forced draft
- PED 2014/68/EU coil design

Capacity range

180 - 1340 kW (for single cell models, nominal R22 kW's)

Typical applications

- Low height requirements
- Tight enclosures and installations requiring a single air inlet
- Indoor installations
- Sound critical installations
- Dry operation in winter time

Low height

• Very low height: fits perfectly on roof tops or tight enclosures.

Easy installation

- VCL condensers are factory-assembled. We ship in one piece for easy on-site lifting and installation.
- VCL offers high capacity and minimum operating weight. **Save on steel supports**, both underneath the equipment and in the building itself for rooftop installations.
- Single-side air inlet lets you install next to solid walls.
- Units housable indoors thanks to centrifugal fans allowing intake or discharge ductwork.

Ideal for a quiet operation

- VCL units include quiet internal centrifugal fans for minimal surrounding noise.
- Single-side air inlet, and a quieter condenser rear for more noise-sensitive areas.
- Cut operation noise still further with factory-designed and tested sound attenuators or silencers.

Year-round reliable operation

- Various corrosion-resistant materials, including the unique <u>Baltibond hybrid coating</u> for guaranteed long service life.
- Optional Baltiguard Drive System for energy savings and less noise during low load (night). A perfect stand-by system in case of motor failure
- Optional extended surface coil with steel fins for dry operation.

Interested in the VCL evaporative condenser for your industrial refrigeration application? Contact your local <u>BAC representative</u> for more information.

Downloads

- <u>VCL evaporative condenser</u>
- BAC condenser overview
- Operating and Maintenance VCL
- Rigging and Installation VCL
- Spare Parts for VCL
- <u>Retrofit Opportunities for VCL</u>

Principle of operation

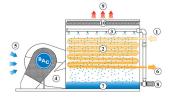


Refrigerant condensers

Principle of operation

Vapor (1) enters through a evaporative condensing coil (2) and gets water sprayed on by the spray system (3) at the top of the condenser. At the same time the centrifugal fan (4) blows ambient air upwards (5) through the condenser. During operation, heat is transferred from the internal circuit coil to the water, and then to the atmosphere as a portion of the water that evaporates. The condensed vapor (6) then exits the unit. The tower sump (7) or basin collects the water. The spray water pump (8) recirculates the water up to the water spray system. The warm saturated air (9) leaves the tower through the drift eliminators (10), which remove water droplets from the air.

Interested in the VCL condenser? Contact your local <u>BAC</u> <u>representative</u> for more information.



Construction details



Refrigerant condensers

Construction details

1. Material options

- Heavy-gauge hot-dip galvanized steel is used for external unit steel panels and structural elements featuring <u>Baltiplus Corrosion</u> <u>Protection.</u>
- The unique <u>Baltibond hybrid coating</u> is an optional extra. A hybrid polymer coating for longer service life, applied pre-assembly to all hotdip galvanized steel components of the unit.
- Optional <u>stainless steel</u> panels and structural elements of type 304L or 316L for extreme applications.
- Or the economical alternative: a **water-contact stainless steel cold water basin**. Its key components and the basin itself are stainless steel. The rest is protected with the Baltibond hybrid coating.



2. Heat transfer media

- Our heat transfer media is a condensing coil. Its thermal performance is proven during comprehensive <u>lab</u> thermal performance tests, and it offers you unrivalled system efficiency.
- The coil is constructed of continuous length of prime surface steel, hotdip galvanized after fabrication. Designed for maximum 23 bar operating pressure according to PED. Pneumatically tested at 34 bar.
- All hot dip galvanized and stainless steel coils are delivered with BAC's **Internal Coil Corrosion Protection**, to ensure an optimal internal corrosion protection and guaranteed quality.

Try our VCL coil options:

- Extended surface coils with selected rows, finned at 3 to 5 fins per inch and hot-dip galvanized after fabrication, for dry operation during winter time.
- Multiple circuit coils (split coils) for your halo carbon refrigerants, maintaining individual compressor systems. Or use it for compressor jacket water or glycol cooling.
- Stainless steel coils are in type 304L or 316L.
- **High pressure coils** are designed for 28 bar operating pressure and pneumatically tested for 40 bar. Hot-dip galvanized after fabrication.

All coils are designed for low pressure drop with sloping tubes for free drainage of fluid.



3. Air movement system

- With motor-driven centrifugal fan and a V-belt drive. You can easily remove the entire motor base for proper belt tensioning to ensure constantly correct belt alignment. Together with the heavy duty fan shaft bearings this guarantees optimal operational efficiency. Singleand multispeed motors available.
- **Centrifugal fan(s)** are forward-curved and nearly noiseless. Overcome external static pressure! Use <u>sound attenuators</u> and ductwork etc. for air intake/discharge with no loss of thermal performance!
- Our drift eliminators come in UV-resistant plastic, which will not rot, decay or decompose and their performance is tested and certified by Eurovent. They are assembled in easily handled and removable sections, for optimal internal access.
- Steel eliminators, protected with the unique <u>Baltibond hybrid coating</u> for optimal corrosion protection, are also available for specific applications.

4. Water distribution system

These consist of:

- A header and spray branches with wide non-clog plastic **nozzles**, secured by rubber grommets. You can easily remove, clean and flush both nozzles and spray branches.
- A cold water basin with:
 - strainers which are easy to lift out and the anti-vortexing device also helps stop trapped air
 - mechanical make up
 - circular access door
- Close coupled, bronze fitted centrifugal spray pump with totally enclosed fan cooled (TEFC) motor. Bleed line with metering valve installed from pump discharge to overflow.

Like to know more about the VCL construction details? Contact your local BAC representative.





Options and accessories

Refrigerant condensers

Options and accessories

Below is a listing of the main VCL options and accessories. If your required option or accessory is not listed, look no further than your <u>local BAC representative</u>.



Sound attenuation

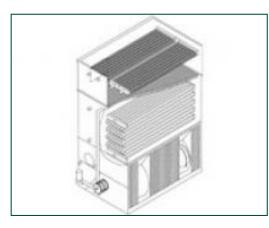
Reducing noise at air intake and discharge points brings us closer to silent cooling equipment.

- The sound reductions obtained by HS sound attenuation are perfect for **residential** sound requirements.
- Heavy noise reductions can be achieved with HD sound attenuation, making it ideal for **rural** requirements.



Move the pump to the connection side and make it **more accessible** when using sound attenuation at the fan side.





Desuperheater

Boost capacity and reduce plume of ammonia reciprocating compressor systems with a desuperheater.



Baltiguard drive system

With this, operate your system like a dual-speed motor, but with standby reserve capacity **to cope with any failure**.



Steel drift eliminators

Steel drift eliminators are more **robust** than plastic alternatives.



Remote sump connection

The best way to **prevent a sump freezing** is to use the auxiliary remote variety within a heated area. Shutting off the circulating pump allows all the water in the water distribution, as well as that in suspension and the sump to drain freely to the auxiliary sump.



Basin heater package

Thanks to our factory-installed heaters, the water stays at 4°C and **never freezes**, even during equipments downtime and however cold it gets outside.



Electric water level control package

For perfectly precise water level control, replace the standard mechanical valve with our electrical water level controller.



Discharge hood

Discharge hoods **reduce the risk of re-circulation** in tight enclosures by increasing discharge air velocity, and can be used to elevate the unit discharge above adjacent walls to comply with layout guidelines.



Safety switch

Cuts power to motors **with safety in mind** during inspection or maintenance.



Standby pump

Install a standby **reserve spray pump** as failure backup!



Water treatment equipment

Devices to control water treatment are needed to ensure proper **condenser water care**. Not only does this help protect the components and fill pack, controlling corrosion, scaling and fouling, it also avoids the proliferation of harmful bacteria, including **legionella**, in the recirculating water.



Filter

Separators and media filters efficiently **remove suspended solids** in the recirculating water, reducing system cleaning costs and optimizing water treatment results. Filtration helps you keep the recirculating water clean.





Sump sweeper piping

Sump sweeper piping **prevents sediment collecting in the cold water basin** of the unit. A complete piping system, including nozzles, is installed in the basin of the condenser **for connection to side stream filtration** equipment.



Clean out port

Clean out port **makes it easy to eliminate silt and sludge** from the condenser basin when cleaning and flushing the sump.



Flanges

Flanges facilitate piping connections on-site.

Special needs?

Refrigerant condensers

Special needs?

Our ongoing <u>R&D</u> investment helps BAC offer you a complete set of solutions for VCL evaporative condensers that meet your needs. Plus, we also cater for extra requirements such as:

Sound control

VCL uses a centrifugal fan in a V-design enclosure for better sound-control.

A quieter condenser rear for more noise-sensitive areas.

Helping keep it near noiseless:

- Sound attenuators
- Baltiguard drive system

Plume control

Tap into abundant BAC plume control experience. For the VCL line, we offer <u>desuperheaters</u> with **reduced plume and extended dry operation periods.**

Check out our <u>BAC plume visualization software</u> for insight into **how your cooling equipment will plume** before installation. Helping you choose the best and most effective plume abatement solution.

Water savings

You need water for evaporative cooling. At BAC, however, we offer acclaimed and advanced water saving technologies. Helping in this aim are:

- <u>Electric water level control package</u>
- Water treatment equipment
- Sump sweeper piping
- Desuperheater

Energy saving

VCL uses evaporative cooling technology for lower operating temperatures than other cooling methods. With the following options, reduce energy costs still further:

- · Baltiguard drive system
- Thermostat

Enhanced hygiene and water care

Water circulates in evaporative condensers and it is important to avoid excessive accumulation of dissolved solids. The following options help keep your condenser clean:

- Remote sump connection
- Water treatment equipment
- Sump sweeper piping
- <u>Clean out port</u>
- Filters

To control biological growth and scale formation, the water quality of the circulated water should be checked regularly. <u>Water quality guidelines</u> can be found in the <u>Knowledge center</u> of the website.

Year-round reliable operation

Inspect and maintain your condenser and protect it against extreme weather for year-round reliability. The options below help keep your condenser running smoothly and reliably and facilitate maintenance.

- Remote sump connection
- Water treatment equipment
- Sump sweeper piping
- <u>Clean out port</u>
- Filters
- Electric water level control package
- <u>Desuperheater</u>
- Baltibond hybrid coating

Do you too want to benefit from the above solutions? Contact your **local BAC representative** for more information.

VCL 042H-159M

Refrigerant condensers

Engineering data

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General notes

1. All models are single coil section units. Fan cycling results only in on-off operation. For additional steps of control, the Baltiguard[®] Drive System and two-speed fan motors are available. More precise capacity control can be obtained with modulating fan discharge dampers.

2. Make up, overflow, suction, drain connections and access door can be provided on side opposite of that shown; consult your BAC representative.

3. Unit height is indicative, for precise value refer to certified print.

4. Shipping/operating weights indicated are for units without accessories such as sound attenuators, discharge hoods, etc. Consult factory certified prints to obtain weight additons and the heaviest section to be

lifted.

5. For indoor applications of evaporative condensers, the room may be used a a plenum with ductwork attached to the discharge only. If inlet ductwork is required, an enclosed fan section must be specified; consult your BAC representative for details.

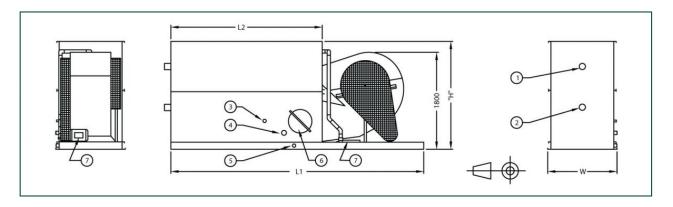
6. Fan kW is at 0 Pa ESP. To operate against external static pressure up to 125 Pa, increase each fan motor one size.

7. Refrigerant charge listed is R 717 operating charge. To determine operating charge of R22 refrigerants, multiply by: 1,93. For R134A, multiply by: 1,98.

8. Refrigerant connections are standard bevelled for welding.

Last update: 01/06/2023

VCL 042H-159M



1. Refrigerant in ND100; 2. Refrigerant out ND100; 3. Make up ND25; 4. Overflow ND50 on VCL 042-119 & 133 - ND80 on VCL 131 & 140-159; 5. Drain ND50; 6. Access; 7. Spray pump; 8. Fan motor.

Model		Weights (kg)			Dimensi	ons (mm)		Air Flow	Fan	Water	Fluid	R717
	Oper. Weight (kg)	Ship. Weight(k g)	Heaviest Section (kg)	L1	L2	Ŵ	н	(m³/s)	Motor (kW)	Flow (l/s)	Outlet ND (mm)	charge (kg)
VCL	1610	1100	1100	3350	1820	1250	1585	7.9	(1x)	5.9	(1x)	20.0
042-H									4.0		0.55	
VCL	1800	1270	1270	3350	1820	1250	1855	6.7	(1x)	5.9	(1x)	28.0
048-G									2.2		0.55	
VCL	1810	1280	1280	3350	1820	1250	1855	7.6	(1x)	5.9	(1x)	28.0
054-H									4.0		0.55	
VCL	1990	1440	1440	3350	1820	1250	2015	6.4	(1x)	5.9	(1x)	38.0
058-G									2.2		0.55	
VCL	2005	1460	1460	3350	1820	1250	2015	7.4	(1x)	5.9	(1x)	38.0
065-H									4.0		0.55	
VCL	2025	1490	1490	3350	1820	1250	2015	8.1	(1x)	5.9	(1x)	38.0
071-J									5.5		0.55	
VCL	2190	1640	1640	3350	1820	1250	2230	7.2	(1x)	5.9	(1x)	46.0
073-H									4.0		0.55	
VCL	2220	1670	1670	3350	1820	1250	2230	7.9	(1x)	5.9	(1x)	46.0
079-J									5.5		0.55	
VCL	2530	1750	1750	4560	2730	1250	1855	11.4	(1x)	9.0	(1x)	42.0
084-K									7.5		0.75	
VCL	2810	2010	2010	4560	2730	1250	2090	10.2	(1x)	9.0	(1x)	55.0
096-J									5.5		0.75	
VCL	2820	2020	2020	4560	2730	1250	2090	11.2	(1x)	9.0	(1x)	55.0
102-K									7.5		0.75	
VCL	2840	2080	2080	4560	2730	1250	2090	12.3	(1x)	9.0	(1x)	55.0
111-L									11.0		0.75	
VCL	2845	2090	2090	4560	2730	1250	2090	12.4	(1x)	9.0	(1x)	55.0
119-M									15.0		0.75	
VCL	3090	2280	2280	4560	2730	1250	2350	10.8	(1x)	9.0	(1x)	72.0
115-K	0.100		00.00		0700	40.00	0070	40.0	7.5		0.75	
VCL	3120	2350	2350	4560	2730	1250	2350	13.0	(1x)	9.0	(1x)	72.0
133-M	2560	2400	2400	E 4 9 0	2650	4050	2000	42.0	15.0	42.4	0.75	74.0
VCL	3560	2490	2490	5480	3650	1250	2090	13.6	(1x)	12.1	(1x)	74.0
131-L VCL	2570	2500	2500	E400	2050	4050	2000	14.0	11.0	40.4	1.1	74.0
1	3570	2500	2500	5480	3650	1250	2090	14.8	(1x)	12.1	(1x)	74.0
140-M VCL	3930	2830	2830	5480	3650	1250	2350	13.4	15.0	12.1	1.1	92.0
148-L	2920	2030	2030	5400	3050	1250	2350	13.4	(1x)	12.1	(1x) 1.1	92.0
VCL	3940	2840	2840	E490	3650	1250	2350	14.6	11.0 (1x)	12.1		92.0
159-M	5940	2040	2040	5480	3050	1250	2350	14.6	(1x) 15.0	12.1	(1x) 1.1	92.0
123-14									15.0		1.1	

VCL 167K-321P

Refrigerant condensers

Engineering data

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General notes

1. All models are single coil section units. Fan cycling results only in on-off operation. For additional steps of control, the Baltiguard[®] Drive System and two-speed fan motors are available. More precise capacity control can be obtained with modulating fan discharge dampers.

2. Make up, overflow, suction, drain connections and access door can be provided on side opposite of that shown; consult your BAC representative.

3. Unit height is indicative, for precise value refer to certified print.

4. Shipping/operating weights indicated are for units without accessories such as sound attenuators,

discharge hoods, etc. Consult factory certified prints to obtain weight additons and the heaviest section to be lifted.

5. For indoor applications of evaporative condensers, the room may be used a a plenum with ductwork attached to the discharge only. If inlet ductwork is required, an enclosed fan section must be specified; consult your BAC representative for details.

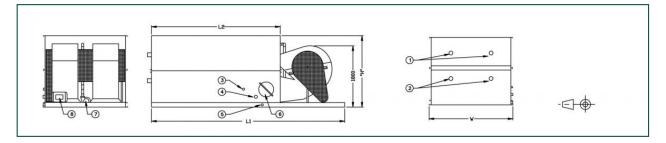
6. Fan kW is at 0 Pa ESP. To operate against external static pressure up to 125 Pa, increase each fan motor one size.

7. Refrigerant charge listed is R 717 operating charge. To determine operating charge of R22 refrigerants, multiply by: 1,93. For R134A, multiply by: 1,98.

8. Refrigerant connections are standard bevelled for welding.

Last update: 01/06/2023

VCL 167K-321P



1. Refrigerant in ND100; 2. Refrigerant out ND100; 3. Make up ND40; 4. Overflow ND80; 5. Drain ND50; 6. Access; 7. Spray pump; 8. Fan motor.

Model	Weights (kg)			Dimensions (mm)			Air Flow	Fan	Water	Fluid	R717	
	Oper. Weight (kg)	Ship. Weight(k g)	Heaviest Section (kg)	L1	L2	w	н	(m³/s)	Motor (kW)	Flow (l/s)	Outlet ND (mm)	charge (kg)
VCL	4740	3170	3170	4560	2730	2400	1855	23.3	(1x)	17.9	(1x)	84.0
171-N									18.5		1.1	
VCL	5260	3650	3650	4560	2730	2400	2090	17.4	(1x)	17.9	(1x)	110.0
167-K									7.5		1.1	
VCL	5290	3680	3680	4560	2730	2400	2090	19.6	(1x)	17.9	(1x)	110.0
185-L									11.0		1.1	
VCL	5310	3700	3700	4560	2730	2400	2090	22.8	(1x)	17.9	(1x)	110.0
208-N									18.5		1.1	
VCL	5860	4210	4210	4560	2730	2400	2350	19.3	(1x)	17.9	(1x)	144.0
209-L									11.0		1.1	
VCL	5880	4240	4240	4560	2730	2400	2350	22.3	(1x)	17.9	(1x)	144.0
235-N									18.5		1.1	
VCL	6420	4750	4750	4560	2730	2400	2560	18.9	(1x)	17.9	(1x)	166.0
219-L									11.0		1.1	
VCL	6570	4790	4790	4560	2730	2400	2560	23.0	(1x)	17.9	(1x)	166.0
258-O									22.0		1.1	
VCL	7270	5030	5030	5480	3650	2400	2350	20.7	(1x)	24.2	(1x)	184.0
239-L									11.0		2.2	
VCL	7280	5040	5040	5480	3650	2400	2350	22.6	(1x)	24.2	(1x)	184.0
257-M									15.0		2.2	
VCL	7300	5060	5060	5480	3650	2400	2350	25.6	(1x)	24.2	(1x)	184.0
285-O									22.0		2.2	
VCL	7990	5690	5690	5480	3650	2400	2560	23.9	(1x)	24.2	(1x)	220.0
286-N									18.5		2.2	
VCL	8010	5710	5710	5480	3650	2400	2560	25.3	(1x)	24.2	(1x)	220.0
299-O									22.0		2.2	
VCL	8110	5810	5810	5480	3650	2400	2560	27.5	(1x)	24.2	(1x)	220.0
321-P									30.0		2.2	

Sound attenuation HS

Refrigerant condensers

Engineering data

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General notes

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2. Make up, overflow, suction, drain connections and access door can be provided on side opposite of that shown; consult your BAC representative.

3. Unit height is indicative, for precise value refer to certified print.

4. Shipping/operating weights indicated are for units without accessories such as sound attenuators, discharge boods, etc. Consult factory certified prints to obtain weight additons and the beaviest section t

discharge hoods, etc. Consult factory certified prints to obtain weight additons and the heaviest section to be lifted.

5. For indoor applications of evaporative condensers, the room may be used a a plenum with ductwork attached to the discharge only. If inlet ductwork is required, an enclosed fan section must be specified; consult your BAC representative for details.

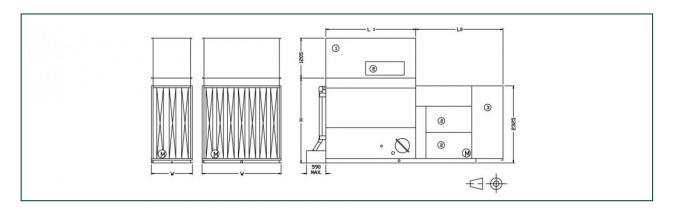
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7. Refrigerant charge listed is R 717 operating charge. To determine operating charge of R22 refrigerants, multiply by: 1,93. For R134A, multiply by: 1,98.

8. Refrigerant connections are standard bevelled for welding.

Last update: 01/06/2023

Sound attenuation HS



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1. Discharge attenuator; 2. Access door; 3. Intake attenuator; W & H = Unit dimensions (see Engineering Data).

Model	Model Dimensions (mm)			Weights (kg)				
	L2	L	Intake	Discharge	Total			
VCL 239-321	2640	3650	665	565	1230			
VCL 131-159	2640	3650	465	365	830			
VCL 042-079	2390	1820	460	215	675			
VCL 167-258	2640	2730	665	465	1130			
VCL 084-133	2640	2730	465	295	760			

Sound attenuation HD

Refrigerant condensers

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2. Make up, overflow, suction, drain connections and access door can be provided on side opposite of that shown; consult your BAC representative.

3. Unit height is indicative, for precise value refer to certified print.

4. Shipping/operating weights indicated are for units without accessories such as sound attenuators, discharge hoods, etc. Consult factory certified prints to obtain weight additons and the heaviest section to be

lifted.

5. For indoor applications of evaporative condensers, the room may be used a a plenum with ductwork attached to the discharge only. If inlet ductwork is required, an enclosed fan section must be specified; consult your BAC representative for details.

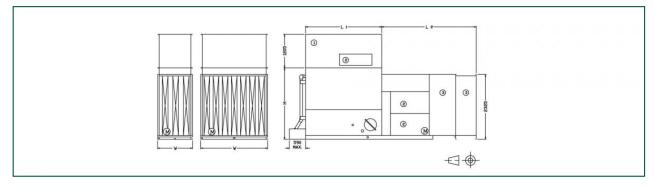
6. Fan kW is at 0 Pa ESP. To operate against external static pressure up to 125 Pa, increase each fan motor one size.

7. Refrigerant charge listed is R 717 operating charge. To determine operating charge of R22 refrigerants, multiply by: 1,93. For R134A, multiply by: 1,98.

8. Refrigerant connections are standard bevelled for welding.

Last update: 01/06/2023

Sound attenuation HD



1. Discharge attenuator; 2. Access door; 3. Intake attenuator; W & H = Unit dimensions (see Engineering Data).

Model	Dimensio	ns (mm)	Weights (kg)				
	L2	L	Intake	Discharge	Total		
VCL 239-321	3375	3650	980	605	1585		
VCL 131-159	3375	3650	660	385	1045		
VCL 042-079	3125	1820	655	235	890		
VCL 167-258	3375	2730	980	500	1480		
VCL 084-133	3375	2730	660	315	975		

Sound attenuation VS

Refrigerant condensers

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discharge hoods, etc. Consult factory certified prints to obtain weight additons and the heaviest section to be lifted.

5. For indoor applications of evaporative condensers, the room may be used a a plenum with ductwork attached to the discharge only. If inlet ductwork is required, an enclosed fan section must be specified; consult your BAC representative for details.

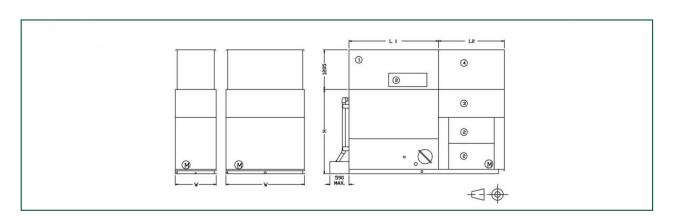
6. Fan kW is at 0 Pa ESP. To operate against external static pressure up to 125 Pa, increase each fan motor one size.

7. Refrigerant charge listed is R 717 operating charge. To determine operating charge of R22 refrigerants, multiply by: 1,93. For R134A, multiply by: 1,98.

8. Refrigerant connections are standard bevelled for welding.

Last update: 01/06/2023

Sound attenuation VS



BA

1. Discharge attenuator; 2. Access door; 3. Intake attenuator; 4. Plenum; W & H = Unit dimensions (see Engineering Data).

Model	Dimensio	ns (mm)	Weights (kg)				
	L2	L	Intake	Discharge	Total		
VCL 042-079	2010	1820	N.A.	N.A.	725		
VCL 167-258	2010	2730	756	419	1175		
VCL 131-159	2010	3650	566	334	900		
VCL 084-133	2010	2730	541	264	805		
VCL 042-079	2010	1820	548	192	740		
VCL 239-321	2010	3650	N.A.	N.A.	1310		
VCL 167-258	2010	2730	N.A.	N.A.	1205		
VCL 131-159	2010	3650	N.A.	N.A.	915		
VCL 084-133	2010	2730	N.A.	N.A.	830		
VCL 239-321	2010	3650	761	529	1290		