



# SELF CONTAINED Water-Cooled Air Conditioners

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**Self Contained  
Water-Cooled  
20-100 tons  
WCVS Model 50 Hz**

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# SELF CONTAINED - Features and Benefits

## Back To Wall (WCVS 270-400)

Allows units to be placed directly against the wall.

- Reduces equipment room space requirements.
- Greater flexibility in positioning the unit.
- More usable (rental/leasing) space.

## Dual Refrigerant Circuits (WCVS 470-800)

- Optimized part load efficiencies.
- Service ability without total system shutdown. (Models 900-12H have 3 & 4 circuits)

## Fully Tested

- Completely factory assembled and run tested.
- Refrigerant circuits factory leak tested and coil proof tested at 300 psig.
- Factory R22 charge for optimum performance.

## Scroll Compressors

Built in scroll compressors on all models.

- 64% fewer moving parts for increased reliability.
- Less rotating mass and friction for greater efficiency
- Enclosed compression chamber for increased efficiencies, compared to semi hermetics.
- Passes liquid without damaging the compressor. Extends lifespan (primary compressor failure is caused by liquid slugging).
- Quieter than equivalent reciprocating compressors.

## Manifolded Condenser Water Piping (WCVS 470-1200)

- Reduced installation and material (piping) cost.
- Connection can be either side allowing flexibility and installation convenience.

## Double Skin PU Panel Option

- Available for applications where internal cleanable panels are required.
- 25mm nominal Double skin panel thickness
- Insulation material is CFC free injected poly urethane, with a K value of 0.02W/mK.

## Insulated Corrosion Resistant, V-Shaped Drain Pan

- Efficient water management, helps reduce bacteria build up, better air quality.

## High Efficiency Evaporator Coil With Trane Wavy 3BS Slit Fin.

- Improves latent load capacity for close humidity control, inperstand for tropical climates.
- Higher efficiency.
- High moisture carryover tolerance.

## Factory Built and Installed Starters

- DOL starters or soft starters as standard features for quick and easy startup and installation.

## Intelligent Control

7 Segment LED Indicated Microprocessor Diagnostics	Quicker , Accurate Troubleshooting
Higher Controller Reliability	Longer, troublefree lifespan.
Less Complex, fewer electromechanical parts.	Increases Reliability
Built in PID based temperature control with zone sensor.	Accurate control as well as Eliminates field sourcing, purchasing & Installation.
Fully tested: coils, system leak tests and run tests.	Guarantees that units leave the factory fully tested, and in operational order.
A dry contact shall be available for remote signalling of general faults.	Added ease in troubleshooting.

## Full Protection

- Compressor overheat , overcurrent and phase loss protection shall be provided.
- High and low pressure safety switches to protect the system against operations outside recommended pressure limits.
- Reverse rotation protection on compressors through safeties that trip the system on high temperature.
- Compressor time delays and on-off sequencing logic that is built into the microprocessor algorith for maximum protection.



## Intelligent Design

270-400 models allow back to wall installation.	Reduces installed space
Scroll Compressors: Introduced by Trane in the early 90s to this range, and is now the industry standard.	Improved reliabilty with less moving parts and ability to pass liquid without damage. Quieter, low starting torque.
High Efficiency Evaporator Coils	High Carryover tolerance and higher coil efficiencies.
Dual Refrigent Circuits (WCVS 270, 470-800)	Redundancy.
Optimized Part load efficiencies.	Delivers higher efficiencies at part load.

## Simplified Installation & Servicing

Service Flexibility	For 2 circuit systems, this means servicing capability without total refrigent system shutdown.
Built in 1 Washable Filters	Filters come installed in Al frames, allowing, cost effective and quick filter replacements.
Built in controls:Starters, thermostats	Minimum electrical wiring and costs required.
Fully R22 Charged.	Almost a plug and play product.
Colored & Numered Wiring.	Further enhances installation & troubleshooting for peace of mind.

## Flexible Choices

Direct on line or soft starter alternatives.	Factory packaged DOL or Soft starters , reduces installed costs and guarantees full factory performance. [Note soft starters used for compressor startup only]
Cleanable Double Skin CFC Free Panels Option	For clean air as well as hygenic maintainence

## Mechanical Specification



### Unit Casing

The Unit framework shall be 1.9mm ga. GI steel. Exterior panels shall be fabricated from 0.9 mm galvanized steel. All panels shall be cleaned and coated with baked polyester powder paint. The compressor base frame shall be welded 2.3 mm galvanized steel.

All panels in contact with air stream shall be insulated with 1 inch 2 pound density fiber glass insulation covered with aluminium foils to prevent contact of moving air with insulation. All panels shall be removable to ensure proper access for servicing and maintenance.

All compressor section panels shall be acoustically insulated with 1 inch acoustic foam, sheets 1 inch PU foam double skin panels shall be optional for IAQ sensitive applications.

### Compressors

Unit shall have multiple-compressors with independent or manifolded hermetically sealed circuits. Compressors shall be scrolls of the suction gas cooled type.

Protective devices for high and low pressure cut-outs on each circuit. Overload for scroll compressors shall be standard.

All compressors shall be isolated with rubber-in shear isolators.

### Micro Processor Control

The unit shall have a factory installed and tested micro processor controller that enables diagnostics and inbuilt control for compressor sequencing and temperature monitoring and control.

Temperature control shall be of an electronic PID control.

Lockout safeties are to be provided for each circuit to prevent unsafe compressor operations (manual reset).

### Cooling Coil

The evaporator coil shall be one-half inch or three-eighth inch OD seamless copper tubes mechanically expanded into aluminium fins.

Coils shall have at least two independent circuits for good part load capability (exceptions being 330, 400). Larger units exceeding 800 MBH shall have 3 or more circuits to ensure best part load capability and servicing. Coils shall be proof tested and leak tested at 300 psig.

Thermal expansion device shall be of direct expansion type with external equalizers (capillary tubes shall not be acceptable).

Drain pipe outlet shall be left or right convertible (300-12H). The drain pan shall be of sloping design fabricated of galvanized steel insulated to prevent any condensation and corrosion coated to prevent any corrosion. Suction lines shall be fully insulated.

### Refrigerant Circuit

Refrigerant circuits shall be independent or manifolded and shall include pressure access ports (high and low pressure), filter driers and sight glasses. The circuits shall be leak tested and factory charged with R-22. The complete system shall be run tested in factory.

### Fans

Supply fans shall be of double width double inlet forward curved centrifugal fans statically and dynamically balanced. The drives shall be factory run tested and balanced. The supply fan motor shall be totally enclosed fan cooled.

### Starter

Unit mounted DOL starters or soft starters available as standard feature, factory installed and tested.

## System Performance Matrix

Model	Total Capacity		Sensible Capacity		Nominal Airflow		Condenser	
	MBH	kW	MBH	kW	CFM	CMS	USGPM	l/s
WCVS270	210	62	148	43	6190	2.92	48	3.0
WCVS330	273	80	187	55	7760	3.66	63	4.0
WCVS400	317	93	219	64	9240	4.36	74	4.7
WCVS470	393	115	278	81	10750	5.07	90	5.7
WCVS530	423	124	291	85	12120	5.72	99	6.2
WCVS600	527	154	379	111	13800	6.51	120	7.6
WCVS660	581	170	402	118	15130	7.14	131	8.3
WCVS730	637	187	469	137	16880	7.97	147	9.3
WCVS800	669	196	482	141	18080	8.53	155	9.8
WCVS900	884	259	612	179	24750	11.68	208	13.1
WCVS12H	1178	345	816	239	33000	15.57	274	17.5

Notes: Gross Cooling Capacity based on 90/100 deg F (32-38°C), EWT-LWT and 80/67 deg F(27/19°C) on coil conditions & Nominal airflows.

# General Specifications WCVS 270-12H

		WCVS 270	WCVS 330	WCVS 400	WCVS 470	WCVS 530	WCVS 600	WCVS 660	WCVS 730	WCVS 800	WCVS 900	WCVS 12H	
<b>Performances (1)</b>													
Gross Cooling Capacity (1)	(MBH)	214	278	323	400	431	537	591	650	682	900	1200	
	(kW)	63	81	94	117	126	157	173.0	173.0	200	264	351	
Unit Capacity Steps (%)		50-50	50-50	50-50	27-63-100	24-62-100	25-50-75-100	25-50-73-100	25-50-73-100	25-50-75-100	35-66-100	25-50-75-100	
Total Compressor Power Input	(kW)	13.2	18.3	18.3	25.5	29.2	32.1	33.9	41.2	45.2	70.8	94.4	
Main Power Supply		400/3/50											
Utilization Range		400V+/- 10%											
Sound Power Level (at 1kHz)	(dBA)	70	68	73	72	72	72	71	73	76	76	76	
<b>Compressor</b>													
Number		2	2	2	3	3	4	4	4	4	3	4	
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	
Model		2x10T	2x13T	2x15T	1x10T+2x13T	1x10T+2x15T	2x10T+2x13T	2x13T+2x13T	2x13T+2x15T	2x15T+2x15T	3x25T	4x25T	
Speeds Number		Single Speed, 2900RPM @ 50H											
Unit MCA Amps (4)	(A)	39	46	56	62	74	80	86	101	107	188	249	
RLA / LRA (2)	(A)	2[13.6/130]	2[16.8/135]	2[20/175]	[13.6/130]+2[16.8/135]	[13.6/130]+2[20/175]	2[13.6/130]+2[16.8/135]	2x2[16.8/135]	2[16.8/135]+2[20/175]	2x2[20/175]	2[49.3/270]	2[49.3/270]	
<b>Condenser Data</b>													
Shell & Tube Condenser with Internally & externally Enhanced Copper Tubes											Tube in Tube		
No. Used		2	1	1	2	2	2	2	2	2	1	1	
Water Connection Side	in	1.25	2	2	2	2	2.5	2.5	2.5	2.5	3	3	
Max. Flow Rate	gpm/Lpm	60/228	73/276	89/335	102/386	116/438	132/500	144/546	161/609	172/648	265/1003	338/1279	
Min. Flow Rate	gpm/Lpm	26/98	33/145	40/150	46/174	53/198	58/219	66/252	72/273	79/300	165/625	178/674	
Max. Water Side Pressure	psig/Kpa	300/2068	300/2068	300/2068	300/2068	300/2068	300/2068	300/2068	300/2068	300/2068	300/2068	300/2068	
<b>Evaporator Coil</b>													
Rows/FPI		3/12	3/12	3/12	3/12	3/12	4/12	4/12	4/12	4/12	4/12	4/12	
Configuration		Vertical Fan Discharge											
Face Area	Sq. ft/m2	13.4/1.25	16.7/1.55	19.2/1.78	26.2/2.44	26.2/2.44	34.8/3.24	34.8/3.24	38/3.53	38/3.53	50/4.65	50/4.65	
Tube Material		Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper	Copper	
Tube Type		Internally Enhanced					Smooth						
Tube Size (OD)	in/mm	3/8 / 9.5	3/8 / 9.5	3/8 / 9.5	3/8 / 9.5	3/8 / 9.5	0.5 / 12.7	0.5 / 12.7	0.5 / 12.7	0.5 / 12.7	0.5 / 12.7	0.5 / 12.7	
No. Of Circuits		2	1	1	1	2	2	2	2	2	3	3	
Refrigerant Flow Control		TXV	TXV	TXV	TXV	TXV	TXV	TXV	TXV	TXV	TXV	TXV	
Drain Connection Size	in	3/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	
<b>Evaporator Fan/Motor</b>													
Drive Type		Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Belt	
FLA/LRA (each) (2)		8.4/41.7	8.4/41.7	11/82	11/82	11/82	15/104	15/104	22/153	22/153	28.1/192	39.7/265	
No of Motors	Std. HP	1-5	1-5	1-7.5	1-7.5	1-7.5	1-10	1-10	1-15	1-15	1-20	1-30	
	Hi Static	1-7.5	1-7.5/1-10	1-10/1-15	1-10/1-15	1-10/1-15	1-15/1-20	1-15/1-20	1-20	1-20	1-25	N.A	
Diameter of Fan	in/mm	15.4/390	15.7/400	15.7/400	15.4/390	15.4/390	17.7/450	17.7/450	17.7/450	17.7/450	19.7/500	22/560	
No of Fans		1	1	1	2	2	2	2	2	2	2	2	
Indoor Fan Type		Centrifugal FC											
Fan Pulley Pitch Diameter	in	10	7	10	11	11	13	13	13	13	13	13	
Air Qty. - Max	cfm	7300	8900	10600	13800	13800	16700	16700	21800	21800	29700	39600	
- Min	cfm	4800	5900	7000	9100	9100	11000	11000	14400	14400	19800	26400	
Fan Motor Type		TEFC 400V+/-10%/3Ph50Hz											
Std. Fan Speed (Std. Factory Set)		870	828	870	923	923	725	725	780	780	759	759	
@ ESP including filters in / (Nominal CFM)		1'[6190]	1'[7760]	1'[9240]	1.2'[10750]	1.2'[12120]	1.2'[13800]	1.2'[15130]	1.2'[16880]	1.2'[18080]	1.2'[24750]	1.2'[24750]	
Max. Allowable Fan RPM		1100	1100	1100	1200	1200	1000	1000	1000	1000	1000	1000	
Motor Pulley Pitch Diameter [std.] in		6	4	6	7	7	6.5	6.5	7	7	7	7	
<b>Filters</b>													
Size(3)	(Qty) in	(2) 15x20	(1) 15x25	(2) 16x20	(2) 15x20 / (4) 16x20	(11) 15x25	(11) 15x25	(4) 15x25	(4) 15x25	(2) 15x20 / (6) 16x25	(2) 15x20 / (6) 16x25	(10) 25x20 / (2) 16x25	(10) 16x25
		(4) 16x20	(5) 16x25	(2) 16x25 / (1) 15x25			(12) 15x25	(12) 15x25	(2) 16x20 / (6) 15x25	(2) 16x20 / (6) 15x25	(5) 20x20 / (1) 16x20	(10) 25x25	
<b>Refrigerant Charge (3)</b>													
Circuit 1	(kg)	7.3	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	27.0	27.0	
Circuit 2	(kg)	7.3	-	-	7.3	7.3	16.8	16.8	16.8	16.8	27.0	27.0	
Circuit 3	(kg)										27.0	27.0	
Circuit 4	(kg)											27.0	
<b>Dimensions [uncrated]</b>													
Height	(mm)	1365	1980	1980	1980	1980	1980	1980	1980	1980	2235	2597	
Width	(mm)	1856	1861	1861	2141	2141	2646	2646	2646	2646	3020	3366	
Depth	(mm)	922	1107	1107	1107	1107	1321	1321	1321	1321	1345	1500	
App. operating Weight	(kg)	567	927	980	1226	1199	1585	1594	1722	1695	1779	2046	

Note :

- Gross Cooling Capacity based on 85/95 deg F [29.5-35C] , EWT-LWT and 80/67 deg F [27/19C] on coil conditions & Nominal airflows.
- RLA/LRA, FLA, MCA Rated at 400V
- 1 inch Washable (270-800), 2 inch Washable (900-12H)
- RLA rated at ARI 360 Conditions



Trane  
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www.trane.com

For more information, contact your local district office

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Trane has a policy of continuous product and product data improvement and reserves the right to change design and specification without notice.