QUANTUM CLIMATE CHANGER

WORLD CLASS AIR HANDING TECHNOLOGY

Model CLCP

Double Skin Air Handling Unit

1,000-58,000 cfm (0.5-27 m^3/s)

TRANE TECHNOLOGIES

Quantum™ Climate Changer™

Technology, economics, regulation and environmental factors are all impact on the HVAC system application and installation. Because TRANE recognizes this event and utilize TRANE worldwide air conditioning system experience, the new Quantum Climate Changer is developed and packed to suit the most current air conditioning system needs and applications.

The global design team from TRANE US Technology Center, TRANE Europe and Air Handling International Development Center in Asia was formed to develop TRANE Quantum Climate Changer.

World Class Air Handling Unit Technology

Various testing and verification procedures in CLCP are incorporated to ensure the highest product quality and reliability.

- All complete fan/motor/drive assemblies are statically and dynamically tested and balanced at actual speed.
- All coils are leak tested at 380 psig.
- Standard aluminum fins are anti-corrosion coated ones (copper fins are option)
- All factory engineered controls e.g. micro-processor and sensors are fully installed and tested.
- All components are checked and verified for zero defect.
- Forward curved, Backward curved and Airfoil fan are available.
- Unit is designed for easy field assembly.
- Rigid and sturdy 50 mm casing can withstand high static pressure and large airflow applications
- Proven and tested low unit leakage rate ensures good control of a contaminant free environment.
- Fan bearing is selected with L-50 life of at least 200,000 hours.
- Direct drive fan assembly option eliminating belt dust and potential downtime due to drives breakdown.
- Energy efficient packages ensure efficient energy

Performance Assurance and Committed Quality

All air handling unit fans are tested per ANSI/AMCA210, ANSI/ASHRAE Standard 51 'Laboratory Method of Testing Fans for Rating' and AMCA300 'Reverberant Room Method for Sound Testing of Fans'.

All coil capacity, pressure drops and selection procedures are rated in accordance to AHRI Standard 410. Plus, exposed insulation system meets UL94: Underwriters Laboratories Incorporated, standard for safety and flammability of plastic material for parts in devices and appliances.

Factory Engineered Controls

Integrated Comfort System (ICS)

The components in a control package are

- Unit mounted DDC controllers
- Variable frequency drive
- Starter
- Modulating valves
- Damper actuators
- Inlet guide vane actuators
- Face and bypass actuators
- Temperature sensors
- Humidity sensors
- Pressure sensors
- Low-limit switches
- Fan or filter status switches
- High and low pressure switches

Quantum™ Climate Changer™
Mechanical Specification

Casing

- Casing shall be pentapost perimeter frame with a modular system based on standardized double wall panels.
- Panel shall be attached to the frame through a self-locking mechanism repressure by a wedge and frame, exerting pressure evenly onto the panel and the seal attached to the frame, and hence a better air tight cabinet construction.
- Removal of any of the panels for any maintenance or repair works, must not affect the structural integrity of the unit.
- There shall be no sharp edges or pointed corners on the casing exterior that might cause accident or injury.
- There shall be no exposed gaps between fixed panels and between fixed panels and frame, to minimize potential air leaks.
- The frame shall be made of extruded aluminum chabbels fitted together with non-metal corner pieces.

Panal

- Panels shall be 25 & 50 mm thick with injected polyurethane foam insulation for a rigid non-vibrating construction.
- The insulation shall be rot-resistant and shall not absorb moisture that will promote fungus growth and also cause it lose its insulating properties.
- The issulation material shall be enclosed in the panel to cvoid insulation being exposed to the air stream.
- The panel insulation material shall have a heat transfer "K'' value of 0.02 w/mK.
- The panels shall be flush mounted to the frames.
- The floor panels shall be double wall construction to allow maintenance personnel access without damage to the insulation.
- The outer wall shall be galvanized steel painted with baked polyester powder paint that is resistant to nicks and scratch and allow for easy cleaning. The inner wall shall be galvanized steel.
- The paint shall be ultra violet resistant, weather resistant and shall not be affected by detergent cleaning.

Access & Inspection Doors

- The door construction shall consist of a door panel that compresses evenly a durable rubber seal onto a rigid frame.
- Opening or closing of the door shall not affect the structural integrity of the unit.
- The hinged door design shall be able to be lifted off or removed totally for easy access.

Base Rail

- The whole unit shall be mounted on a galvanized steel base rail for ease of shipping and handling
- The minimum height of the base shall be 120mm to ensure proper air circulation and avoid entrapment of moisture below the unit.
- The base rail is to be used in lieu of concrete plinths or other additional bases that are used at site.

Fan section

- supply fan shall be certified as per AMCA 210 and AMCA 300 Standards.
- All Centrifugal fans shall be statically and dynamically balanced
- The entire fan/motor/drives assembly shall be mounted on a common framework and isolated from the unit by rubber-in-shear or spring isolators. The fan discharge shall be isolated from the casing by a vibration absorbing or flexible duct.
- Fan shall be double width, double intel, multi blades type.
- Fan shall be equipped with bearings with an L-50 life of 200,000 hours.
- Forword curved fan shall be made of galvanized steel blades.
- Backward curved fan shall be made of treated and coated heavy gauge steel blades.
- Fan shaft design shall not exceed the first critical speed at any cataloged rpm and equipped with self-aligning bearings.

Motor and Drives

- Motors shall be totally enclosed fan-cooled with IP54 protection with class F insulation and maximum ambient temperature is 40 degree C.
- The motor mounting base design shall allow movement on three dimensions for ease of drives alignment and belt tensioning.
- Drives shall be constant speed, fixed pitch sheaves selected at 1.5 service factor.

Coil Section

- Coils performance shall be rated in accordance with ARI Standard 410.
- Coil shall be fabricated by the air handling manufacturer to maintain consistence in quality and reliability.
- Cooling coils shall be cartridge type mounted on steel channel for easy removal when required.
- Coil face velocity shall not exceed what is specified on the coil schedule.
- The number of this provided should be the minimum needed to meet the performance requirment to minimize the pressure drop across the coil.
- Coil casing shall be 1.5 mm thck galvanized steel with drain holes in the bottom channels to ensure condensale drainage.
- Coil tubes shall be copper and mechanically expanded into aluminum plate fins. No soldering process.
- The fins shall be sine-wave design for better heat transfer efficiency and moisture carry-over limit performance.
- Coil shall be leak tested at 380 psing (26 bar)
- Three Dimensional Pitched drain pan shall be installed under the coil to ensure total removal of condensate.
- The drain pan shall be 1.0 mm thick galvanized steel, coated with a mastic compound for comosion protection.
- In case of stached coils, and intermediate drain pan shall be installed between the coils to drain condensate to the main drain pan without flooding the lower coil and passing condensate through the air of the lower coil.

Filter Section

- The filter section shall be fabricated by the air handling manufacture with the same casing construction as the unit.
- Throwaway filters shall be 50mm thick, pleated media type. Filter shall be UL Class 2 with Average Effociency of 25-30% in accordance to ASHRAE 52.1-1992 Test Standard.
- Aluminium filters shall be 50mm thick, washable type. Filters shalll be UL Class 2 with Average Arreatance of 72% in accordance to ASHRAE 52.1-1992 Test Standard.
- Synthetic filters shall be 50mm thick, washable type. Filters shall be UL Class 2 with Average Arrestance of 80-85% in accordance to ASHRAE 52.1-1992 Test Standard.
- Cartridge filters shall be 100mm thick and shall be UL Class 2 with Average Efficiency of 60-65%, 80-85% and 90-95% in accordance to ASHRAE 52.1-1992 Test Standard.
- Bag filters shall be 380mm deep and shall be UL Class 2 with Average Effciency of 60-65%, 80-85% and 90-95% in accordance to ASHRAE 52.1-1992 Test Standrad.

Mixing Section

- The mixing section shall be fabricated by the air handling manufacturer with the same casing construction as the unit.
- Damper shall be provided to modulate the volume of outside or return air.
- Damper shall be opposed blade type fitted into a casing of galvanized sheet steel.

Remarks: If you require to install CLCP outdoor e.g. rooftop, please note the sales engineer for your correct selection.

Quantum™ Climate Changer™
Quick Select
Quick Selection Procedure

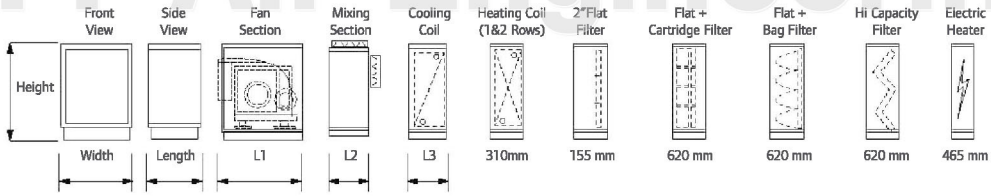
Step 1 : Determine what is the design airflow cfm (m³/s) or total cooling capacity MBH (kW)
Step 2 : Use the table below to determine the unit size by picking the closest air flow or total cooling capacity.
Step 3 : The unit width and height are the same for all sections. Unit length in Table A is based on basic fan+coil+flat filter sections only.
For other combinations, use Table B: Standard Section Length to determine the overall unit length.
Step 4 : Determine the nominal unit details (unit weight, coil water pressure drop, water flow rate and motor installed power) using Table A.

Table A: Quick Select

Model Size		Coil Face Area		Face Velocity		Total Cooling Capacity		External Static Pressure		Unit Dimensions			Unit Weight	Cooling Coil Water Pressure Drop		Water Flow Rate		Motor Installed Power	
		Ft²	(m²)	cfm	(m³/s)	MBH	(kW)	in.wg	(Pa)	Width	Height	Length	kg	ft.wg.	(kPa)	GPM	(L/s)	hp	(kW)
										mm	mm	mm							
CLCP	003	2.58	(0.24)	1,292	(0.61)	38	(11)	1.2	(300)	748	868	1368	160	0.5	(1.5)	7.61	(0.48)	2.0	(1.5)
CLCP	004	4.30	(0.40)	2,161	(1.02)	75	(22)	1.2	(300)	1058	868	1368	200	1.2	(3.7)	14.90	(0.94)	2.0	(1.5)
CLCP	006	6.13	(0.57)	3,072	(1.45)	92	(27)	1.2	(300)	1368	868	1368	260	2.5	(7.5)	20.61	(1.30)	3.0	(2.2)
CLCP	008	7.85	(0.73)	3,941	(1.86)	123	(36)	1.2	(300)	1678	868	1368	300	1.6	(4.7)	24.25	(1.53)	4.0	(3.0)
CLCP	010	9.68	(0.90)	4,873	(2.30)	140	(41)	1.2	(300)	1368	1178	1523	330	1.2	(3.6)	27.74	(1.75)	5.5	(4.0)
CLCP	012	12.47	(1.16)	6,271	(2.96)	205	(60)	1.2	(300)	1678	1178	1523	420	2.9	(8.6)	41.21	(2.60)	5.5	(4.0)
CLCP	014	15.27	(1.42)	7,669	(3.62)	270	(79)	1.2	(300)	1988	1178	1523	470	5.3	(15.8)	54.05	(3.41)	7.5	(5.5)
CLCP	016	17.10	(1.59)	8,581	(4.05)	276	(81)	1.2	(300)	1678	1488	1523	530	2.3	(6.9)	55.32	(3.46)	7.5	(5.5)
CLCP	020	20.97	(1.95)	10,530	(4.97)	365	(107)	2.0	(500)	1988	1488	1678	700	4.3	(12.9)	72.91	(4.60)	15.0	(11.0)
CLCP	025	25.81	(2.40)	13,072	(6.17)	467	(137)	2.0	(500)	1988	1798	1833	750	6.1	(18.3)	93.36	(5.89)	15.0	(11.0)
CLCP	030	31.18	(2.90)	15,678	(7.40)	546	(160)	2.0	(500)	1988	2108	1988	850	4.9	(14.7)	109.21	(6.89)	15.0	(11.0)
CLCP	035	36.88	(3.43)	18,538	(8.75)	672	(197)	2.0	(500)	2298	2108	1988	990	8.0	(23.9)	134.41	(8.48)	20.0	(15.0)
CLCP	040	42.69	(3.97)	21,441	(10.12)	802	(235)	2.0	(500)	2608	2108	2143	1150	12.0	(36.0)	160.09	(10.10)	20.0	(15.0)
CLCP	045	48.39	(4.50)	24,322	(11.48)	928	(272)	2.0	(500)	2918	2108	2143	1250	17.1	(51.1)	185.45	(11.70)	25.0	(18.5)
CLCP	050	54.19	(5.04)	27,225	(12.85)	1,054	(309)	2.0	(500)	3228	2108	2298	1460	23.4	(70.0)	211.29	(13.33)	30.0	(22.0)
CLCP	060	63.98	(5.95)	32,140	(15.17)	1,242	(364)	2.0	(500)	3228	2418	2453	1870	22.9	(68.4)	248.22	(15.66)	40.0	(30.0)
CLCP	065	70.75	(6.58)	35,551	(16.78)	1,385	(406)	3.0	(750)	3538	2418	2608	2110	26.4	(78.8)	279.13	(17.61)	50.0	(37.0)
CLCP	070	77.53	(7.21)	38,962	(18.39)	1,339	(410)	3.0	(750)	3848	2418	2608	2210	8.7	(25.9)	272.94	(17.22)	50.0	(37.0)
CLCP	080	84.41	(7.85)	42,415	(20.02)	1,515	(444)	3.0	(750)	4158	2418	2608	2450	10.9	(32.6)	302.90	(19.11)	60.0	(45.0)
CLCP	085	91.18	(8.48)	45,805	(21.62)	1,662	(487)	3.0	(750)	4468	2418	2608	2570	13.3	(39.9)	331.91	(20.94)	60.0	(45.0)
CLCP	090	97.96	(9.11)	49,216	(23.23)	1,815	(532)	3.0	(750)	4778	2418	2608	2840	16.2	(48.5)	362.97	(22.90)	75.0	(55.0)
CLCP	095	105.16	(9.78)	52,839	(24.94)	1,938	(568)	3.0	(750)	5088	2418	2608	2940	15.4	(46.0)	387.86	(24.47)	75.0	(55.0)

Note: 1. Cooling capacities are based on conditions of EAT 80 °FDB / 67 °FWB and EWT 45 °F / LWT 55 °F.
2. Unit dimensions and weight include forward curved fan section, 4-Row 120 FPF coil (1/2 inch CU tube) section and flat filter section (with filter media).
3. All dimentions and weights above are based on 50 mm. casing design.
4. Product design and specification are sunject to change without notice.

Table B: Standard Section Length



Fan Section, L1

Model Size	003	004	006	008	010	012	014	016	020	025	030
Length, mm	775	775	775	775	930	930	930	930	1085	1240	1240
Model Size	035	040	045	050	060	065	070	080	085	090	095
Length, mm	1240	1395	1395	1550	1705	1860	1860	1860	1860	1860	1860

Fan Section, L2

Model Size	003	004	006	008	010	012	014	016	020	025	030
Length, mm											
Model Size	035	040	045	050	060	065	070	080	085	090	095
Length, mm											

Coil Section, L3

Model Size	003 - 025	030 - 095
1 and 2 row coil	310 mm	310 mm
4 row coil	310 mm	465 mm

Model Size	003 - 025	030 - 095
6 row coil	465 mm	465 mm
8, 10 and 12 row coil	620 mm	620 mm

Note: 1. Total unit length shall be calculated based on total sum of all the individual section lengths added together.
2. Add 128mm to overall unit length for end frame for all models.
3. Fan section lengths are indicative only as the length varies according to the fan arrangement and motor kW range.
4. All dimensions are for 50mm casing.
5. Product design and specification are subject to change without notice.

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