Odyssey™ air-cooled chillers and heat pumps

CGA cooling only/CXA heat pump
VGA cooling only/VXA heat pump
Sizes: 075-100-120-150-200-240

May 2012

CG-PRC006-E4

Designed with your needs in mind

TRANE Odyssey™ chillers and heat pumps represent a totally new approach to design products for the TRANE company. The design team's mission is…to bring a system to the marketplace that will meet your job requirements every time.

TRANE's experienced design team used the newest computer technology and an entirely new manufacturing process to develop a new standard in chillers.

Couple the TRANE reputation for quality and reliability in chillers with improvements in efficiency, flexibility and installation ease… and you have systems that will give you "Simply the best value"

Contents

Features and benefits

CGA-CXA-VGA-VXA unit features

- Scroll compressor with:
- Sound-proofing
- Protection of compressor motor winding
- Crankcase heater (CXA/VXA)
- Thermo-magnetic circuit-breaker

1 compressor on sizes 075 to 120,
2 compressors on sizes 150 to 240

- Axial fans with low noise level completely integrated 1 fan on sizes 075 to 120, 2 fans on sizes 150 to 240
- Stainless steel brazed plate water heat exchanger equipped with heating resistor
- Aluminium fin coils with copper tubes
- Cooling circuits with:
- R407C refrigerant operating charge
- Thermostatic expansion valve(s)
- Liquid line filter drier(s)
- High and low pressure cut-outs

1 refrigerant circuit on sizes 075 to 120, 2 refrigerant circuits on sizes 150 to 240

- Disconnect switch
- Water flow switch
- Low ambient dual speed fan
- Water outlet low temperature (+12°C / -12°C)

Accessories

- Contactors for pump
- Remote control module.

Options

- Black epoxy fins
- High and low pressure gauges

Control

Microprocessor control module featuring:

- Liquid crystal display indicating return water temperature; codes of any faults
- Control of operating parameters
- Possibility of remote fault signaling on 24 V indicator light
- Anti-freeze protection of evaporators
- Control of defrosting (CXA/VXA only)

VGA-VXA unit additional features

Packaged hydraulic circuit for easier and quicker installation:

- Water pump
- Water tank: 80 l (sizes 075 -100), 90 l (size 120) or 150 l (sizes 150- 200-240)
- 35 l expansion vessel
- Water flow switch
- Relief valve-pressure gauge assembly
- Automatic air venting
- High pressure safety valve set at 3 bars

General Data

Table 3 : General and electrical data – VGA R407C Refrigerant

			VGA 075 R407C	VGA 100 R407C	VGA 120 R407C	VGA 150 R407C	VGA 200 R407C	VGA 240 R407C
Eurovent Performances (1)								
	Cooling Capacity	kW	19.6	26.0	32.3	37.6	52.9	64.7
	Power input in cooling	kW	7.6	10.0	13.4	15.1	19.9	28.2
	Net EER		2.59	2.61	2.42	2.50	2.66	2.29
	Net ESEER		3.07	3.09	2.84	3.06	3.31	2.78
	Pressure available in Cooling	kPa	135	110	82	180	158	118
	Main Power supply		400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
	Sound Power Level	dB(A)	76	78	82	78	80	85
Units Amps								
	Nominal (4)	A	16.9	24.6	28.3	32.6	48.1	55.5
	Start-up Amps	A	104	136	141	124	161	170
	Recommended Fuse size (AM)		25	32	40	50	63	80
	Recommended Wire	mm^2	4	6	6	10	10	16
	Max wire length	m	90	90	75	90	75	75
Compressor								
	Number		1	1	1	2	2	2
	Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
	Model		SZ100	SZ120	SZ161	SZ100	SZ120	SZ161
	Speeds number		1	1	1	1	1	1
	Motors Number		1	1	1	2	2	2
	Rated Amps (2)(4)	A	13.6	20.7	22.9	13.6	20.7	22.9
	Locked rotor Amps (2)	A	98	130	145	98	130	145
	Motor RPM	rpm	2900	2900	2900	2900	2900	2900
	Sump Heater (2)	W	-	-	-	-	-	-
Heat Exchanger								
	Type		BPHE	BPHE	BPHE	BPHE	BPHE	BPHE
	Model		V80-40	V80-50	V80-50	DV200-38	DV200-50	DV200-50
	Water volume (total)	l	93	93	103	185	186	186
	Antifreeze Heater	W	-	-	-	-	-	-
Water Connections								
	Type : ISO R7		Male	Male	Male	Male	Male	Male
	Diameter		1"1/2	1"1/2	1"1/2	1"1/2	1"1/2	1"1/2
Water pump								
	Type		Multi-cell	Multi-cell	Multi-cell	Single stage	Single stage	Single stage
	Model		MHIL 502–E–3	MHIL 502–E–3	MHIL 502–E– 3	BAC40-136-1,1/2	BAC40-136-1,1/2	BAC40-136-1,1/2
	Motor	kW	0.55	0.55	0.55	1.1	1.1	1.1
	Power factor		0.74	0.74	0.74	0.8	0.8	0.8
	Rated Amps	A	1.7	1.7	1.7	2.8	2.8	2.8
	Locked rotor Amps	A	3.0	3.0	3.0	5.3	5.3	5.3
Coil								
	Type		Plate Fin	Plate Fin	Plate Fin	Plate Fin	Plate Fin	Plate Fin
	Tube size	mm	9.52	9.52	9.52	9.52	9.52	9.52
	Tube type		I.G.	I.G.	I.G.	I.G.	I.G.	I.G.
	Height	mm	812.8	914.4	914.4	812.8	914.4	914.4
	Length	mm	1727	1727	2159	1727	1727	2159
	Face Area	m^2	1.40	1.58	1.97	2.81	3.16	3.95
	Rows	#	2	2	2	2	2	2
	Fins per inch (fpf)	#	16 (192)	16 (192)	16 (192)	16 (192)	16 (192)	16 (192)
Fan								
	Type		Propeller	Propeller	Propeller	Propeller	Propeller	Propeller
	Number		1	1	1	2	2	2
	Diameter	mm	650	710	710	650	710	710
	Drive type		Direct	Direct	Direct	Direct	Direct	Direct
	Speeds number		2	2	2	2	2	2
	Air flow	m^3/h	9300	12000	17000	18600	24000	34000
	Motors Number		1	1	1	1	1	1
	Motor HP (2)	kW	0.48	0.73	1.50	0.31	0.38	1.00
	Rated Amps (2)	A	1.07	1.7	3.2	1.07	1.7	3.2
	Motor RPM	rpm	630	680	900	630	680	900
Dimensions								
	Height	mm	1732	1732	1732	1732	1732	1732
	Length	mm	1061	1061	1261	2200	2200	2200
	Width	mm	952	952	1052	1050	1050	1050
	Shipping weight	kg	399	414	430	690	720	750
	Operating weight	kg	419	434	450	710	740	770
System Data								
	Refrigerant circuit		1	1	1	2	2	2
Refrigerant Charge (3)		kg	5	5.2	7.5	5.3	5.5	7.8

(1) at Eurovent Conditions
(2) per motor
(3) per circuit
(4) 5 bars suction - 25 bars discharge

Application Considerations

Application of this product should be within the catalogued waterflow and performance consideration.

Clearance requirements

Vertical condenser air discharge and condenser coil inlet must be unobstructed.

The recommended clearances identified with unit dimensions should be maintained to assure adequate serviceability, maximum capacity and peak operating efficiency. Actual clearances that appear inadequate should be reviewed with the local TRANE representative.

Operating limits

Table 5 - Normal operating limits

Outdoor ambient temperature			
Units		**Cooling mode**	**Heating mode**
CXA-VXA	Mini.	15°C	-15°C
CGA-VGA	Mini	-10°C	-
CGA-CXA-VGA-VXA	Maxi.	45°C	20°C

Leaving water temperature			
Units		**Cooling mode**	**Heating mode**
CXA-VXA	Mini.	-12°C	30°C
CXA-VXA	Maxi.	15°C	50°C
CGA-VGA	Mini.	-12°C	-
CGA-VGA	Maxi.	15°C	-

Performance Data

Figure 1 CGA-CXA 075 to 240 Evaporator Pressure Drop

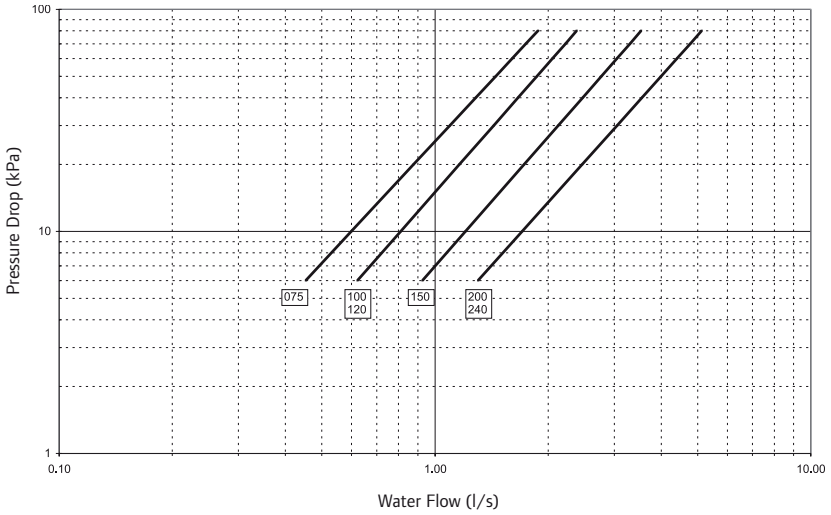


Figure 2 VGA/VXA 075 to 120 Water Pump Performances

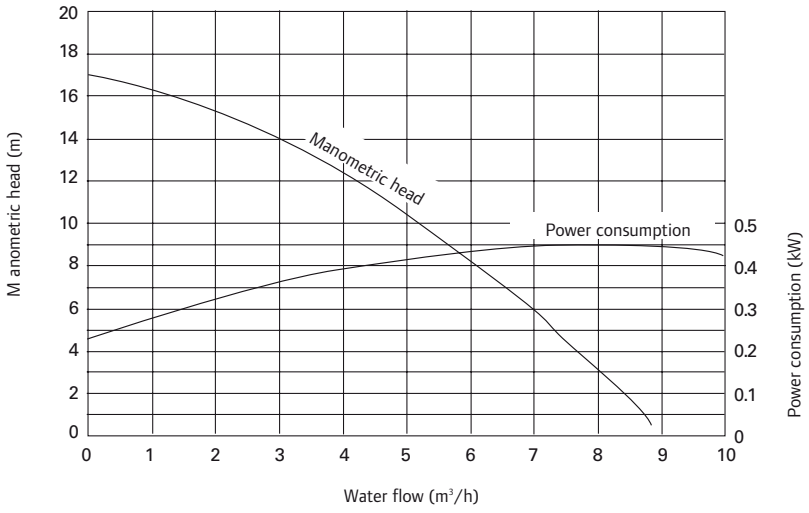
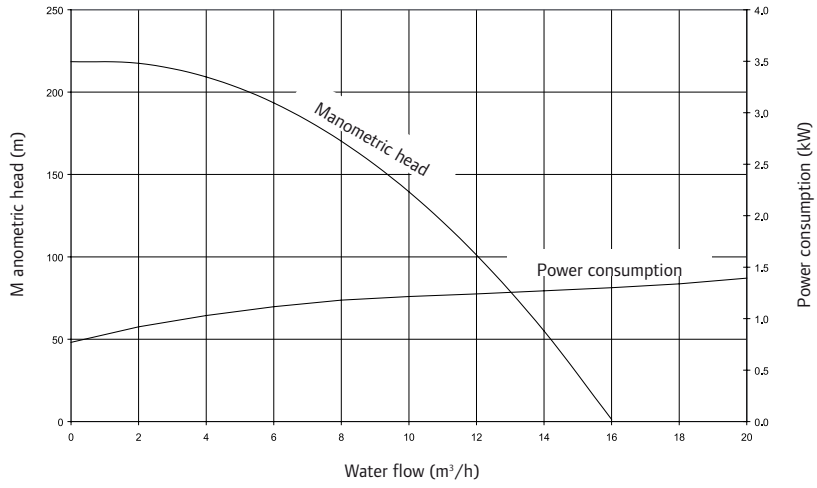


Figure 3 VGA/VXA 150 to 240 Water Pump Performances



Mechanical Specifications

CGA/CXA/VGA/VXA R407C

General
Units shall be assembled on heavy gauge steel mounting/lifting rails and shall be weather proofed. Unit shall include scroll compressor(s), plate fin condenser coil, brazed plate heat exchangers fans and motors, and operating charge of R407C refrigerant. Operating range shall be between -10°C and + 45°C in cooling and down to -15°C in heating as standard from factory. Units shall be certified and rated in accordance with Eurovent standard.

Casing
Unit casing shall be constructed of galvanized steel. Exterior surfaces shall be cleaned, phosphatized and finished with a weather-resistant baked enamel finish. Units surface shall be tested 500 hours in salt spray test. Units shall have removable end panels which allow access to all major components and controls.

Refrigeration System - Single Compressor
Size 075, 100 and 120 units shall have a single refrigeration circuit. This refrigeration circuit has an integral subcooling circuit. A filter drier, expansion valve and check valves shall be provided as standard. Units shall have both a liquid line and suction gas line with gauge port.
Units shall have one scroll compressor. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of nameplate voltage. Temperature and current-sensitive motor overloads shall be included for maximum protection.

Refrigeration System - Dual Compressor
Size 150, 200 and 240 units shall have two separate and independent refrigeration circuits. Each refrigeration circuit shall have an integral subcooling circuit. A filter drier shall be provided as standard. Units shall have both a liquid line and suction gas line with gauge ports. Each refrigeration circuit is controlled by one thermostatic expansion valve.
Units shall have two scroll compressors. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of nameplate voltage. Internal temperature and current-sensitive motor overloads shall be included for maximum protection.

Air exchanger
Coils shall be inner groove 9.52 mm copper tubes mechanically bonded to configured aluminum fin as standard. Coil shall be factory pressure and leak tested to 30 bar air pressure.

Water exchanger
Shall be of the stainless steel brazed plates type. Evaporator shall include thermal insulation and anti-freeze protection.
A differential pressostat shall ensure the water flow control. Differential pressostat shall be freeze protected.

Air exchanger Fans
Direct-drive, statically and dynamically balanced propeller fan(s) with polypropylene reinforced with 30% fiberglass blades and aluminum hub shall be used in draw-through vertical discharge position. Permanently lubricated totally enclosed type motors shall be provided and shall be protected by a circuit breaker. Motor(s) shall have ball bearings for helicoidal fan application type and shall be IP55, class F.

Controls
Cooling only units shall be completely factory wired with microprocessor based control and terminal block for power wiring. Control wiring shall be 24-volt control circuit which includes fuses and control transformer.
Units shall include a fused disconnect device. Microprocessor shall control return water temperature, operating parameters, anti-short cycling, and anti-freeze protection of the evaporator. The liquid crystal display shall indicate return water temperature and codes of any fault. 24 V output shall be available for remote signalling of general faults.

Accessories/options

Remote Control Module – Shall allow remote access to microprocessor controls and settings.

Pressure Gauges - Shall allow for reading of high pressure and low pressure on each refrigerant circuit.

Safety recommendations

To avoid accidents and damage, the following recommendations should be observed during maintenance and service visits :

1. The maximum allowable pressures for system leak testing on low and high pressure side are given in the chapter "Installation". Always provide a pressure regulator.
2. Disconnect the main supply before any servicing on the unit.
3. Service work on the refrigeration system and the electrical system should be carried out only by qualified and experienced personnel.

Maintenance contract

It is strongly recommended that you sign a maintenance contract with your local Service Agency. This contract provides regular maintenance of your intallation by a specialist in our equipment. Regular maintenance ensures that any malfunction is detected and corrected in good time and minimizes the possibility that serious damage will occur. Finally, regular maintenance ensures the maximum operating life of your equipment. We would remind you that failure to respect these installation and maintenance instructions may result in immediate cancellation of the warranty.

Training

The equipment described in this manual is the result of many years of research and continuous development. To assist you in obtaining the best use of it, and maintaining it in perfect operating condition over a long period of time, the constructor have at your disposal a refrigeration and air conditioning service school. The principal aim of this is to give operators and maintenance technicians a better knowledge of the equipment they are using, or that is under their charge. Emphasis is particularly given to the importance of periodic checks on the unit operating parameters as well as on preventive maintenance, which reduces the cost of owing the unit by avoiding serious and costly breakdown.

TRANE

Trane optimizes the performance of homes and buildings around the world. A business of Ingersoll Rand, the leader in creating and sustaining safe, comfortable and energy efficient environments, Trane offers a broad portfolio of advanced controls and HVAC systems, comprehensive building services, and parts. For more information, visit www.Trane.com.

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

CG-PRC006-E4 May 2012 Supersedes: CG-PRC006-E4_0109

Ingersoll Rand

Digitally printed on environmentally friendly paper;
produced using fewer trees and chemicals and less energy.