Cool

CUBIC Condensing Units

Designed to match your VES air handling unit

- Cooling only
- Heat pump
- Duty range 2.6-161kw
- High specification

VES Andover®

Just add air

CUBIC Condensing Units

CFCUS 5-10

CUS 1-4

CUS 15-60D

CUS 5-12

INTRODUCTION

This range of nine air cooled condensing units and heat pumps covers the range of 2.6 to 13kW.

UNIT IDENTIFICATION

AIR COOLED CONDENSING UNIT & OUTDOOR HEAT PUMP RANGE	
CU	Condensing Unit Cooling Only
CUH	Outdoor Heat Pump
S	Scroll Compressor (Model sizes 2-4)
1-4	Model Size
e.g.	Model CUHS2

CONSTRUCTION

The units are constructed from galvanised steel, epoxy baked powder coated to form a durable weatherproof finish.

Standard unit colour is Light Grey (RAL 7035).

Access to the compressors is via removable panels at the end and side of the unit.

CONDENSER

A large surface area coil, ideally positioned to optimise airflow and heat transfer and manufactured from refrigeration quality copper tubes with mechanically bonded aluminium fins.

FAN & MOTOR ASSEMBLY

Axial flow fan assembly with low noise sickle type blades and inlet ring.

The external rotor motor allows the use of a low power output, single phase, speed controllable motor to power the fan.

The motor has inbuilt thermal overload protection and the assembly is supplied complete with a finger guard for protection.

COMPRESSOR

CU/CUH 1 - 1.5

Fully hermetic reciprocating compressor fitted as standard with internal thermal motor protection. The compressor is mounted on the base via the use of vibration isolators.

CUS/CUHS 2 - 4

Hermetic scroll compressors fitted as standard with internal thermal motor protection and internal pressure relief valve. Compressor(s) are mounted to the base via the use of vibration isolators. Charged with Polyolester oil.

PRE CHARGE

All Condensing Units are supplied pre-charged with R407c for a pipe run of up to 7 metres. Refrigerant must be added for longer pipe runs (refer to technical specification for further information).

REFRIGERATION

Cooling Only

CUS 1 - 4

Each unit features as standard:

- Liquid Line shut off valve;
- Suction Line shut off valve;
- High & Low pressure switches;
- Filter drier (loose);
- Operating Charge.

Heat Pump

CUHS 1 - 4

Each unit features as standard:

- Liquid shut off valve;
- Suction shut off valve;
- High & Low pressure switches;
- Filter drier biflow (loose);
- Reversing valve;
- Defrost function;
- Oil sump heater;
- Suction line accumulator;
- Check valve (TEV inbuilt);
- Externally equalised bi-directional thermostatic expansion valve biflow.

ELECTRICAL

The unit control panel is fitted with the necessary contactors, sub-circuit protection and terminals to allow efficient and continuous unit operation.

All wiring is colour coded and numbered for identification and all units are wired to current local and European standards.

HEAD PRESSURE CONTROL

Head pressure is maintained by a factory fitted head pressure controller which varies the speed of the fan(s) to provide optimum control under varying ambient conditions.

MAINS ELECTRIC ISOLATOR

To ensure complete unit isolation of the electrical panel during adjustment and maintenance. The factory-fitted isolating device is a door interlocking type, preventing the panel from being accessed when the unit is running.

OPTIONAL EXTRAS

Epoxy Condenser Coils

In atmospheres where high corrosion is anticipated epoxy coated aluminium finned coils can be supplied.

Wall Mounting Brackets

To allow wall mounting a bracket and fixing kit can be supplied.

Defrost Drain Tray (CUHS1-4 Units Only)

A stainless steel drain tray can be provided to collect condensate when units are used in heat pump mode. Recommended for wall mounted installations.

Hot Gas Bypass (Models 1-4 Cooling Only)

To achieve capacity control during low load conditions or to maintain suction pressure when used with fresh air systems, the hot gas bypass system will modulate the capacity down to 40% of full load. A stub is provided for site connection of the hot gas line to the local expansion device. The hot gas option is supplied as a loose field fit kit.

Phase Rotation Protection (Models 2.5T-4 Only)

A phase sequence relay is available for units containing 3 phase scroll compressors, to prevent possible damage by running the compressor in the wrong direction.

Capacity Data - Cooling Duty - Cooling Only Unit

	Evaporating Temperature °C	Ambient									
		25°C		30°C		35°C		40°C		45°C	
		Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW
CU 1	-5	2.66	1.03	2.46	1.06	2.26	1.09	2.05	1.12	1.81	1.15
	0	3.42	1.09	3.17	1.14	2.92	1.19	2.67	1.23	2.83	1.28
	5	4.17	1.15	3.88	1.21	3.59	1.27	3.30	1.33	2.96	1.40
	10	4.92	1.18	4.59	1.21	4.26	1.35	3.92	1.44	3.53	1.53
CU 1.5	-5	3.10	1.11	2.83	1.25	2.57	1.21	2.33	1.25	2.11	1.30
	0	3.90	1.18	3.58	1.33	3.27	1.32	2.98	1.38	2.71	1.45
	5	4.81	1.23	4.44	1.38	4.08	1.42	3.73	1.50	3.40	1.58
	10	5.86	1.26	5.43	1.48	5.00	1.50	4.59	1.61	4.19	1.71
CUS 2	-5	4.01	1.09	3.76	1.26	3.52	1.44	3.27	1.61	3.01	1.79
	0	4.77	1.13	4.51	1.31	4.25	1.47	3.98	1.65	3.71	1.83
	5	5.67	1.19	5.37	1.36	5.06	1.53	4.76	1.71	4.45	1.88
	10	6.62	1.24	6.30	1.40	5.98	1.56	5.63	1.75	5.27	1.93
CUS 2.5S	-5	5.97	1.74	5.61	2.01	5.24	2.26	4.83	2.55	4.41	2.83
	0	7.12	1.82	6.73	2.08	6.34	2.34	5.90	2.63	5.46	2.91
	5	8.40	1.93	7.98	2.18	7.55	2.42	7.06	2.72	6.56	3.01
	10	9.80	2.03	9.32	2.27	8.84	2.51	8.26	2.80	7.68	3.08
CUS 2.5T	-5	5.90	1.72	5.69	2.00	5.47	2.27	5.27	2.54	5.53	2.82
	0	7.18	1.83	6.81	2.08	6.43	2.34	6.07	2.59	5.66	2.90
	5	8.40	1.91	7.99	2.17	7.57	2.42	7.13	2.71	6.68	2.99
	10	9.70	2.02	9.25	2.27	8.79	2.51	8.31	2.79	7.82	3.07
CUS 3	-5	6.99	2.13	6.62	2.44	6.26	2.75	5.91	3.07	5.50	3.44
	0	8.28	2.27	7.86	2.54	7.44	2.81	6.99	3.14	6.54	3.53
	5	9.69	2.38	9.20	2.69	8.72	2.96	8.22	3.30	7.67	3.63
	10	11.20	2.51	10.67	2.79	10.12	3.09	9.55	3.42	8.99	3.74
CUS 3.5	-5	8.66	2.48	8.19	2.79	7.71	3.10	7.23	3.42	6.75	3.73
	0	10.38	2.60	9.82	2.91	9.25	3.21	8.72	3.54	8.18	3.86
	5	12.35	2.77	11.56	3.05	10.76	3.33	10.24	3.66	9.72	3.98
	10	14.18	2.93	13.29	3.20	12.39	3.46	11.89	3.79	11.39	4.12
CUS 4	-5	10.56	2.50	9.85	2.98	9.18	3.46	8.54	3.95	8.54	3.95
	0	12.44	2.63	11.74	3.11	11.05	3.59	10.32	4.07	9.78	4.61
	5	14.54	2.86	13.80	3.33	13.05	3.79	12.37	4.27	11.75	4.80
	10	16.95	3.11	16.17	3.56	15.38	4.00	14.51	4.45	13.62	5.00

Notes: *1 Output kW refers to the compressor duty.*
2 Input kW refers to the compressor input power only.
3 Cooling data for a cooling only unit.

Capacity Data - Cooling Duty – Heat Pump Unit

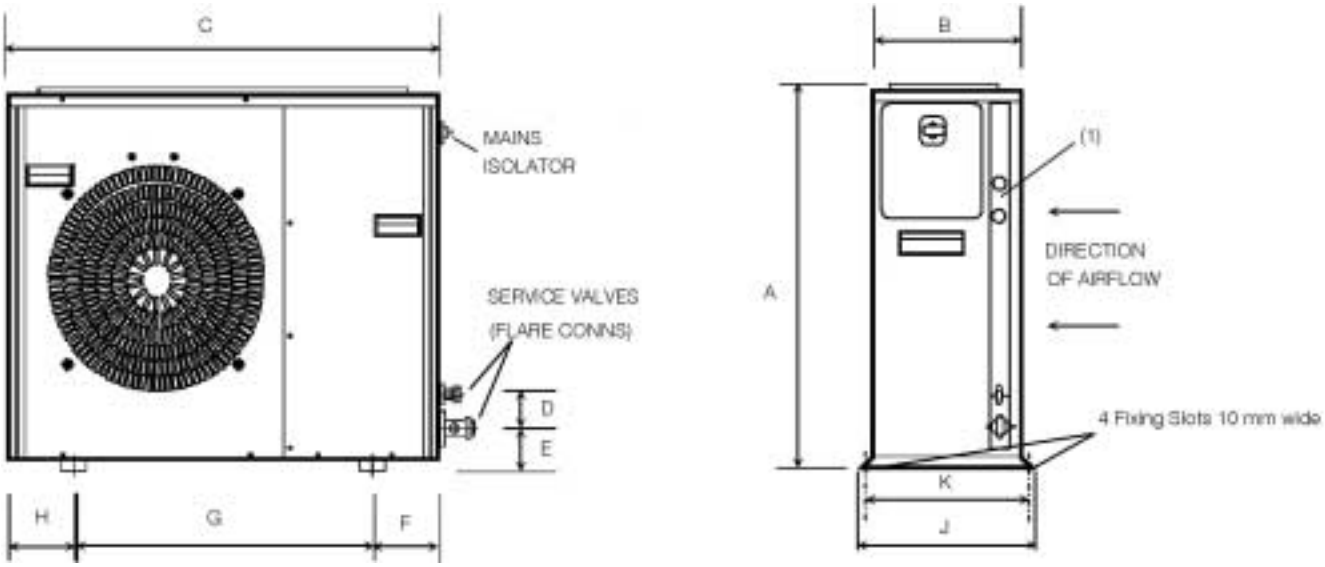
	Evaporating Temperature °C	Ambient									
		25°C		30°C		35°C		40°C		45°C	
		Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW
CUH 1	-5	2.55	0.99	2.36	1.02	2.17	1.05	1.97	1.08	1.74	1.10
	0	3.28	1.05	3.04	1.09	2.80	1.14	2.56	1.18	2.72	1.23
	5	4.00	1.10	3.72	1.16	3.45	1.22	3.17	1.28	2.84	1.34
	10	4.72	1.13	4.41	1.16	4.09	1.30	3.76	1.38	3.39	1.47
CUH 1.5	-5	2.98	1.07	2.72	1.20	2.47	1.16	2.24	1.20	2.03	1.25
	0	3.74	1.13	3.44	1.28	3.14	1.27	2.86	1.32	2.60	1.39
	5	4.62	1.18	4.26	1.32	3.92	1.36	3.58	1.44	3.26	1.52
	10	5.63	1.21	5.21	1.42	4.80	1.44	4.41	1.55	4.02	1.64
CUHS 2	-5	3.85	1.05	3.61	1.21	3.38	1.38	3.14	1.55	2.89	1.72
	0	4.58	1.08	4.33	1.26	4.08	1.41	3.82	1.58	3.56	1.76
	5	5.44	1.14	5.16	1.31	4.86	1.47	4.57	1.64	4.27	1.80
	10	6.36	1.19	6.05	1.34	5.74	1.50	5.40	1.68	5.06	1.85
CUHS 2.5S	-5	5.73	1.67	5.39	1.93	5.03	2.17	4.64	2.45	4.23	2.72
	0	6.84	1.75	6.46	2.00	6.09	2.25	5.66	2.52	5.24	2.79
	5	8.06	1.85	7.66	2.09	7.25	2.32	6.78	2.61	6.30	2.89
	10	9.41	1.95	8.95	2.18	8.49	2.41	7.93	2.69	7.37	2.96
CUHS 2.5T	-5	5.66	1.65	5.46	1.92	5.25	2.18	5.06	2.44	5.31	2.71
	0	6.89	1.76	6.54	2.00	6.17	2.25	5.83	2.49	5.43	2.78
	5	8.06	1.83	7.67	2.08	7.27	2.32	6.84	2.60	6.41	2.87
	10	9.31	1.94	8.88	2.18	8.44	2.41	7.98	2.68	7.51	2.95
CUHS 3	-5	6.71	2.04	6.36	2.34	6.01	2.64	5.67	2.95	5.28	3.30
	0	7.95	2.18	7.55	2.44	7.14	2.70	6.71	3.01	6.28	3.39
	5	9.30	2.28	8.83	2.58	8.37	2.84	7.89	3.17	7.36	3.48
	10	10.75	2.41	10.24	2.68	9.72	2.97	9.17	3.28	8.63	3.59
CUHS 3.5	-5	8.31	2.38	7.86	2.68	7.40	2.98	6.94	3.28	6.48	3.58
	0	9.96	2.50	9.42	2.79	8.88	3.08	8.37	3.39	7.85	3.71
	5	11.86	2.66	11.09	2.93	10.33	3.20	9.83	3.51	9.33	3.82
	10	13.61	2.81	12.75	3.07	11.89	3.32	11.41	3.64	10.93	3.96
CUHS 4	-5	10.14	2.40	9.46	2.86	8.81	3.32	8.20	3.79	8.20	3.79
	0	11.94	2.52	11.27	2.99	10.61	3.45	9.91	3.91	9.39	4.43
	5	13.96	2.75	13.25	3.20	12.53	3.64	11.88	4.10	11.28	4.61
	10	16.27	2.99	15.52	3.42	14.76	3.84	13.93	4.27	13.08	4.80

Notes: *1 Output kW refers to the compressor duty.*
2 Input kW refers to the compressor input power only.
3 Cooling data for a heat pump condensing unit.

	°C	Outdoor Air On % RH	Condensing Temperature 30°C Output kW	35°C Output kW	40°C Output kW	45°C Output kW	50°C Output kW	55°C Output kW
CUH 1	5	85	4.50	4.33	4.12	3.91	3.54	3.61
	7	85	4.77	4.54	4.34	4.07	3.96	3.75
	10	80	5.05	4.79	4.56	4.33	4.24	3.99
CUH 1.5	5	85	5.29	5.02	4.74	4.62	4.43	4.20
	7	85	5.53	5.29	5.06	4.80	4.65	4.44
	10	80	5.81	5.53	5.34	5.07	4.97	4.74
CUHS 2	5	85	5.44	5.37	5.29	5.32	5.29	5.01
	7	85	5.74	5.65	5.57	5.59	5.36	5.19
	10	80	6.13	6.03	5.94	5.94	5.93	5.88
CUHS 2.5S	5	85	8.14	8.02	7.99	7.95	7.91	7.87
	7	85	8.63	8.49	8.43	8.38	8.31	8.27
	10	80	9.19	9.04	8.99	8.93	8.87	8.72
CUHS 2.5T	5	85	8.14	8.02	7.99	7.95	7.91	7.87
	7	85	8.63	8.49	8.43	8.38	8.31	8.27
	10	80	9.19	9.04	8.99	8.93	8.87	8.77
CUHS 3	5	85	9.30	9.25	9.20	9.17	9.12	9.09
	7	85	9.83	9.79	9.77	9.77	9.76	9.73
	10	80	10.59	10.46	10.32	10.26	10.20	10.08
CUHS 3.5	5	85	11.92	11.71	11.62	11.51	11.40	11.32
	7	85	12.61	12.36	12.27	12.15	12.00	11.89
	10	80	13.51	13.23	13.12	12.95	12.78	12.59
CUHS 4	5	85	13.57	13.51	13.48	13.43	13.38	13.36
	7	85	14.34	14.25	14.21	14.14	14.06	14.01
	10	80	15.42	15.19	15.08	15.02	14.89	14.79

Notes: 1 *Output kW refers to the compressor duty.*
2 *Indoor ambient at 20°C.*

Dimensions



CU/CUH		A	B	C	D Liquid	E Suction	F	G	H	J	K
1	mm	843	333	946	76	87	140	657	140	395	369
1.5	mm	843	333	946	76	87	140	657	140	395	369
S2	mm	843	333	946	76	87	140	657	140	395	369
S2.5	mm	843	333	946	76	87	140	657	140	395	369
S3	mm	1143	333	946	76	87	140	657	140	395	369
S3.5	mm	1143	333	946	76	87	140	657	140	395	369
S4	mm	1143	333	946	76	87	140	657	140	395	369

Notes: 1 *Incoming Electrical Service knockouts (6 off) located at (1).*
2 *Airflow Clearance: For Condenser Coil 150mm CUS/CUHS 1-4.*
3 *Maintenance Access: Please allow 500mm around right hand side and front of unit for maintenance.*
4 *Dimensions G and K are feet fixing centres.*
5 *Models CUS/CUHS 3.5 and 4 have two vertically aligned condenser fans.*

CU/CUH	1	1.5	S2	S2.5S	S2.5T	S3	S3.5	S4
Nominal Capacity (1)kW	3.6	4.1	5.0	7.7	7.7	8.7	11.0	13.1
Nominal Input (1)kW	1.3	1.4	1.6	2.3	2.3	3.0	3.3	3.8
Capacity Steps %	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100
Construction								
Material	Galvanised Steel							
Colour	Light Grey (RAL 7035)							
Condenser								
Type	Air Cooled							
Quantity	1	1	1	1	1	1	1	1
Face Area m^2	0.71	0.71	0.71	0.76	0.76	0.89	0.89	0.89
Nominal Airflow m^3/s	1.05	1.05	1.05	0.80	0.80	0.80	1.45	1.80
Coil Volume (2) l	2.03	2.03	2.03	4.33	4.33	5.12	5.12	5.12
Discharge	Horizontal							
Fans								
Type	Axial							
Quantity	1	1	1	1	1	1	2	2
Diameter mm	450	450	450	450	450	450	450	450
Maximum Speed rpm	840	840	840	840	840	840	840	840
Compressor								
Type	Reciprocating				Scroll			
Quantity	1	1	1	1	1	1	1	1
Number of Cylinders	2	2	-	-	-	-	-	-
Oil Charge Volume L	0.7	1.5	1.0	1.1	1.1	1.1	1.9	1.6
Refrigeration								
Number of Circuits	1	1	1	1	1	1	1	1
Refrigerant Type	R407c							
Refrigerant Charge kg	0.6	0.6	0.6	1.3	1.3	1.5	1.5	1.5
Refrigeration Control	Thermostatic Expansion Valve (CUH Only)							
Dimensions/Weights CU Units								
Height mm	843	843	843	843	843	1143	1143	1143
Width mm	937	937	937	937	937	937	937	937
Depth mm	400	400	400	400	400	400	400	400
Machine Weight (nom) kg	57.4	63.2	57.2	73.5	73.5	85.0	98.6	101.0
Operating Weight (nom) kg	60.4	66.2	60.2	75.7	75.7	88.1	101.6	104.1
Dimensions/Weights CUH Units								
Height mm	843	843	843	843	843	1143	1143	1143
Width mm	937	937	937	937	937	937	937	937
Depth mm	400	400	400	400	400	400	400	400
Machine Weight (nom) kg	58.7	64.6	58.6	75.4	75.4	80.4	103.0	103.4
Operating Weight (nom) kg	61.7	67.6	61.8	78.4	78.4	83.6	106.0	109.4
Connections								
Liquid Line (3) in	1/4	1/4	1/4	3/8	3/8	3/8	3/8	1/2
Suction Line (3) in	5/8	5/8	5/8	3/4	3/4	3/4	3/4	3/4
Hot Gas Stub in	3/8	3/8	1/2	1/2	1/2	1/2	1/2	1/2

(1) Nominal Capacity based on 5°C evaporating temperature and a 35°C ambient.
(2) Figures for guidance.
(3) Flare connections on service valves.

Electrical Data

CU/CUH	1	1.5	S2	S2.5S
Unit Data				
Nominal Run Amps (1) A	7.3	7.9	10.3	14.3
Maximum Start Amps A	37.6	38.1	49.6	78.6
Control Circuit VAC	230	230	230	230
Mains Supply V			230/1/50	
Rec. Mains Fuse A	16	16	16	20
Max Incoming Mains mm	6	6	6	6
Compressor				
Motor Rating kW	1.38	1.51	1.7	2.5
Nominal Run Amps (1) A	6.65	7.20	9.6	13.60
Locked Rotor Amps A	35.00	35.50	47.00	76.00
Crankcase Heater Rating W	42	42	40(2)	40(2)
Type of Start		Direct on Line		
Condenser Fan				
Motor Rating kW	0.15	0.15	0.15	0.15
Full Load Amps A	0.65	0.65	0.65	0.65
Locked Rotor Amps A	2.60	2.60	2.60	2.60

CU/CUH	S2.5T	S3.0	S3.5	S4.0 -
Unit Data				
Nominal Run Amps (1) A	6.4	7.1	8.8	9.5
Maximum Start Amps A	39.1	46.6	59.2	67.0
Control Circuit VAC	230	230	230	230
Mains Supply V		400/3/50		
Rec. Mains Fuse A	16	16	16	20
Max Incoming Mains mm	6	6	6	6
Compressor				
Motor Rating kW	2.5	2.9	3.7	4.0
Nominal Run Amps (1) A	5.7	6.4	7.5	8.2
Locked Rotor Amps A	36.5	44	54	61.8
Crankcase Heater Rating W	40(2)	40(2)	65(2)	65(2)
Type of Start		Direct on Line		
Condenser Fan				
Motor Rating kW	0.15	0.15	0.15	0.15
Full Load Amps A	0.65	0.65	0.65	0.65
Locked Rotor Amps A	2.60	2.60	2.60	2.60

(1) Nominal data based on 5°C evaporating temperature and a 35°C ambient.
(2) Heat Pump units only.

Noise Data

	Sound Measurement	Frequency (Hz) dBA	125	250	500	1000	2000	4000
CUS/CUHS 1- 3	Power dBA	70	79	71	67	66	60	55
	Pressure @ 1 m	62	71	63	59	58	52	47
	Pressure @ 10 m	42	51	43	39	38	32	27
CUS/CUHS 3.5 - 4	Power dBA	73	79	75	72	66	64	57
	Pressure @ 1 m	65	71	67	64	58	56	49
	Pressure @ 10 m	45	51	47	44	38	36	29

Note: Above noise levels are with the condenser fan running at full speed.
Under normal operating conditions (ambients up to 35°C) noise levels will be reduced by 3 - 4 dB.

INTRODUCTION

This range of air cooled condensing units and heat pumps covers the 14-35kW requirement, in axial fan only.

UNIT IDENTIFICATION

AIR COOLED CONDENSING UNIT & OUTDOOR HEAT PUMP RANGE

CUS . . . . . Condensing Unit Cooling Only
CUHS. . . . . Outdoor Heat Pump
5-12. . . . . Model Size
e.g. . . . . Model CUS 6

CONSTRUCTION

Units are fabricated from galvanised steel, epoxy baked powder coated to form a durable weatherproof finish.

Standard unit colour is Light Grey (RAL 7035).

CONDENSER

Large surface area condenser coil(s) manufactured from refrigeration quality copper tubes, with mechanically bonded aluminium fins.All units are leak tested and carry a holding charge of inert gas.

FAN

610mm diameter axial flow fan assembly(s) with low noise paddle type blades. The external rotor motor design allows the use of a low power output single phase speed controllable motor. The motor has inbuilt thermal overload protection, and the assembly is supplied complete with a finger guard for protection.

COMPRESSOR

All units utilise hermetic scroll compressors. The CUS7.5/10 and 12 models are fitted with a crankcase heater to guard against floodback and oil foaming on start up. Other features include internal motor protection.

REFRIGERATION

Cooling Only

Each unit is fitted with a liquid and suction line shut off valve for ease of maintenance and installation. Factory set HP/LP pressure switches are fitted, with manual reset high pressure cut-out and automatic reset low pressure cut-out.
A large capacity filter drier is supplied loose for on site installation.

REFRIGERATION

Heat Pump CUHS 5, 6 AND CUH 7.5 ONLY

Each unit is fitted with a thermostatic expansion valve and a check valve assembly to prevent short circuiting of refrigerant, together with a large capacity suction accumulator and a reversing valve. A factory set defrost switch facilitates defrosting of the outside coil when in heat pump mode. All heat pump compressors are fitted with crankcase (oil sump) heaters.

Factory set HP/LP pressure switches are fitted, with manual reset high pressure cut-out and automatic reset low pressure cut-out.

A bi-directional filter drier is supplied loose for on site installation.

ELECTRICAL

Weatherproof control panels are accessed via a lockable panel and contain the necessary contactors, sub-circuit protection and terminals. All wiring is colour coded and numbered for identification. All units are wired in accordance with current local and European standards.

COMPRESSOR ANTI-CYCLE TIMER

To prevent short cycling and subsequent additional wear on the compressor, this item is factory fitted to limit compressor starts to six per hour.

HEAD PRESSURE CONTROL

Head pressure is maintained by a factory fitted, pressure actuated head pressure controller which varies the speed of the fan to provide optimum head pressure control under varying ambient conditions.

MAINS ISOLATOR

A weatherproof mains isolator is fitted to ensure mains isolation of the electrical panel.

OPTIONS

Epoxy Condenser Coils

In atmospheres where high corrosion is anticipated epoxy coated aluminium finned coils can be supplied.

Hot Gas Bypass (Cooling Only Units)

To achieve capacity control during low load conditions, a factory fitted hot gas bypass valve is fitted. This will modulate down to 40% of full capacity. A stub is provided for site connection of the hot gas line to the local expansion device.

Defrost Drain Tray (Heat Pump Only)

An insulated and trace heated drain tray can be provided to collect condensate when units are used in the reverse cycle/defrost mode.

Capacity Data

COOLING DUTY - COOLING ONLY UNITS

	Evaporating Temperature °C	Ambient									
		25°C		30°C		35°C		40°C		45°C	
		Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW
CUS 5	-5	10.83	2.65	10.21	3.07	9.61	3.49	9.06	3.91	8.40	4.33
	0	12.99	2.88	12.28	3.28	11.57	3.67	10.89	4.07	10.21	4.50
	5	15.26	3.13	14.48	3.51	13.73	3.89	12.95	4.27	12.17	4.72
	10	17.64	3.43	16.82	3.80	16.00	4.17	15.16	4.54	14.35	4.99
CUS 6	-5	14.31	4.00	13.60	4.54	12.88	5.07	12.16	5.61	11.21	6.21
	0	17.09	4.30	16.16	4.81	15.23	5.32	14.28	5.84	13.31	6.46
	5	19.86	4.60	18.87	5.11	17.90	5.62	16.84	6.18	15.57	6.75
	10	22.86	4.93	21.81	5.43	20.77	5.94	19.57	6.51	18.43	7.07
CUS 7.5	-5	16.67	4.81	15.79	5.47	14.86	6.12	13.96	6.77	12.98	7.49
	0	19.85	5.08	18.83	5.71	17.84	6.36	16.84	7.00	15.64	7.76
	5	23.39	5.39	20.21	6.00	21.04	6.60	19.81	7.26	18.57	7.99
	10	27.19	5.67	25.89	6.24	24.58	6.82	23.14	7.54	21.78	8.19
CUS 10	-5	22.15	5.27	20.88	6.21	19.66	7.14	18.41	8.07	17.17	9.01
	0	26.12	5.56	24.90	6.47	23.61	7.38	22.38	8.29	21.12	9.22
	5	33.92	5.94	30.66	6.73	27.41	7.52	24.14	8.30	21.79	9.17
	10	35.89	6.14	34.60	7.00	33.32	7.87	31.98	8.73	30.52	9.69
CUS 12	-5	28.25	7.81	26.80	8.83	25.35	9.86	23.94	10.89	22.38	11.97
	0	33.54	8.35	31.95	9.32	30.30	10.30	28.69	11.27	26.87	12.35
	5	39.30	8.85	37.52	9.82	35.73	10.79	33.91	11.78	31.86	12.89
	10	45.68	9.53	43.74	10.14	41.78	10.74	39.62	11.98	37.23	13.37

Notes: 1 Output kW refers to the compressor duty.
2 Input kW refers to the compressor input power only

COOLING DUTY – HEAT PUMP UNITS

	Evaporating Temperature °C	Ambient									
		25°C		30°C		35°C		40°C		45°C	
		Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW
CUHS 5	-5	10.40	2.54	9.80	2.95	9.23	3.35	8.70	3.75	8.06	4.16
	0	12.47	2.76	11.79	3.15	11.11	3.52	10.45	3.91	9.80	4.32
	5	14.65	3.00	13.90	3.37	13.18	3.73	12.43	4.10	11.68	4.53
	10	16.93	3.29	16.15	3.65	15.36	4.00	14.55	4.36	13.78	4.79
CUHS 6	-5	13.74	3.84	13.06	4.36	12.36	4.87	11.67	5.39	10.76	5.96
	0	16.41	4.13	15.51	4.62	14.62	5.11	13.71	5.61	12.78	6.20
	5	19.07	4.42	18.12	4.91	17.18	5.40	16.17	5.93	14.95	6.48
	10	21.95	4.73	20.94	5.21	19.94	5.70	18.79	6.25	17.69	6.79
CUHS 7.5	-5	16.00	4.62	15.16	5.25	14.27	5.88	13.40	6.50	12.46	7.19
	0	19.06	4.88	18.08	5.48	17.13	6.11	16.17	6.72	15.01	7.45
	5	22.45	5.17	19.40	5.76	20.20	6.34	19.02	6.97	17.83	7.67
	10	26.10	5.44	24.85	5.99	23.60	6.55	22.21	7.24	20.91	7.86

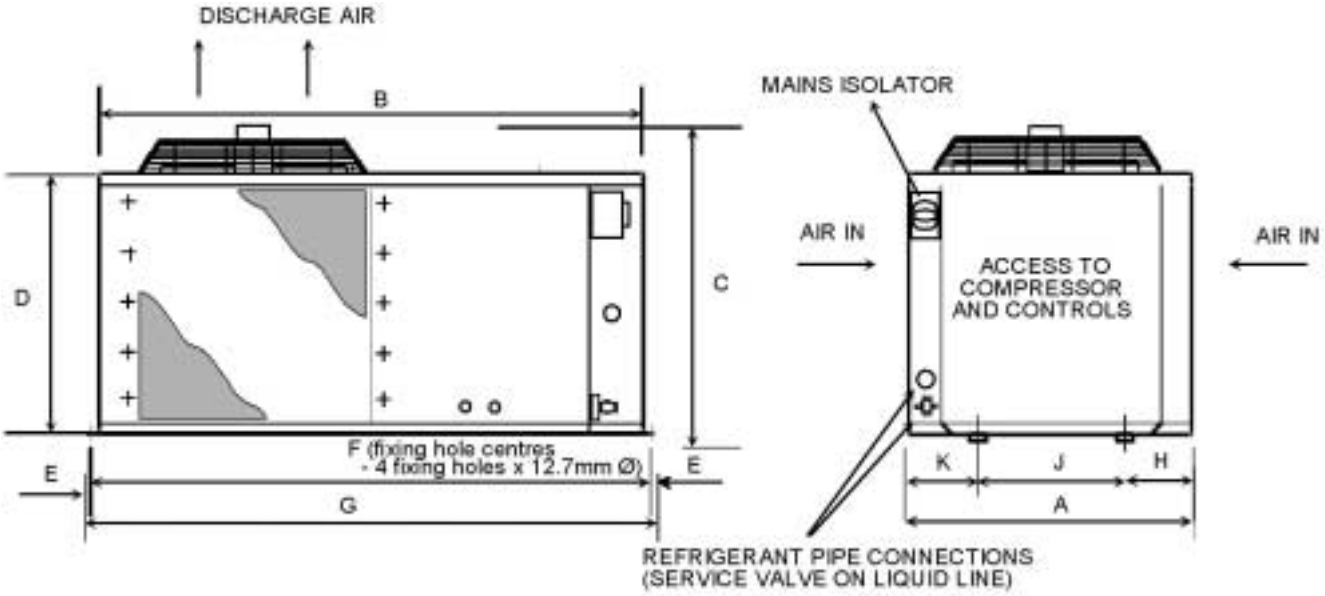
Notes: 1 Output kW refers to the compressor duty.
2 Input kW refers to the compressor input power only

HEATING DUTY - HEAT PUMP UNITS

	Outdoor Unit Evaporator Air On Temperature °C/ RH %	Indoor Unit Condensing Temperature					
		30°C Output kW	35°C Output kW	40°C Output kW	45°C Output kW	50°C Output kW	55°C Output kW
CUHS 5	5 / 85	14.24	14.07	14.01	13.93	13.84	13.75
	7 / 85	15.30	15.07	14.98	14.88	14.71	14.58
	10 / 80	16.40	16.30	16.09	15.90	15.70	15.55
CUHS 6	5 / 85	18.65	18.60	18.64	18.61	18.57	18.49
	7 / 85	19.78	19.71	19.69	19.58	19.49	19.31
	10 / 80	21.40	21.17	21.14	20.93	20.65	20.41
CUHS 7.5	5 / 85	22.16	22.01	21.94	21.89	21.75	21.69
	7 / 85	23.45	23.24	23.20	23.02	22.95	22.90
	10 / 80	25.38	25.24	25.15	24.93	24.74	24.58

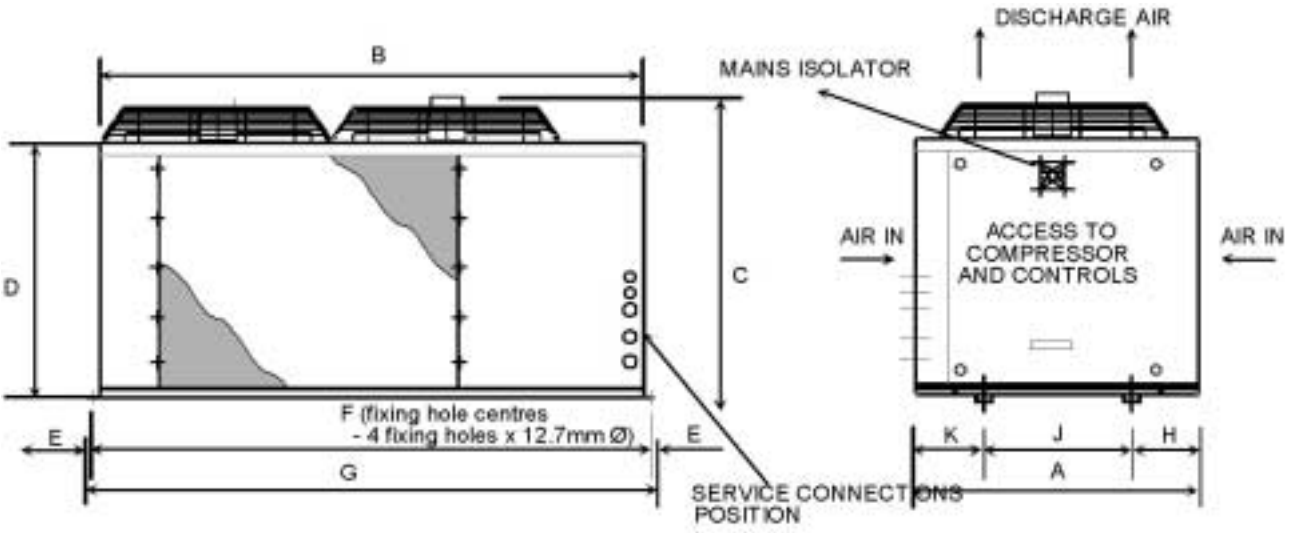
Notes: 1 Output kW refers to the compressor duty.
2 Indoor ambient at 20°C

Dimensions: CUS/CUHS 5 - 7.5



CUS/CUHS		A	B	C	D	E	F	G	H	J	K
5	mm	865	1148	699	550	16	1181	1213	195	457	213
6	mm	865	1148	699	550	16	1181	1213	195	457	213
7.5	mm	996	1376	699	550	16	1409	1441	193	610	193

Dimensions: CUS 10 - 12



CUS		A	B	C	D	E	F	G	H	J	K
10	mm	866	1705	953	810	16	1738	1770	204	457	204
12	mm	866	1705	953	810	16	1738	1770	204	457	204

Notes: 1 Incoming Services: Connections to left hand side of unit compressor compartment.
2 Airflow and Maintenance Clearance: Please allow 500mm around the unit for airflow and maintenance purpose.

Noise Data

Sound Pressure Measurement		Frequency (Hz) dBa	63	125	250	500	1000	2000	4000	8000
CUS/CUHS 5 – 6	@ 1m	71	72	73	71	70	68	60	53	46
	@ 10m	51	52	53	51	50	48	40	33	26
CUS/CUHS 7.5	@ 1m	73	73	71	74	71	69	64	57	50
	@ 10m	53	53	51	54	51	49	44	37	30
CUS 10-12	@ 1m	73	80	77	73	72	69	63	56	47
	@ 10m	53	60	57	53	52	49	43	36	27

Note: Above noise levels are with the condenser fan running at full speed. Under normal operating conditions (ambients up to 35°C) noise levels will be reduced by 3 - 4 dB.

Technical Data

CUS/CUHS		5	6	7.5	10(1)	12(1)
Nominal Capacity(2)	kW	13.7	17.9	21.0	27.4	35.7
Nominal Input (2)	kW	3.9	5.6	6.6	7.5	10.8
Capacity Steps	%	0-100	0-100	0-100	0-100	0-100
Construction						
Material				Galvanised Steel		
Colour				Light Grey (RAL 7035)		
Condenser						
Type				Air Cooled		
Quantity		2	2	3	2	2
Face Area	m^2	0.69	0.69	1.03	1.37	1.37
Nominal Airflow	m^3/s	2.00	2.00	2.25	4.45	4.45
Coil Volume (3)	l	8.0	8.0	12.0	15.7	15.7
Discharge			Vertical			
Fan						
Type				Axial		
Quantity		1	1	1	2	2
Diameter	mm	610	610	610	610	610
Maximum Speed	rpm	930	930	930	930	930
Compressor						
Type				Hermetic Scroll		
Quantity		1	1	1	1	1
Oil Charge Volume	L	1.55	1.65	3.25	3.80	4.00
Refrigeration						
Number of Circuits		1	1	1	1	1
Refrigerant Type		R407C	R407C	R407C	R407C	R407C
Refrigeration Control (CUH only)				Thermostatic Expansion Valve		
Unit Refrigerant Charge	kg	2.4	2.4	3.63	4.76	4.76
Dimensions						
Height	mm	699	699	699	953	953
Width	mm	1148	1148	1376	1705	1705
Depth	mm	865	865	996	866	866
Weights CUS Units						
Machine Weight (nom)	kg	138	141	203.5	242	247
Operating Weight (nom)	kg	141	144	208.5	261	266
Weights CUHS Units						
Machine Weight (nom)	kg	164	167	216.5	-	-
Operating Weight (nom)	kg	168	171	222.5	-	-
Connections						
Liquid Line	in	Flare 1/2	Flare 5/8	Flare 5/8	Sweat 7/8	Sweat 7/8
Suction Line	in	Sweat 7/8	Sweat 7/8	Sweat 1 1/8	Sweat 1 1/8	Sweat 1 3/8
Hot Gas Stub	in	5/8	5/8	5/8	7/8	7/8

(1) These models are not available as reverse cycle heat pump units.
(2) Nominal cooling capacity based on 5°C evaporating temperature and a 35°C ambient.
(3) Figures for guidance.

Electrical Data

CUS/CUHS		5	6	7.5	10(1)	12(1)
Unit Data						
Nominal Run Amps (2)	A	11.4	13.5	15.2	21.1	26.6
Maximum Start Amps	A	68.3	100.8	103.8	131.6	186.6
Control Circuit CUS	VAC	230	230	230	230	230
Control Circuit CUHS	VAC	24	24	24	-	-
Mains Supply	V			400/3/50		
Rec. Mains Fuse	A	20	25	32	40	40
Max Incoming Mains	mm^2	10	10	10	10	10
Compressor						
Motor Rating	kW	4.5	5.9	6.9	8.9	11.6
Nominal Run Amps (2)	A	8.9	11.0	12.7	16.1	21.6
Locked Rotor Amps	A	62.5	95.0	98.0	120.0	175.0
Crankcase Heater Rating	W	65 (3)	65 (3)	50	50	50
Type of Start			Direct on Line			
Condenser Fan						
Motor Rating	kW	0.55	0.55	0.55	0.55	0.55
Full Load Amps	A	2.50	2.50	2.50	2.50	2.50
Locked Rotor Amps	A	5.80	5.80	5.80	5.80	5.80

(1) These models are only available in cooling only format.
(2) Nominal data based on 5*C evaporating temperature and a 35*C ambient.
(3) Heat pumps only.

INTRODUCTION

This range of cooling only condensing units covers the 15-32kW requirement, with a centrifugal fan, for plantroom installation.

UNIT IDENTIFICATION

AIR COOLED CONDENSING UNIT RANGE
CFCUS . . . . . Condensing Unit with Centrifugal Fan S . . . . . Scroll Compressor 5-10 . . . . . Model Size e.g. . . . . Model CFCUS 6

CONSTRUCTION

Units are fabricated from galvanised steel, epoxy baked powder coated to form a durable weatherproof finish.

Standard unit colour is Light Grey (RAL 7035).

CONDENSER

Large surface area condenser coil(s) manufactured from refrigeration quality copper tubes, with mechanically bonded aluminium fins. All units are leak tested and carry a holding charge of inert gas.

FAN

A double inlet, double width forward curved centrifugal fan which is statically and dynamically balanced for quiet operation. Impellers and casings are galvanised for protection against corrosion. Fan shafts are mild steel and run in lifetime lubricated ball bearings. The fan(s) are driven via a heavy duty 'V' belt and pulley system by a totally enclosed fan cooled motor which is mounted on a moveable platform to facilitate belt tensioning and servicing. In applications where motors of 4kW and above are utilised both plummer blocks with lead bearings are fitted together with twin belt drives.

COMPRESSOR

All units utilise hermetic scroll compressors.

The CFCUS 7.5 and 10 models are fitted with a crankcase heater to guard against floodback and oil foaming on start up. Other features include internal motor protection, internal spring isolators and muffler to reduce noise and vibration.

REFRIGERATION

Each unit is fitted with a liquid and suction line shut off valve for ease of maintenance and installation. Factory set HP/LP pressure switches are also fitted, with manual reset high pressure cut-out and automatic reset low pressure cut-out.

A large capacity filter drier is supplied loose for on site installation.

HEAD PRESSURE CONTROL

Head pressure is maintained by a factory fitted, pressure actuated head pressure controller to provide optimum head pressure control under varying ambient conditions. Recommended for European climates and year round 24 hour applications.

CONTROLS ELECTRICAL

All units have terminals supplied for the interconnecting wiring required.

Weatherproof control panels are accessed via a lockable panel and contain the necessary contactors, sub-circuit protection and terminals.

All wiring is colour coded and numbered for identification. All units are wired in accordance with current local and European standards.

MAINS ISOLATOR

A weatherproof mains isolator will be fitted to ensure mains isolation of the electrical panel.

COMPRESSOR ANTI-CYCLE TIMER

To prevent short cycling and subsequent additional wear on the compressor, this item is factory fitted to limit compressor starts to six per hour.

OPTIONS

Epoxy Condenser Coils

In atmospheres where high corrosion is anticipated epoxy coated aluminium finned coils can be supplied.

Hot Gas Bypass

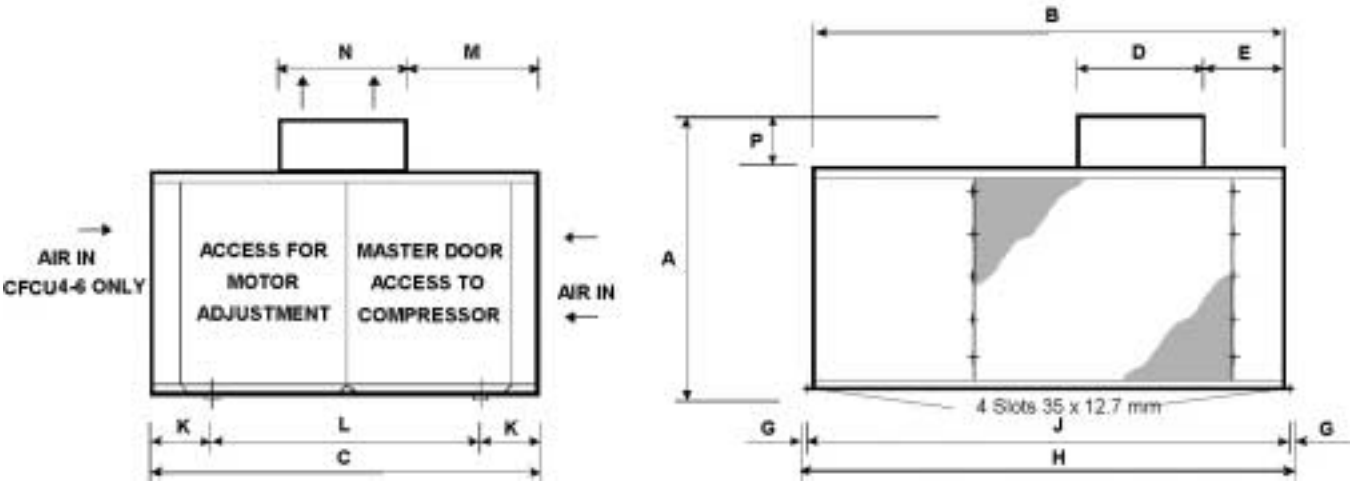
To achieve capacity control during low load conditions, a hot gas bypass valve will modulate down to 40% of full capacity. This is supplied factory fitted on all units.

Capacity Data

	Evaporating Temperature °C	Ambient									
		25°C		30°C		35°C		40°C		45°C	
		Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW
CFCUS 5	-5	10.83	2.65	10.21	3.07	9.62	3.49	8.95	3.93	8.35	4.36
	0	12.99	2.89	12.28	3.28	11.58	3.67	10.84	4.10	10.14	4.54
	5	15.26	3.13	14.49	3.51	13.73	3.89	12.88	4.31	12.11	4.76
	10	17.64	3.43	16.82	3.80	15.99	4.16	15.15	4.54	14.27	5.04
CFCUS 6	-5	14.36	3.97	13.65	4.50	12.94	5.04	12.21	5.58	11.27	6.16
	0	17.17	4.25	16.23	4.77	15.29	5.28	14.35	5.80	13.40	6.42
	5	19.94	4.56	18.95	5.06	17.98	5.57	16.94	6.13	15.86	6.71
	10	22.97	4.88	21.93	5.38	20.87	5.88	19.67	6.46	18.52	7.02
CFCUS 7.5	-5	16.67	4.81	15.79	5.47	14.86	6.12	13.96	6.77	12.98	7.49
	0	19.85	5.08	18.83	5.71	17.84	6.36	16.84	7.00	15.64	7.76
	5	23.39	5.39	20.21	6.00	21.04	6.60	19.81	7.26	18.57	7.99
	10	27.19	5.67	25.89	6.24	24.58	6.82	23.14	7.54	21.78	8.19
CFCUS 10	-5	21.60	5.67	20.38	6.60	19.13	7.53	17.91	8.46	16.61	9.44
	0	25.50	6.01	24.24	6.92	23.03	7.83	21.78	8.73	20.38	9.73
	5	31.98	6.41	28.83	7.17	25.67	7.93	22.57	8.69	21.86	9.97
	10	35.04	6.71	33.76	7.57	32.49	8.42	31.09	9.33	29.49	10.28

Notes: 1 Output kW refers to the compressor duty.
2 Input kW refers to the compressor input power only.

Dimensions: CFCUS -10



CFCUS		5	6	7.5	10
A	mm	717	717	985	985
B	mm	1173	1173	1459	1459
C	mm	1016	1016	1148	1148
D	mm	575	575	560	560
E	mm	45	45	30	30
F	mm	557	557	824	824
G	mm	16	16	19	19
H	mm	1238	1238	1524	1524
J	mm	1206	1206	1486	1486
K	mm	203	203	224	224
L	mm	610	610	701	701
M	mm	161	161	194	194
N	mm	560	560	700	700
P	mm	160	160	160	160
D(1)	mm	343	343	450	450
N(1)	mm	397	397	525	525

Notes: 1 Aperture size without optional head pressure control damper fitted.
2 Incoming Services: Connections to left hand side of unit compressor compartment.
3 Airflow and Maintenance Clearance: Please allow 500mm around the unit for airflow and maintenance purpose.

Technical Data

CFCUS		5	6	7.5	10
Nominal Capacity (1)	kW	14.8	19.7	24.8	32.3
Nominal Input (1)	kW	4.3	6.4	8.1	10.0
Capacity Steps	%	0-100	0-100	0-100	0-100
Construction					
Material			Galvanised Steel		
Colour			Light Grey (RAL 7035)		
Condenser					
Type			Air Cooled		
Quantity		2	2	2	2
Face Area	m^2	0.69	0.69	1.37	1.37
Nominal Airflow	m^3/s	1.89	2.08	2.89	3.20
Nom External Static	Pa	100	100	100	100
Discharge			Vertical		
Fan					
Type			Belt Driven Centrifugal		
Quantity		1	1	1	1
Standard Motor Size	kW	2.2	2.2	3.0	4.0
Nom Speed @ 100Pa ESP	rpm	937	994	951	1014
Compressor					
Type			Scroll		
Quantity		1	1	1	1
Oil Charge Volume	L	1.55	1.65	3.25	3.8
Refrigeration					
Number of Circuits		1	1	1	1
Refrigerant Type		R407C	R407C	R407C	R407C
Refrigerant Charge	kg	2.4	2.4	3.63	4.76
Dimensions/Weights					
Height	mm	717	717	985	985
Width	mm	1238	1238	1524	1524
Depth	mm	1016	1016	1148	1148
Machine Weight (nom)	kg	238	245	320	325
Operating Weight (nom)	kg	241	248	325	330
Connections					
Liquid Line	in	1/2	5/8	5/8	7/8
Suction Line	in	7/8	7/8	1 1/8	1 1/8

(1) Nominal cooling capacity based on 5°C evaporating temperature and a 30°C ambient.

(2) External statics higher than the nominally quoted 100Pa are achievable. Please contact Sales Office for further information.

Electrical Data

CFCUS		5	6	7.5	10
Unit Data					
Nominal Run Amps (1)	A	14.0	16.1	19.3	24.5
Maximum Start Amps	A	91.7	124.2	119.9	168.3
Control Circuit	VAC	24	24	24	24
Mains Supply	V		400/3/50		
Rec. Mains Fuse	A	25	32	35	40
Max Incoming Mains	mm^2	10	10	10	10
Compressor					
Motor Rating	kW	4.5	5.9	8.14	9.7
Nominal Run Amps (1)	A	8.9	11.0	12.73	16.1
Locked Rotor Amps	A	62.5	95.0	98	120.0
Crankcase Heater Rating	W	65	65	50	50
Type of Start			Direct on Line		
Condenser Fan					
Motor Rating	kW	2.20	2.20	3.00	4.00
Full Load Amps	A	5.10	5.10	6.70	8.40
Locked Rotor Amps	A	29.15	29.15	41.40	48.30

*(1) Nominal data based on 5*C evaporating temperature and a 30°C ambient.*

Noise Notes:

(1) Sound Power Reference Power = 10^{-12} Watts.

(2) dBA is the overall noise level, measured on the A scale.

(3) All data is based on nominal conditions.

(4) All Sound Power levels measured directly at fan outlet (ducted discharge).

Noise Data

Sound Pressure Measurement		Frequency (Hz) dBa	63	125	250	500	1000	2000	4000	8000
CFCUS 5	Power	83	90	86	83	82	78	73	69	58
CFCUS 6	Power	85	92	88	85	84	80	75	71	60
CFCU 7.5	Power	87	92	89	87	84	83	78	75	-
CFCUS 10	Power	89	94	91	89	86	85	80	78	-

INTRODUCTION

This range of air cooled condensing units covers the range 40 kW to 161 kW in seven model sizes and has been custom designed to maximise performance whilst minimising footprint, profile and noise.

The range is ideal for application on an AHU where the benefits of two independent refrigeration circuits can be fully realised.

The condensing units are run, wired, function tested and leave the factory with a holding charge of ozone friendly nitrogen.

These units are purpose designed for outdoor applications and are fully weatherproofed.

UNIT IDENTIFICATION

AIR COOLED CONDENSING UNIT	
CUS	Condensing Unit with Propeller Fan and Scroll Compressor
15-60	Model Size
D	Double Circuit
e.g.	Model CUS 20D

CONSTRUCTION

CUS 15-30D The base utilises a lock bolted channel sub frame, the upper section being of a pentapost type construction. A totally enclosed weatherproof compressor compartment features full access to all refrigeration components. All items are fabricated from galvanised steel and coated with an epoxy baked powder paint for a durable weatherproof finish.

CUS 40-60D The cabinet is fabricated from galvanised steel coated with an epoxy baked powder paint, giving a durable weatherproof finish. A fully weatherproofed electrical panel is situated at one end of the unit.

Standard unit paint colour is Light Grey (RAL 7035).

CONDENSER

Large surface area condenser coil(s) manufactured from refrigeration quality copper tubes, with mechanically bonded aluminium fins.

FAN

A 610mm diameter axial flow fan assembly with low noise paddle type blades. The unique external rotor motor design allows the use of a low power output single phase speed controllable motor to power the fan. The motor has inbuilt thermal overload protection, and the assembly is supplied complete with a finger guard for protection.

COMPRESSOR

CUS 15-30D All units utilise hermetic scroll compressors fitted with crankcase (oil sump) heater to guard against refrigerant migration during the off cycle and to eliminate oil foaming on start up. Features include internal motor protection and internal vibration eliminators.

CUS 40-60D All units utilise hermetic tandem scroll compressors fitted with crankcase (oil sump) heater to guard against refrigerant migration during the off cycle and to eliminate oil foaming on start up. Features include internal motor protection and internal vibration eliminators.

REFRIGERATION

Each circuit is fitted with a liquid line shut off valve, complete with integral schraeder connections for ease of maintenance and installation. The suction line is capped and sealed for customer connection. A large capacity filter drier is supplied loose for on site installation. A factory set dual HP/LP switch is fitted to each circuit and features manual reset on high pressure and auto reset on low pressure.

HEAD PRESSURE CONTROL

Head pressure is maintained by a factory fitted, pressure actuated head pressure controller which varies the speed of the fan(s) to provide optimum control under varying ambient conditions.

LP START KIT

For unit operation in an ambient below -5°C, a low pressure start kit is factory fitted which prevents low pressure nuisance tripping on start up.

ELECTRICAL

The panel is sub divided into mains and control sections thereby ensuring voltage integrity between mains (400/230V) and controls (24V). The controls section can be accessed during normal operation of the unit thereby eliminating the possibility of coming into contact with any mains voltage. The panel houses all the necessary sub circuit protection, starters and timers to ensure continuous and efficient operation of the unit. All units are wired to the latest European codes and standards.

MAINS ISOLATOR

CUS 15-30D A weatherproof mains isolator is fitted to ensure mains isolation of the electrical panel during adjustment and maintenance.

CUS 40-60D A weatherproof door interlocking mains isolator is fitted to prevent access to the mains section when the electrical power is switched on.

OPTIONS

EPOXY CONDENSER COILS

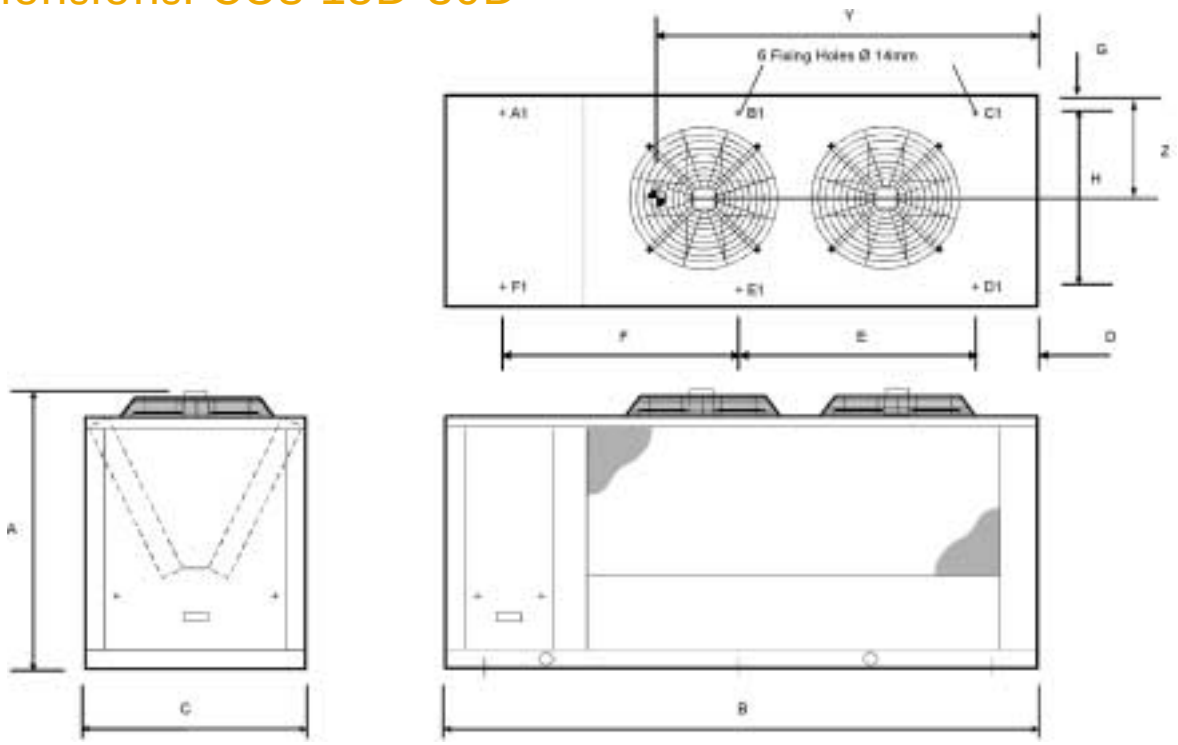
In atmospheres where high corrosion is anticipated epoxy coated aluminium finned coils can be supplied.

Capacity Data

Evaporating Temperature °C		Ambient									
		25°C		30°C		35°C		40°C		45°C	
		Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW	Output kW	Input kW
CUS15D	-5	33.13	9.74	31.47	11.20	29.89	12.67	28.25	12.67	26.54	15.56
	0	38.96	10.30	37.19	11.74	35.45	13.19	33.71	13.19	31.94	16.01
	5	45.27	10.95	43.51	12.36	41.78	13.79	39.93	13.79	37.57	16.48
	10	53.87	11.86	51.50	13.22	49.09	14.57	46.77	14.57	44.58	17.17
CUS 20D	-5	42.84	12.58	40.35	14.58	37.90	16.58	35.46	18.59	32.76	20.74
	0	50.55	13.33	48.05	15.28	45.60	17.24	43.10	18.87	40.25	21.42
	5	62.54	14.21	56.36	15.82	50.16	17.44	44.03	19.06	48.74	22.19
	10	69.48	14.94	66.94	16.78	64.36	18.63	61.43	20.64	58.19	22.67
CUS 25D	-5	56.30	17.02	53.41	19.23	50.55	21.46	47.67	23.67	44.54	26.02
	0	66.78	18.20	63.61	20.30	60.36	22.40	57.14	24.51	53.45	26.87
	5	78.23	19.31	74.67	21.39	71.13	23.49	67.45	25.65	63.30	28.07
	10	90.92	20.73	87.08	22.03	83.17	23.34	78.81	26.27	73.96	29.08
CUS 30D	-5	64.13	21.03	60.95	23.57	57.80	26.11	54.55	28.64	51.10	31.65
	0	75.92	22.42	72.33	24.92	68.71	27.42	65.04	30.10	61.01	33.21
	5	89.10	23.81	84.88	26.31	80.73	28.81	76.41	31.68	71.80	34.81
	10	103.02	25.32	98.38	27.72	93.74	30.26	88.70	33.21	83.32	36.60
CUS 40D	-5	81.68	22.87	77.28	27.32	72.87	31.76	67.49	36.45	62.11	41.14
	0	96.69	26.69	91.11	30.23	85.53	33.76	79.27	37.89	73.00	42.01
	5	114.25	27.38	109.11	31.47	103.96	35.56	97.95	39.89	91.93	44.21
	10	132.65	30.33	127.50	33.90	122.34	37.47	115.94	41.75	109.53	46.02
CUS 50D	-5	103.65	30.79	97.85	35.52	92.05	40.25	84.50	44.89	76.95	49.53
	0	121.95	34.03	115.47	38.27	108.98	42.51	100.64	47.57	92.30	52.63
	5	143.50	36.65	137.45	40.79	131.40	44.93	123.54	49.88	115.68	54.82
	10	168.16	39.10	160.14	43.25	152.12	47.39	144.01	52.42	135.89	57.44
CUS 60D	-5	129.15	38.61	122.12	43.25	115.08	47.89	108.68	53.01	102.28	58.13
	0	150.40	40.87	143.65	45.55	136.89	50.22	129.59	55.55	122.28	60.88
	5	177.65	43.49	169.53	48.14	161.41	52.79	152.24	58.26	143.06	63.72
	10	206.00	46.25	196.43	50.75	186.86	55.25	177.07	61.42	167.28	67.59

Notes: 1 Output kW refers to the compressor duty.
2 Input kW refers to the compressor input power only

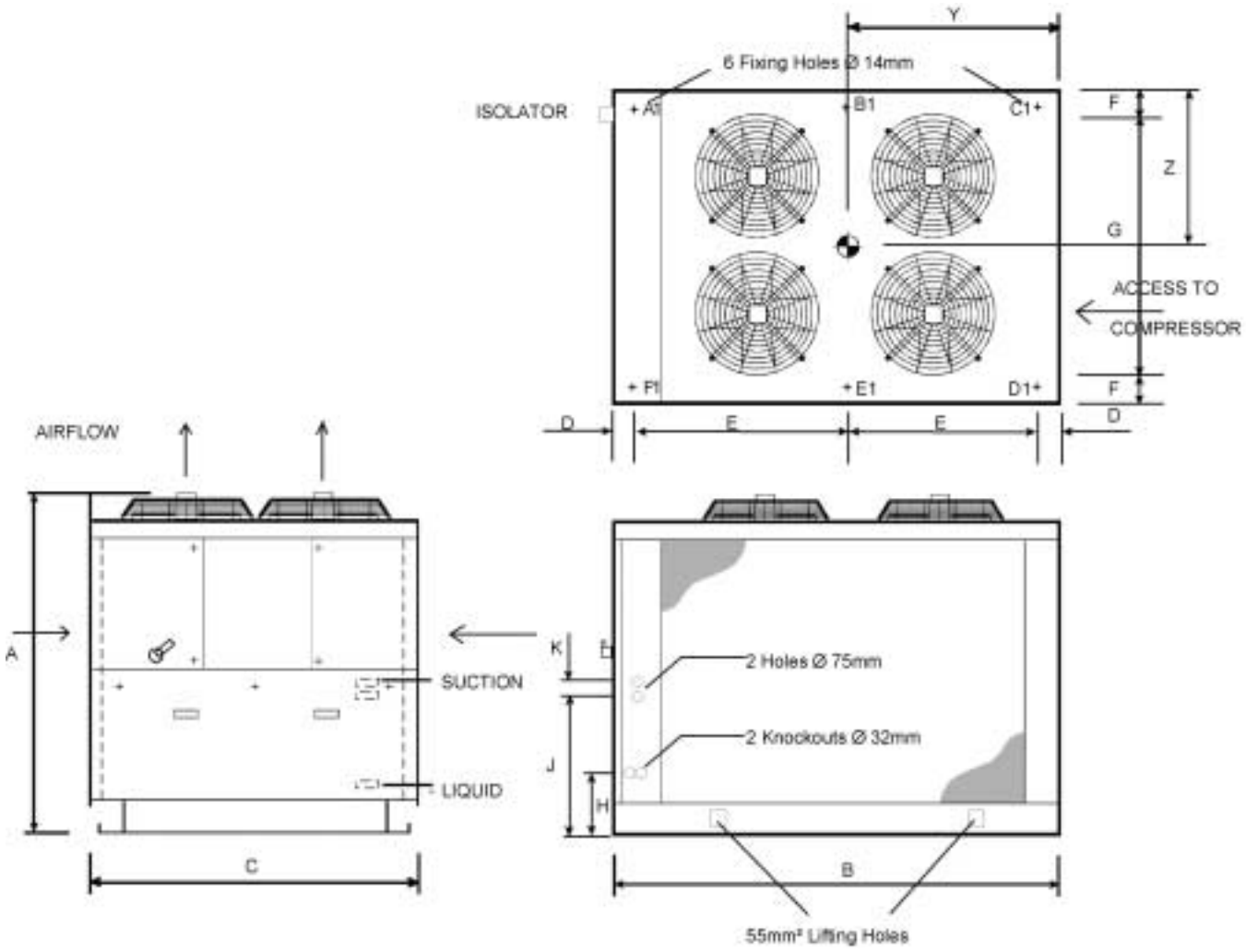
Dimensions: CUS 15D-30D



		A	B	C	D	E	F	G	H
CUS 15D	mm	1438	2300	1100	200	-	-	25	1050
CUS 20D	mm	1438	2900	1100	200	1250	1250	25	1050
CUS 25D	mm	1438	2900	1100	200	1250	1250	25	1050
CUS 30D	mm	1438	3000	1100	200	1300	1300	25	1050

	Point Loadings (kg)						Centre of Gravity (mm)	
	A1	B1	C1	D1	E1	F1	Y	Z
CUS 15D	146	-	101	101	-	156	1330	560
CUS 20D	130	120	56	56	121	140	1770	560
CUS 25D	130	122	57	57	123	141	1765	560
CUS 30D	174	140	78	77	138	179	1785	550

Notes: 1 Suction and liquid connections terminate underneath the condenser coil.
2 Allow 500mm around the unit for airflow and maintenance clearance.



		A	B	C	D	E	F	G	H	J	K
CUS 40D	mm	1693	2440	1800	200	1020	75	1650	155	595	100
CUS 50D	mm	1693	2440	1800	200	1020	75	1650	155	595	100
CUS 60D	mm	1693	2440	1800	200	1020	75	1650	155	595	100

	Point Loadings (kg)						Centre of Gravity (mm)	
	A1	B1	C1	D1	E1	F1	Y	Z
CUS 40D	148	174	174	174	174	149	1169	896
CUS 50D	157	206	206	208	206	156	1136	900
CUS 60D	180	254	254	258	255	180	1116	900

Notes: Allow 500mm around the unit for airflow and maintenance clearance.

Technical Data

CUS		15D	20D	25D	30D	40D	50D	60D
Nominal Capacity (1)	kW	41.8	50.2	71.1	80.7	104.0	131.4	161.4
Nominal Input (1)	kW	13.8	17.4	23.5	28.8	43.2	54.6	61.8
Capacity Steps	%	0-50-100	0-50-100	0-50-100	0-50-100	0-25-50-75-100	0-30-60-80-100	0-25-50-75-100
Construction Material		Galvanised Steel						
Colour		Light Grey (RAL 7035)						
Condenser								
Type		Air Cooled						
Quantity		2	2	2	2	2	2	2
Face Area	m^2	2.47	3.46	3.46	3.46	5.75	5.75	5.75
Nominal Airflow	m^3/s	4.00	4.80	6.80	6.80	9.60	13.60	13.00
Discharge		Vertical						
Fan								
Type		Axial						
Quantity		2	2	3	3	4	6	6
Diameter	mm	610	610	610	610	610	610	610
Maximum Speed	rpm	930	930	930	930	930	930	930
Compressor								
Type		ScrollTandem Scroll						
Quantity		2	2	2	2	4	4	4
Oil Charge Volume	L	3.2	3.8	4.0	6.6	3.8	3.8/6.6	6.6
Refrigeration								
Number of Circuits		2						
Refrigerant Type		R407C						
Holding Charge		Inert Gas						
Dimensions/Weights								
Height	mm	1438	1438	1438	1438	1693	1693	1693
Width	mm	2300	2900	2900	3000	2440	2440	2440
Depth	mm	1100	1100	1100	1100	1800	1800	1800
Machine Weight (nom)	kg	440	540	550	695	978	1119	1356
Operating Weight (nom)	kg	450	550	560	705	993	1139	1381
Connections								
Suction }Sweat	in	1 1/8	1 1/8	1 1/8	1 3/8	1 5/8	2 1/8	2 1/8
Liquid }Sweat	in	5/8	5/8	5/8	5/8	1 1/8	1 1/8	1 1/8

(1) Nominal capacity based on 5°C evaporating temperature and a 35°C ambient.

Electrical Data

CUS		15D	20D	25D	30D	40D	50D	60D
Unit Data								
Nominal Run Amps (1)	A	30.4	35.6	47.2	53.0	62.8	82.9	97.5
Maximum Start Amps	A	115.7	140.2	202.3	205.0	149.5	164.8	220.5
Control Circuit	V				24VAC			
Mains Supply	V				400/3/50			
Permanent Supply	V				230/1/50			
Rec Mains Fuse	A	50	50	80	80	100	100	125
Rec. Permanent Fuse(2)	A	4	4	4	4	-4	-4	-4
Max Incoming) Mains	mm^2	25	25	35	35	50	50	95
Cable Size) Perm	mm^2	2.5	2.5	2.5	2.5	-2.5	-2.5	-2.5
Compressor								
Motor Rating	kW	6.9	8.9	11.6	13.4	8.9	8.9/13.4	13.4
Nominal Run Amps (1)	A	12.7	15.2	19.8	22.5	15.2	15.2/22.5	22.5
Locked Rotor Amps	A	98	120.0	175.0	175.0	120.0	120.0//175.0	175.0
LRA Soft Start Option		49	60.0	88.0	88.0	-	-	-
Crankcase Heater Rating	W	50	50	50	75	50	50/75	75
Type of Start		Direct on Line						
Condenser Fan								
Motor Rating	kW	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Full Load	A	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Locked Rotor Amps	A	5.80	5.80	5.80	5.80	5.80	5.80	5.80

(1) Nominal Run Amps based on 5°C evaporating and a 35°C ambient.

	Sound Measurement	Frequency (Hz) dBa	63	125	250	500	1000	2000	4000	8000
CUS 15D	Power dB	84	88	80	81	81	81	74	66	57
	Pressure @ 1m	76	80	72	73	73	73	66	58	49
	Pressure @ 10m	56	60	52	53	53	53	46	38	29
CUS 20D	Power dB	85	88	80	82	82	82	75	68	59
	Pressure @ 1m	77	80	72	74	74	74	67	60	51
	Pressure @ 10m	57	60	52	54	54	54	47	40	31
CUS 25/30D	Power dB	86	88	81	83	83	82	78	72	64
	Pressure @ 1m	78	80	73	75	75	74	70	64	56
	Pressure @ 10m	58	60	53	55	55	54	50	44	36
CUS 40D	Power dB	101	95	93	89	89	95	95	93	91
	Pressure @ 1m	93	87	85	81	81	87	87	85	83
	Pressure @ 10m	73	67	65	61	61	67	67	65	63
CUS 50D	Power dB	103	97	95	92	92	98	98	95	90
	Pressure @ 1m	95	89	87	84	84	90	90	87	82
	Pressure @ 10m	75	69	67	64	64	70	70	67	62
CUS 60D	Power dB	105	98	95	92	94	99	100	97	90
	Pressure @ 1m	97	90	87	84	86	91	92	89	82
	Pressure @ 10m	77	70	67	64	66	71	72	69	62

Notes:

1 *Sound Power Reference Power = 10-12 Watts.*
2 *Sound Pressure Reference Pressure = 2 x 10-5 N/m².*
3 *dBA is the overall noise level, measured on the A scale.*
4 *Sound Pressure data is only valid in free field conditions, where a reflective base, such as a roof is found.*

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