Custom ADV

ADV Custom 240÷22920

Air flow rate 850÷104.970 m³/h

Features

Wide and versatile range

Energy Saving Solutions

Custom solutions

ADVR Custom-Version with integrated heat regulation

ADV Sanitisable Custom Hygienic-Version

Tax incentives*

Modular air handling units.

STRUCTURAL FEATURES

STRUCTURE
Panels made of double sandwich sheet metal with interposed expanded polyurethane insulation, a density of 46 kg/m³ and class 1 fire resistance; or rock wool with oriented and glued fibres, a density of 90 kg/m³ and class 0 fire resistance.
Several material combinations are available for the internal and external parts of the panel, such as pre-painted and pre-plasticised galvanised steel, AISI 304/316L stainless steel and aluminium. If the acoustic aspect is a decisive factor, together with a careful selection of the silencers, high sound absorption capacity panels are suggested.
Load-bearing structure consisting of anticorodal extruded aluminium sections for concealed screws with double fins and a chamber to guarantee no interruptions in the sections.
Continuous base under each aluminium section.
The framework inside the unit is made of galvanised sheet steel/aluminium or AISI 304 stainless steel, depending on requirements.
Inspection doors in line with the various sections are equipped with antipanic handles opening from the inside and the outside.
Outdoor versions: they are equipped with a roof with the same finish as the outer panels of the machine.
Side technical compartments are available in the treatment sections on request.
COMPONENTS

DAMPERS AND MIXING CHAMBERS

Calibration dampers with opposing movement fins, with aluminium aerofoil, tightness class 2,3 or 4.
Mixing chambers with two or three dampers
FILTERS
Filters available:
• Particulate filters ISO Coarse 30,50,55;ISO ePM10 70,80%;ISO ePM2.5 70%;ISO ePM1 50/70/85%;E10,E12,H13,H14
• Biocide filters Airsuite ISO Coarse 55;ISO ePM1 50/70/85%
Activated carbon filters are also available for chemical and physical deodorisation and absorption of gaseous and organic vapours.
Accessories: pressure plugs, differential pressure switches and/or analogue pressure gauges
COILS
Carrier fluids: water, glycolated water, vapour; overheated steam; direct expansion or electric
• In standard versions, the heat exchange coils are package-type with copper pipes and aluminium fins and can be removed on guides. Available options
Coils with the materials of the pipes and fins made of:
• pre-painted copper/aluminium,
• copper/copper,
• copper/tinned copper,
• iron/aluminium,
• entirely made of stainless steel.
Accessories: Drop separators: polypropylene, galvanised steel, aluminium and stainless steel droplet separators can be selected according to your needs.
FANS
• High efficiency belt and pulley backward blade fans
• Free impeller fans with IE5 EC Brushless motors

• Free impeller Plenum fans with IE3-IE4 asynchronous motors
Special versions:
Epoxy paint finish for aggressive atmospheres;
Versions entirely made of stainless steel;
Motors compliant with the ATEX Standard;
Accessories: a wide range of accessories is available for fan adjustment and control
SILENCERS
Consisting of highly sound-absorbing mineral wool baffles covered in glass fibre to protect against flaking. Various lengths are available to meet all noise reduction requirements.
Available options
Version with melinex-coated baffles and micro-stretched mesh.
HUMIDIFIERS
Adiabatic humidifiers
• Evaporating pack implemented in versions with disposable or pump recirculated water. The evaporating pack is available in cellulose paper or Sanifloc flocked PVC, with 100 to 200 mm thicknesses
• With nozzles in versions with disposable or pump recirculated water
• High pressure atomising humidifiers: high efficiency and hygienically safe system;
Isothermal humidifiers
Steam humidifiers are intended for the following supplies:
• Only if the humidification section is set up, including: the condensation drain pan along the entire section and a drop separator downstream of it.
• With vapour distributor suitable for working with vapour at atmospheric pressure
• Standalone vapour producers with immersed electrodes, electric resistances or gas powered.
• With vapour distributor and control valve suitable for working with vapour supply pressures from 0.2 to 5 bar.
HEAT RECOVERY UNITS
•Crossed or opposed flow plate heat recovery units with or without integrated by-pass damper for free-cooling
Available options
Acrylic protection for environments with aggressive atmosphere
Extra sealing: to guarantee enhanced sealing between the two air flows.

• Rotary heat recovery units
at fixed or variable speed
Available options
Condensing rotor; hygroscopic enthalpy; enthalpy of absorption
The rotor can also be equipped with a special protection against corrosion from atmospheric or chemical agents.

• Twin coil heat recovery units
• Unidirectional regenerative heat recovery units
• Indirect adiabatic heat recovery units

VERSIONS

• STANDARD Series with a single fan with a rectangular section.
• NARROW Series with a single fan with a square section: useful to minimise the footprint taken up by the CTA.
• LOWERED Series with a combined fan: useful to minimise the total height of the CTA.
• VERTICAL Series.

SIZES

• A total of 77 sizes are available, divided into standard, narrow and combined ranges.

ADVR Custom

Rhoss's integrated adjustment ensures:
No access related problems to install the components in the best position for the unit to work.
Extremely simplified installation and minimised time related factors.
Rhoss becomes the only partner, responsible also for CE certification of the machine.
ADVR Custom air handling units are supplied complete with power and regulation electrical panels as well as all in-field functional elements necessary to manage the specific application required, which are intended to be installed, calibrated, and electrically connected: All the units are tested in the factory, where the electrical connections and the movements of the mechanical adjustment parts are checked along with the logic functions, electromechanical interactions, and software compliance with requirements.
Main technical features
ELECTRICAL PANEL installed on the machine, complete with programmed microprocessor regulator, transformers, drives for power control of the various utilities, safety devices and signal lights.
CONTROL PANEL with LCD display and keypad, messaging and custom settings for the specific application.
HYDRAULIC ASSEMBLIES for each coil, including 2 and 3 way, high quality, shut-off motorised valves and 2-way balancing valves on the bypass.
ACTUATORS FOR AIR DAMPERS.
Temperature, humidity and air quality SENSORS selected according to the specific requirements of the system.
Dirty filter or no air flow signal PRESSURE SWITCHES.
AIR ANTIFREEZE THERMOSTAT.
Modulating or On/Off adiabatic or isothermal CONTROL OF THE HUMIDIFIERS, as required.
AUTOMATIC AIR FREE-COOLING, RECIRCULATION/MIXING CONTROL.
Plate, rotary, twin, unidirectional regenerative, direct and indirect adiabatic heat RECOVERY UNIT MANAGEMENT.
MANAGEMENT OF FANS at constant revs, constant flow rate, constant pressure in the duct or in the room.
Management of fans with a double motor or twin fan units, one in stand-by for the other.
INVERTERS that can be configured for panel, potentiometer, constant pressure or flow rate control. They have been specifically selected to obtain low harmonic distortion in compliance with the European Directive
IEC/EN 61000-3-12.
Available functions and options
The regulator has daily and weekly time bands and a

clock with a buffer coil. It automatically controls all functions, if specifically requested, including:
• Automatic management of free-cooling, recirculation/mixture or heat recovery on the sensitive or enthalpy air, depending on the selected machine configuration.
• Management of the “BOOST” function to reduce the time required for the system to be fully operational
• Compensation of the delivery set-point in relation to the outdoor temperature.
• Checking the delivery temperature in cascade according to the temperature detected on the return line/in the room.
• Electric heating coils On/Off or modulating control.
• Smooth management of enthalpy humidification and dehumidification resulting in maximum energy efficiency, without having to (Inaccurately) detect the saturation temperature.
• Operation based on freely programmable weekly time bands.
•Remote re-calibration potentiometers to control the ambient temperature, the opening of the dampers and fan inverter control.
•Remote keypad.
•Ambient panel for simplified use.
•Main alarm.
•Remote On/Off.
•Possibility of customising the alarm functions.
Interface
Rhoss ADVR CTA units can be interfaced, through appropriate additional modules, with Modbus, Lonwork, Bacnet, TCP/IP protocols and, therefore, directly with all the main BMS systems

ADV Custom Hygienic range was designed according to high engineering standards and is ideal for applications where cleanliness and hygiene requirements are a must.

The units have been awarded the Hygiene compliance certificate for Air Handling Units by TUV NORD according to standards VDI 6022 Part 1 and DIN 1946 Part 4.
The air flow features and mechanical performance are certified by Eurovent according to standards EN1886 and EN13053.
The VDI 6022 Guideline contains the minimum hygiene requirements for HVAC systems, ventilation and air handling units for design, manufacture, operation, management and maintenance aspects.
It therefore also defines the hygiene requirements of Air handling units regarding: usable materials, components, manufacturing, mechanical features, accessibility and serviceability, in accordance with the highest technical standards.
STRUCTURE
The entire machine can be inspected through large access doors. Each section that is subject to frequent maintenance can be supplied with lighting and a large double-walled porthole to facilitate a visual inspection.
The internal structure is completely free of sharp edges or protrusions and the profiles used are completely rounded. Thereby, air friction on the surfaces is reduced together with the accumulation of dirt or washing liquid inside the unit.
The materials available for the panelling and framework guarantee levels of chemical resistance and bacterial cleanliness required for the monitoring of contamination.
The condensation drain pans are included along the entire length of the machine for all the components involved in the flow to be cleaned
AIR FILTERS
The filtration medium of the filters installed by Rhoss is microbiologically inert. The sealing gaskets are only of non-porous closed cell type.
The filters are housed in a rigid subframe which assures mechanical stability and minimises mechanical stress in the filtration medium, thereby preventing undesired filter breakage.

With the front filter extraction option, Rhoss ensures a very low filter bypass factor (class F9) and safe maintenance, which can be performed from the “clean” side of the air flow. The drain tank under the section also assures the filter module is completely sanitisable.
A special high performance frame is available for absolute filters in addition to, if required, machine set-up to perform the DOP test on site.
Rhoss supplies Air’Suite® biocidal filters for this range of air handling units as well. This unique solution on the market allows decontamination from microbiological agents (bacteria, moulds, viruses, algae, etc.) to be achieved in the air and the filtering device as well.
FANS
The Plenum fans – both with AC and EC Brushless motors – represent the ideal solution in these applications due to a number of aspects:
-no transmission belts make it a “clean” component, eliminating all fouling problems related to belt chalking
-the free impeller with no auger makes it easily accessible and cleanable
-the pressure outlet on the bell mouth allows the fan’s working point to be read with the utmost ease and precision and to set it to constant flow rate or pressure as usually required in such environments.
To increase redundancy and reliability of the system, Rhoss provides the dual fan unit solution both in common chamber and separate chambers, thereby providing the designer with the highest freedom of choice.
HUMIDIFIERS
Steam humidification with autonomous producer with immersed electrodes/electric heaters/gas.
Dispensing mains steam nozzles suitable for hospital environments.
High pressure adiabatic humidifiers are available for certain applications that allow an accurate control to be performed on the ambient humidity without compromising the cleanliness of the air.
Adequate distances between the components are calculated for all the humidification sections in order to guarantee correct absorption of the steam itself
HEAT EXCHANGERS
The heat exchangers are equipped with a special inspection door with spotlight and inspection window.
The frame of the coils can be selected made of aluminium, AISI 304 or 316 L steel, so as to prevent corrosion from the cleaning liquids used. Also the coil fins can be selected in different corrosion-proof materials.
HEAT RECOVERY

All heat recovery units are designed to meet the design restrictions of efficiency and pressure drops with a special focus on the machine's fluid dynamics. They are easily and fully accessible for easier cleaning and maintenance and the materials used comply with the requirements of VDI 6022.
The standard does not give specific guidelines on the recovery type to be used, leaving this choice up to the skills and assessments of the designer.
In critical applications or under controlled contamination, where air recirculation and mixing of the two air flows is not permitted, recovery with twin coils remains the only solution that assures complete separation between delivery and return, preventing any type of leakage between the two.
HEAT REGULATION
As for all aspects related to adjustment and control logics, when Rhoss provides the air handling unit complete with integrated heat regulation, the following is assured:
compliance with all safety aspects related to machine access for routine and special maintenance
the use of materials approved by the legislation in the hydraulic part as well as the adjustment and power wiring part
the implementation of appropriate adjustment logics for the type of application and the required degree of hygiene
Qualified personnel to perform the first machine start-up in a workmanlike manner.

Technical data

NARROW ADV SERIES									
MODEL		**371**	**471**	**541**	**661**	**741**	**881**	**1071**	**1241**
Air flow rate at 2.5 m/s	m³/h	1.300	1.700	1.950	2.400	2.700	3.200	3.850	4.500
Front dimension B	mm	730	730	770	810	870	880	880	1.030
Front dimension H	mm	680	740	740	800	800	900	940	980
STANDARD ADV SERIES									
MODEL		**240**	**300**	**380**	**440**	**570**	**710**	**800**	**920**
Air flow rate at 2.5 m/s	m³/h	850	1.080	1.360	1.700	2.050	2.450	2.850	3.300
Front dimension B	mm	730	820	950	950	970	1.080	1.080	1.080
Front dimension H	mm	630	630	660	720	720	750	820	880
LOWERED ADV SERIES									
MODEL		**420**	**630**	**830**	**990**	**1180**	**1400**	**1580**	**1850**
Air flow rate at 2.5 m/s	m³/h	3.780	5.620	7.420	8.910	10.690	12.630	14.250	16.630
Front dimension B	mm	1.400	1.550	1.800	1.950	2.100	2.250	2.500	2.600
Front dimension H	mm	750	800	900	950	1.000	1.100	1.200	1.250

NARROW ADV SERIES									
MODEL		**1461**	**1751**	**2021**	**2361**	**2831**	**3371**	**3941**	**4571**
Air flow rate at 2.5 m/s	m³/h	5.300	6.300	7.300	8.500	10.200	12.200	14.000	16.500
Front dimension B	mm	1.030	1.030	1.050	1.220	1.410	1.610	1.610	1.630
Front dimension H	mm	1.120	1.280	1.310	1.340	1.350	1.350	1.520	1.700
STANDARD ADV SERIES									
MODEL		**1070**	**1220**	**1380**	**1530**	**1720**	**2080**	**2300**	**2500**
Air flow rate at 2.5 m/s	m³/h	3.850	4.400	4.950	5.500	6.200	7.500	8.300	9.000
Front dimension B	mm	1.230	1.360	1.360	1.430	1.480	1.550	1.630	1.630
Front dimension H	mm	880	880	920	920	990	1.070	1.070	1.170
LOWERED ADV SERIES									
MODEL		**2210**	**2550**	**2860**	**3190**	**3650**	**4220**	**4830**	**5550**
Air flow rate at 2.5 m/s	m³/h	19.870	22.950	25.750	28.720	32.880	38.010	43.470	49.950
Front dimension B	mm	2.700	2.800	2.950	3.100	3.250	3.550	3.850	4.105
Front dimension H	mm	1.350	1.400	1.500	1.550	2.650	1.700	1.800	1.900

NARROW ADV SERIES									
MODEL		**5441**	**6561**	**7611**	**9131**	**10711**	**12751**	**15041**	**18361**
Air flow rate at 2.5 m/s	m³/h	19.500	23.500	27.500	33.000	38.500	46.000	55.000	66.000
Front dimension B	mm	1.740	2.020	2.150	2.500	2.780	2.900	3.350	3.800
Front dimension H	mm	1.880	1.880	2.000	2.000	2.060	2.300	2.300	2.420
STANDARD ADV SERIES									
MODEL		**2920**	**3270**	**3600**	**4300**	**5250**	**6060**	**7500**	**8480**
Air flow rate at 2.5 m/s	m³/h	10.500	12.000	13.000	15.500	19.000	21.800	27.000	30.500
Front dimension B	mm	1.630	1.650	1.650	1.930	2.130	2.310	2.700	2.850
Front dimension H	mm	1.300	1.300	1.400	1.560	1.560	1.700	1.700	1.700
LOWERED ADV SERIES									
MODEL		**6240**	**7060**	**8100**	**9220**	**10400**	**11660**		
Air flow rate at 2.5 m/s	m³/h	56.160	63.500	72.900	82.940	93.630	104.970		
Front dimension B	mm	4.405	4.610	4.910	5.210	5.510	5.810		
Front dimension H	mm	1.950	2.100	2.200	2.350	2.500	2.600		

NARROW ADV SERIES									
MODEL									
Air flow rate at 2.5 m/s		m³/h							
Front dimension B		mm							
Front dimension H		mm							
STANDARD ADV SERIES									
MODEL			**9750**	**11400**	**12600**	**13900**	**16580**	**19860**	**22920**
Air flow rate at 2.5 m/s		m³/h	35.000	41.000	45.500	50.000	59.500	71.500	82.500
Front dimension B		mm	3.000	3.000	3.200	3.600	3.850	4.040	4.540
Front dimension H		mm	1.870	2.050	2.210	2.210	2.210	2.420	2.490
LOWERED ADV SERIES									

MODEL	
Air flow rate at 2.5 m/s	m³/h
Front dimension B	mm
Front dimension H	mm

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