

Coolblade

In Row air conditioning units for IT applications

16 ÷ 27 kW Chilled water; 12 ÷ 25 kW Direct expansion



General information

The Coolblade range is specifically dedicated to Data Centres, in applications characterised by “hot aisle” and “cold aisle” layouts or in systems with containment and separation of the hot part from the cold part.

Configurations

Coolblade DX: Direct expansion air conditioning units, for coupling to external condensing units.

Coolblade CW –Coolblade DW: Chilled water air conditioning units.

Strengths

- ▶ Available in chilled water (CW - DW) & direct expansion version (DX)
- ▶ High heat removal on small footprint
- ▶ Axial and radial fan configuration
- ▶ Very high efficiency (increased in axial fan configuration)
- ▶ High installation flexibility
- ▶ Full redundancy option for Tier IV datacenter (DW version)

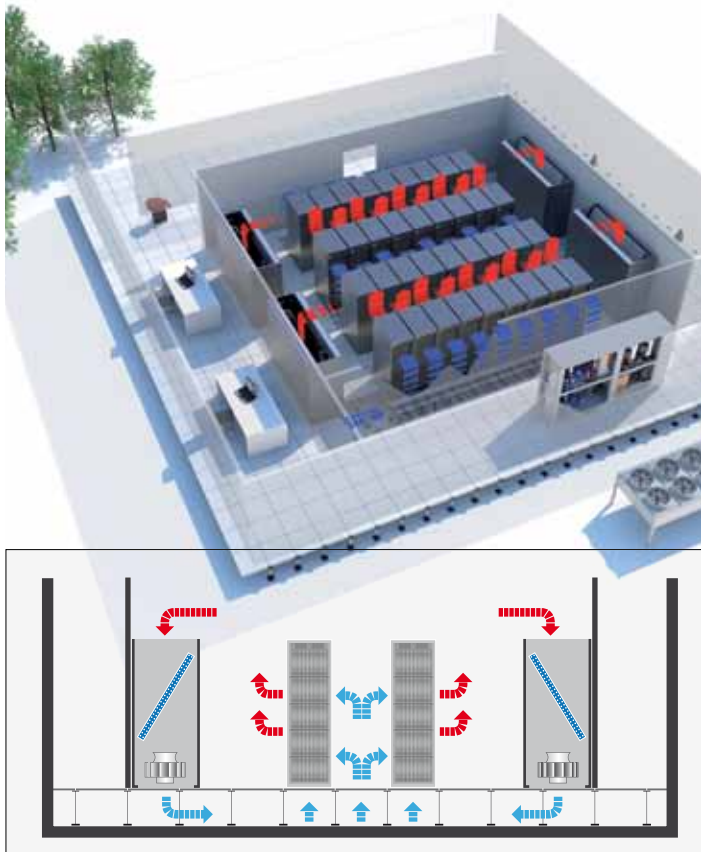
INDEX

APPLICATION	3
CONFIGURATIONS AND NAME	5
SPECIFICATIONS	5
TECHNICAL SPECIFICATIONS - COOLBLADE DX	8
ELECTRICAL SPECIFICATIONS - COOLBLADE DX	8
OPERATING LIMITS – COOLBLADE DX	9
COOLBLADE DX - EPSILON ECHOS+ LE	9
TECHNICAL SPECIFICATIONS - COOLBLADE CW-DW	10
ELECTRICAL SPECIFICATIONS - COOLBLADE CW-DW	10
OPERATING LIMITS – COOLBLADE CW-DW	11
NOISE DATA - COOLBLADE DX-CW-DW (Axial fans)	12
NOISE DATA - COOLBLADE DX-CW-DW (Radial fans)	12
REFRIGERANT DIAGRAMS – COOLBLADE DX	13
HYDRAULIC DIAGRAMS – COOLBLADE CW-DW	14
DIMENSIONAL DRAWINGS – COOLBLADE DX	15
DIMENSIONAL DRAWINGS – COOLBLADE CW DW	23
INSTALLATION TIPS	39

APPLICATION

The Coolblade range has been designed for use in Data Centres that require insertion of cooling units in an in-row configuration, that is, inserted between racks. These are therefore devices expressly made for insertion in a hot aisle/cold aisle configuration. Their operation can be concisely described as follows: the racks draw in fresh air from the front and expel hot air from the back using the fans supplied with the equipment contained inside them. The racks are arranged in opposing rows, so that they are facing the same aisle; the result is the creation of alternately cold (in front of the racks) and hot aisles (behind the racks).

In conventional systems, primary cold air is usually supplied from under a raised floor, by precision air conditioning units positioned on the outer edge of the room or just outside it ("external" or "room" air conditioning).

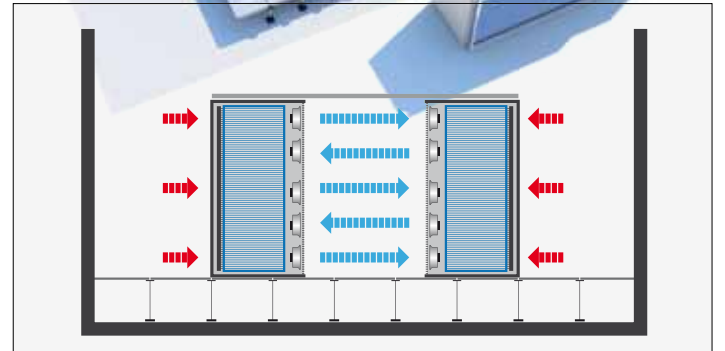
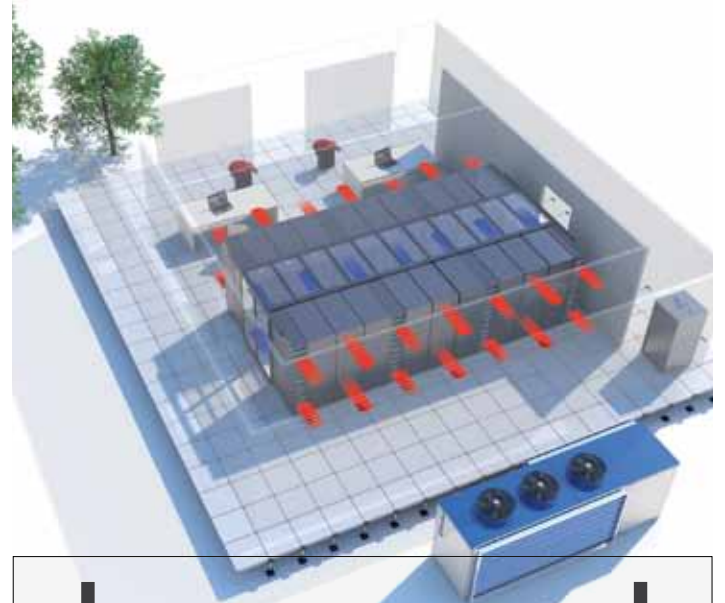


But Coolblade units draw in hot air directly from the hot aisle and put it, cooled, into the cold aisle. A sufficient number of Coolblade units are installed alongside and in between the racks to cover the design heat load, usually with the addition of one or more redundant units to guarantee continuity of cooling in all situations.

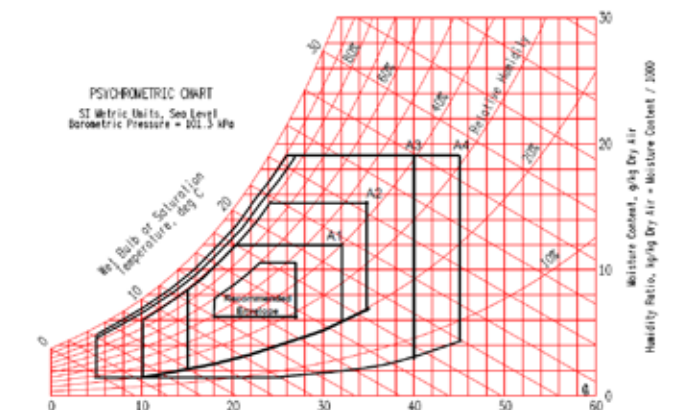
Maximization of energy efficiency is obtained with so-called containment, through which the hot and/or cold areas are isolated, thereby preventing any air bypass or recirculation between the two sections.

It should also be emphasised that this type of application does not require a raised floor for air distribution, or alternatively

a moderately high raised floor for just power or refrigerant distribution.



Coolblade units manage the heat load using various methods and strategies, which can vary according to the specific installation method and the type of cooling system; in any case, with reference to the ASHRAE guidelines (TC9.9 /2011).



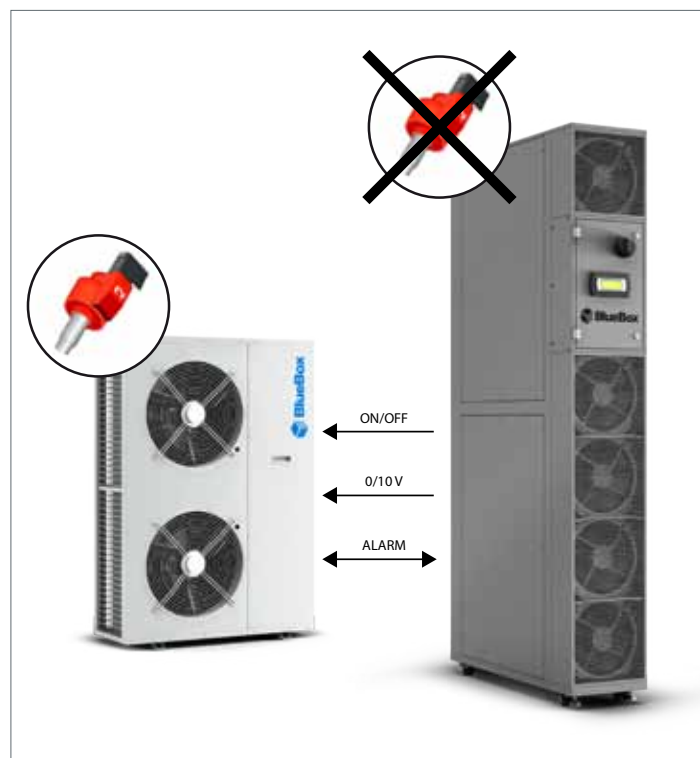
A feature common to all versions is the presence of variable speed fans with electronically commutated (EC) motors, which can modulate based on the return temperature (from the hot aisle); depending on configurations, it is also possible to modulate the cooling capacity based on the return temperature or, alternatively, choose to keep the supply temperature constant in the cold aisle (this last functionality is valid only for chilled water or direct expansion systems with modulation of cooling capacity).

The fans are available in axial version, with front air supply, and in radial version, with side air supply (from one side or both sides).

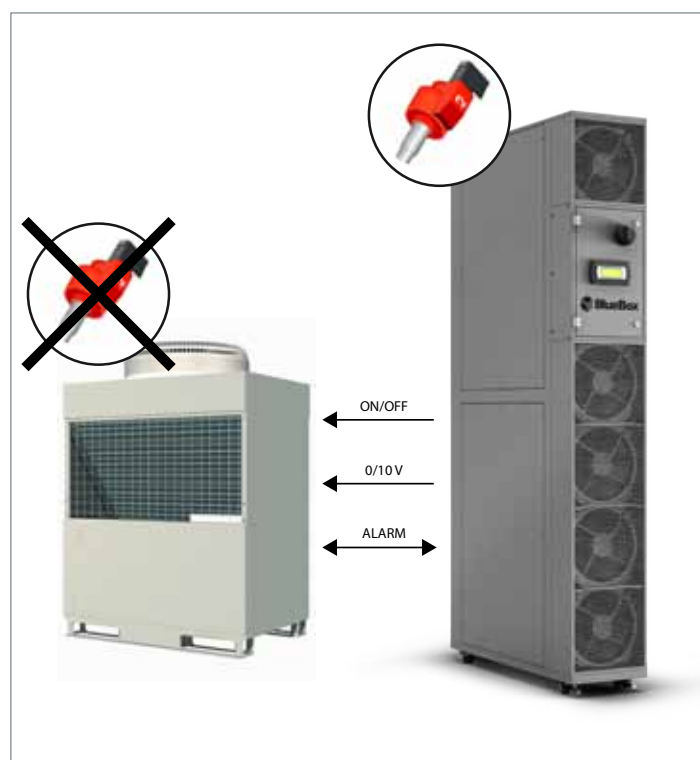


Direct expansion units, provided with evaporating coils, are designed to be connected to an external condensing unit, which can indifferently be provided with a variable speed or fixed speed compressor. It is possible to use condensing units provided with expansion valve (which therefore feed the internal unit with a liquid/gas mixture) and condensing units without expansion valve (which feed the internal unit with subcooled high pressure liquid); in the second case, the expansion valve can be installed on the Coolblade DX unit.

The unit can control the external condensing unit through a modulating 0-10V or on/off signal, and receive an alarm signal from it.



Example of connection with Blue Box condensing unit, provided with expansion valve.



Example of connection with condensing unit not provided with expansion valve.

CONFIGURATIONS AND NAME

Configuration example:

Coolblade	DX	A	12	L
1	2	3	4	5

1	Series	Coolblade
2	Type	DX = direct expansion CW = chilled water, single hydraulic circuit DW = chilled water, double hydraulic circuit
3	Ventilating section	A = Axial fans, front air discharge R = Radial fans, right and left side air discharge RR = Radial fans, right side air discharge RL = Radial fans, left side air discharge
4	Size	12 : Nominal cooling capacity (at catalogue conditions)
5	Cabinet variant	<none> : depth 1000 L : depth 1200

SPECIFICATIONS

DIMENSIONS AND CONFIGURATION

The dimensions of the Coolblade units are 300x1000x2000 (width x depth x height, expressed in mm) or 300x1200x2000 ("L" versions). All units are provided with air filters at the inlet, copper coils with aluminium finning, fans, electrical control panel and electronic microprocessor controller.

Air is always sucked in from the back, filtered and cooled, and then expelled from the front thanks to the action of the fans positioned downstream of the exchange coil, evenly distributed over the entire height of the unit. Depending on the type of fans, air is expelled from the front or side into the cold aisle, thereby ensuring the best air distribution according to the application.

STRUCTURE

The structural frame is fabricated from polished sheet-steel with oven-baked epoxy polyester powder coating. The removable panels are also made of polished sheet-steel with oven-baked epoxy polyester powder coating, and internally insulated with open-cell matting (fire reaction class A2 according to EN13501). The colour is RAL7016 (anthracite grey) with textured finish. Unpainted internal panels and infills are made of hot dip galvanised sheet-iron.

The units are provided with wheels to make handling easier and adjustable feet for final positioning. There are threaded inserts in the upper part to make them easier to fix to adjacent racks.

All the materials making up the unit are recyclable and CFC-free.

FANS

The units are equipped with 3, 4 or 5 (depending on size) variable speed electric fans with directly coupled electronically commutated (EC) motor. Each fan is provided with integrated thermal overload protection.

The fans are installed on the front, downstream of the handling coil and can be accessed from the front of the unit even after installation, without having to take the unit out of the row of racks.

Available as an option are axial fans, which combine excellent efficiency and energy saving qualities, and radial fans, which allow a higher air flow rate than the axial version and the possibility of directing the supply air to the side of the unit.

Air flow is constantly monitored by a differential pressure switch, which signals an alarm condition when there is no flow.

AIR FILTERS

The non-regenerable air filter is class G2 (according to EN779) and is designed to minimize head loss while maintaining an adequate level of filtration. The filters are pleated and contained in a 100mm-thick galvanised sheet-iron frame. They can be accessed from the back of the unit for maintenance operations.

The condition of the filters is constantly monitored by a differential pressure switch that signals when they are excessively fouled.

CHILLED WATER HANDLING COIL AND HYDRAULIC CIRCUIT (CW and DW units)

The Coolblade CW and DW units are provided with handling coils with copper tubes and high turbulence aluminium fins, with hydrophilic coating.

A stainless steel condensate drip tray is positioned under the handling coil. The drain connection is from the bottom of the unit, unless a condensate booster pump (option) is requested, in which case the drain is plugged.

The CW units are provided with a single hydraulic circuit, without control valves in the basic version. Optionally available is a three-way valve with modulating servo control (0-10V control); or a two-way valve (for variable flow rate systems). The hydraulic connections can be carried out indifferently from the bottom or the top in units without valves; they are carried out from the bottom or, on request, from the top for units with valves.

The DW units are provided with a dual hydraulic circuit (a single finned pack coil with two interlaced circuits) without valves in the basic version. Optionally available is a three-way modulating valve (0-10V control) for each circuit; or a two-way valve (again, for each circuit). Each circuit can individually supply the full cooling capacity when the other circuit is not in operation. The controller installed on the unit also allows both circuits to be used at the same time, thereby supplying a higher cooling capacity to quickly satisfy any load peaks or temporary rises in water temperature.

EVAPORATING HANDLING COIL AND REFRIGERANT CIRCUIT (DX units)

The Coolblade DX units are provided with handling coil with small-section copper tubes, specifically designed for use with refrigerant R410A, and high-efficiency aluminium fins with

hydrophilic coating.

The refrigerant circuit includes shut-off valves for gas and liquid and two 5/16" service outlets for each side. The refrigerant connections can be carried out indifferently from the top or the bottom.

If the external condensing unit is not provided with expansion valve, the electronic expansion valve integrated in the Coolblade unit and managed directly by the installed electronic controller is available as option.

ELECTRICAL CONTROL PANEL

The electrical control panel is contained in a box that can be accessed from the front of the unit. It contains a six-pole disconnect switch with 1-0-2 selector switch to manually switch between two alternative power sources. This selector switch also fulfils other functions as disconnect device for each of the two sources, and can be operated from the outside.

The electrical control panel is also provided with an automatic circuit breaker and an isolation transformer for supplying power to the electronic controller, based on a microprocessor board and a display.

The standard power supply is 230V/1~/50Hz for all sizes.

The wiring for the power supply and the field signals can be carried out indifferently from the top or the bottom, through suitable provision on the top or on the base of the unit.

The microprocessor controller inside the electrical control panel is provided with the following functions/features:

- Display of the return air temperature
- Display of the supply temperature (on all the direct expansion units and on the chilled water units if the valve is present)
- Display of the incoming water temperature (only chilled water units)
- Display of the fan speed
- Alarm signalling on two levels (serious alarm and minor alarm)
- Log recording of the last 150 alarms
- Display of the status of controlled devices
- Display of the status of inputs and outputs of the microprocessor.

STANDARD FEATURES

In addition to what was described in the previous sections, the standard features of the Coolblade units include:

- Adjustable support feet
- Wheels to facilitate handling
- No air flow alarm
- Dirty filter alarm
- Water sensor (anti-flood)
- Thermal overload protection (internal) for each fan
- Packaging in wooden crate with pallet
- Divisible pallet to facilitate the positioning operation

TESTING

Leak tests and functional tests are carried out at the factory.

ACCESSORIES AND DESCRIPTION

CODE	Accessory	Operation and advantages
PSC	Condensate booster pump	Allows any condensate formed on the cooling coil and collected in the condensate drip tray to be boosted up to a hydrostatic head of 6m. Recommended in all cases where the hydraulic connections are carried out exclusively from the top.
VRM2	3-way chilled water valve	In chilled water units, this allows control of the supply temperature.
VRM3	2-way chilled water valve	In chilled water units, this allows control of the supply temperature in variable water flow rate applications.
COID	Upward hydraulic connections	For chilled water units, these allow the configuration of the units to be adapted to the requirements of the system.
ALMA	No water flow alarm	For chilled water units, this keeps the water flow at the inlet monitored and signals when there is no flow by generating an alarm condition.
VTE	Electronic expansion valve	For direct expansion units, this is necessary when the condensing unit is not provided with a throttling device. Guarantees constant and precise control of superheating of the sucked-in gas. If available on the condensing unit, a potential-free contact that shows the operating status of the compressor can also be connected to the direct expansion units, thereby optimizing the operation of the electronic expansion valve.
DAA	Dual power supply with automatic switching	This allows immediate automatic switching to the other source if one of the two power supplies fails, in order to maintain continuity of service in installations where high redundancy is required. This obligatorily requires a dual power supply system.
SERI	RS485 serial board	<p>Serial connection boards allow connection to supervision and remote management systems, thereby making it possible to display the main operating parameters and edit the main operational parameters.</p> <ul style="list-style-type: none"> - The RS485 serial board allows connection to supervision systems with the Modbus RTU protocol. - The BacNet serial board allows connection to supervision systems with the MS/TP protocol. - The LonWorks serial board allows connection to supervision systems with the FTT-10 protocol. - The Ethernet serial board allows connection to supervision systems with the HTTP, SNMP, BACnet/IP and Modbus/IP protocols. The RJ45 connector is placed on the back of the unit to make connection easier. A mini web server is installed in the serial board for remote display of the unit via html.
BAC	Bacnet serial board	
LON	LonWorks serial board	
ETH	Ethernet serial board	

TECHNICAL SPECIFICATIONS - COOLBLADE DX

Unit Size			12/12L	19/19L	25/25L
Total cooling capacity	(1)	kW	12,5	19,1	24,4
Sensible cooling capacity	(1)	kW	12,5	19,1	24,4
SHR			1,0	1,0	1,0
Total cooling capacity	(2)	kW	14,4	21,7	27,9
Sensible cooling capacity	(2)	kW	14,4	21,7	27,9
SHR			1,0	1,0	1,0
Total cooling capacity	(3)	kW	11,6	19,3	25,8
Sensible cooling capacity	(3)	kW	11,6	19,3	25,8
SHR			1,00	1,00	1,00
Fans					
Number			3	4	5
Nominal air flow		m³/h	3.300	4.200	4.900
Minimum air flow		m³/h	2.150	2.730	3.190
Axial version					
Power input at nominal air flow		kW	0,14	0,25	0,41
Maximum air flow		m³/h	4000	4700	4900
Radial version, air supply on both sides					
Power input at nominal air flow			0,38	0,51	0,60
Maximum air flow		m³/h	3500	4500	5400
Radial version, air supply on one side					
Power input at nominal air flow			0,45	0,63	0,79
Maximum air flow		m³/h	3350	4200	4900
Noise levels					
Sound power level, suction side	(4)	dB(A)	71,0	72,3	73,4
Sound power level, discharge side	(4)	dB(A)	74,0	75,3	76,4
Sound power level, suction side	(5)	dB(A)	73,9	75,0	76,1
Sound power level, discharge side	(5)	dB(A)	78,3	79,5	80,4
Refrigeration circuit					
Suction connection		n°x mm	1x16	1x18	1x18
Liquid connection		n°x mm	1x12	1x12	1x16
Blue Box matching condensing unit					
Model			Epsilon Echos+LE 15	Epsilon Echos+LE 20	Epsilon Echos+LE 26
Compressor power input	(1)	kW	3,2	4,3	5,6
Compressor power input	(2)	kW	5,2	6,8	8,6
Fan power input		kW	0,3	0,8	1,3
Dimensions and weight of basic unit					
Length		mm	300	300	300
Depth		mm	1.010	1.010	1.010
Height		mm	2.002	2.002	2.002
Operating weight		kg	120	130	140
Dimensions and weight of "L" units					
Length		mm	300	300	300
Depth		mm	1.200	1.200	1.200
Height		mm	2.002	2.002	2.002
Operating weight		kg	160	170	180

ELECTRICAL SPECIFICATIONS - COOLBLADE DX

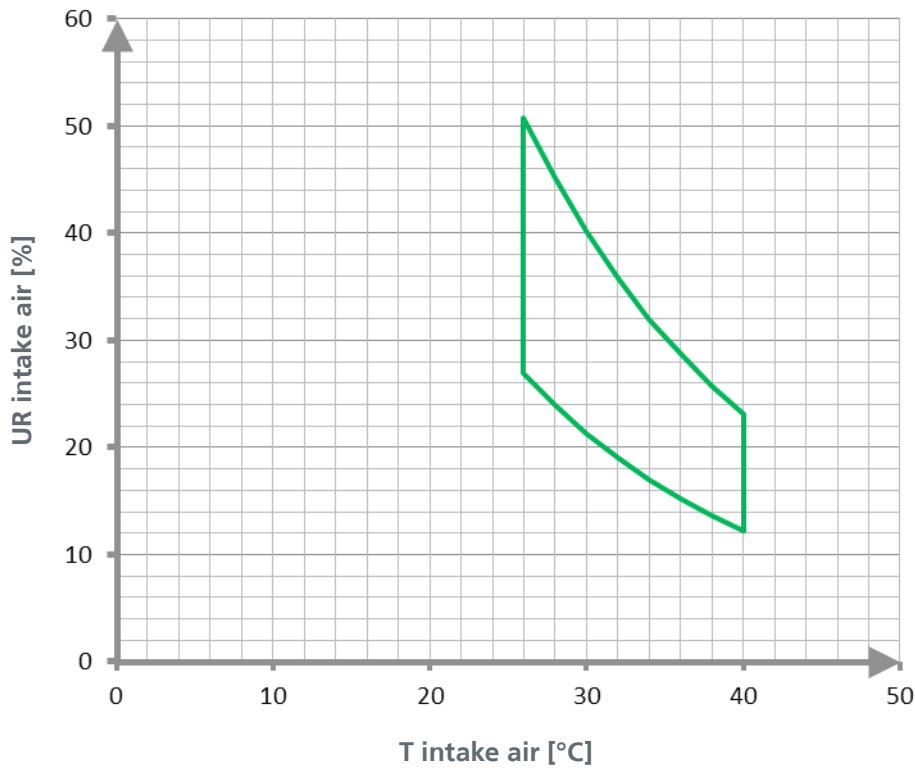
Unit size			12/12L	19/19L	25/25L
Maximum power requirement (axial fans)		kW	0,25	0,33	0,42
Max. absorbed current (axial fans)		A	2,16	2,88	3,60
Maximum power requirement (radial fans)		kW	0,50	0,67	0,84
Max. absorbed current (radial fans)		A	4,20	5,60	7,00
Mains supply				230/1~/50 ±5%	

All performance data are given at the following conditions: incoming air 35°C/27%RH

- Compressor speed 90rps, ambient air 35°C
- Compressor speed 120rps, ambient air 35°C
- Saturated evaporating temperature 12°C, saturated condensing temperature 45°C
- Axial fans, maximum air flow
- Radial fans, maximum airflow

OPERATING LIMITS – COOLBLADE DX

As concerns the combination of temperatures and relative humidities, it is strongly recommended that the design conditions of the return air (hot aisle) fall within the limits specified below:

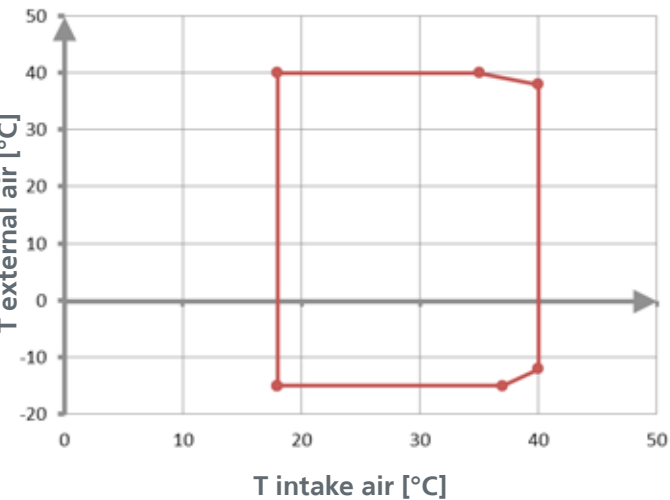


It should be emphasised that the standard design temperatures of a hot aisle/cold aisle system with containment are usually higher than 30°C; however, Coolblade DX units can also operate at lower return air temperatures, within the limits stated below.

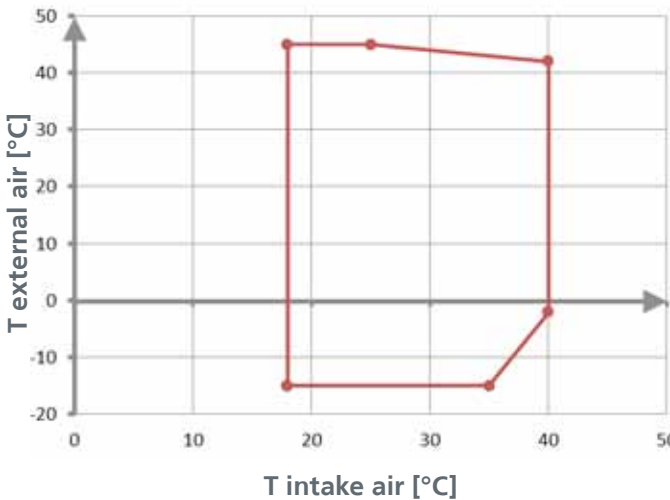
Coupled to Epsilon Echos + LE condensing unit

The operating limits indicated below are valid only for the standard coupling (see the “technical specifications” section).

COOLBLADE DX - EPSILON ECHOS+ LE



Condensing unit at maximum capacity (compressor at 120rps)



Condensing unit at rated capacity (compressor at 90rps)

TECHNICAL SPECIFICATIONS - COOLBLADE CW-DW

Unit Size			16/16L	27/27L	22/22L
Total cooling capacity	(1)	kW	16,5	27,2	21,8
Sensible cooling capacity	(1)	kW	16,5	27,2	21,8
NSEER with axial fans	(1)		1,0	1,0	1,0
NSEER with radial fans	(1)		125,9	63,8	50,9
Total cooling capacity	(2)	kW	19,0	31,4	25,2
Sensible cooling capacity	(2)	kW	14,4	31,4	25,2
NSEER with axial fans	(2)		109,8	73,8	59,0
NSEER with radial fans	(2)		37,9	51,3	41,0
Total cooling capacity	(3)	kW	14,6	24,3	19,3
Sensible cooling capacity	(3)	kW	14,6	24,3	19,3
NSEER with axial fans	(3)		111,3	56,9	45,0
NSEER with radial fans	(3)		38,5	39,5	31,2
Fans					
Number		n°	3	5	5
Nominal air flow		m³/h	3.200	4.800	4.800
Minimum air flow			2.150	3.190	3.190
Axial version					
Power input at nominal air flow		kW	0,13	0,42	0,42
Maximum air flow		m³/h	3.400	4.800	4.800
Radial version, air supply on both sides					
Power input at nominal air flow		kW	0,37	0,60	0,60
Maximum air flow		m³/h	3.600	5.200	5.200
Radial version, air supply on one side					
Power input at nominal air flow		kW	0,42	0,79	0,79
Maximum air flow		m³/h	3.300	4.800	4.800
Hydraulic circuit					
Number of hydraulic circuits			1	1	2
Total pressure drop without valves	(1)	kPa	26	36	45
Total pressure drop with valves	(1)	kPa	46	60	79
In/out connections			G3/4"	G1"	2xG3/4"
Internal volume		dm³	8,5	14,8	2x8,5
Noise levels					
Sound power level, suction side	(4)	dB(A)	71,1	73,4	73,4
Sound power level, discharge side	(4)	dB(A)	74,1	76,4	76,4
Sound power level, suction side	(5)	dB(A)	73,9	76,1	76,1
Sound power level, discharge side	(5)	dB(A)	78,3	80,4	80,4
Dimensions and weight of basic unit					
Length		mm	300	300	300
Depth		mm	1.000	1.000	1.000
Height	(6)	mm	2.003	2.003	2.003
Operating weight		kg	0	0	0
Dimensions and weight of "L" units					
Length		mm	300	300	300
Depth		mm	1.200	1.200	1.200
Height	(6)	mm	2.003	2.003	2.003
Operating weight		kg	0	0	0

ELECTRICAL SPECIFICATIONS - COOLBLADE CW-DW

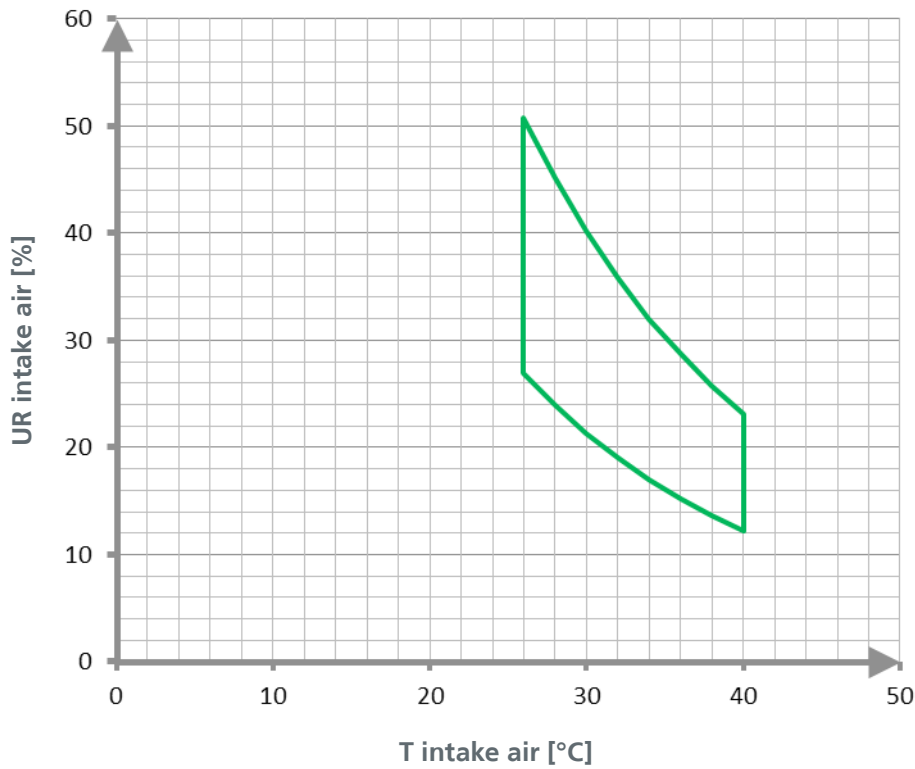
Unit size			16/16L	27/27L – 22/22L
Maximum power requirement (axial fans)		kW	0,25	0,42
Max. absorbed current (axial fans)		A	2,16	3,6
Maximum power requirement (radial fans)		kW	0,50	0,84
Max. absorbed current (radial fans)		A	4,20	7,00
Mains supply			230/1~ / 50 ±5%	

All performance data are given at the following conditions: incoming air 35°C/30%RH

1. Inlet/outlet water temperature 13/18°C
2. Inlet/outlet water temperature 10/15°C
3. Inlet/outlet water temperature 15/20°C
4. Axial fans, maximum air flow
5. Radial fans, maximum airflow
6. Adjustable height between 2003 and 2025mm

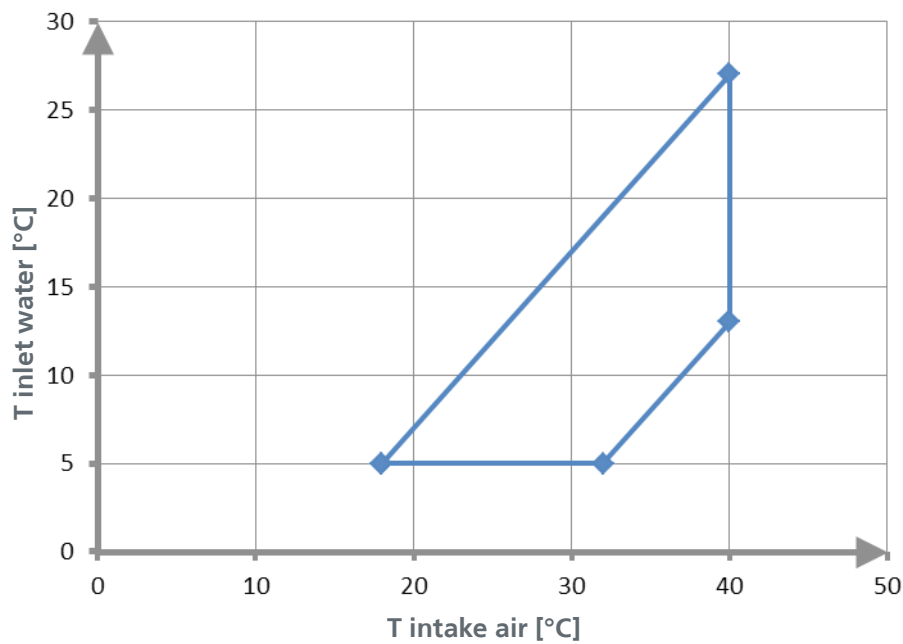
OPERATING LIMITS – COOLBLADE CW-DW

As concerns the combination of temperatures and relative humidities, it is strongly recommended that the design conditions of the return air (hot aisle) fall within the limits specified below::



It should be emphasised that the standard design temperatures of a hot aisle/cold aisle system with containment are usually higher than 30°C; however, Coolblade CW-DW units can also operate at lower return air temperatures, within the limits stated below.

The operating limits indicated below refer to the optimal operation of the units. Outside the indicated limits, undesirable condensate and dehumidification problems, high head losses on hydraulic side or insufficient heat exchange may occur.



The maximum percentage of glycol is 50%.

NOISE DATA - COOLBLADE DX-CW-DW (Axial fans)

Supply side

Model	Sound pressure level octave-band [dB]									A-weighted sound power level discharge side [dB(A)]
	Central frequency [Hz]									
	63	125	250	500	1000	2000	4000	8000		
Coolblade DX12 12L - CW16/16L	33,1	51,3	65,3	66,8	69,6	69,5	62,3	51,3	74	
Coolblade DX19/19L	34,3	52,5	66,5	68,0	70,8	70,7	63,5	52,5	75,3	
Coolblade DX25/25L – CW27/27L – DW22/22L	35,3	53,5	67,5	70,0	71,8	71,6	64,4	53,5	76,4	

Suction side

Model	Sound pressure level octave-band [dB]								A-weighted sound power level suction side [dB(A)]
	Central frequency [Hz]								
	63	125	250	500	1000	2000	4000	8000	
Coolblade DX12 12L - CW16/16L	31,7	51,7	67,9	69,4	66,9	63,1	54,9	43,9	71
Coolblade DX19/19L	33,0	52,9	69,1	70,6	68,1	64,3	56,1	45,1	72,3
Coolblade DX25/25L – CW27/27L – DW22/22L	33,9	53,9	70,1	71,6	69,1	65,3	57,0	46,0	73,4

NOISE DATA - COOLBLADE DX-CW-DW (Radial fans)

Supply side

Model	Sound pressure level octave-band [dB]								A-weighted sound power level discharge side [dB(A)]
	Central frequency [Hz]								
	63	125	250	500	1000	2000	4000	8000	
Coolblade DX12 12L - CW16/16L	36,4	48,4	61,7	73,8	73,5	73,3	65,5	58,8	78
Coolblade DX19/19L	37,6	49,6	62,9	75,0	74,7	74,5	66,7	60,0	79,5
Coolblade DX25/25L – CW27/27L – DW22/22L	38,6	50,6	63,9	76,0	75,7	75,4	67,7	61,0	80,4

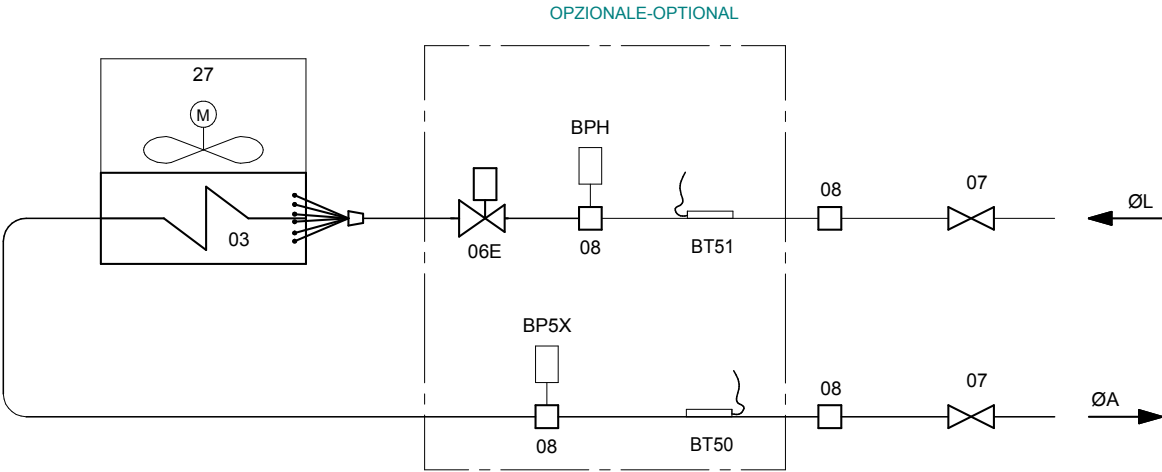
Suction side

Model	Sound pressure level octave-band [dB]								A-weighted sound power level suction side [dB(A)]
	Central frequency [Hz]								
	63	125	250	500	1000	2000	4000	8000	
Coolblade DX12 12L - CW16/16L	34,0	47,8	61,4	72,4	69,2	66,7	60,1	51,3	74
Coolblade DX19/19L	35,2	49,0	62,6	73,6	70,4	67,9	61,3	52,5	75
Coolblade DX25/25L – CW27/27L – DW22/22L	36,2	50,0	63,6	74,6	71,4	68,9	62,3	53,5	76,1

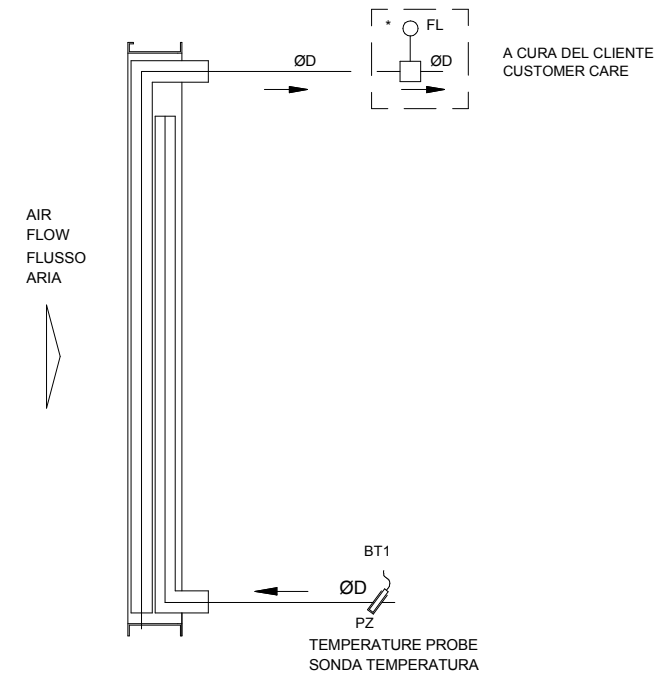
All data are expressed as sound power levels, emitted by the unit on the air supply side (front) or suction side (back), and are related to the maximum air flow rate (maximum rotation speed of the fans).

REFRIGERANT DIAGRAMS – COOLBLADE DX

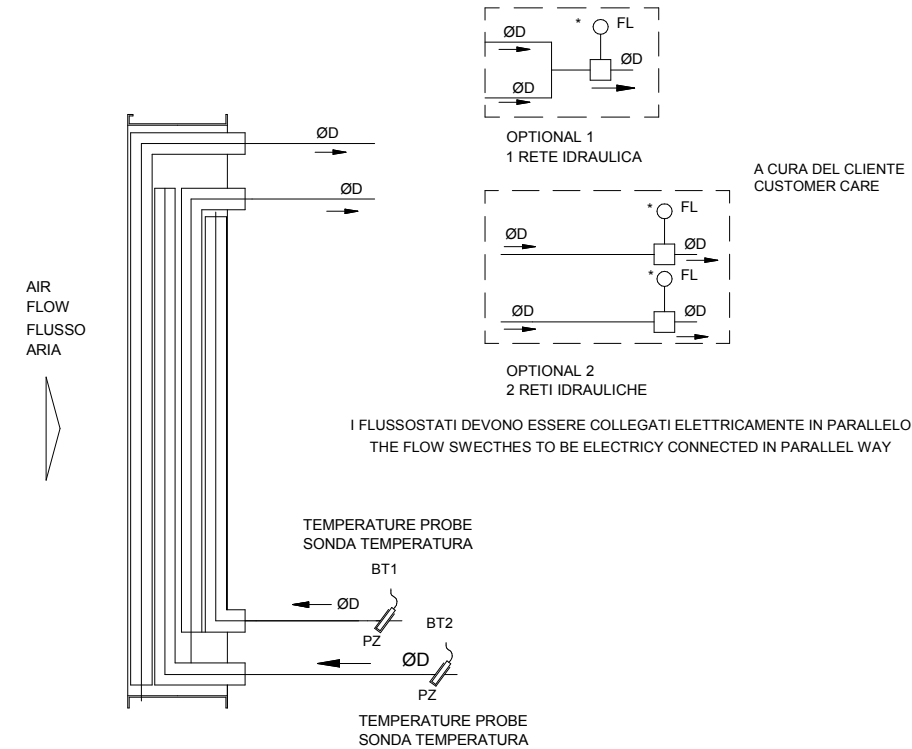
TUBO RAME - COPPER PIPE (Ø mm)			
TAGLIA - SIZE	12	19	25
ØA	Ø16	Ø18	
ØL	Ø12		Ø16



HYDRAULIC DIAGRAMS – COOLBLADE CW-DW
size 16/16L/27/27L



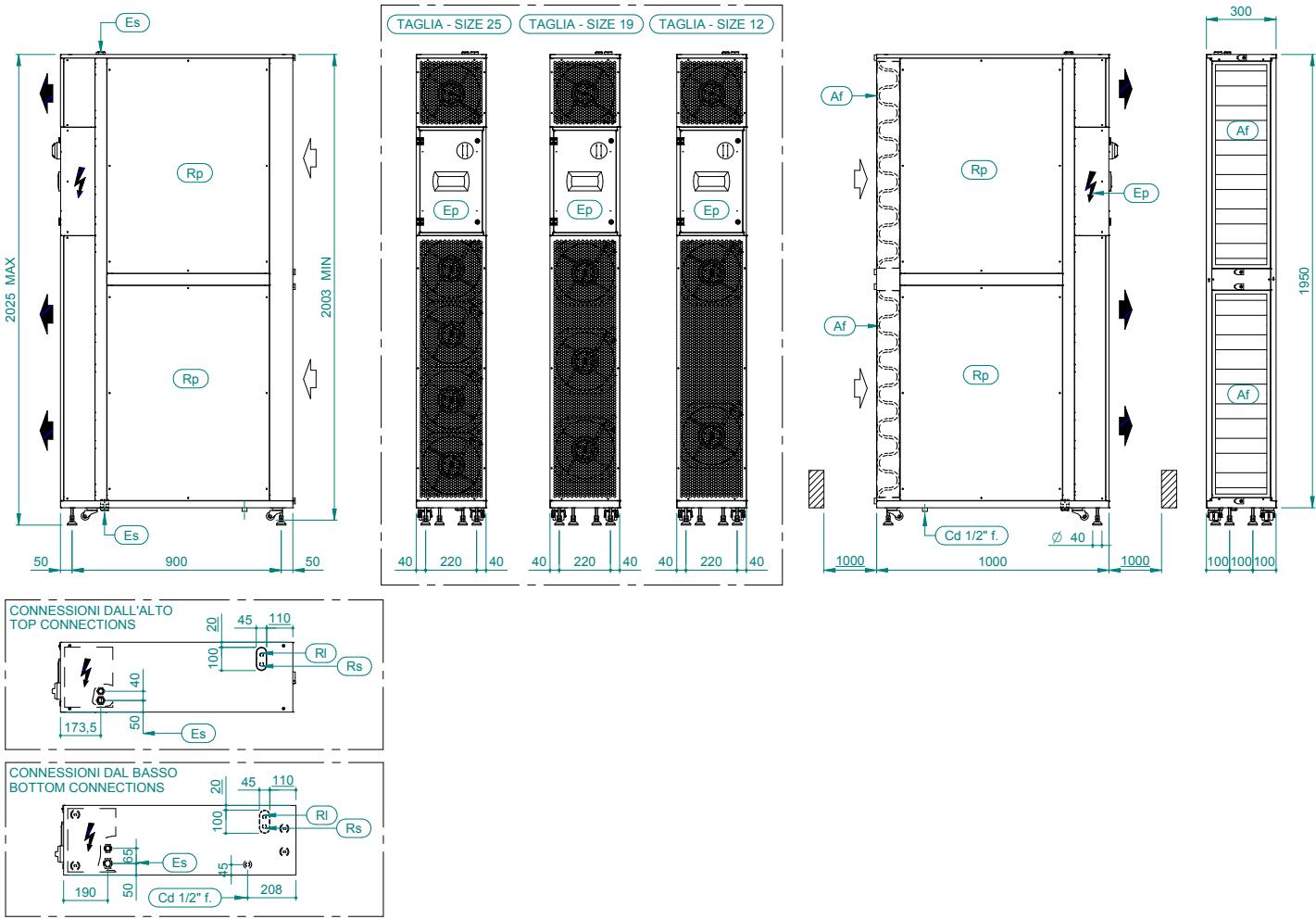
size 22/22L



DIMENSIONAL DRAWINGS – COOLBLADE DX A

A4G613 - A

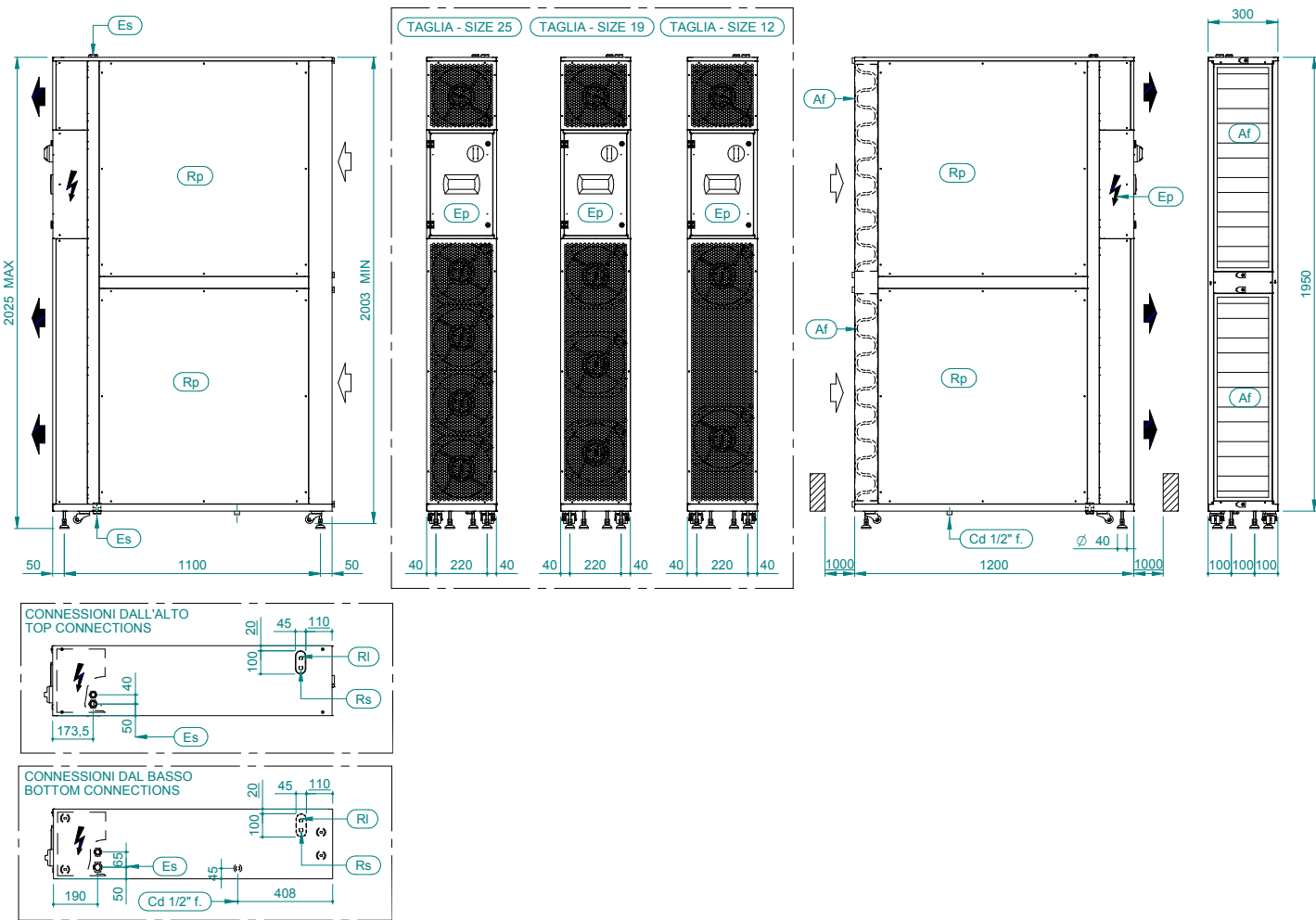
Axial fans – depth 1000



DIMENSIONAL DRAWINGS – COOLBLADE DX A

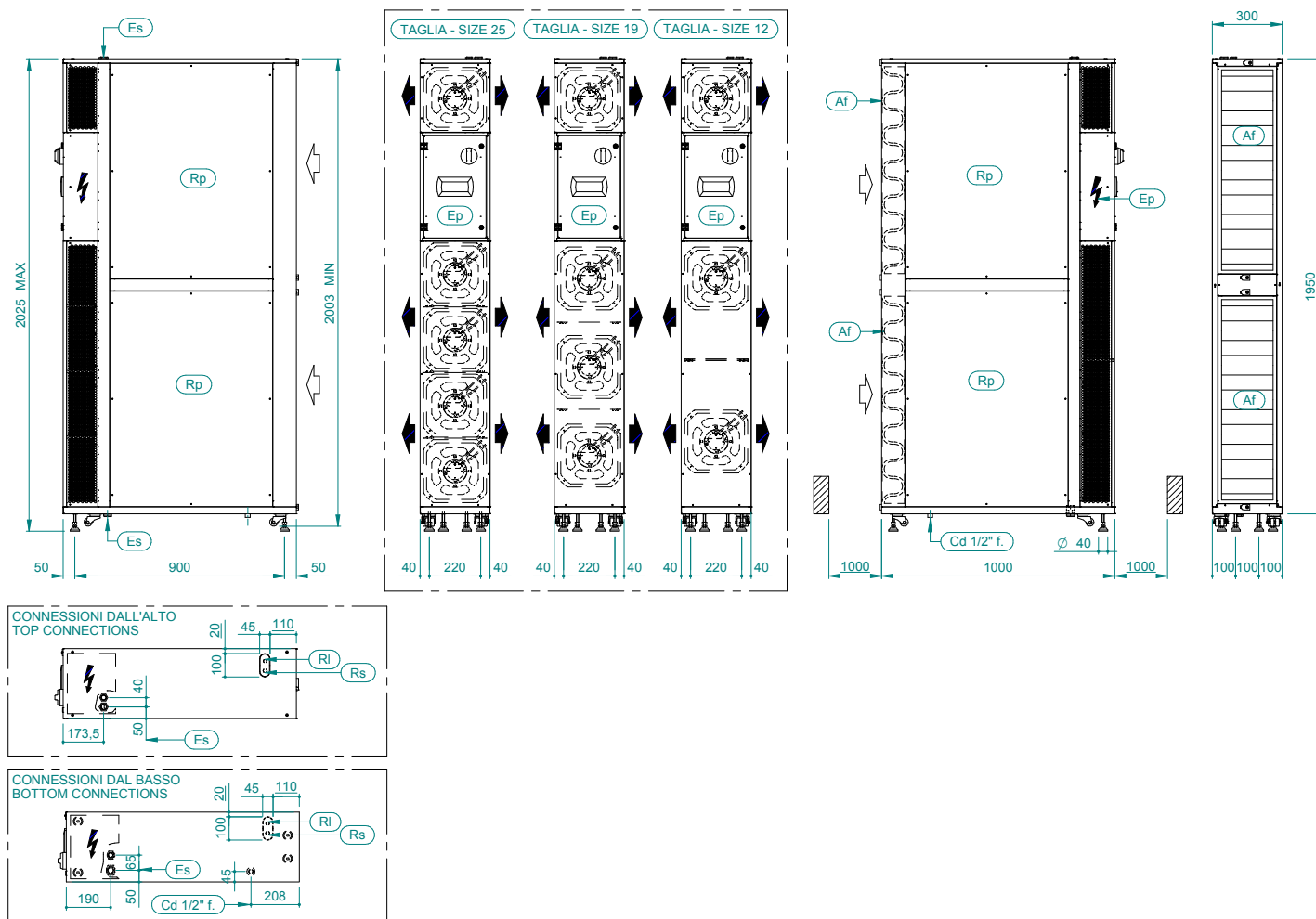
A4G636 - A

Axial fans – depth 1200



A4G614 - A

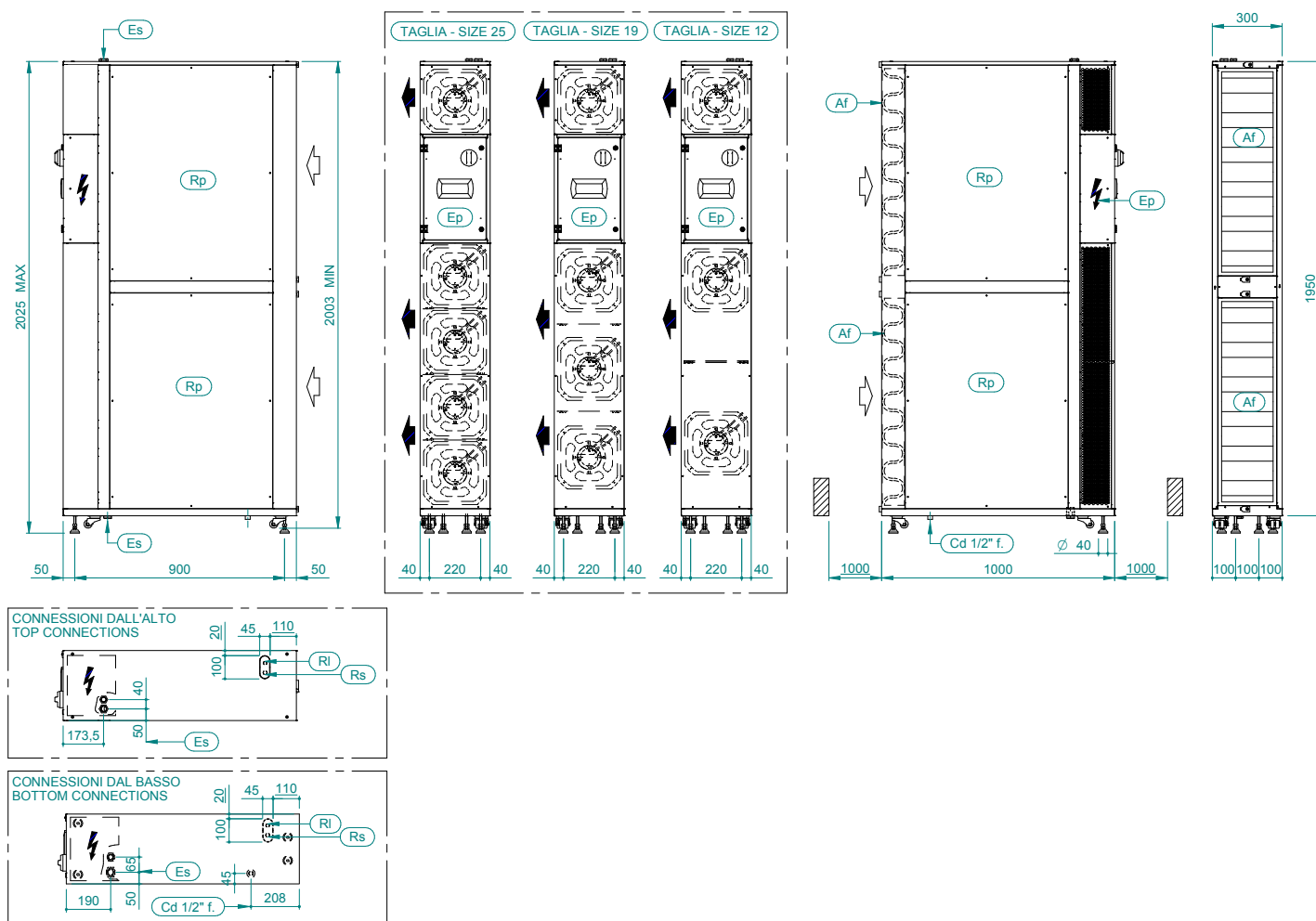
Radial fans – depth 1000 (Exhaustion from both sides)



A4G614 - A

Radial fans – depth 1000 (Exhaustion from right side)

Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.

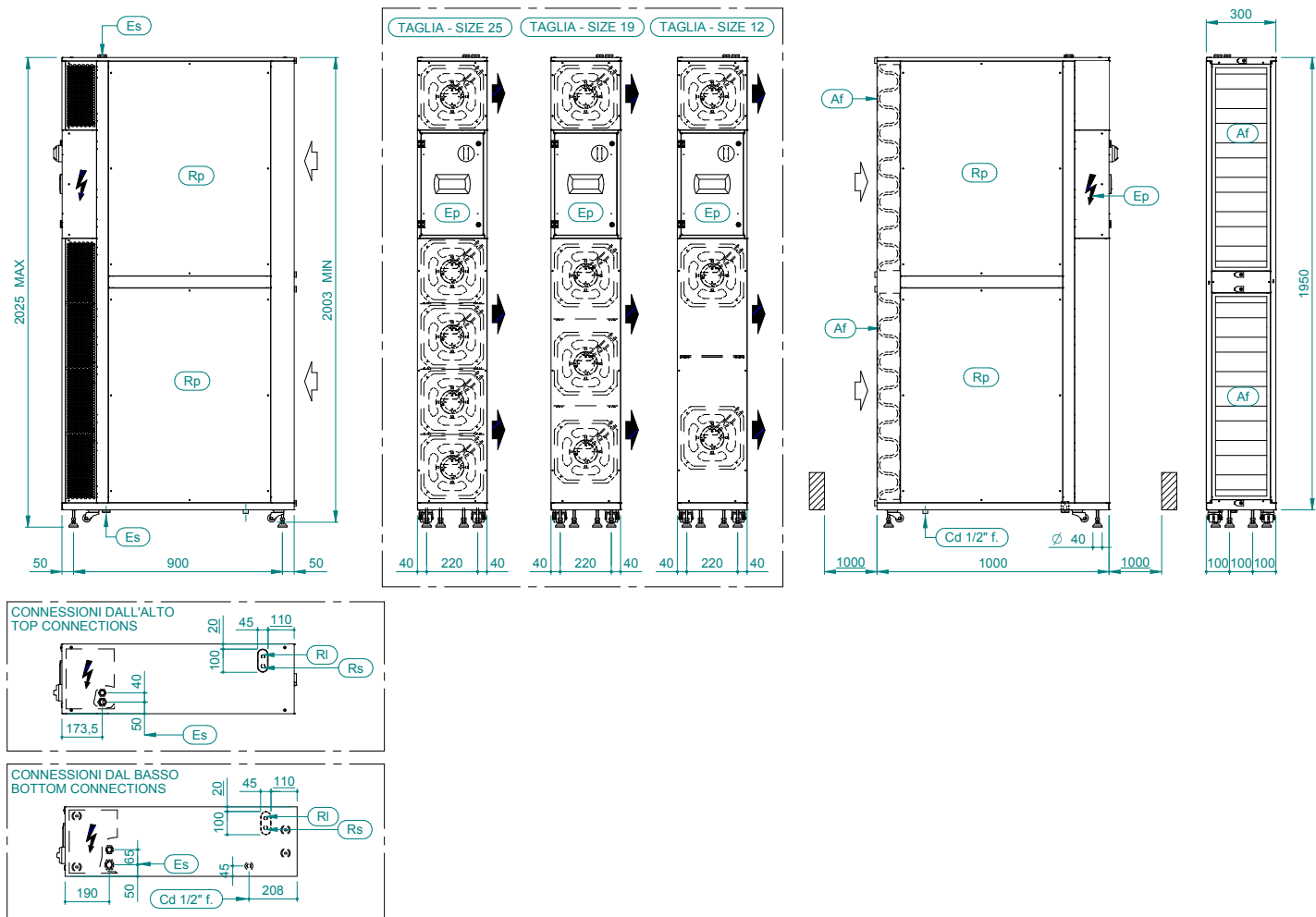


DIMENSIONAL DRAWINGS – COOLBLADE DX RL

A4G614 - A

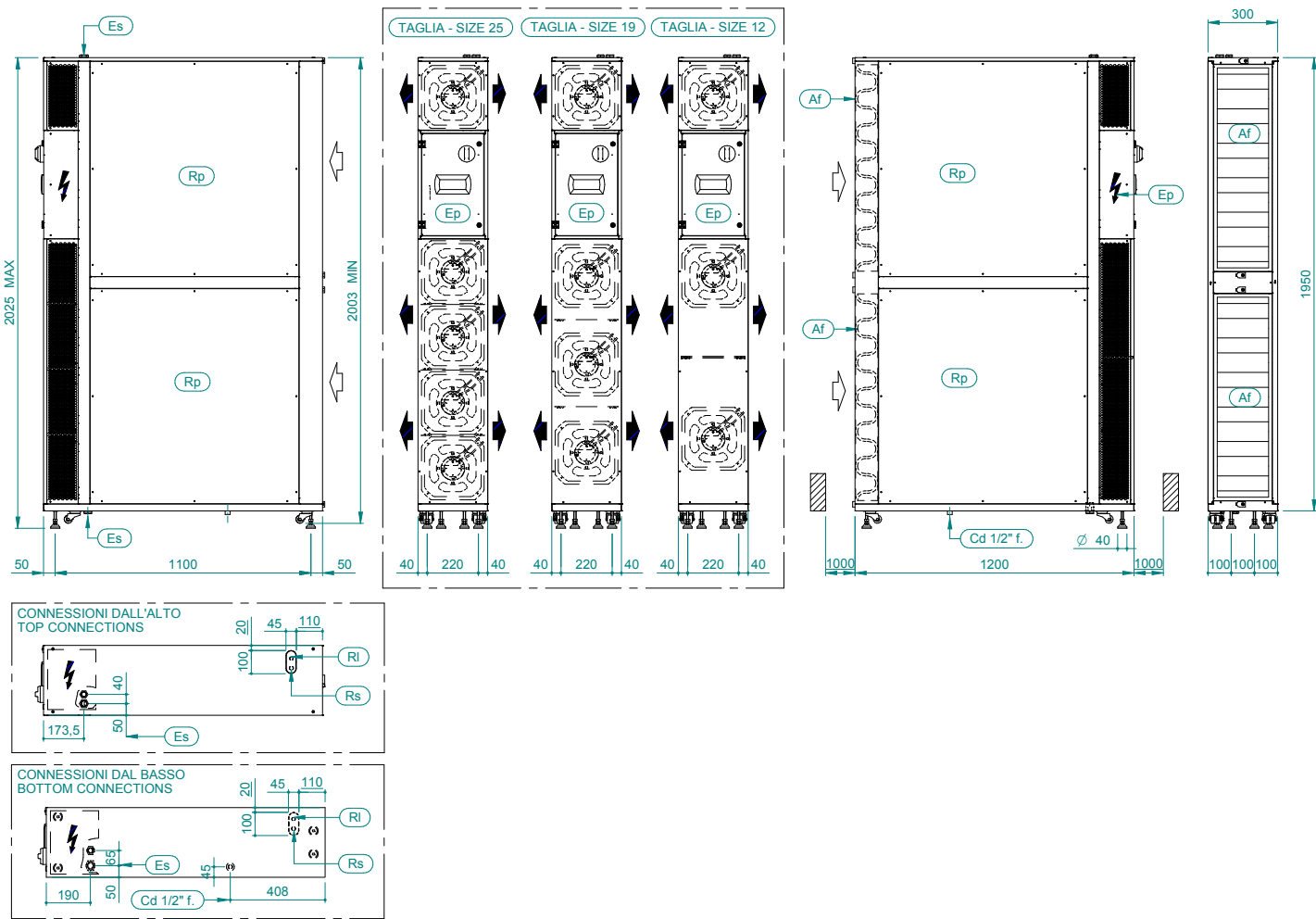
Radial fans – depth 1000 (Exhaustion from left side)

Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.



DIMENSIONAL DRAWINGS – COOLBLADE DX R
Radial fans – depth 1200 (Exhaustion from both sides)

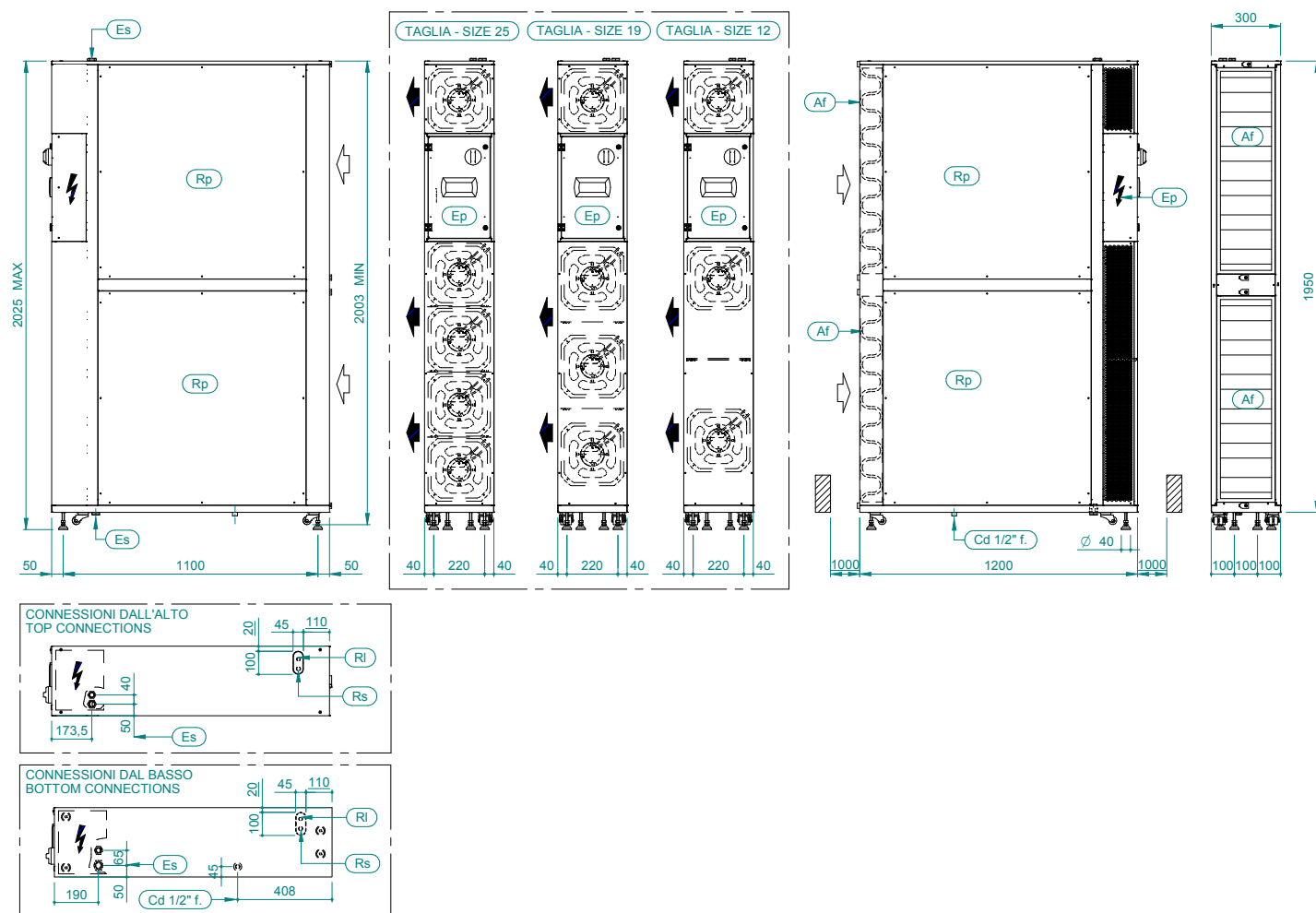
A4G637 - A



A4G637 - A

Radial fans – depth 1200 (Exhaustion from right side)

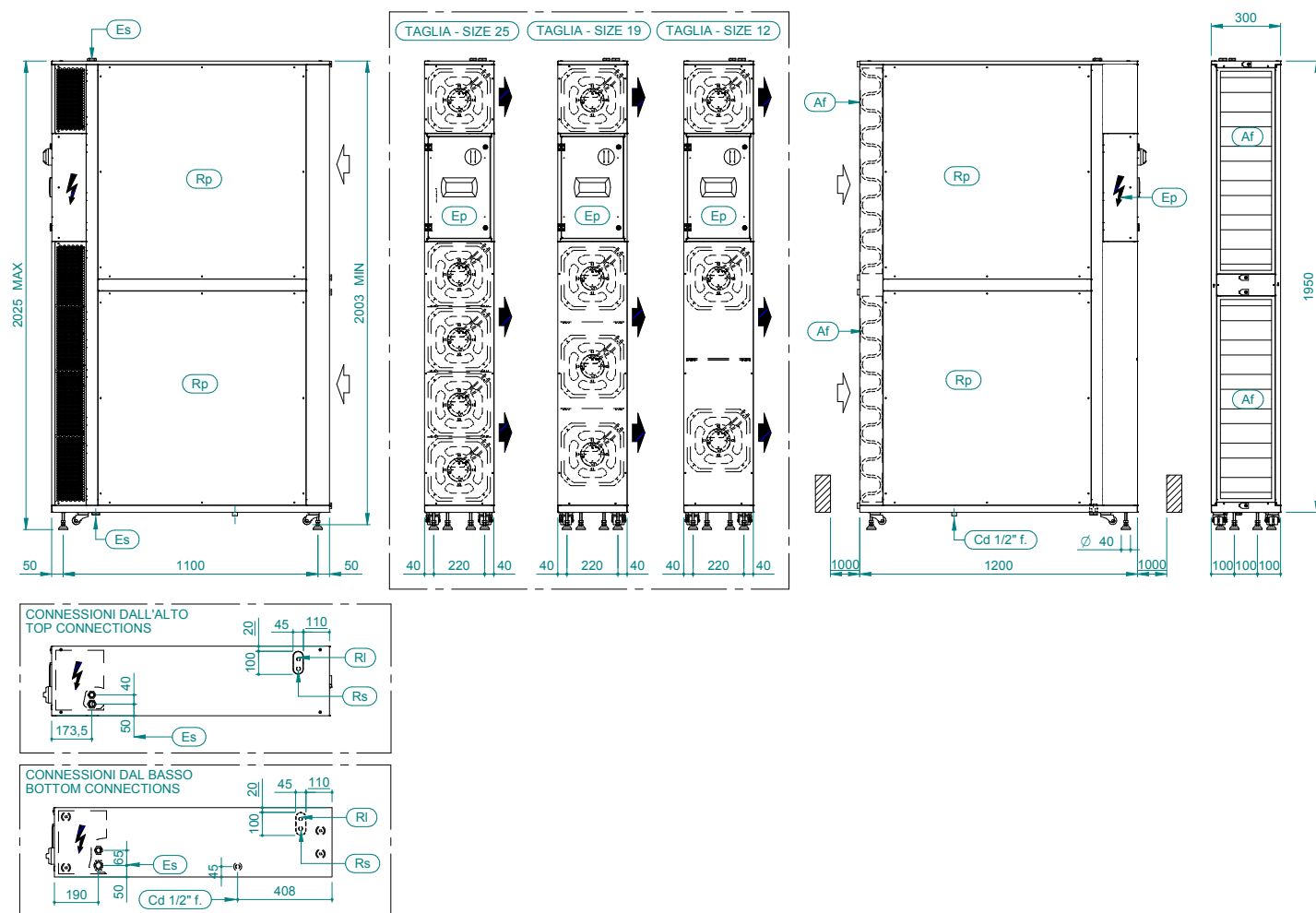
Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.



A4G637 - A

Radial fans – depth 1200 (Exhaustion from left side)

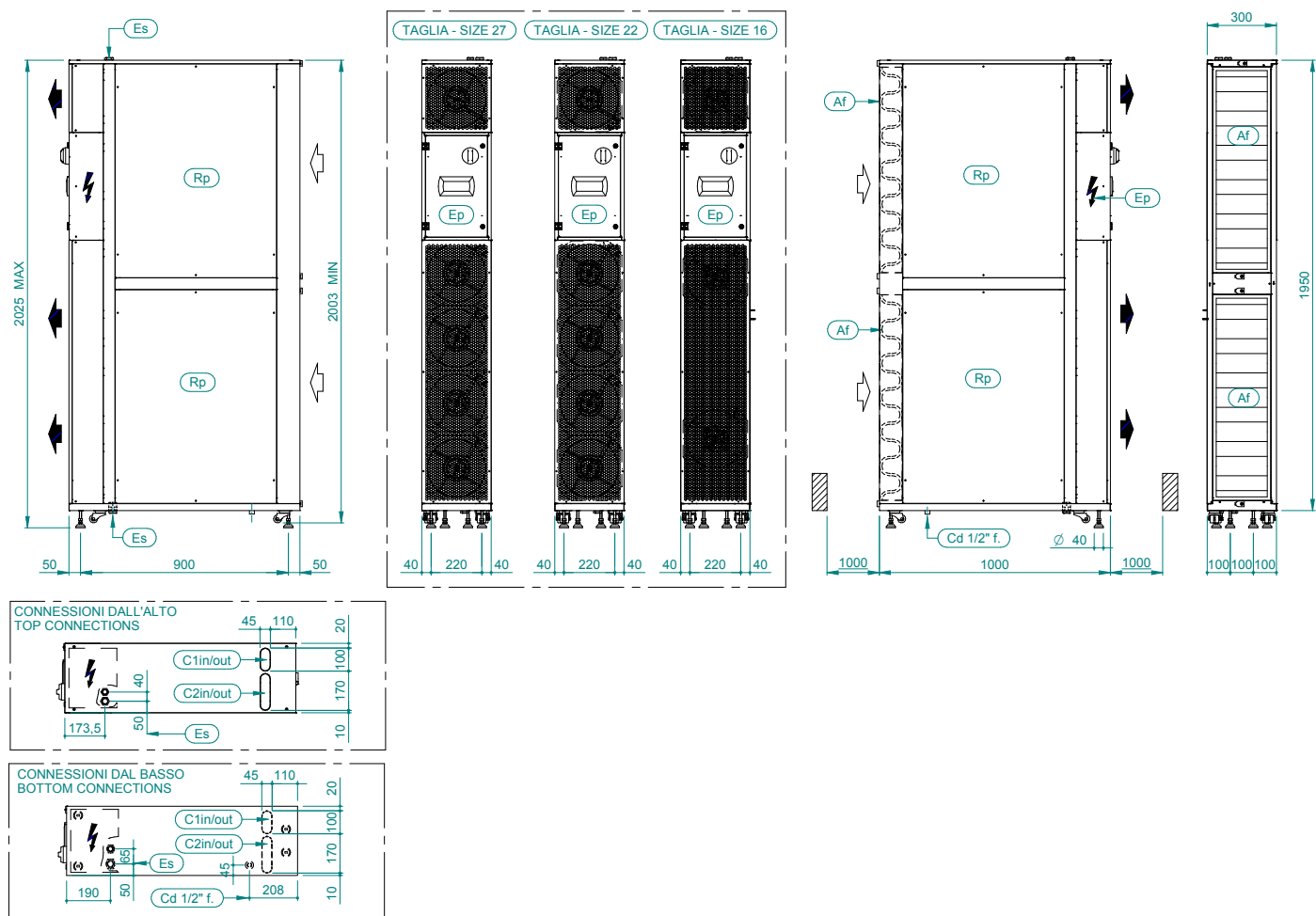
Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.



DIMENSIONAL DRAWINGS – COOLBLADE CW DW A

A4G859 - A

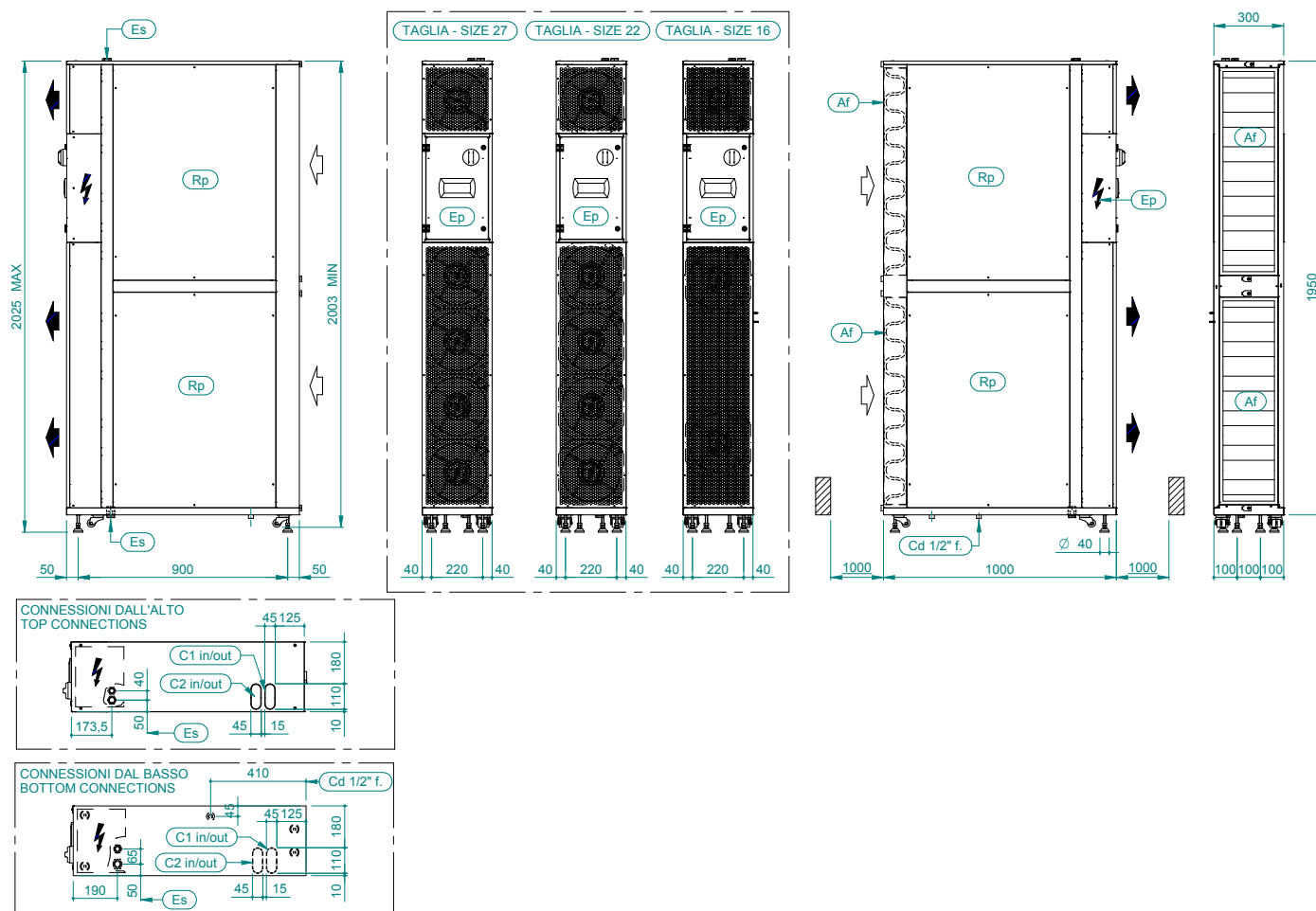
Axial fans - depth 1000 (with and without valve)



DIMENSIONAL DRAWINGS – COOLBLADE DW A

A4G857 - A

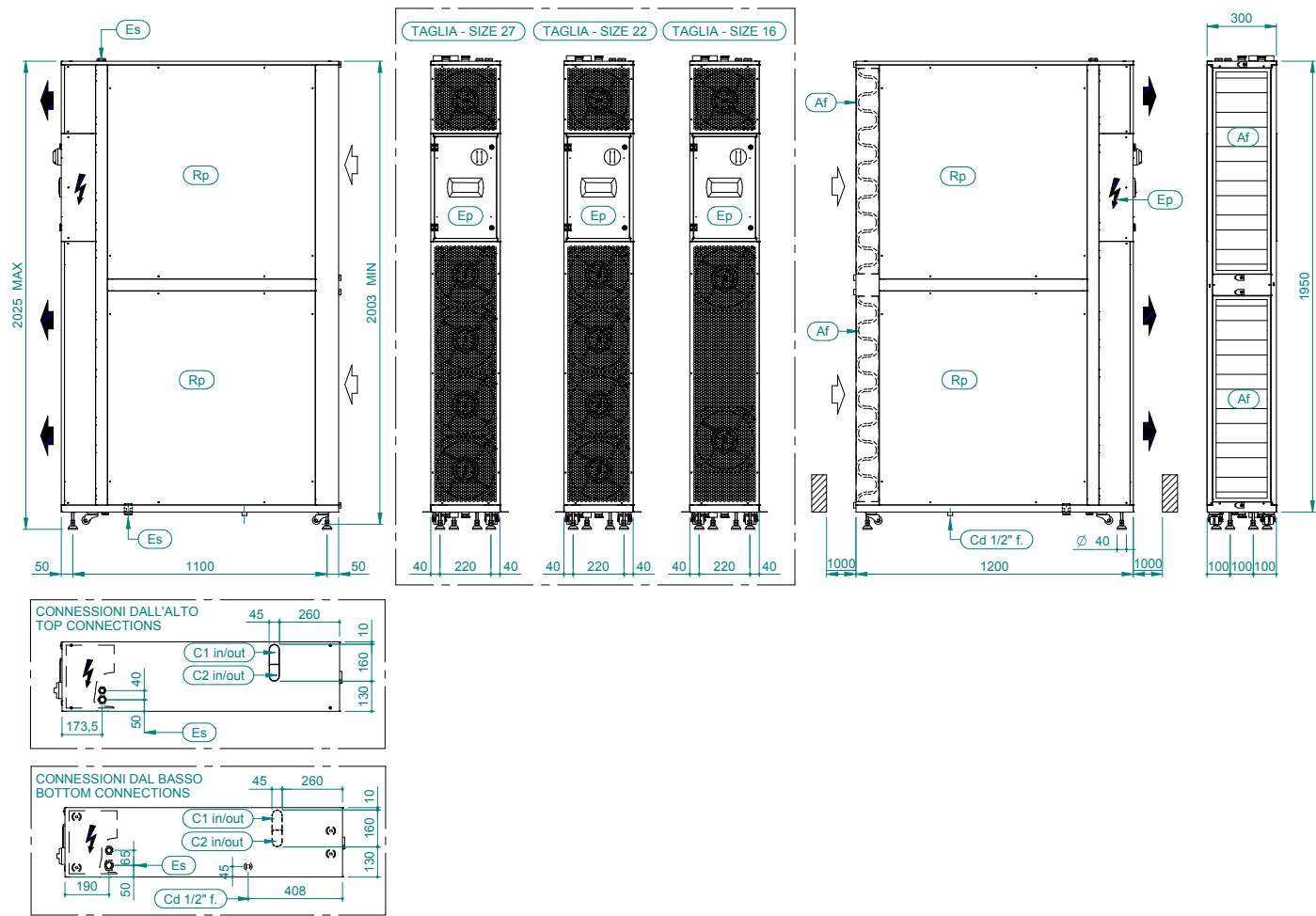
Axial fans - depth 1000 (with valve)



DIMENSIONAL DRAWINGS – COOLBLADE CW-DW A

A4G854 - A

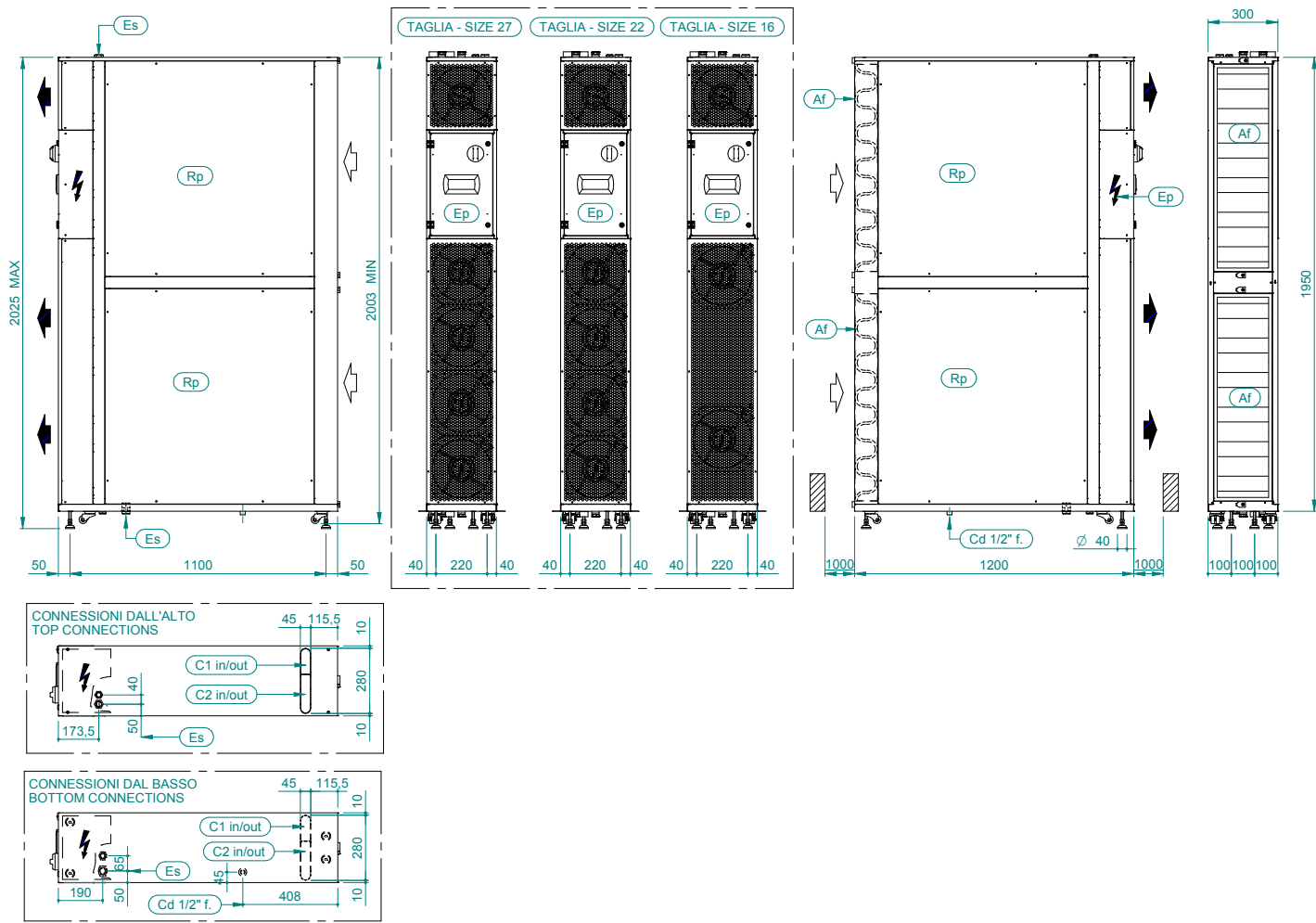
Axial fans - depth 1200 (without valve)



DIMENSIONAL DRAWINGS – COOLBLADE CW-DW A

A4G736 - B

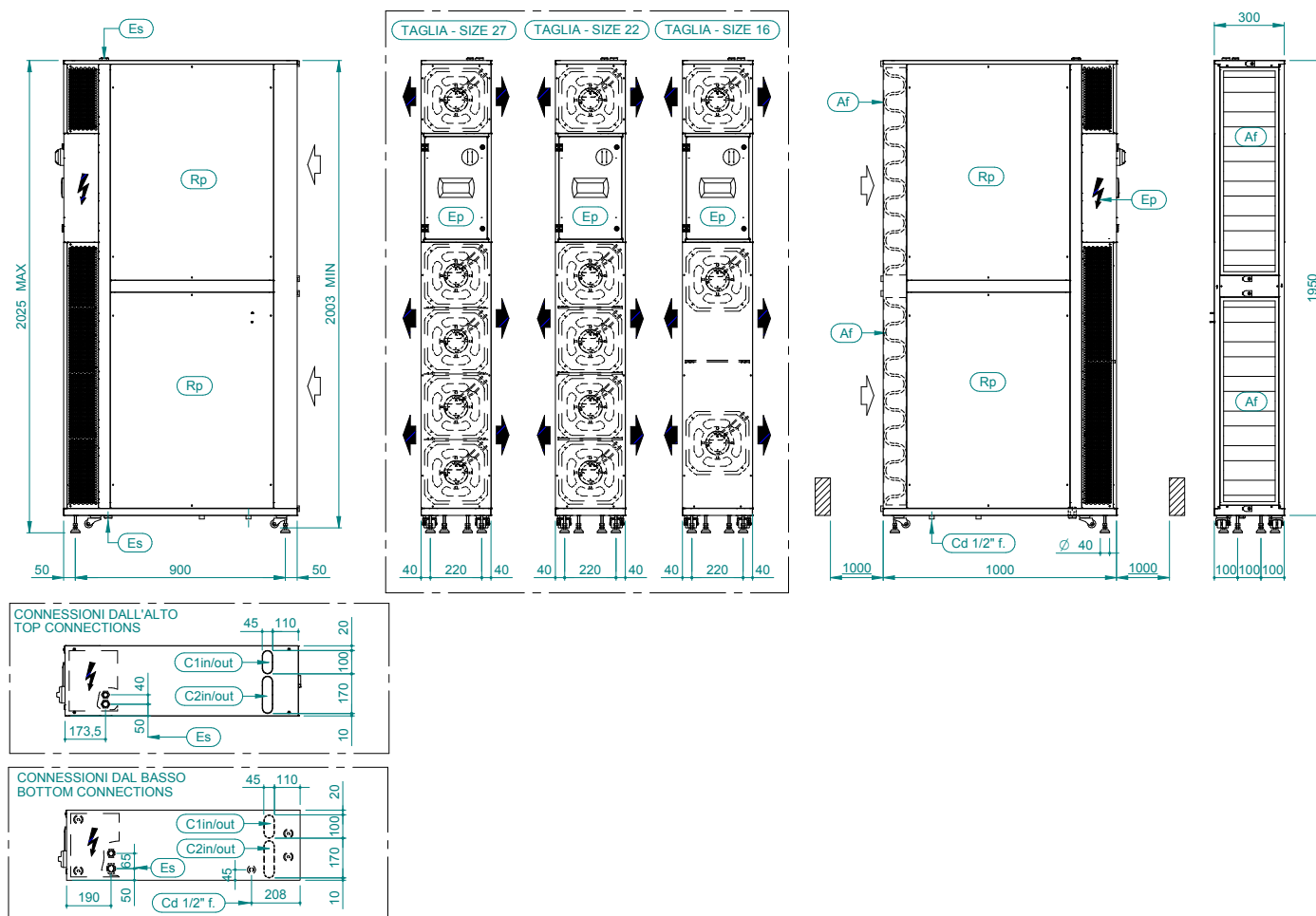
Axial fans - depth 1200 (with valve)



DIMENSIONAL DRAWINGS – COOLBLADE CW-DW R

A4G860 - A

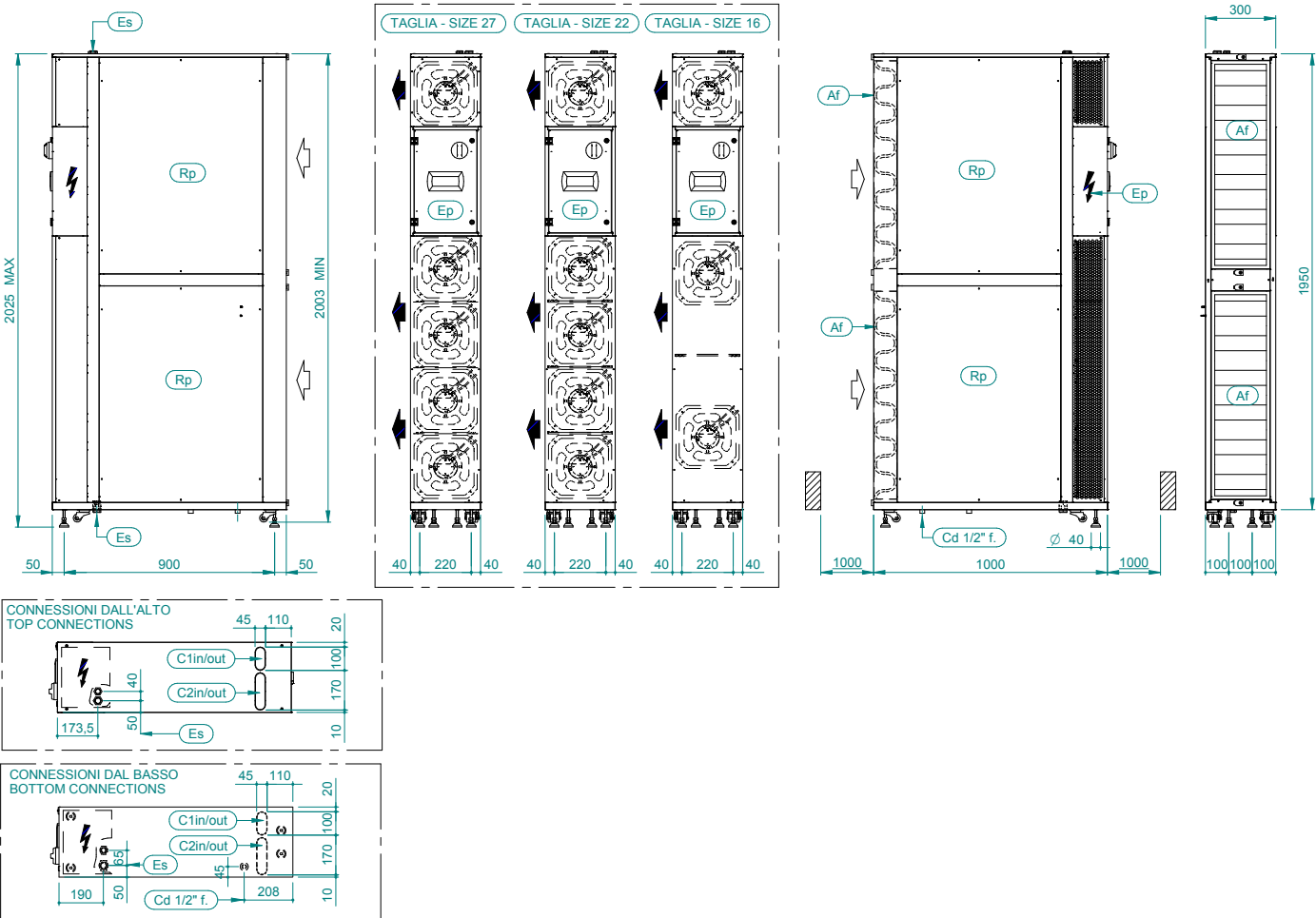
Radial fans – depth 1000 (with and without valve)



DIMENSIONAL DRAWINGS – COOLBLADE CW-DW RR
Radial fans – depth 1000 (with and without valve)

A4G860 - A

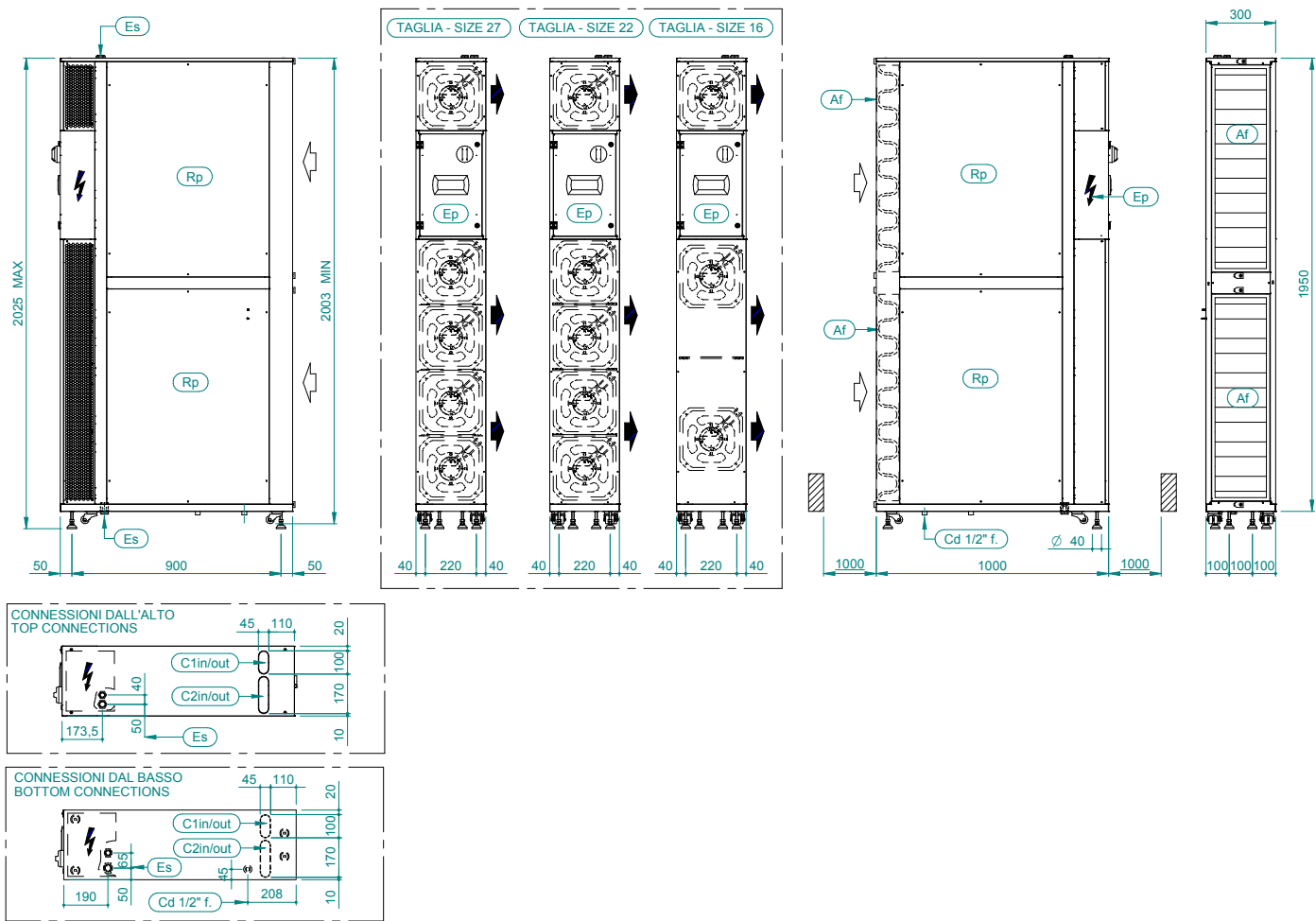
Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.



DIMENSIONAL DRAWINGS – COOLBLADE CW-DW RL
Radial fans – depth 1000 (with and without valve)

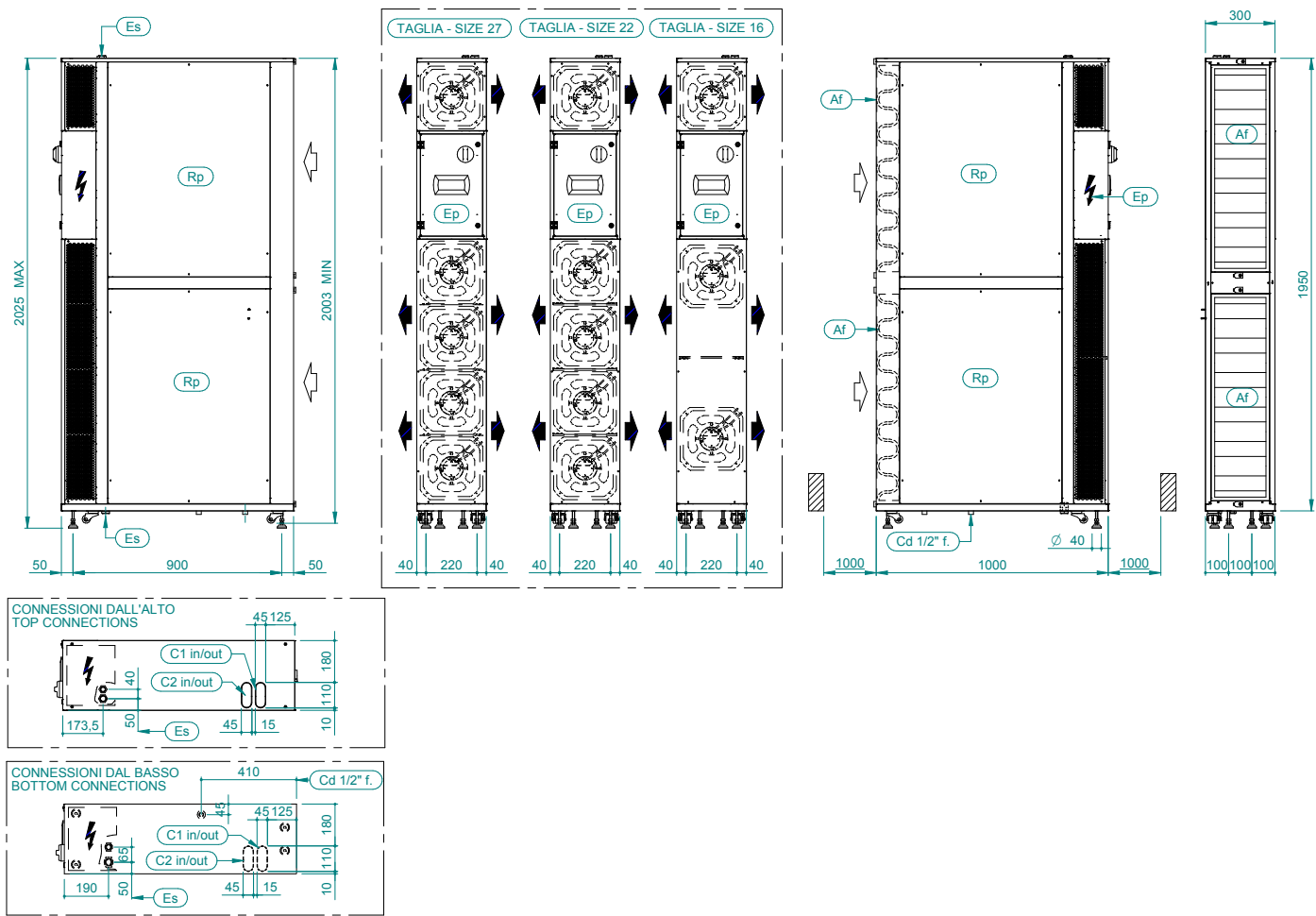
A4G860 - A

Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.



DIMENSIONAL DRAWINGS – COOLBLADE DW R
Radial fans – depth 1000 (With valve)

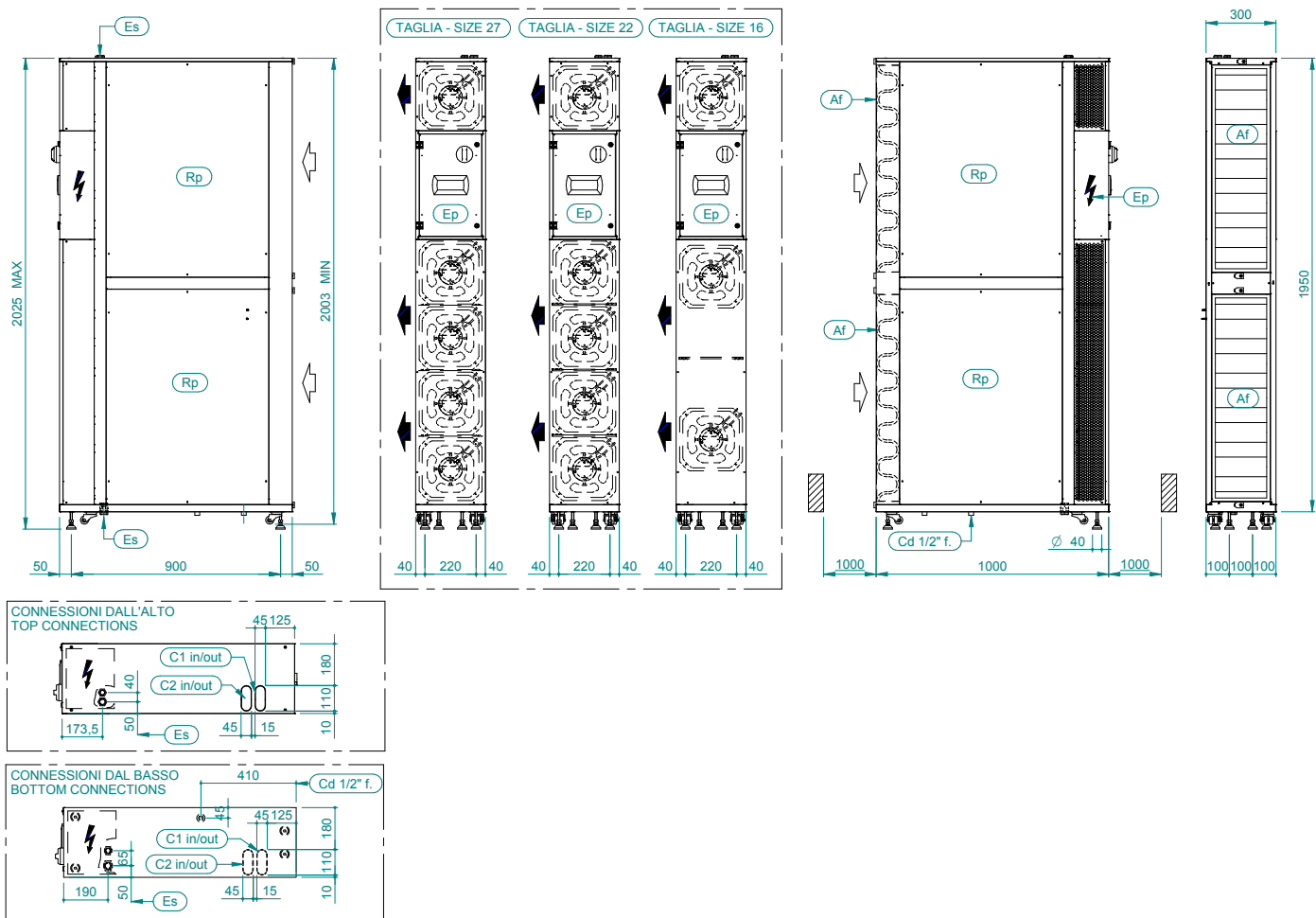
A4G858 - A



DIMENSIONAL DRAWINGS – COOLBLADE DW RR
Radial fans – depth 1000 (With valve)

A4G858 - A

Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.

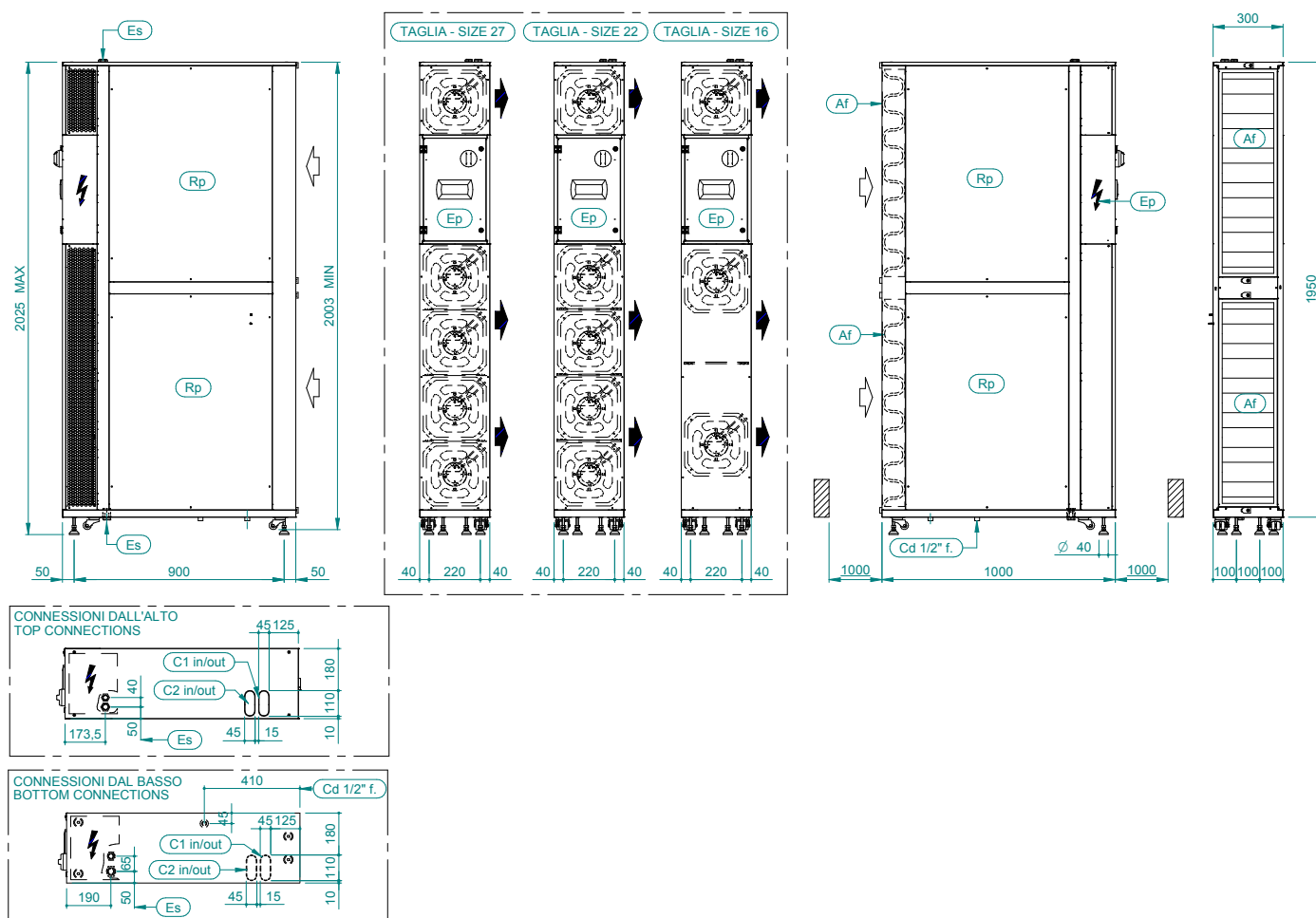


DIMENSIONAL DRAWINGS – COOLBLADE DW RL

A4G858 - A

Radial fans – depth 1000 (With valve)

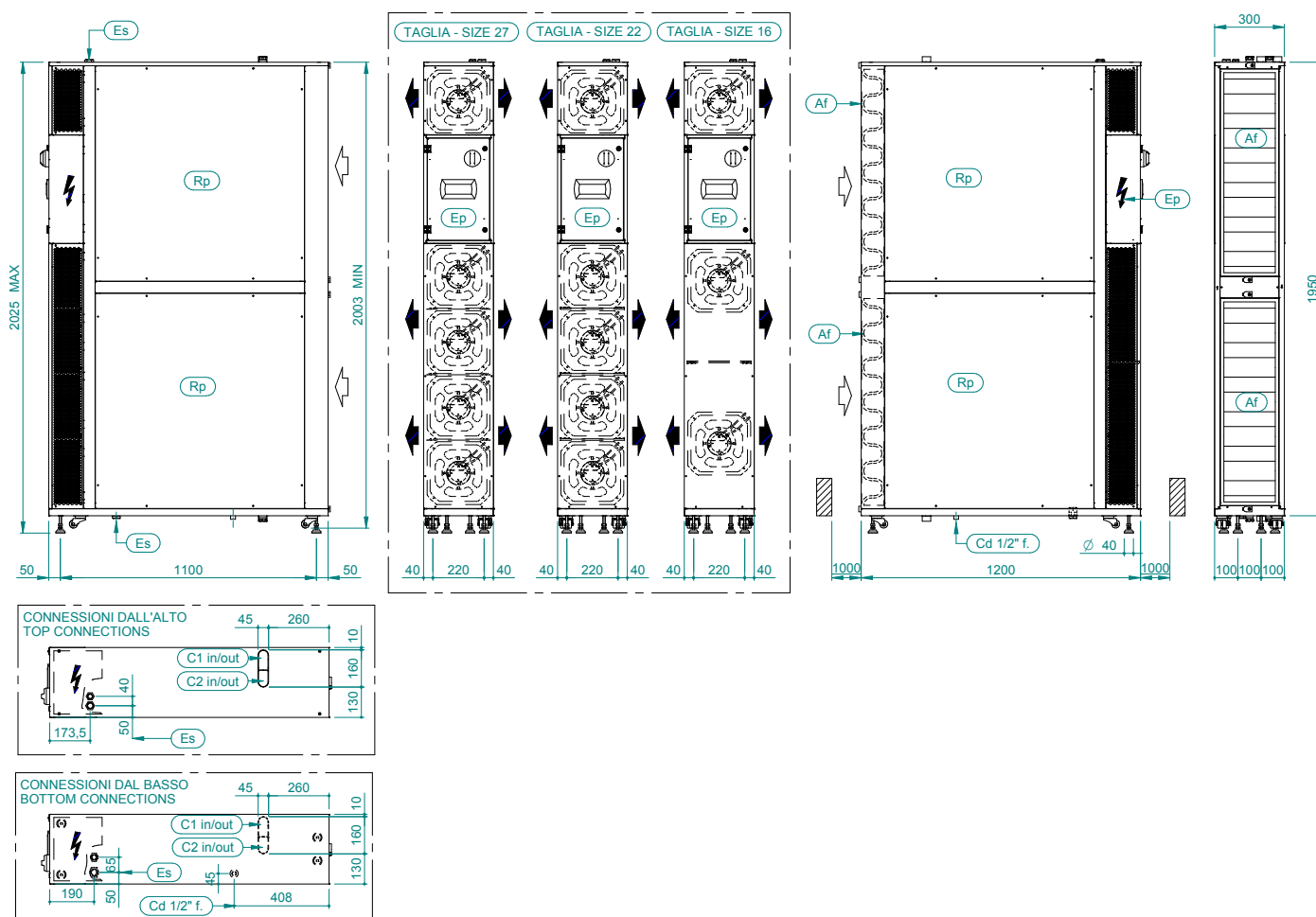
Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.



DIMENSIONAL DRAWINGS – COOLBLADE CW-DW R

A4G855 - A

Radial fans – depth 1200 (Without valve)

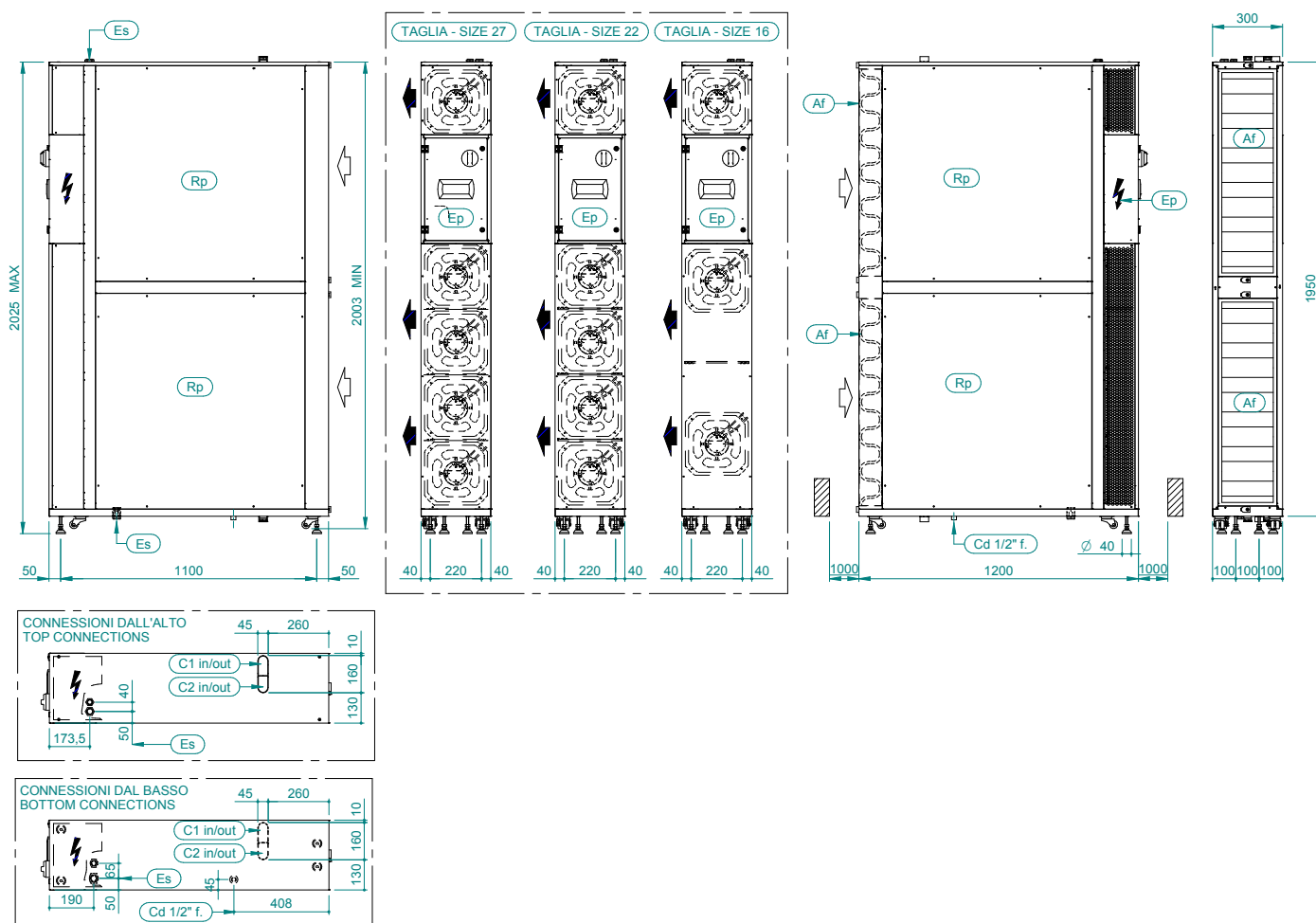


DIMENSIONAL DRAWINGS – COOLBLADE CW-DW RR

A4G855 - A

Radial fans – depth 1200 (Without valve)

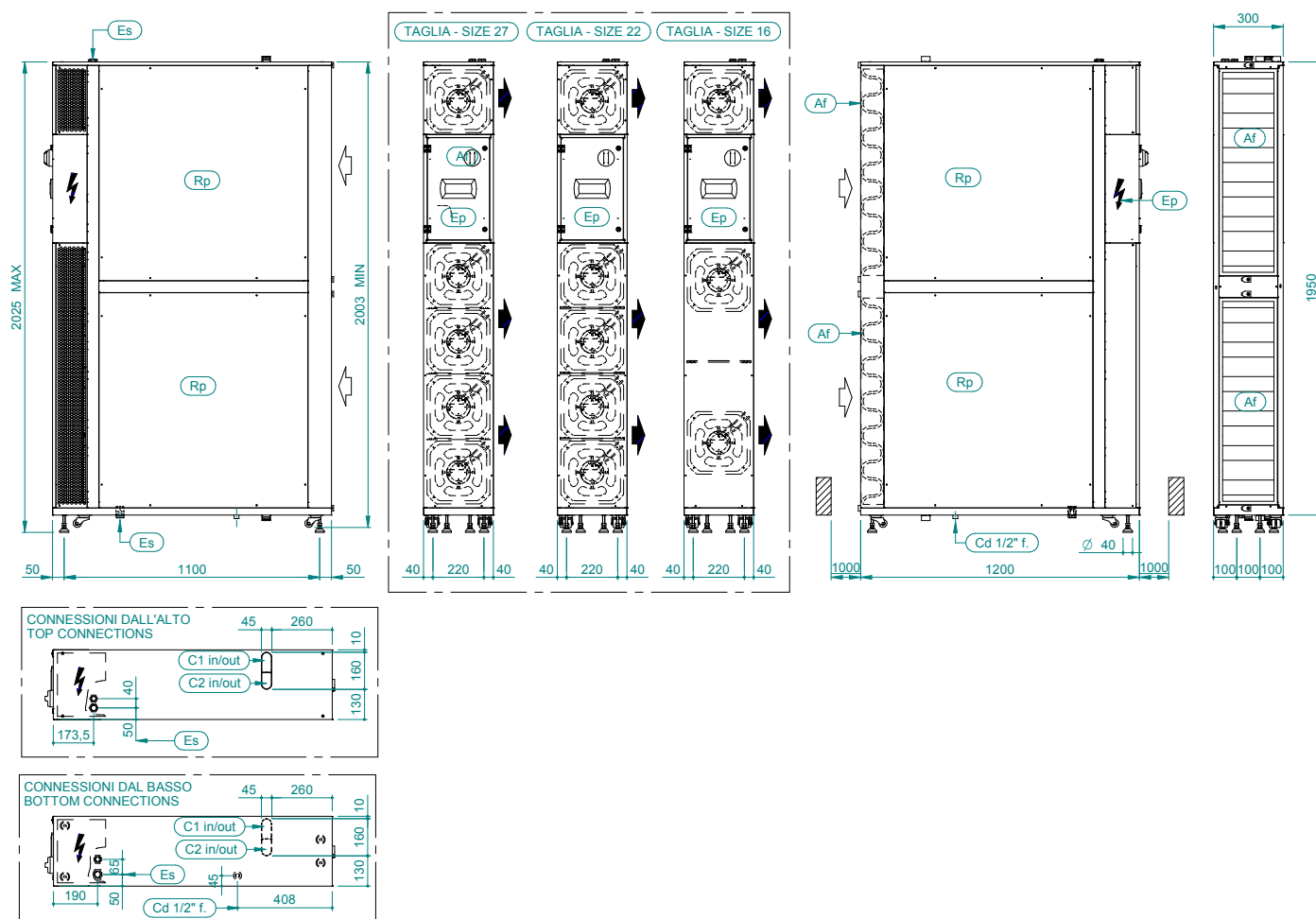
Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.



A4G855 - A

Radial fans – depth 1200 (Without valve)

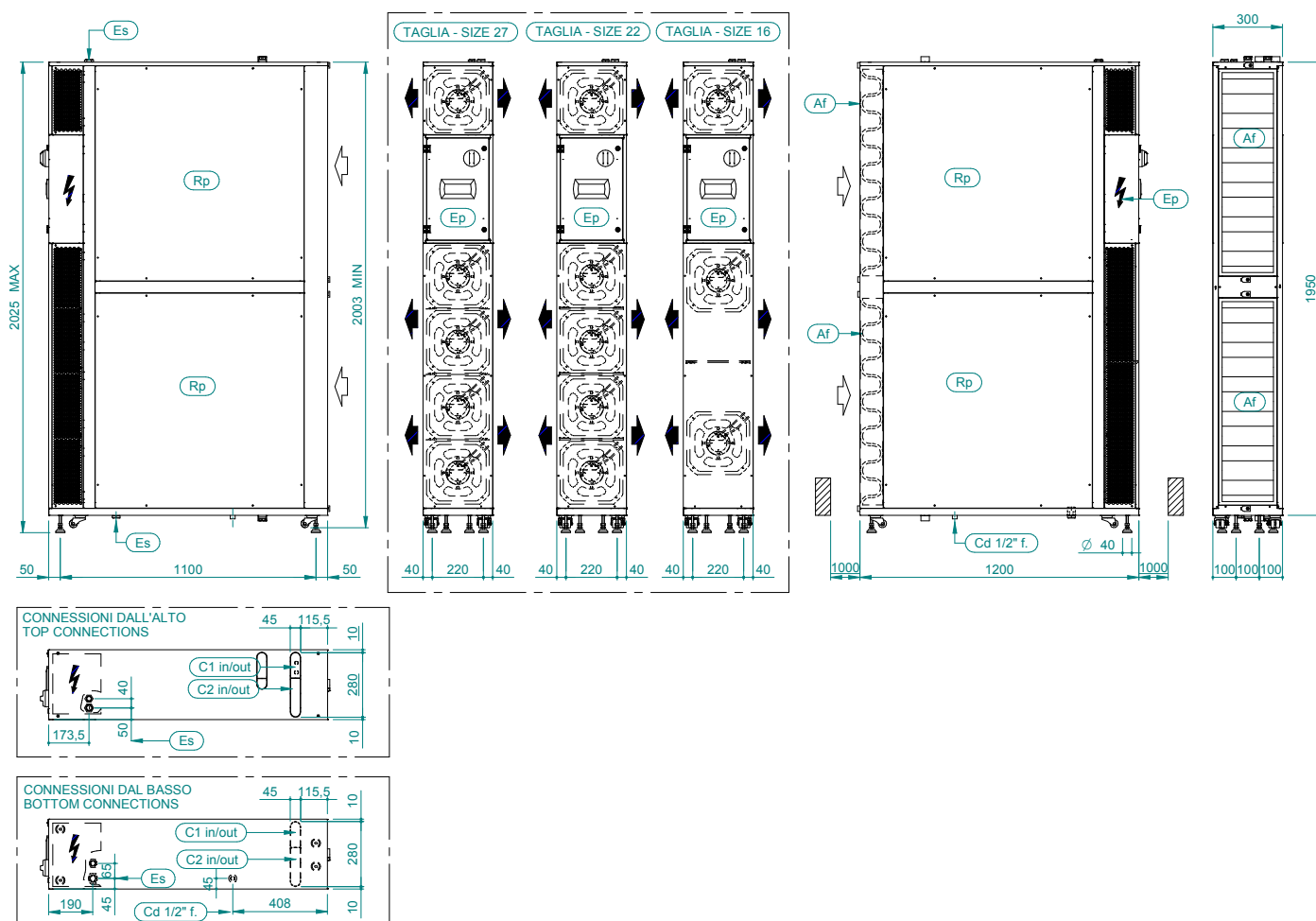
Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.



DIMENSIONAL DRAWINGS – COOLBLADE CW-DW R

A4G853 - A

Radial fans – depth 1200 (With valve)

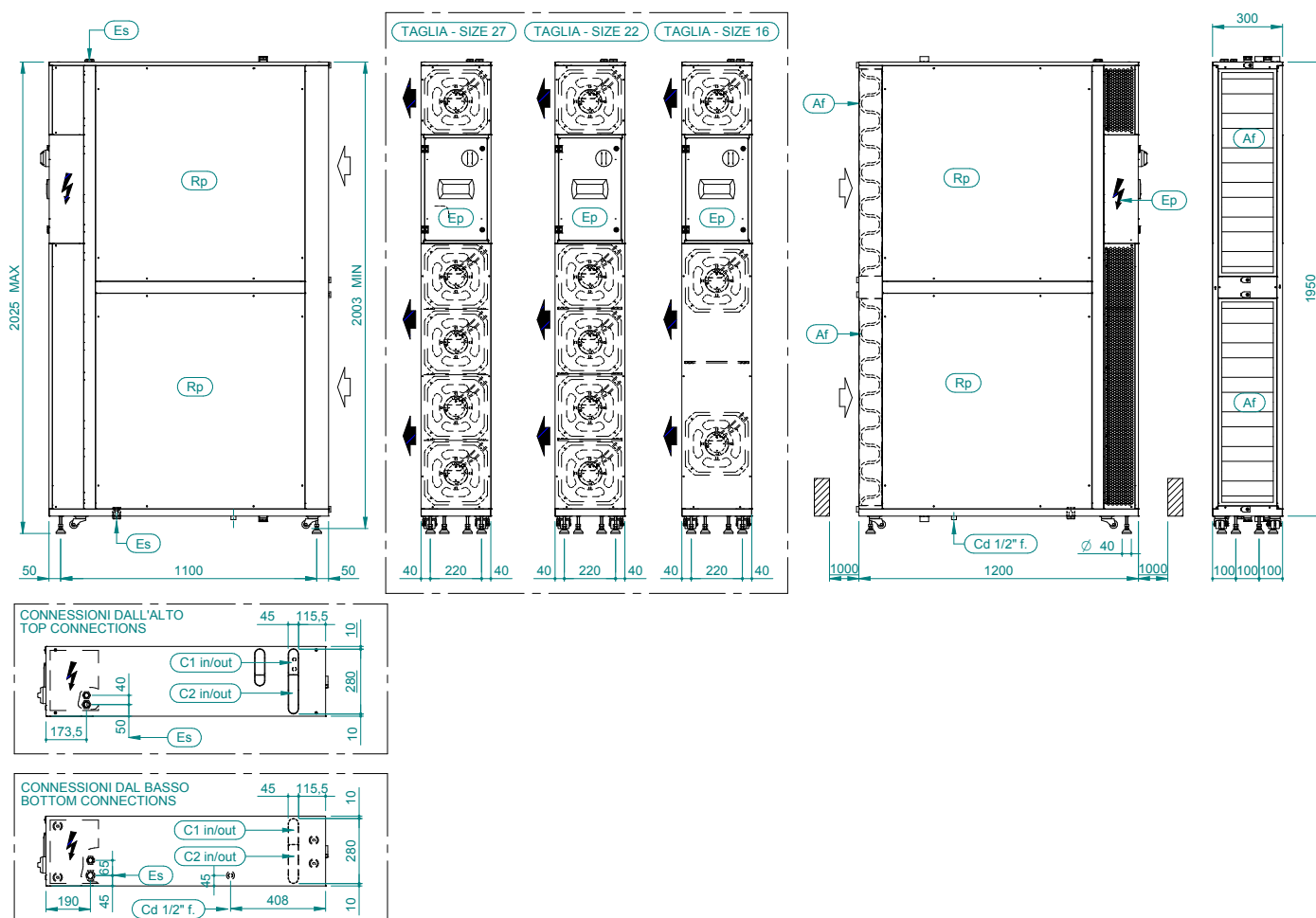


DIMENSIONAL DRAWINGS – COOLBLADE CW-DW RR

A4G853 - A

Radial fans – depth 1200 (With valve)

Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.

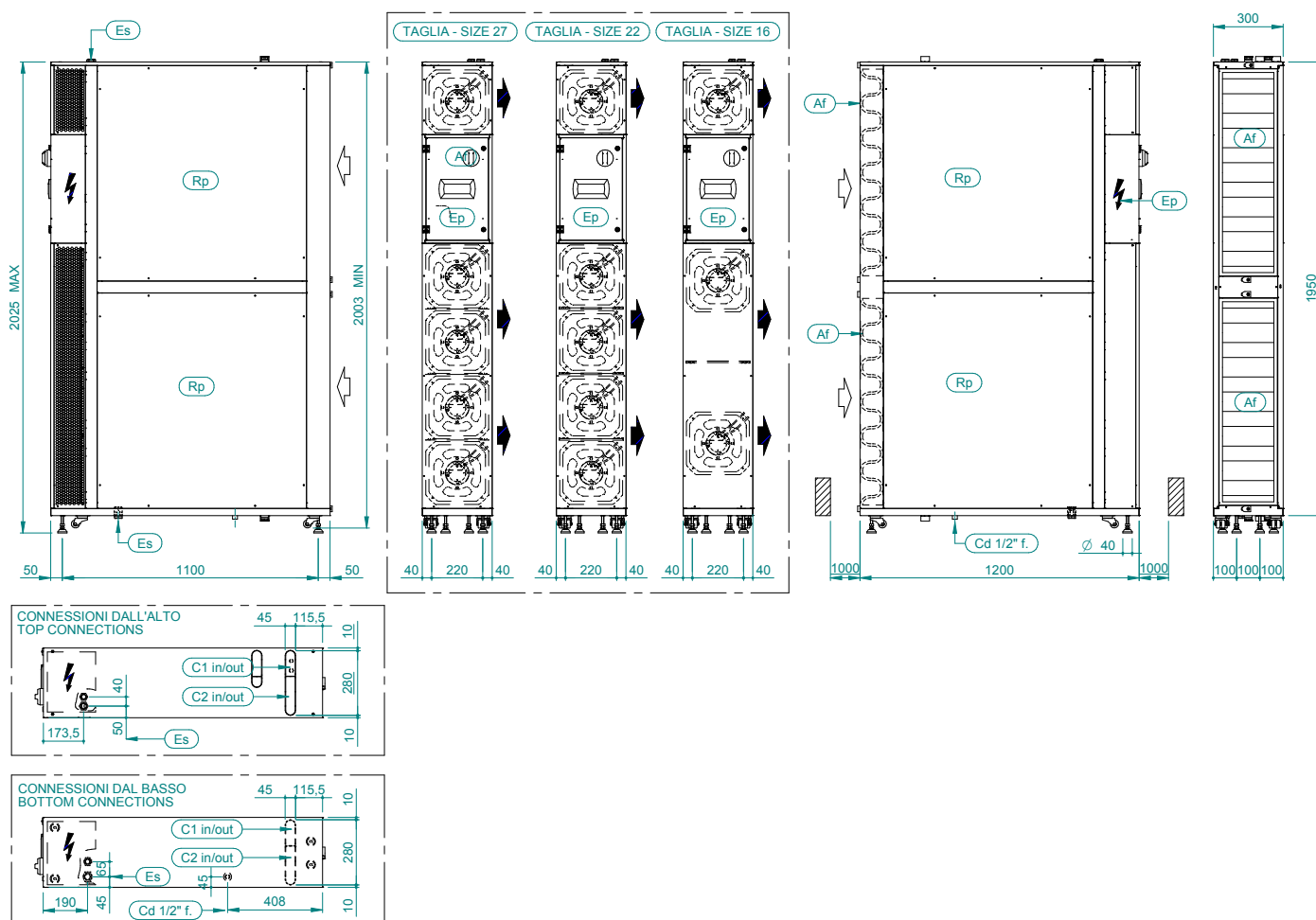


DIMENSIONAL DRAWINGS – COOLBLADE CW-DW RL

A4G853 - A

Radial fans – depth 1200 (With valve)

Warning! The air exhaust side is the one as seen looking at the unit from the top, orienting the unit according to the path of the air flow inside it.



INSTALLATION TIPS

POSITIONING

- Coolblade units are perfectly balanced, but they are tall and slender and have their centre of gravity about halfway up, so care must be taken when handling and positioning them.
- Strictly comply with the clearance spaces indicated in the catalogue.
- Coolblade units are designed and made for interior use only. The hydraulic circuits are not provided with freeze protection.

ELECTRICAL CONNECTIONS

- Always consult the attached wiring diagram, which provides all the instructions necessary for making the electrical connections.
- Electrical connections to be made for Coolblade units: it is possible to carry one or two single-phase power lines and connect both to the disconnect switch; in this way, it will be possible to choose which power supply to use through the disconnect switch/selector switch on the unit.
- If the power supply comes from the external unit, connect it to just one of the incoming lines available on the Coolblade unit.
- Power up the COOLBLADE units by positioning the six-pole selector switch on "1" or "2" according to the power supply line present or the chosen power supply line.
- Before accessing the internal parts of the Coolblade unit, power it down by turning the six-pole selector switch, which also acts as disconnect switch, to position "0".
- The power supply line must be protected in accordance with current regulations.

HYDRAULIC AND REFRIGERANT CONNECTIONS

- If the hydraulic connections are carried out from the bottom, thoroughly vent the hydraulic system, with pumps switched off, by operating the air valves of the Coolblade units. This procedure is particularly important because even small air bubbles can cause reduced performance of the finned pack heat exchanger of the Coolblade units. If the hydraulic connections are carried out from the top, the air vent must be positioned by the customer on the highest point of the system.
- Make the hydraulic circuit with inclusion of the typical components used in closed hydraulic circuits (for example, expansion vessel, flow switch, storage tank, air valves, shut-off valves, anti-vibration couplings, etc.).
- Make the refrigerant connections strictly following the instructions provided with the installation, operation and maintenance manual, in particular as regards the brazing, cleaning, vacuum and charging operations.

START-UP AND MAINTENANCE

- Strictly follow the instructions given in the operation and maintenance manual. These operations must in any case be carried out by qualified persons.

