

DUPLEX

500 to 9000 MultiEco

All-purpose ventilation units

with counterflow

heat exchangers

DUPLEX 500–9000 MultiEco is a new generation of all-purpose ventilation units with counterflow heat recovery exchangers. The indoor version of compact DUPLEX 500–9000 MultiEco units are used for comfort ventilation, hot-air heating and cooling in small facilities, shop floors, stores, schools, restaurants, shops, sports and industrial halls. They are suitable wherever efficient ventilation and possibly hot-air circulation ventilation and cooling must be provided at minimum running cost, i.e. the highest efficiency of heat recovery, low power input of fans and as little noise as possible.

DUPLEX MultiEco units are produced in compact (500 to 6500 MultiEco) and semi-compact (7500 to 9000 MultiEco) version and contain two independently controlled EC fans with backward curved blades, a heat recovery exchanger with large heat-transfer surface and high efficiency, slide-out supply and exhaust air class G4, M5 or F7 filters, drain pans and possibly also a circulation damper with a servo drive or integrated air heaters and coolers.

Unit casing is divided into two versions:

DUPLEX 500–6500 MultiEco are frameless construction, casing is made of painted metal sheet (colour RAL 9006) with 30 mm PIR insulation with heat transfer coefficient ($\lambda = 0,024 \text{ W/mK}$).

DUPLEX 7500–9000 MultiEco are frame construction, casing is made of painted metal sheet (colour RAL 9006) with 45 mm mineral wool insulation with heat transfer coefficient ($\lambda = 0,037 \text{ W/mK}$).

DUPLEX MultiEco ventilation units meet the requirements of the most stringent European standards:

- Casing properties according to EN 1886
- EC motors according to ErP 2015
- SFP < 0,45 W/(m³/h) according to PassivHaus*
- Hygienic requests according to VDI6022
- Commission regulation (EU) requirements No. 1253/2014 (Ecodesign)*



Advantages of DUPLEX MultiEco units:

- New design of ventilation units with excellent parameters
- Great thermal insulation of the casing (class T2)
- Reduced thermal bridging (class TB1/TB2**)
- Compact dimensions
- Very flat unit suitable for ceiling-suspended installation
- Ease of installation
- Variable configuration of discharge ports
- Unified dimensions of ports
- Optional versions with a bypass and circulation damper
- Horizontal floor-standing up to 9 000 m³/h, ceiling-suspended types up to 6 500 m³/h and floor-standing flat types up to 5 500 m³/h
- High efficiency fans – SFP < 0,45 W/(m³/h)*
- High heat recovery efficiency of the counterflow heat exchanger – up to 93 %
- Integrated control system including temperature sensors
- Integrated web server (aMotion regulation)
- Comprehensive design software

* in the defined working area
 ** TB1 for 500–6500 MultiEco
 TB2 for 7500–9000 MultiEco

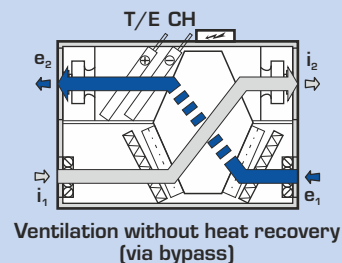
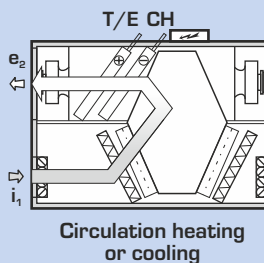
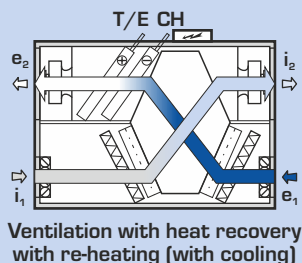


500 to 9000 MultiEco

AVAILABLE MODIFICATIONS (CAN BE COMBINED)

- | | | | |
|-----|----------------------------------|-------|-----------------------------------|
| - B | with in-built bypass damper | - T | with in-built hot-water heater |
| - C | with in-built circulation damper | - CHF | with in-built direct chiller |
| - E | with in-built electrical heater | - CHW | with in-built water-based chiller |

OPERATING MODES OF DUPLEX MULTIECO UNITS



➔ e₁ ... Fresh outdoor air suction
 ⇨ e₂ ... Fresh filtered air outlet

⇨ i₁ ... Exhaust air suction
 ⇨ i₂ ... Exhaust air outlet

T/E... Central heating / electrical heater connection
 CH ... Cooling connection

SELECTION SOFTWARE



For the detailed design of DUPLEX series units, accessories and control systems we recommend using our dedicated design software. You can find it on our website at www.atrea.eu or request a CD at our office.



UNIT VENTILATORS & HEAT RECOVERY

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PERFORMANCE GRAPHS

DUPLEX MULTI ECO

| DUPLEX MultiEco | | 500 | 800 | 1100 | 1500 | 2500 | 3500 | 4500 | 5500 | 6500 | 7500 | 9000 | |
|--|-------------------|--|--------|---------|---------|---------|---------|---------|---------|---------|-----------|-----------|--|
| Supply air - max. ¹⁾ | m ³ /h | 660 | 1 200 | 1 300 | 2 200 | 3 600 | 5 500 | 5 800 | 7 500 | 7 800 | 8 600 | 11 500 | |
| Extraction air - max. ¹⁾ | m ³ /h | 670 | 1 150 | 1 250 | 1 800 | 3 550 | 5 300 | 5 600 | 7 100 | 7 700 | 8 300 | 11 300 | |
| Max. airflow according to ErP 2018 ⁵⁾ | m ³ /h | 550 | 850 | 950 | 1 600 | 2 350 | 3 550 | 4 250 | 5 000 | 6 000 | 7 200 | 8 100 | |
| Heat recovery efficiency ²⁾ | % | up to 93 % | | | | | | | | | | | |
| Number of versions and positions | - | see table „Mounting positions“, page 4 | | | | | | | | | | | |
| Weight ³⁾ | kg | 80-110 | 95-130 | 120-170 | 200-280 | 290-370 | 350-430 | 370-450 | 480-560 | 580-670 | 1120-1250 | 1210-1350 | |
| Max. power input | kW | 0,3 | 0,7 | 0,8 | 1,2 | 2,6 | 4,5 | 5,2 | 6,6 | 6,6 | 6,6 | 8,9 | |
| Voltage | V | 230 | | | | | | 400 | | | | | |
| Frequency | Hz | 50 | | | | | | | | | | | |
| Revolutions - max. | min ⁻¹ | 4 300 | 3 350 | 3 350 | 2 920 | 3 000 | 2 980 | 2 980 | 2 700 | 2 700 | 2 700 | 2 570 | |
| Heating output E low - max. ⁵⁾ | kW | 1,8 | 1,8 | 1,8 | 2,1 | 4,2 | 7,2 | 7,2 | 9,9 | 9,9 | - | - | |
| Heating output E high - max. ⁵⁾ | kW | - | - | - | 4,2 | 8,4 | 10,8 | 12,6 | 14,7 | 14,7 | - | - | |
| Heating output T - max. ⁴⁾ | kW | 5 | 14 | 16 | 22 | 30 | 42 | 51 | 71 | 80 | 85 | 90 | |
| Cooling output CHW - max. ⁴⁾ | kW | 4 | 8 | 10 | 16 | 22 | 30 | 42 | 56 | 62 | 67 | 72 | |
| Cooling output CHF - max. ⁴⁾ | kW | 3 | 6 | 8 | 10 | 13 | 25 | 37 | 41 | 50 | 55 | 60 | |

¹⁾ Maximum flow rate through units at zero external pressure

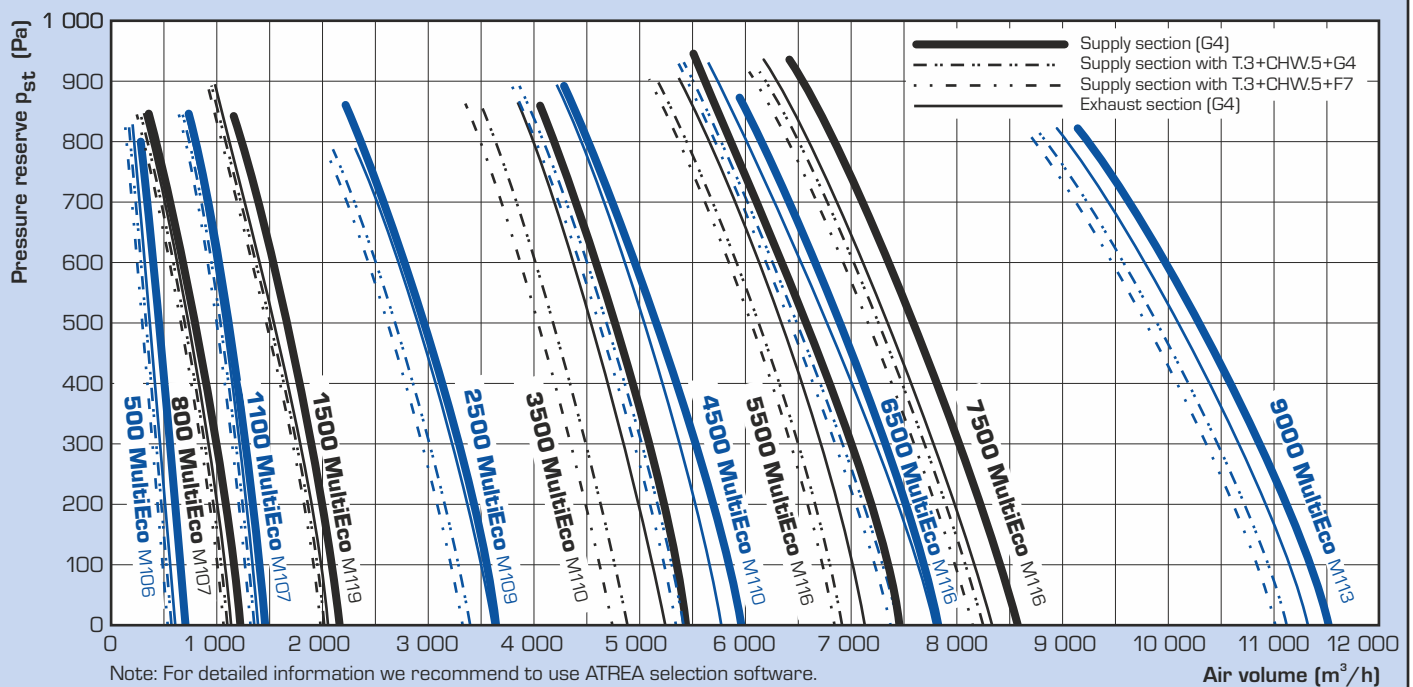
²⁾ According to air volume

³⁾ Depending on equipment

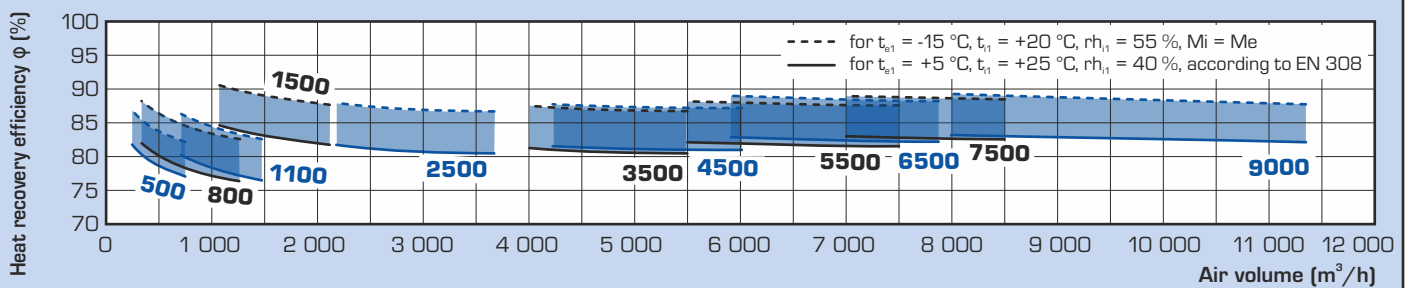
⁴⁾ Depending on register type, liquid and flow rates

⁵⁾ For detailed information please use our DUPLEX selection software.

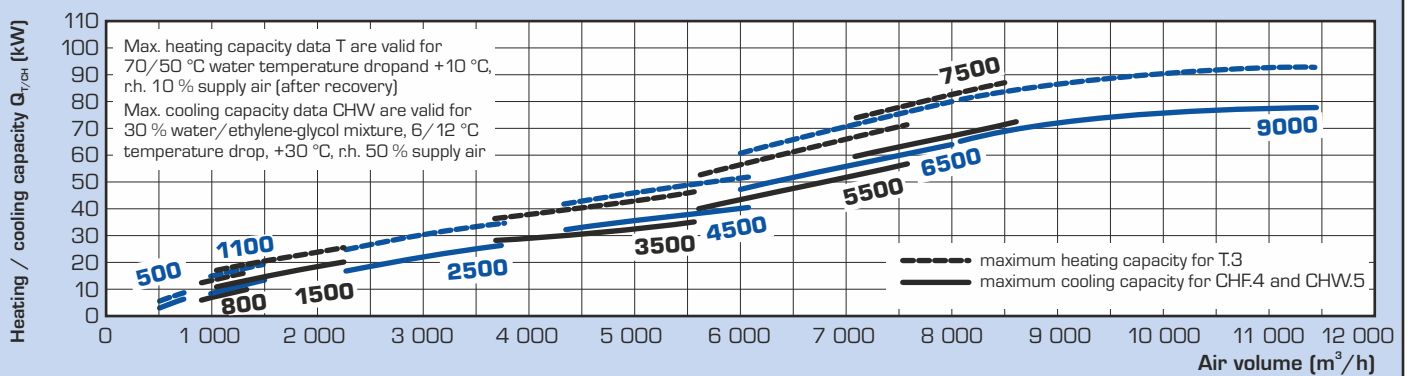
PERFORMANCE SUMMARY



HEAT RECOVERY EFFICIENCY

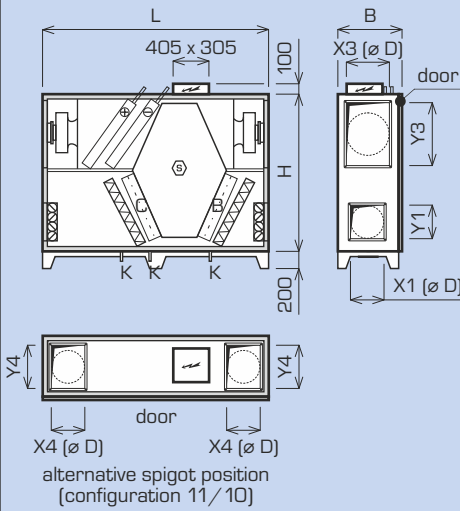


HEATING AND COOLING PERFORMANCES

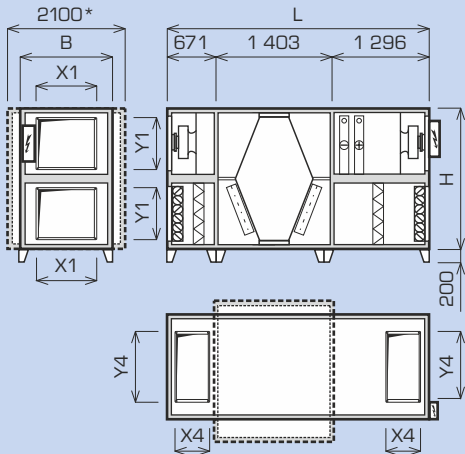


BASIC DIMENSIONS

FLOOR-STANDING (front view) MultiEco 500 to 6500



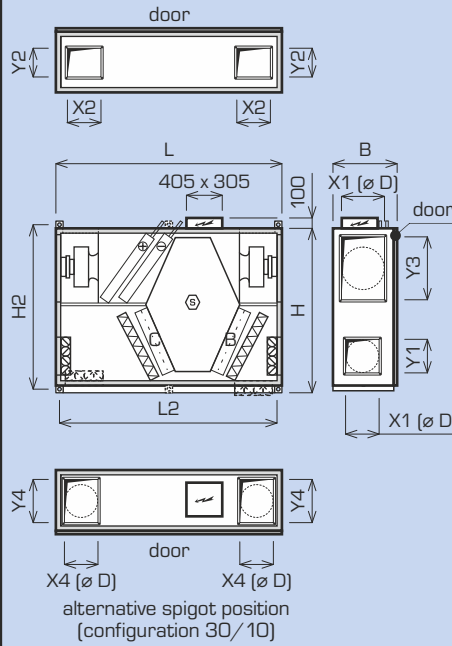
MultiEco 7500 to 9000



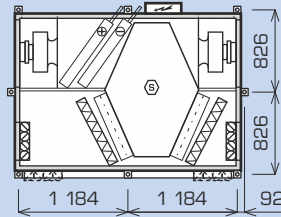
* dimension only for DUPLEX 9000 MultiEco

CEILING-SUSPENDED (top view) MultiEco 500 to 6500

alternative spigot position
(configuration 30/5)

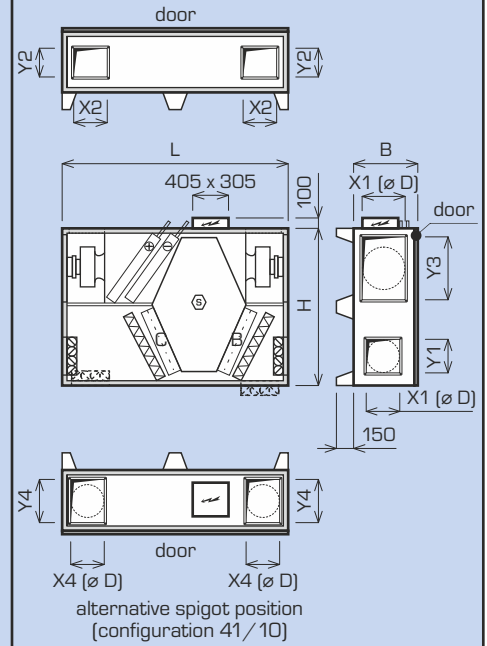


MultiEco 6500



FLOOR-STANDING FLAT (top view) MultiEco 1500 to 5500

alternative spigot position
(configuration 41/5)

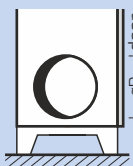


| DUPLEX MultiEco | | 500 | 800 | 1100 | 1500 | 2500 | 3500 | 4500 | 5500 | 6500 | 7500 | 9000 |
|--|----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|------------|------------|
| dimension H | mm | 765 | 970 | 1 100 | 1 600 | 1 600 | 1 600 | 1 600 | 1 600 | 1 600 | 1 795 | 1 795 |
| dimension H2 | mm | 715 | 920 | 1 050 | 1 650 | 1 650 | 1 650 | 1 650 | 1 650 | - | - | - |
| dimension B | mm | 384 | 384 | 384 | 455 | 580 | 775 | 885 | 1 065 | 1 295/1 390* | 1 620 | 1 620 |
| length L | mm | 1 600 | 1 800 | 1 920 | 2 300 | 2 300 | 2 300 | 2 500 | 2 500 | 2 500 | 3 370 | 3 370 |
| length L2 | mm | 1 652 | 1 852 | 1 972 | 2 270 | 2 270 | 2 270 | 2 470 | 2 470 | see diagram | - | - |
| condensate drain | mm | ø 22 | | | ø 32 | | | | | | | |
| Connecting ports | | | | | | | | | | | | |
| dimension X1 × Y1 (standard e ₁ , i ₁), D | mm | ø 200 | ø 250 | ø 250 | ø 315 | 300 × 400 | 400 × 400 | 500 × 500 | 500 × 500 | 700 × 500 | 900 × 710 | 900 × 710 |
| dimension X2 × Y2 (atyp e ₁ , i ₁), D | mm | ø 200 | ø 250 | ø 250 | 400 × 200 | 300 × 400 | 400 × 400 | 500 × 500 | 500 × 500 | 500 × 700 | - | - |
| dimension X3 × Y3 (standard e ₂ , i ₂) | mm | 200 × 250 | 200 × 350 | 200 × 350 | ø 315 | 450 × 710 | 500 × 710 | 710 × 710 | 900 × 710 | 900 × 710 | - | - |
| dimension X4 × Y4 (atyp e ₂ , i ₂) | mm | - | - | - | - | 250 × 355 | 250 × 400 | 355 × 630 | 355 × 800 | 355 × 900 | 400 × 1200 | 400 × 1200 |

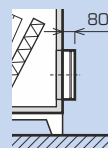
* For DUPLEX 6500 MultiEco in configuration 30/x. For detailed information please use our ATREA selection software.

TYPES AND DIMENSIONS OF CONNECTING PORTS

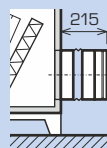
CIRCULAR



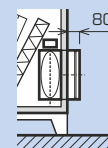
Basic port
(inlet, outlet)



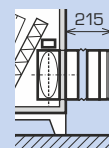
Port with flexible flange
(inlet, outlet)



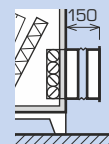
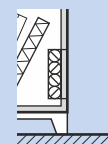
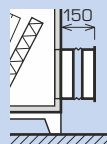
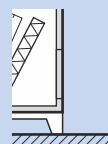
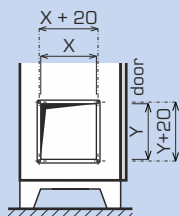
Port with damper
(inlet, outlet)



Port with damper and flexible flange
(inlet only)



RECTANGULAR



INSTALLATION AND VERSIONS

INSTALLATION VERSIONS AND CONNECTING PORTS

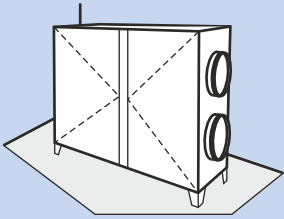
DUPLEX 500 to 9000 MultiEco units are available in a range of versions to facilitate their installation in the machine room. This significantly increases options to install DUPLEX MultiEco units in cramped spaces. For structural reasons and to ensure condensate drain it is not possible to have all units available in all mounting positions. Detailed drawings are shown in the summary table "Mounting positions".

DUPLEX MultiEco units are characterised by a wide range of accessories – the ports may be optionally fitted with flexible flanges and inlet ports may have shut-off dampers if required.

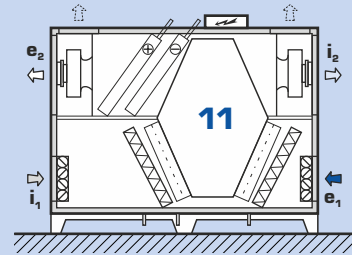
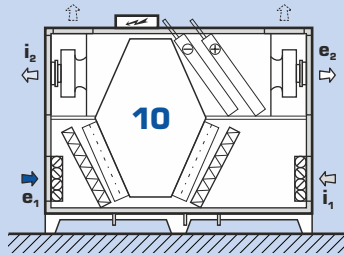
MOUNTING POSITIONS

FLOOR-STANDING HORIZONTAL POSITION

MultiEco 500 to 9000

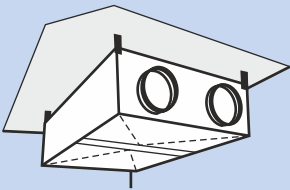


configuration 10/0 to 11/10 – door-side view (up to 8 configurations in total)

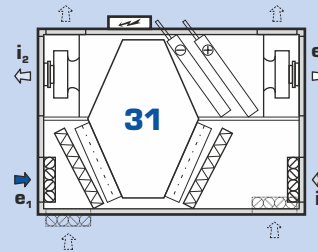
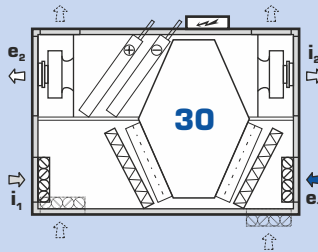


CEILING-SUSPENDED POSITION

MultiEco 500 to 6500

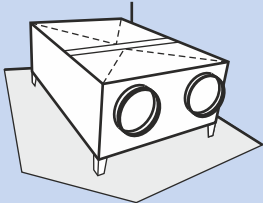


configuration 30/0 to 31/15 – top view (up to 32 configurations in total)

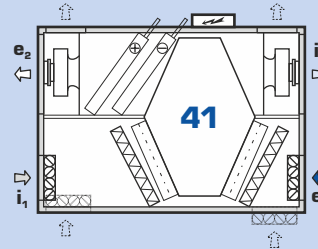
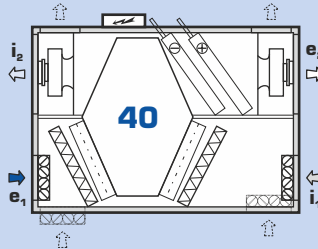


FLOOR-STANDING FLAT POSITION

MultiEco 1500 to 5500



configuration 40/0 to 41/15 – top view (up to 32 configurations in total)



500, 800 and 1100 MultiEco units are available in following configurations:

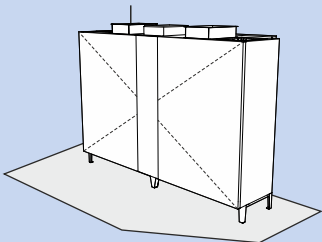
- horizontal: 10/0, 11/0
- ceiling-suspended: 30/0, 30/1, 30/4, 30/5, 31/0, 31/1, 31/4, 31/5

For more detailed technical information check out ATREA selection software.

OTHER CONFIGURATIONS OF DUPLEX MULTI

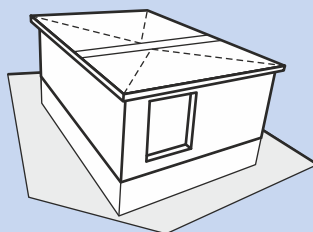
UPRIGHT POSITION

DUPLEX MultiEco-V 1500 to 6500



ROOFTOP UNITS - FLAT

DUPLEX MultiEco-N 1500 to 9000



For detailed information please see separate technical catalogues.

HANDLING SPACE

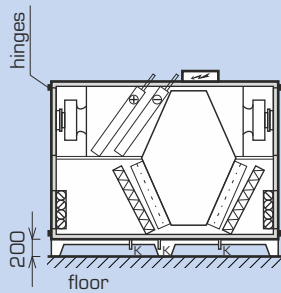
DUPLEX units must be installed with the prescribed handling space around the unit in mind.

Below the unit at least 150 mm must be left to install the DN 32 condensate drain line. This line must run through a U-bend at least 150 mm high into a sewer. This space is easily provided when the steel supporting feet supplied as standard are used. Handling space in front of the unit must be maintained for opening the front door; replacing filters and providing servicing and installation access to each unit part. Each drawing shows the minimum handling space.

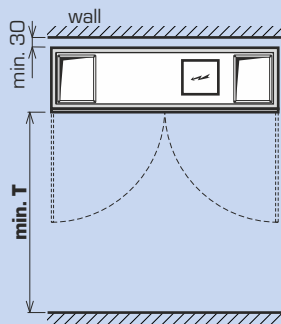
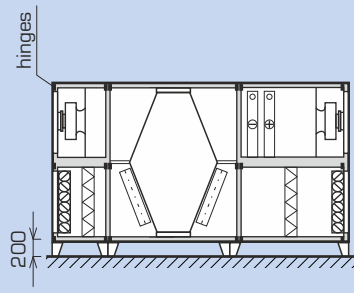
In addition, each unit must have the minimum handling space of 600 mm from the side of the control system electric switchboard according to CSN. Units with a heating or cooling control manifold must have free space from the side of the manifold, too.

Handling space in front of the door

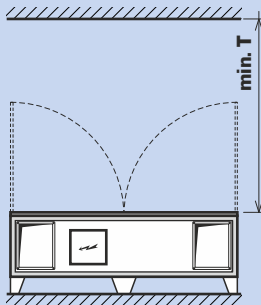
Floor-standing horizontal 500-6500 MultiEco



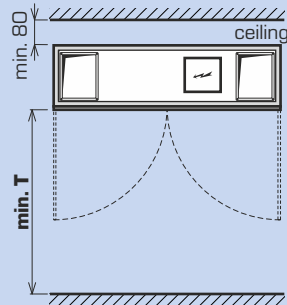
Floor-standing horizontal 7500-9000 MultiEco



Floor-standing flat 1500-5500 MultiEco

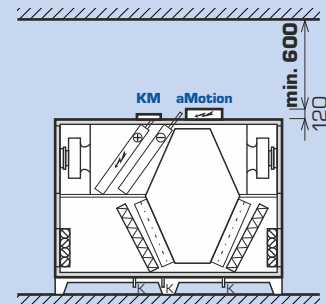


Ceiling-suspended 500-6500 MultiEco

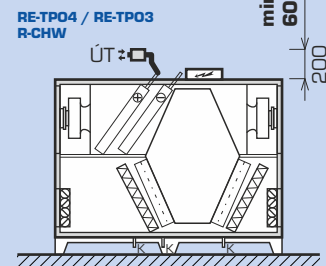


Handling space for accessories

Control modules



Control manifolds for coils



| Type | standard door T (mm) | hingeless door T (mm) |
|----------------------|----------------------|-----------------------|
| DUPLEX 500 MultiEco | 800 | 500 |
| DUPLEX 800 MultiEco | 900 | 500 |
| DUPLEX 1100 MultiEco | 1 000 | 500 |
| DUPLEX 1500 MultiEco | 1 200 | 500 |
| DUPLEX 2500 MultiEco | 1 200 | 600 |
| DUPLEX 3500 MultiEco | 1 200 | 680 |
| DUPLEX 4500 MultiEco | 1 150 | 900 |
| DUPLEX 5500 MultiEco | 1 150 | 1 100 |
| DUPLEX 6500 MultiEco | 1 320 | 1 300 |
| DUPLEX 7500 MultiEco | - | 1 600 |
| DUPLEX 9000 MultiEco | - | 1 600 |

ACOUSTIC POWER L_w AND ACOUSTIC PRESSURE $L_{D,3}$

| Type | Working point | Acoustic power L_w [dB(A)] | | | | | Acoustic pressure $L_{D,3}$ [dB(A)] at distance of 3 m |
|----------------------|----------------------------------|------------------------------|-------------|--------------|--------------|------|---|
| | | inlet e_1 | inlet i_1 | outlet e_2 | outlet i_2 | unit | |
| DUPLEX 500 MultiEco | 500 m ³ /h (200 Pa) | 53 | 66 | 80 | 82 | 59 | 38 |
| DUPLEX 800 MultiEco | 800 m ³ /h (200 Pa) | 64 | 65 | 81 | 79 | 58 | 38 |
| DUPLEX 1100 MultiEco | 1 000 m ³ /h (200 Pa) | 56 | 58 | 80 | 80 | 65 | 44 |
| DUPLEX 1500 MultiEco | 1 500 m ³ /h (200 Pa) | 61 | 61 | 86 | 86 | 64 | 43 |
| DUPLEX 2500 MultiEco | 2 500 m ³ /h (200 Pa) | 59 | 55 | 79 | 79 | 70 | 49 |
| DUPLEX 3500 MultiEco | 3 500 m ³ /h (200 Pa) | 64 | 62 | 90 | 90 | 70 | 50 |
| DUPLEX 4500 MultiEco | 4 500 m ³ /h (200 Pa) | 67 | 67 | 92 | 91 | 76 | 55 |
| DUPLEX 5500 MultiEco | 5 500 m ³ /h (200 Pa) | 69 | 68 | 97 | 95 | 66 | 45 |
| DUPLEX 6500 MultiEco | 6 000 m ³ /h (200 Pa) | 72 | 72 | 96 | 88 | 75 | 55 |
| DUPLEX 7500 MultiEco | 7 500 m ³ /h (200 Pa) | 65 | 69 | 91 | 92 | 72 | 51 |
| DUPLEX 9000 MultiEco | 8 500 m ³ /h (200 Pa) | 67 | 66 | 97 | 97 | 76 | 46 |

MODIFICATIONS

DUPLEX MULTIECO - BASIC UNIT



Basic configuration

DUPLEX 500-6500 MultiEco

The compact unit consists of supply and exhaust free-wheel fans with electric motors in anti-vibration mounting, removable counterflow air-to-air heat recovery core assembled from thin plastic plates, removable G4, M5 or F7 supply and exhaust air filters, and a condensate pan with flexible hose. A front door enables easy access to all built-in components and filters.

DUPLEX 7500-9000 MultiEco

The unit consists of 3 separate sections:

- 1 - supply free-wheel fan with electric motors in anti-vibration mounting, removable supply filter G4, M5 or F7
- 2 - cross-flow heat recovery exchanger with an electric motor, a belt pulley and a belt
- 3 - exhaust free-wheel fan with electric motors in anti-vibration mounting, removable exhaust filter G4, M5 or F7

A front door enables easy access to all built-in components and filters.

The units meet requirement in accordance with Commission regulation (EU) No. 1253/2014 (Ecodesign) in the defined working area

DUPLEX xxxx MultiEco

Me.xxx; Mi.xxx



Fans

All units are equipped with high-efficiency fans (ebm-papst and Ziehl Abegg) with free-running impellers and backward curved blades. Ventilators of DUPLEX 500 to 9000 MultiEco units meets the requirements of the ErP 2015.



Heat recovery exchanger

The only heat recovery core type S7 or S3 made of plastic in counterflow arrangement with high efficiency - up to 93 %.

Sx

DUPLEX MULTIECO - MODIFICATION DESCRIPTION



By-pass ("B")

By-pass of the plate heat recovery core on supply air side. By-pass consists of an opposed-blade damper and an actuator. It is fitted next to the recovery core inside the unit; it does not increase size of the unit. The standard actuator is BELIMO 24 V; other types are available upon request.

B.x



Mixing damper ("C")

The mixing damper is used to mix exhaust and supply air. Circulation valve consists of an opposed-blade damper and actuator. It is fitted next to the recovery core inside the unit, it does not increase the size of the unit. The standard actuator is BELIMO 24 V; other types are available upon request.

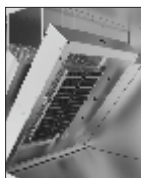
C.x



Hot water heating coil ("T")

Built-in water-to-air three-row (possibly five-row) heating coil; made of copper pipes and aluminum fins. Designed for systems up to 110 °C and 1,0 MPa. The coil is standardly equipped with flexible connection and a steam-gas capillary thermostat for freeze protection. Units in modification T (with heating coil) must be equipped with e, supply air shutoff damper; an actuator with spring-return function is recommended. A coil hydraulic kit for heating capacity control of RE-TPO4 or RE-TPO3 type can be supplied with the coil upon request.

T.x



Electric heating coil ("E")

Integrated electric heating coils consist of PTC (Positive Temperature Coefficient) cells; they are generally used to heat up supply air. By default, electric heating coils always include protective thermostats (operational as well as emergency with manual reset) and regulation module KM featuring power switching elements with so called "zero" switching function (SSR). Built-in electric heating coils are offered in the 500-6500 MultiEco units in two power options (basic and powerful). For more information please refer to the selection software DUPLEX.

E.x



Direct expansion (DX) coil ("CHF")

A built-in coil made of copper pipes and aluminum fins, including a condensate pan with individual condensate drainage and a pressure switch for freeze alarm. Three- or four-row coils with various evaporate temperature are chosen depending on capacity required, refrigerant type and air parameters. Optionally it is possible to deliver double-circuit evaporator in division 1:1 or 1:2, or completely atypical with needed capacity.

CHF.x



Chilled water cooling coil ("CHW")

A built-in coil made of copper pipes and aluminum fins, including a condensate pan with individual condensate drainage. Three- or five-row coils are chosen depending on capacity required, cooling medium type and air parameters. The cooling coil can be equipped with the R-CHW2 or R-CHW3 hydraulic kit on request.

CHW.x

OTHER OPTIONAL ACCESSORIES (BASIC OVERVIEW)

Ke.xxx; Ki.xxx

Shutoff damper e₁; i₁

Shutoff dampers standardly fitted with BELIMO actuators are located in the air inlet port.

- The following damper types are available:
- **fresh air damper e₁** - mandatory for C modification (with mixing damper) and T modification (with heating coil)
 - **exhaust air damper i₁**



Fe.xxx; Fi.xxx

Air filtration

All DUPLEX MultiEco units can be equipped with supply or exhaust air filtration of M5 or F7 class instead of standard G4 class. Pressure drop of the filter is then 50 to 100 Pa (clean filter) depending on air flow rate, unit type and dirt accumulated.



RE-TPO.x

Heating coil hydraulic kit

Its function is to control heating capacity of a heating coil. It consists of a three-speed pump, two globe shutoff valves and connection pipes. Further equipment depends on the type:

- **RE-TPO4** - four-way mixing valve with an actuator for digital control system
- **RE-TPO3** - three-way mixing valve with an actuator for digital control system



R-CHW.x

Cooling coil hydraulic kit

Its function is to control cooling capacity of a chilled-water cooling coil. It always consists of two globe shutoff valves and connection pipes. Further equipment depends on the type:

- **R-CHW3** - three-way mixing valve with an actuator
- **R-CHW2** - throttling valve with an actuator for digital control system



MFF

Tube manometers

Accessory for filters for simple view of current pressure drop. The tube manometers are obligatory for hygienic unit design in accordance with the VDI 6022.



FK.x

Spare cartridge filters

Replacement filter cartridges in different sizes based on the unit type. Available in G4, M5 and F7 filtration class.



Delivery of disassembled unit

All units can be delivered dismantled on request. The unit is to be assembled by rivets and bolts directly on site, therefore the unit can be installed in inaccessible location. Casing insulation class T3, thermal bridging class TB2.

H.P

Flexible connections

Round and rectangular ports can be equipped with flexible connections upon request.



TPO

Hot water heating coil (TPO)

Separately supplied coil for installation into round duct. It is suitable for cramped locations, where it is impossible to put the coil inside the unit, as well as for rooftop units. The coil is standardly equipment with the steam-gas capillary thermostat. Capacities and diameters can be found in respective catalogue sheets.



Electric heating coil (EPO-V)

Separately supplied heating coil to be fitted into round or rectangular duct. Capacities and diameters can be found in respective catalogue sheets.



CF.XXX

Constant air flow and pressure

Manometers reading fan pressure together with controls, enables intelligent fan control of preselected airflow. This accessory assumes the unit is equipped with ATREA digital control system. Using a second manometer (optional accessory) in the supply air duct enables the user to control constant pressure in the supply duct.



EPO-V

Electric preheaters EPO-V

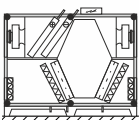
EPO-V electric heating coils to provide the antifreeze protection of the heat recovery exchanger when equal-pressure ventilation is continuously required. It is installed inside a duct on the outdoor supply air side of the unit (e₁).

This accessory assumes the unit is equipped with ATREA digital control system.



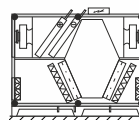
Hingeless door

When needed it is possible to deliver door without standard hinges - than necessary manipulation space is reduced. DUPLEX 7500 and 9000 MultiEco are supplied hingeless standardly.



External switchboard

It is possible to supply control module in external version with various cable length.



CONTROLS






DUPLEX MultiEco units are delivered with basic control components or with complete control systems.

There are three types of control systems available (Basic, CPM and aMotion) according to customer needs and an application. The systems also include variety of sensors (temperature, humidity, air quality, CO₂) for effective operation control.

Features of the control systems

- selection of the most suitable and efficient control system at the lowest cost, depending on the particular application
- control system is integrated with the unit, most components are already wired and checked in factory, thus reducing the risk of incorrect wiring
- no control system project documentation is necessary for standard cases, standardized solutions can be used
- simple wiring, system simplicity, error indication
- qualified technical support and consulting

SUMMARY OF DUPLEX MULTIECO CONTROL SYSTEMS

| Type | Use | Controller |
|---------------------------|---|--|
| “Basic” controls | <ul style="list-style-type: none"> - all electrical components are wired to a junction box terminal strip inside or outside the unit - standard components are fans, damper actuators, capillary freeze protection thermostat of hot water heating coil - more components are included upon customer's request (exact actuator type, sensors, thermostats, pressure switches etc.) - suitable for applications with separate delivery of control system; e.g. large buildings with central control system etc. | <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>basic version (fans, actuators, thermostats, pressure switches and others on request)</p> </div> <p style="text-align: center;">↑ ↓</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Supervisory control system</p> </div> |
| “CPM” controls | <p>Standard functions</p> <ul style="list-style-type: none"> - EC fan speed control (stepless) - automatic by-pass damper position - frost protection of heat exchanger - switching of electric or water heater - input for external switch - inlet and outlet shut-off damper control - minimum and maximum fan speed preselection - analogue input (0-10 V) for air quality sensor (CO₂, RH) - outputs for controlling electrical preheater and heater (pulse switched 10 V) or water heater (controlled by 0-10 V signal) - outputs for controlling cooling (direct or water), eventually heat pump <p>Controller CPM</p> <ul style="list-style-type: none"> - fully graphic touchscreen - weekly program - „party” mode - „holiday” mode - filter change notice - automatic operation based on constant signal - e.g. constant pressure <p>Controller CP 10 RA</p> <ul style="list-style-type: none"> - rotatable controller | <div style="text-align: center;">  <p>CPM controller with touchscreen display</p> </div> <div style="text-align: center; margin-top: 20px;">  <p>CP 10 RA with mechanical knob</p> </div> |
| “aMotion” controls | <p>Standard aMotion control functions</p> <p>Elementary aM-CE basic module</p> <ul style="list-style-type: none"> - EC fans speed control (according to selected mode) - Automatic heat and cool recovery control (by-pass control) - Evaluates and prevents all emergency conditions according to the measured values - Possibility of setting basic and user scenes and weekly calendars to select modes, power, temperatures and other functions - Ethernet connection for communication over the Internet - Inputs for external signals - control e.g. from kitchens, toilets and similar - Possibility of connecting air quality sensors (e.g. CO₂ concentration or relative humidity) either by contact, 0-10V voltage, or via the bus. - Outputs for continuous control of electric preheater and heater (pulse switched 10 V) - Possibility of connecting up to two controllers of different types - Connection to supervisory control system via Modbus TCP protocol <p>Legendary aM-CL advanced module (with all functions from Elementary aM-CE module and additional options below)</p> <ul style="list-style-type: none"> - Control of systems with VAV boxes - Control of systems with heat sources (heat pumps, heat accumulators etc.) - Communication by BACnet protocol over the bus - Possibility of connecting more than two controllers - More than 4 external bus elements (controllers, CO₂ sensors, outdoor temperature sensors,...) - Multiple adjustable scenes (more than 10) - More than 2 user calendars - More than 4 users (excluding service access) <p>Additional module aM-IO18</p> <ul style="list-style-type: none"> - Inputs for 4 external signals - control from kitchens, toilets and similar - Hot water heater control (0-10 V) - Control of circulation modes <p>Additional module aM-IO12</p> <ul style="list-style-type: none"> - Control of cooling (direct and water) and heat pumps - Rotary regenerator <p>Additional aM-XCF</p> <ul style="list-style-type: none"> - Unit control based on flow measurement <p>Additional RD-K module</p> <ul style="list-style-type: none"> - Additional inputs and outputs significantly expanding the control system functionality <p>BACnet / KNX converter</p> <ul style="list-style-type: none"> - Connection to the superior system via BACnet or KNX protocol | <p>aTouch (touchscreen)</p> <div style="text-align: center;">  </div> <p>aDot (touchscreen)</p> <div style="text-align: center;">  </div> <p>aSpace (internet interface)</p> <div style="text-align: center;">  </div> |