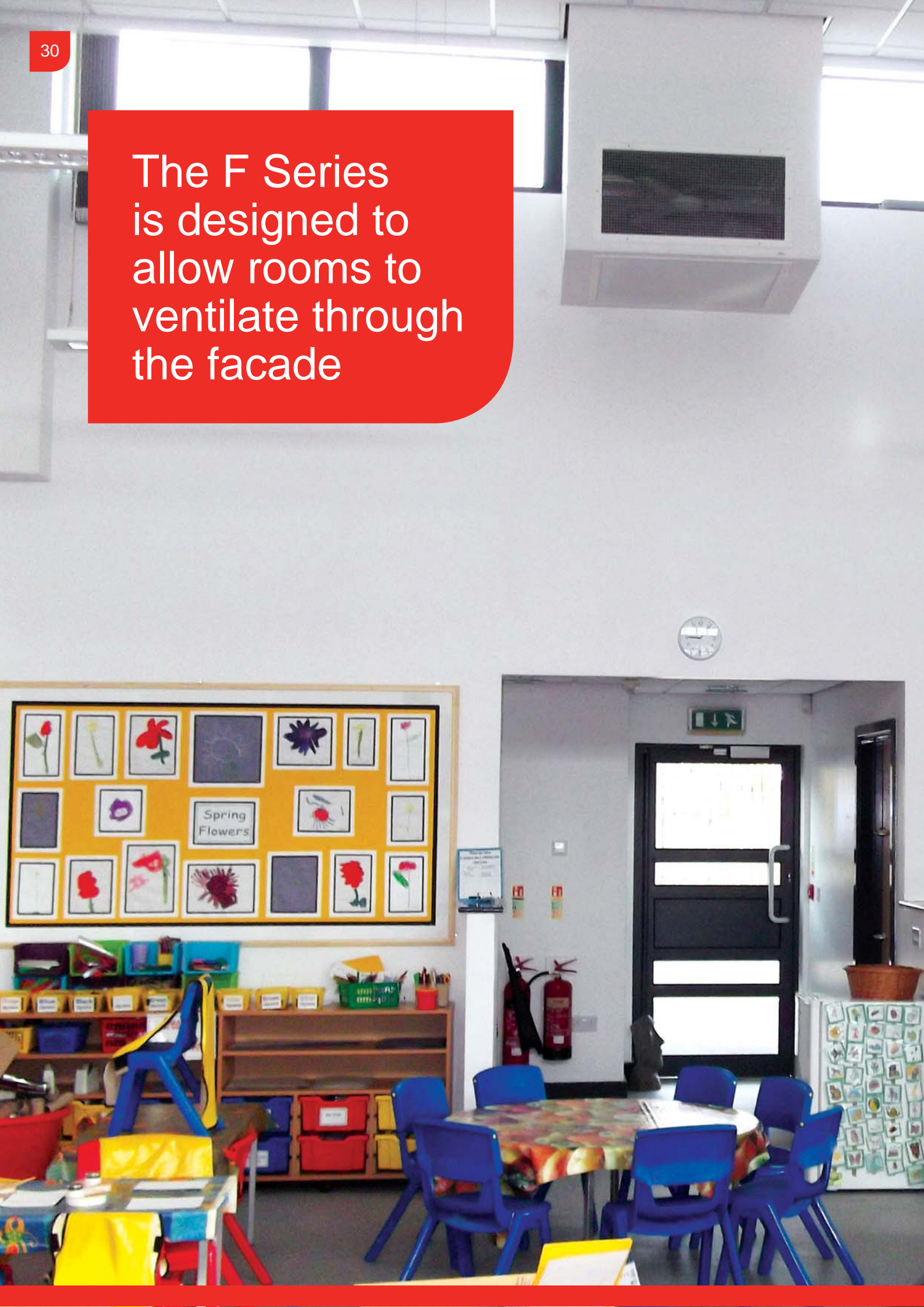


The F Series  
is designed to  
allow rooms to  
ventilate through  
the facade



# F Series

If there is a clerestory window concept as indicated in the figure shown then the unit operates in single sided mixing ventilation mode in winter and in summer uses displacement cross-flow ventilation. Without an elevated facade the F500 units provide mixing ventilation

The F1000 unit is a facade mounted unit that has been designed to ventilate a room with occupancies from 10 to 35 people. Integrated fans mitigate cold draughts in a low energy way delivering appropriate ventilation and superb thermal comfort. The illustration below shows an F1000 unit located in a room with another variable control damper located on the same facade in the opposite corner of the room



## Air Flow Strategies

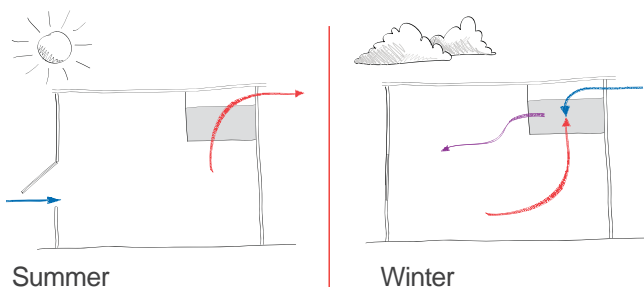
### Summer Mode

When it is warm outside the system operates in upflow displacement mode, using the stack effect to achieve high air flow rates and keeping the room at a pleasant temperature.

Fan boost and night cooling modes offer greater thermal comfort in exceptional summer conditions.

### Winter Mode

When the outside temperature becomes too low to bring air directly onto occupants the F Series operates to pre-mix the incoming cold fresh air with warm room air to mitigate the risk of cold draughts and eliminate the need for wasteful pre-heating with radiators. Exhaust is provided by an adjacent window or variable control damper provided by Breathing Buildings.



## Product Information

### Features

- Low energy mixing fans to mitigate against cold draughts in winter
- Summer exhaust boost mode
- Night cooling
- Insulated volume control damper ensures appropriate ventilation rates
- Internal temperature sensor with integrated CO<sub>2</sub> sensor
- External temperature sensor
- Integral control responds to environmental conditions
- Traffic light indicator panel for window opening
- Ready fitted mounting brackets
- Key switch for automatic operation; long term off; test

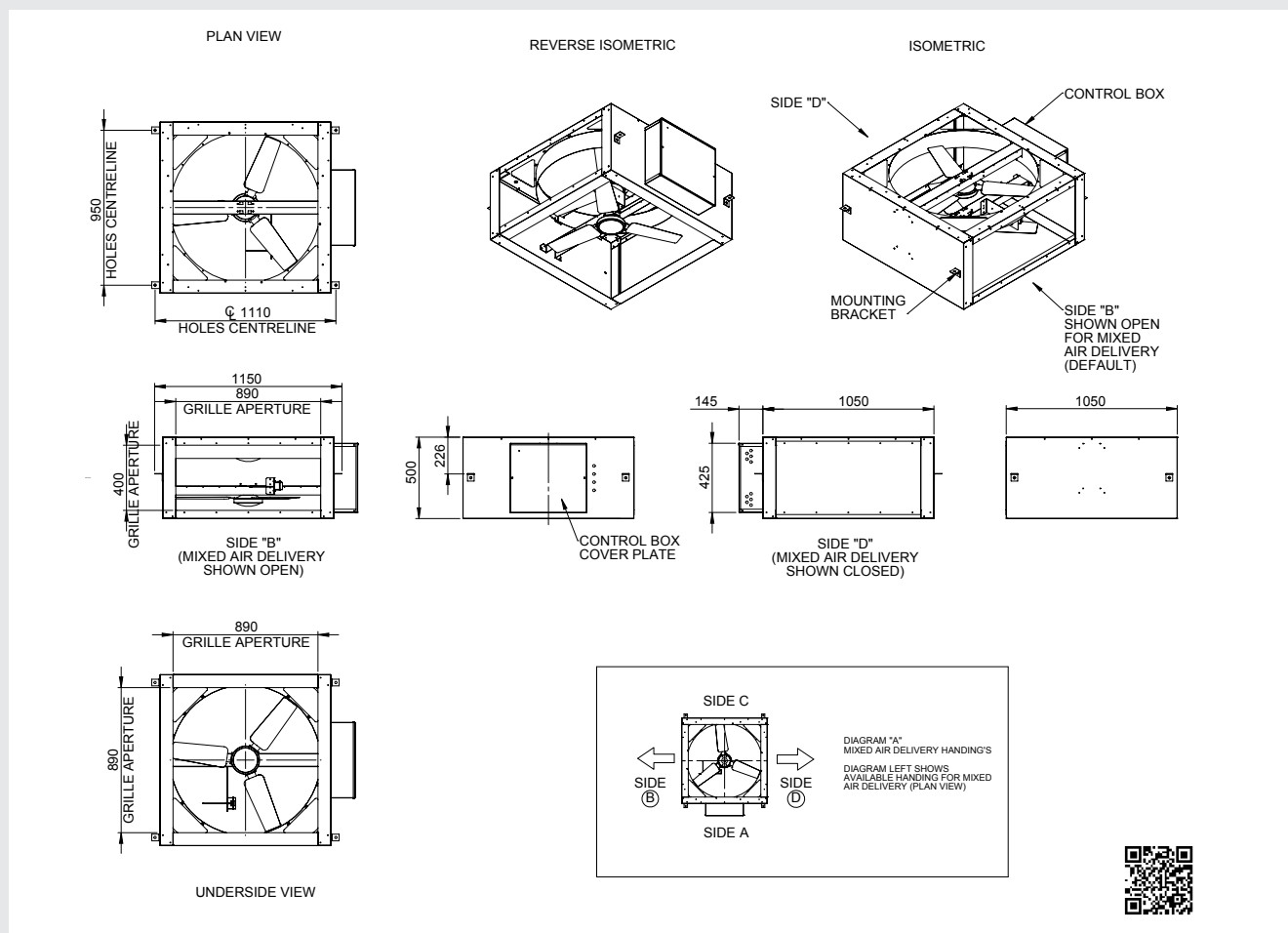
### Options

- F1000, F500 and F350
- Patented heating control strategy ensures minimum energy use
- Weather louvre
- Noise attenuation for noisy sites
- Integrated noise attenuation through combination of acoustic louvres and internal baffles depending on site specific requirements
- Control signal for automated actuation of low level windows or dampers
- Modbus link for integration into wider Building Management Systems (BMS)
- Eggcrate grilles



## F Series continued

## F1000 Dimensioned Drawing



## Dimensions

H	500 mm
D	1,000 mm
W	1,000 mm
Weight	80 Kg
Physical area	0.5 m <sup>2</sup>
Effective Area (A*)	0.4 m <sup>2</sup>

## Electrical

Power Rating	0.1 kW
Voltage	230V AC (+- 10%)
Full load current	0.5A
Short Circuit Rating	N/A - Control only
Earth Leakage	<3.5 mA

[www.breathingbuildings.com/downloads](http://www.breathingbuildings.com/downloads)

## Acoustic Performance

Frequency Band (Hz)	Sound Power (dB)								Overall dB (A)	Ambient dB (A) <sup>#</sup>
	63	125	250	500	1k	2k	4k	8k		
Winter Slow	33	39	33	29	21	15	18*	24*	30.6	30.8
Winter Fast	41	52	43	40	37	28	19*	24*	41.8	35.0
Summer Boost	38	39	38	37	33	23	18*	24*	37.4	32.3

\* denotes results at background

# Ambient sound pressure in typical classroom for BB93

## F500 & F350

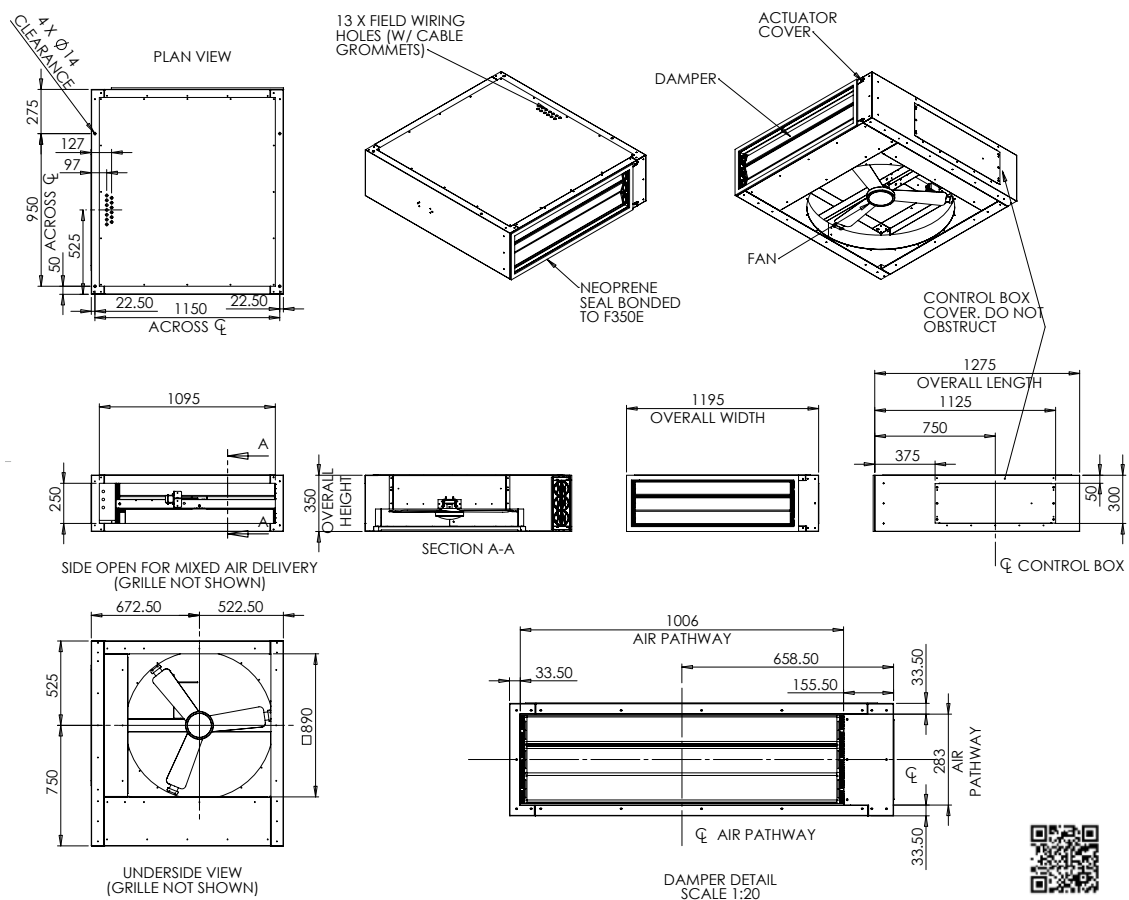
The F500 and F350 units are designed to provide i) single sided mixing ventilation or ii) premixing of incoming air when the outflow is via a higher level opening such as an atrium or exhaust fan. They are designed for use in spaces with limited floor to ceiling height. The damper is mounted on the side of the mixing chamber rather than above it as in the F1000. A single sweep fan draws room air up to meet the inflowing, cold air in winter.

When the units provide inflow and outflow in winter, each F500 unit is designed to provide ventilation for

up to 16 people and multiple units can be used in higher occupancy spaces. When the units are used to only provide inflow in winter, each F500 unit is designed to provide ventilation for up to 32 people and each F350 unit is designed to provide ventilation for up to 20 people (depending on the buoyancy head).

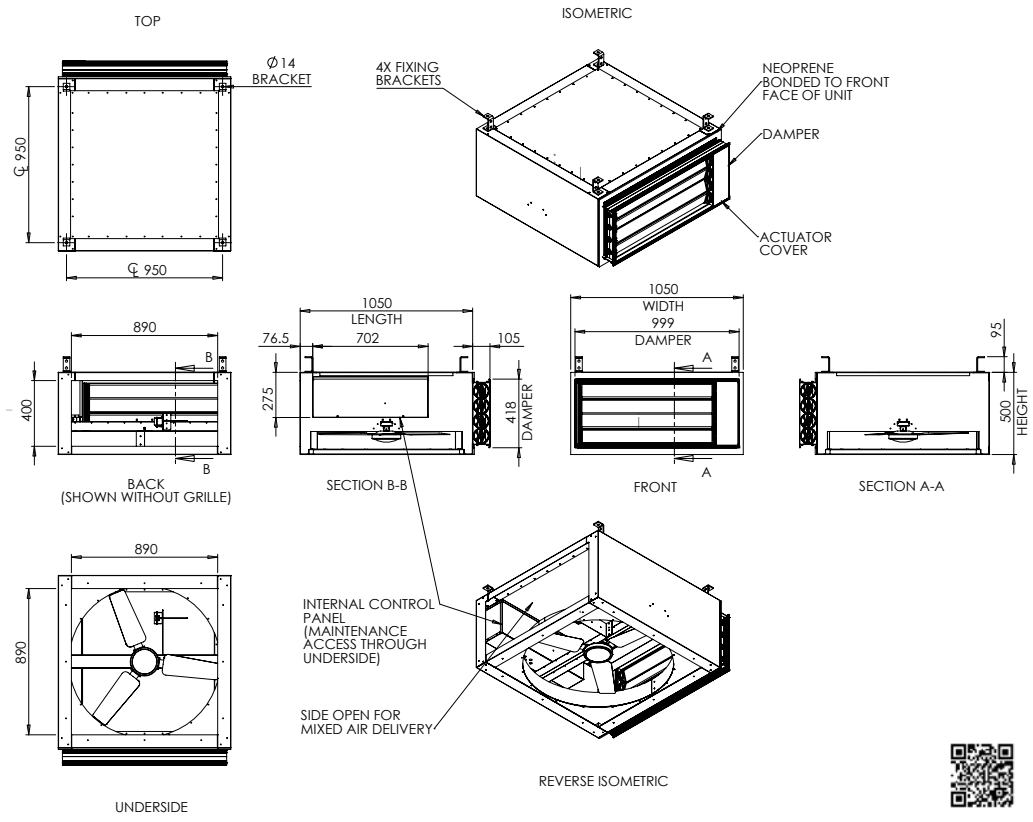
In summer the units are usually operated in conjunction with additional lower level openings in the space.

## F350 Dimensioned Drawing

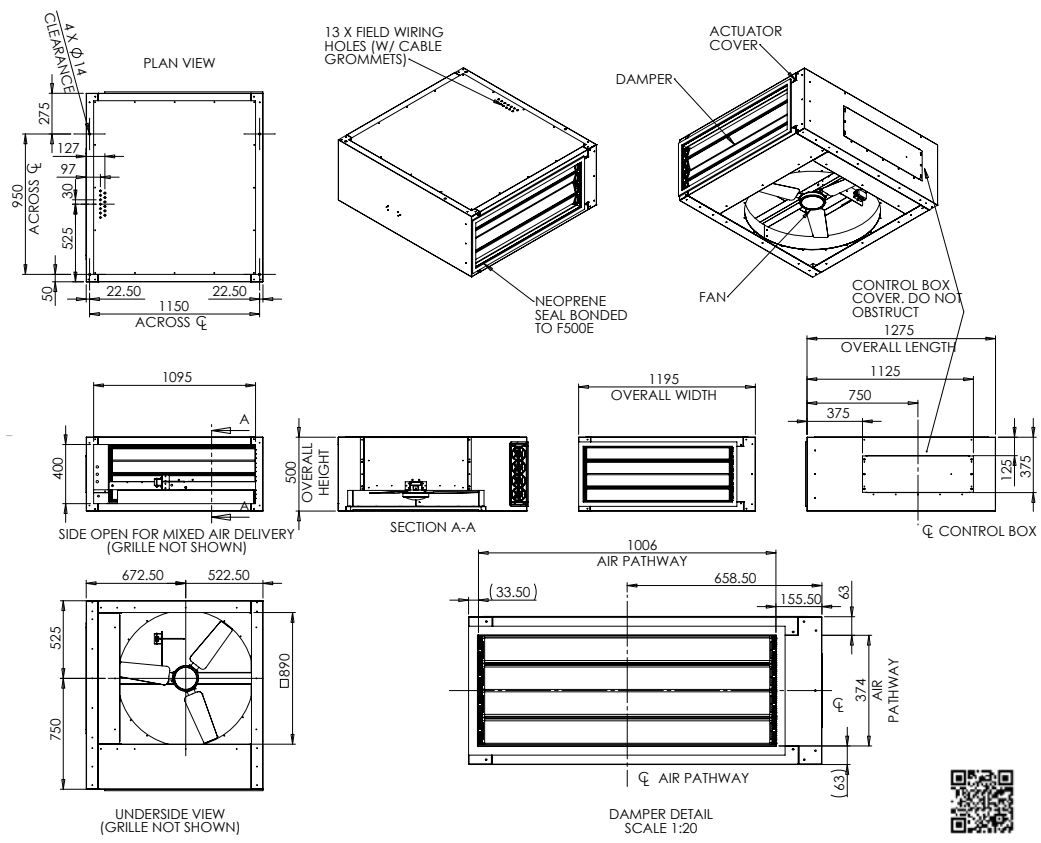


# F Series continued

## F500 Dimensioned Drawing



## F500E Dimensioned Drawing



## Performance

### U-Value

Part L2a requirement	3.5 (W/m <sup>2</sup> K)
F Series	2.2 (W/m <sup>2</sup> K)
Damper section	<0.8 (W/m <sup>2</sup> K)

### Damper Air Leakage

Part L2a requirement	10 m <sup>3</sup> /h/m <sup>2</sup>
F Series	2.9 m <sup>3</sup> /h/m <sup>2</sup>

Tested at 50 Pa across whole damper unit

### Conformity

CE marking	Yes
BB93 (standard room)	Yes

## Installation

The F Series comes with fixing brackets.

The E-Stack unit can be hung from 4 no. pieces of M10 (drop-rods).

### Mixed Air Temperatures at the Occupied Zone

External Temp	Internal Temperature				
	21	22	23	24	25
14	19.5	20.0	20.5	21.0	21.5
12	18.5	19.0	19.5	20.0	20.5
10	17.5	18.0	18.5	19.0	19.5
4	14.5	15.0	15.5	16.0	16.5

Based on fresh air flow rate of 150 l/s, 30 people at 5 litres/person/s

## System Schematic and Wiring

