

Air Cleaner 2

Based on the Corsi-Rosenthal Box*



18 Inch (40cm) Circular Fan
20x25 Inch filters

Metric bolt construction using 3030 t-slot
framing system

Scalable & modular

Variety of materials choices

Kit assembly

Capable of >1000m³/hr flowrate

Anti tamper features

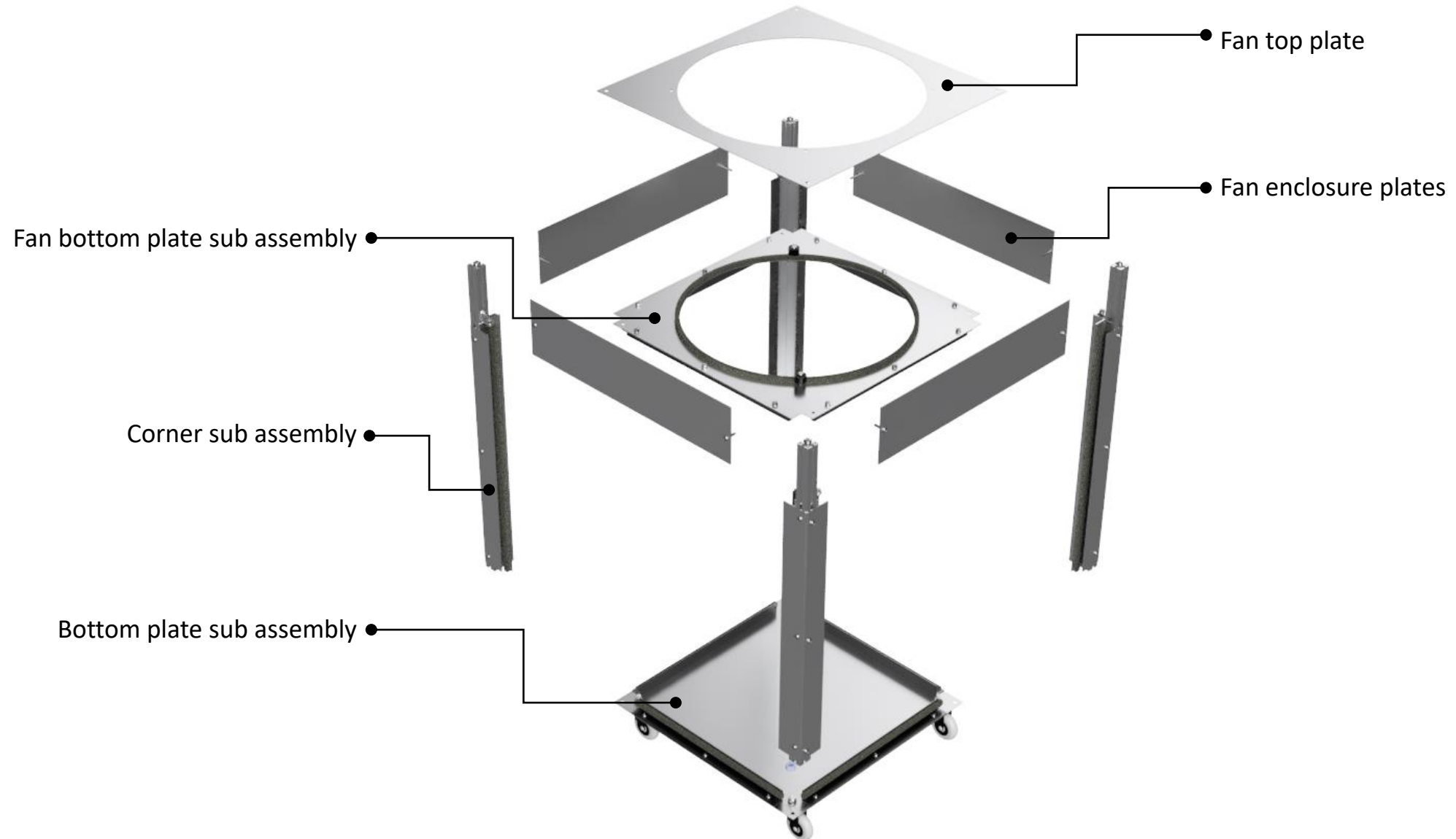
Prefilter options

Timer or IoT plug options



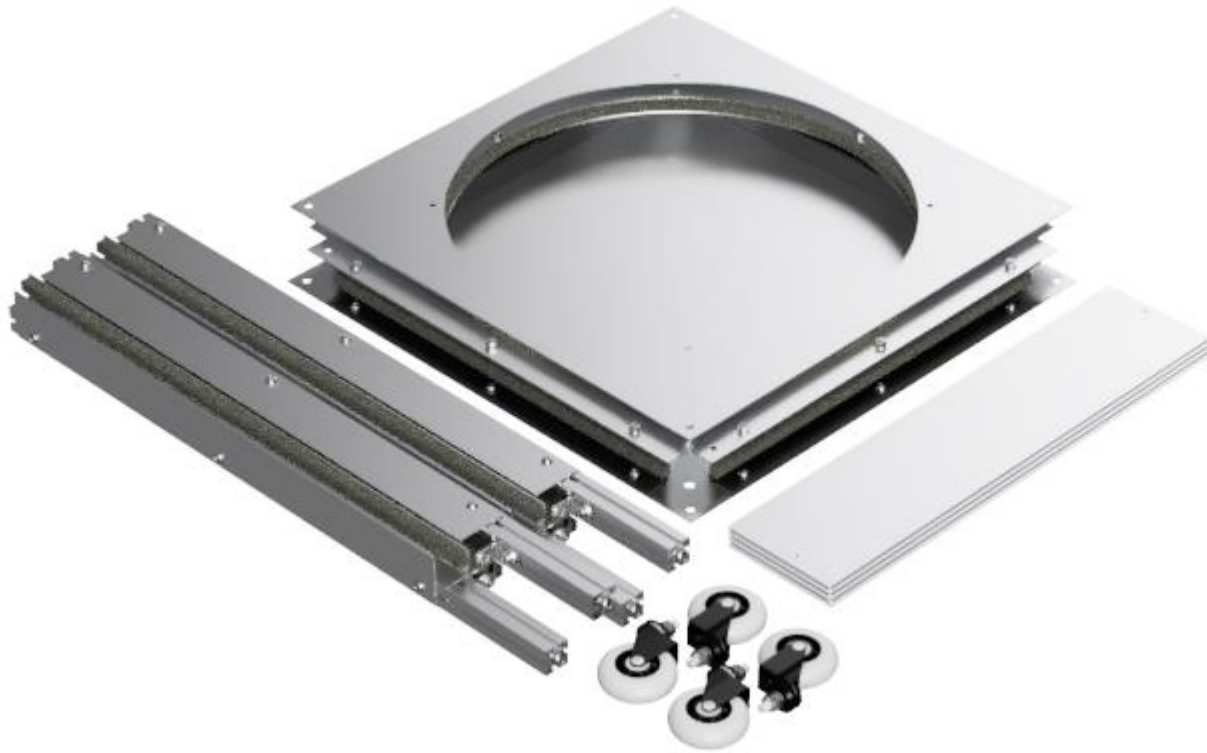
20 Inch (50cm) Box Fan
20x20 Inch Filters

Exploded view



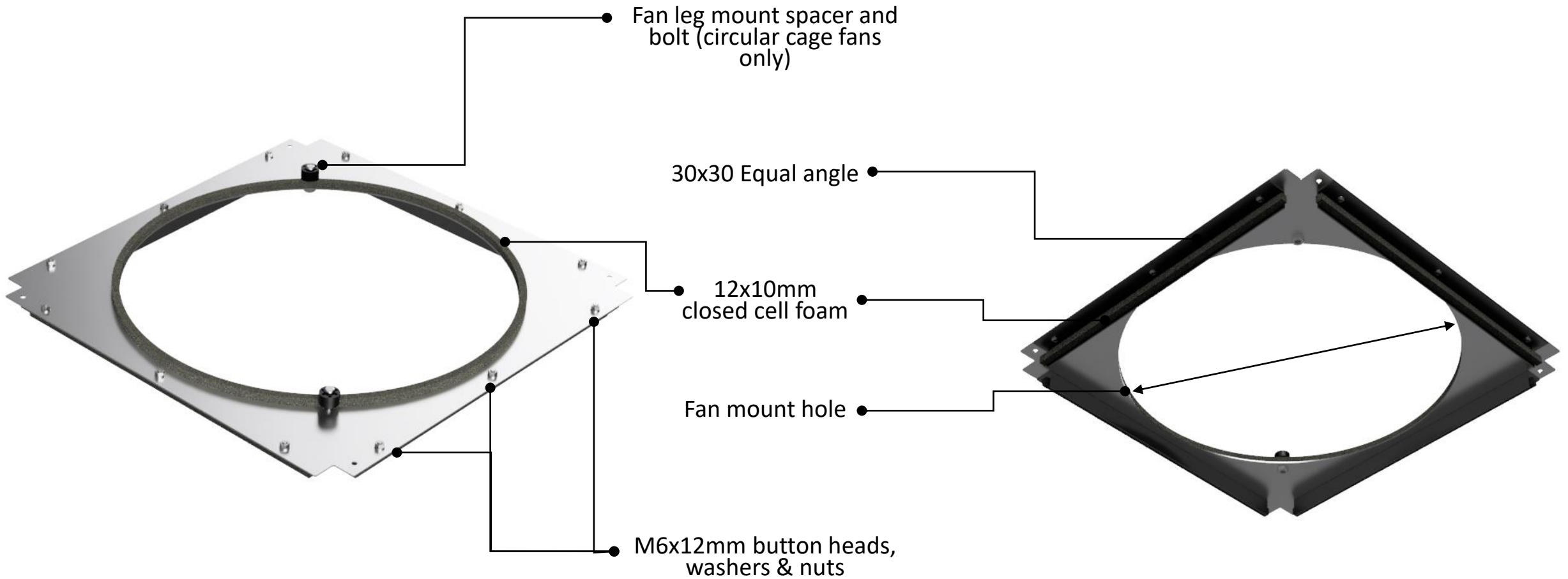
Flat pack

Sub assemblies

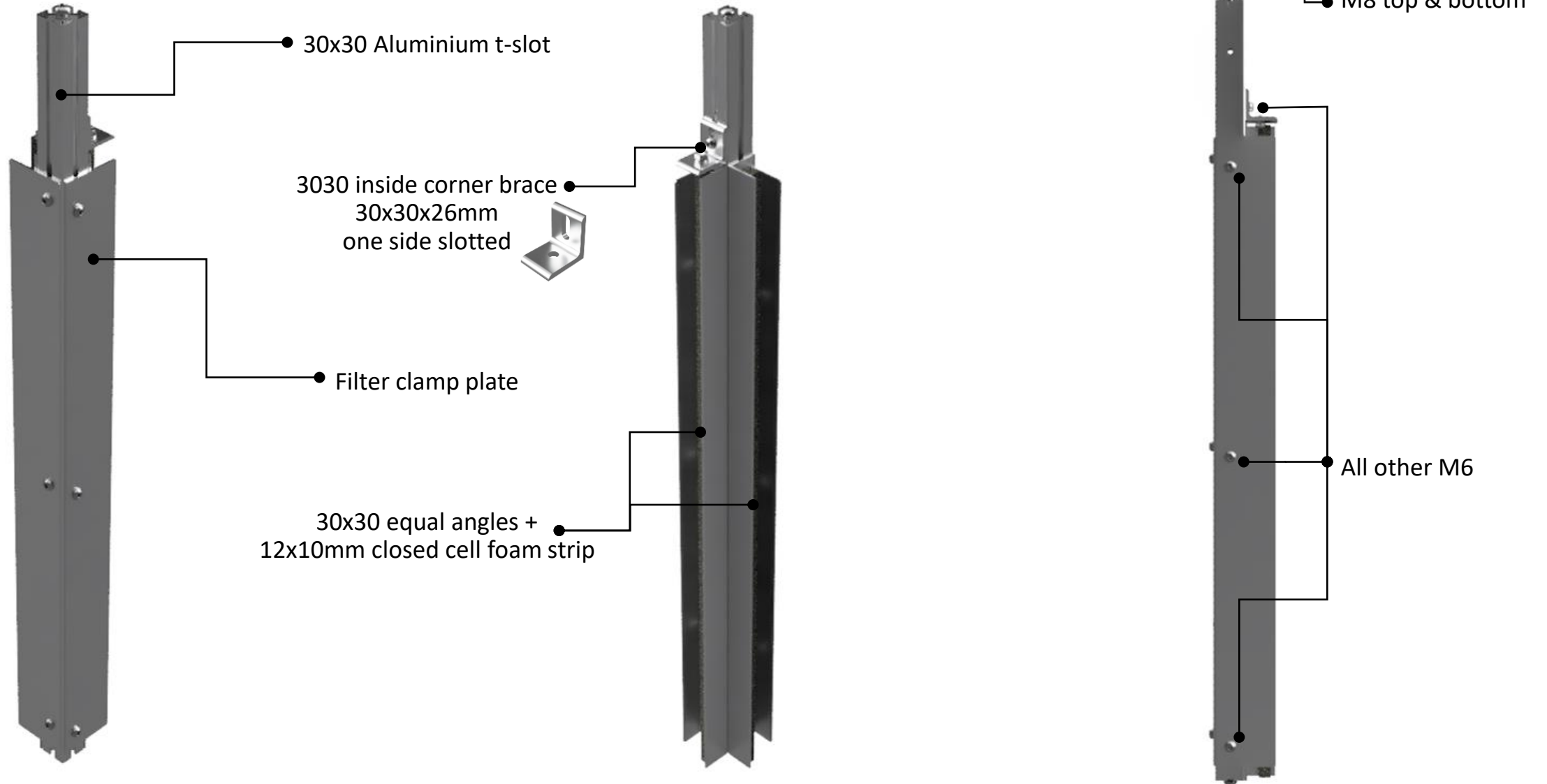


Seal any gaps at
corners after assembly

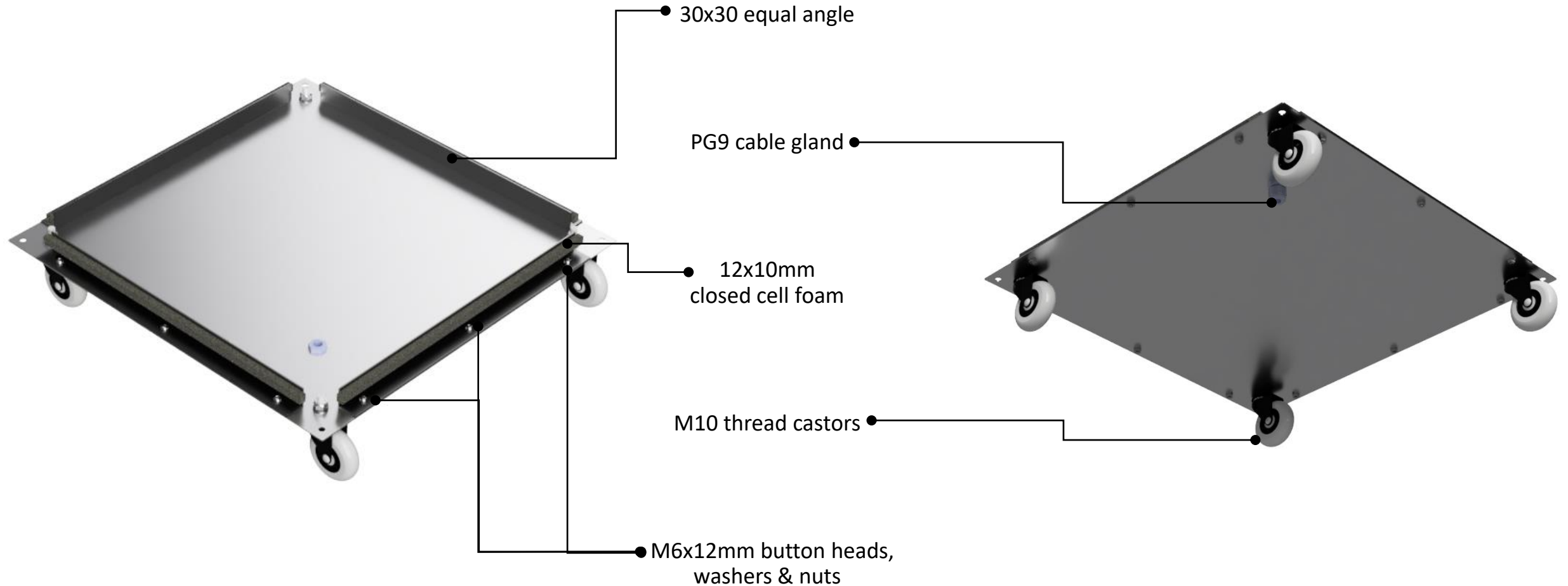
Fan bottom plate sub assembly



Corner sub assembly

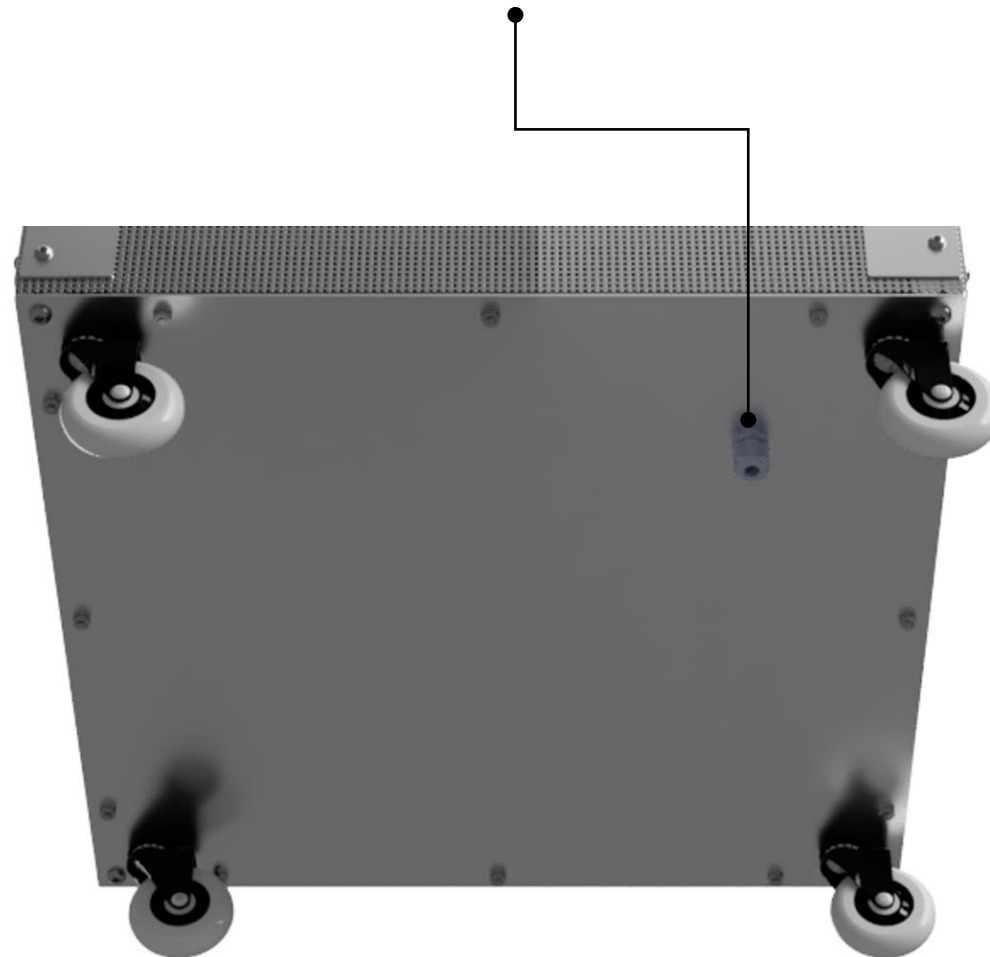


Base plate sub assembly



Cable management

PG9 gland



OPTIONS

Sizes



High Flow – Recommended

18 Inch (45cm) 100-120w Cage Fan

20x25 Inch filters*



Low Noise, Small Footprint - Lowest Flow

14 Inch (35cm) 50-80w Cage Fan

16x25 Inch filters



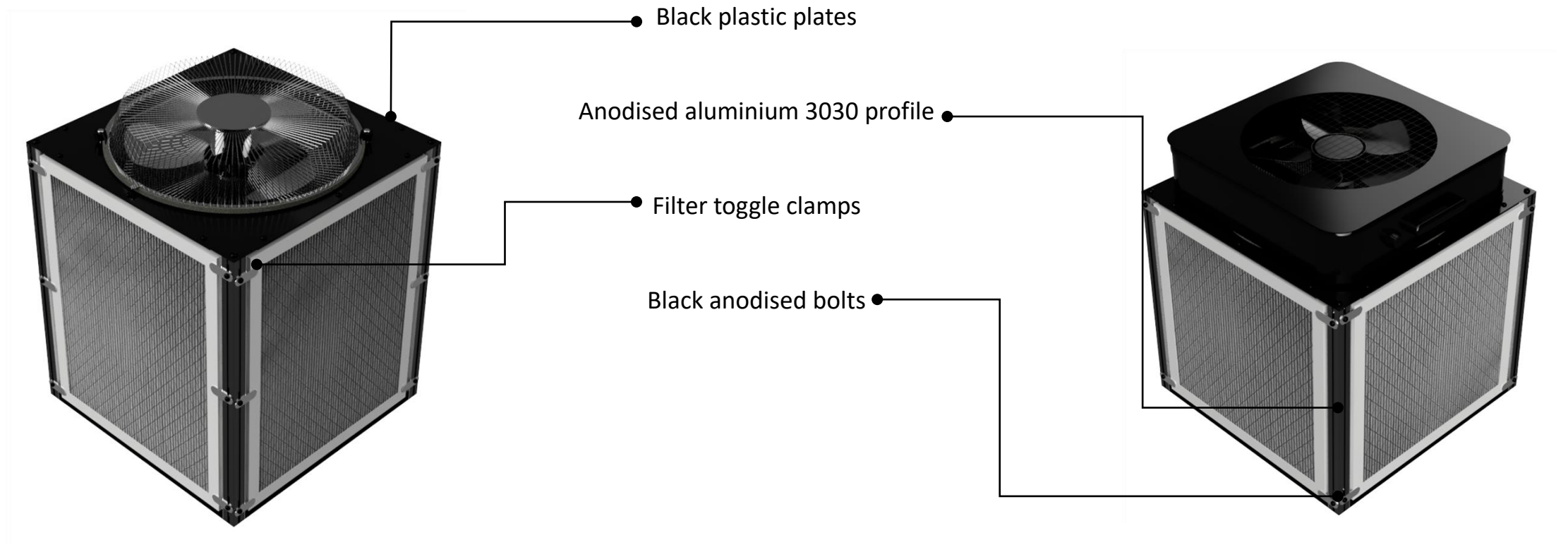
US / Canada Optimised DIY Spec

20 Inch (50cm) 60w Box Fan

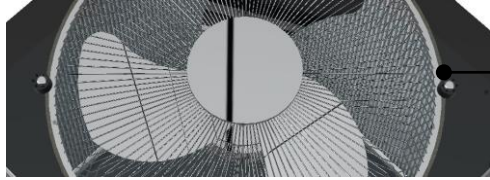
20x20 Inch filters

Basic box

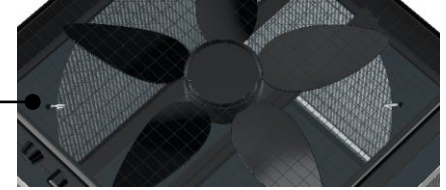
Example:



Basic box mount



● Cage fan pinned by leg bolts & spacers



Box fan secured by 2x zip ties ●



Material specifications

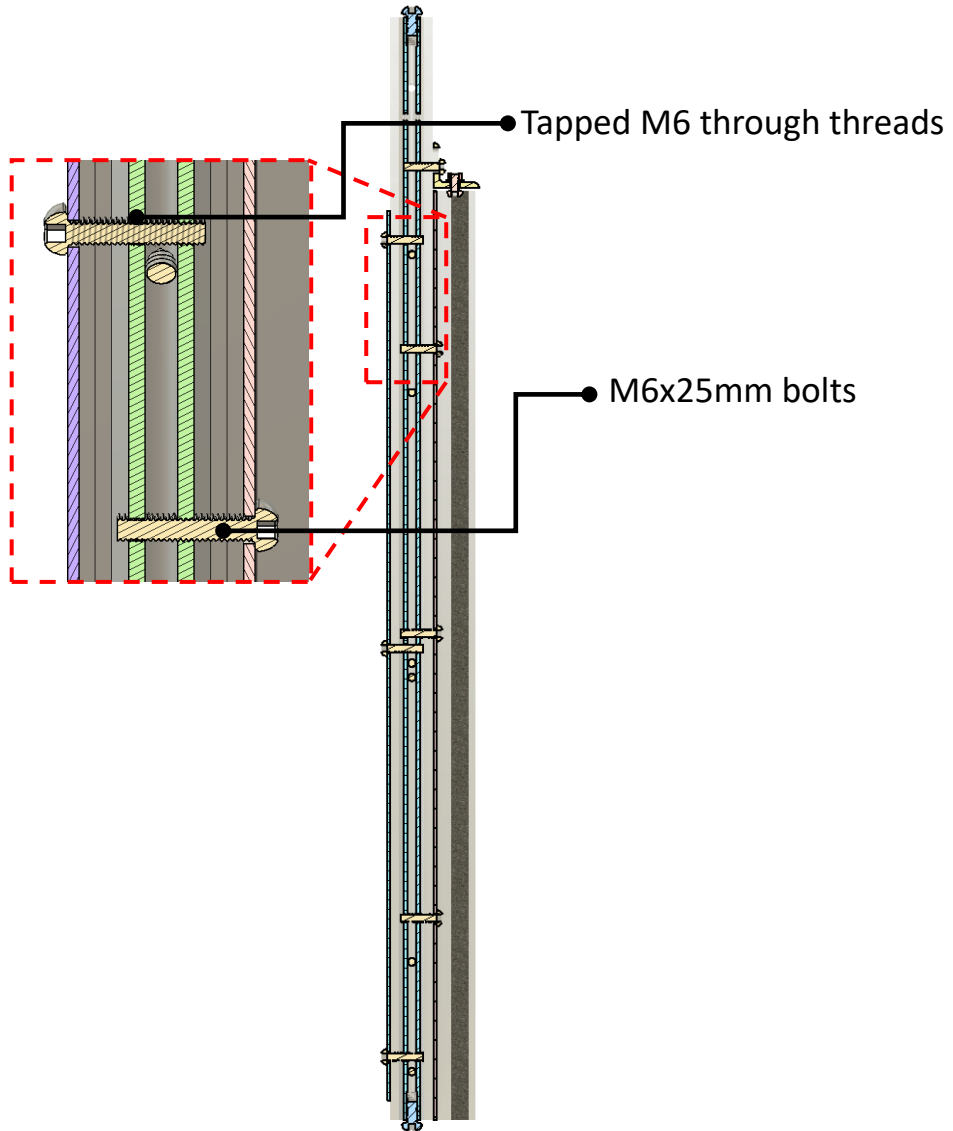
Increasing cost and durability



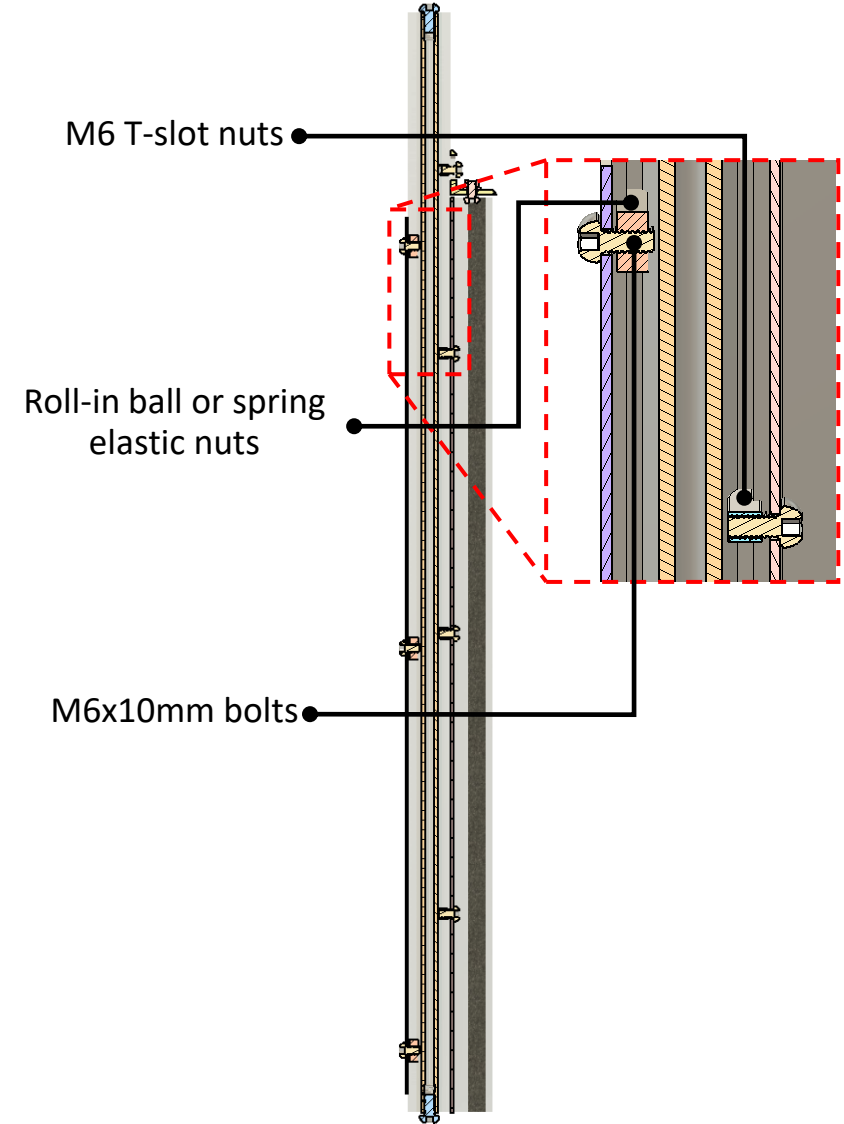
Prototyped Material All other materials have not been validated.
Suggestions only.

Part	Shape	Material Options				
		Laserply	uPVC/PET/ABS/Polycarbonate	Powder coated mild steel	Aluminium (6061, 6063)	Stainless steel (304 and 316)
Corner pillars	3030 T slot or 30mm box section				3030 t-slot	
Equal angle	Equal angle (L profile)				30x30x2mm	30x30x1.5mm
Filter clamp plates	Flat plate	3mm LaserPly	30x30x2mm rigid trim	30x30x3mm Rolled Steel Angle (RSA)	2mm	0.9mm
Fan top plate	Flat plate	3mm LaserPly	3mm	1mm	2mm	0.9mm
Fan bottom plate	Flat plate	3mm LaserPly	3mm	1mm	2mm	0.9mm
Base plate	Flat plate	3mm LaserPly	3mm	1mm	2mm	0.9mm

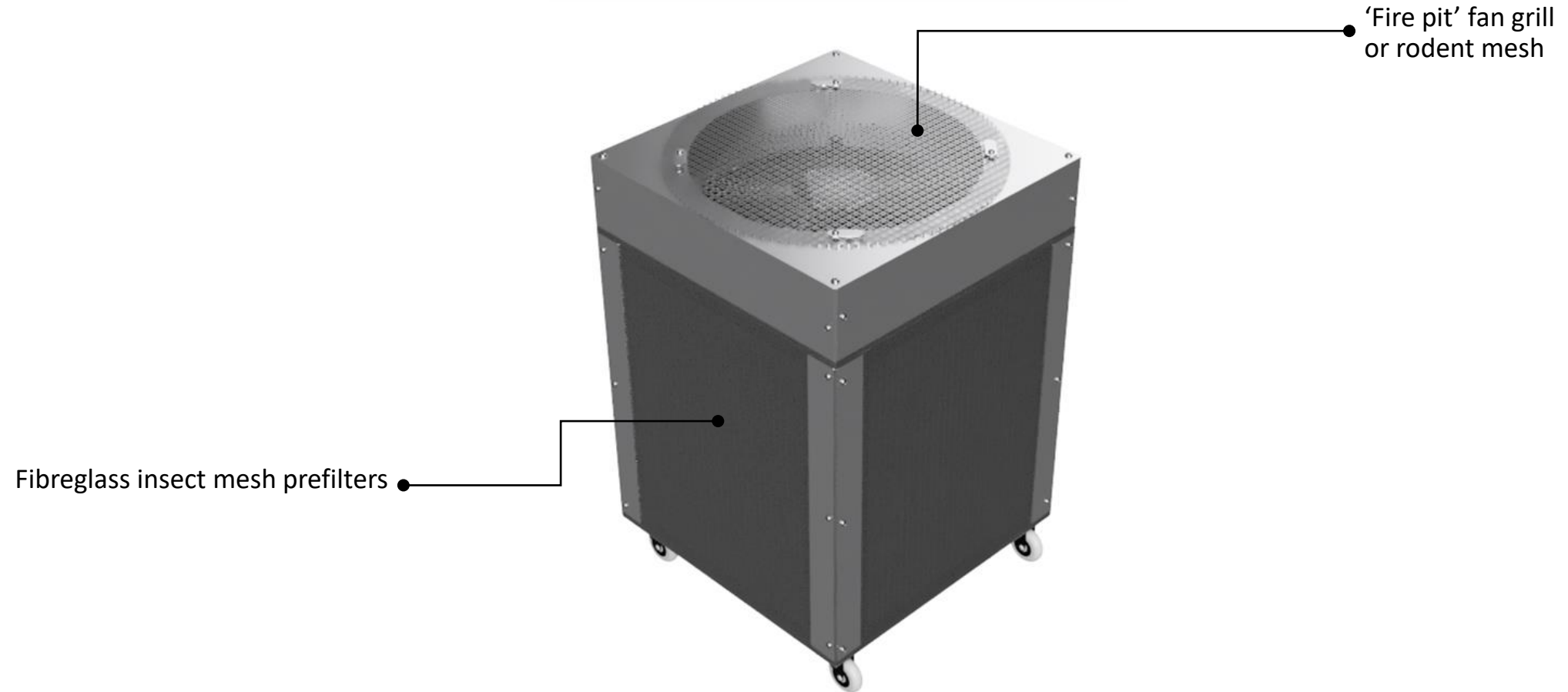
Lowest Cost: Tapped Threads



Most Robust: Elastic T-Slot Nuts

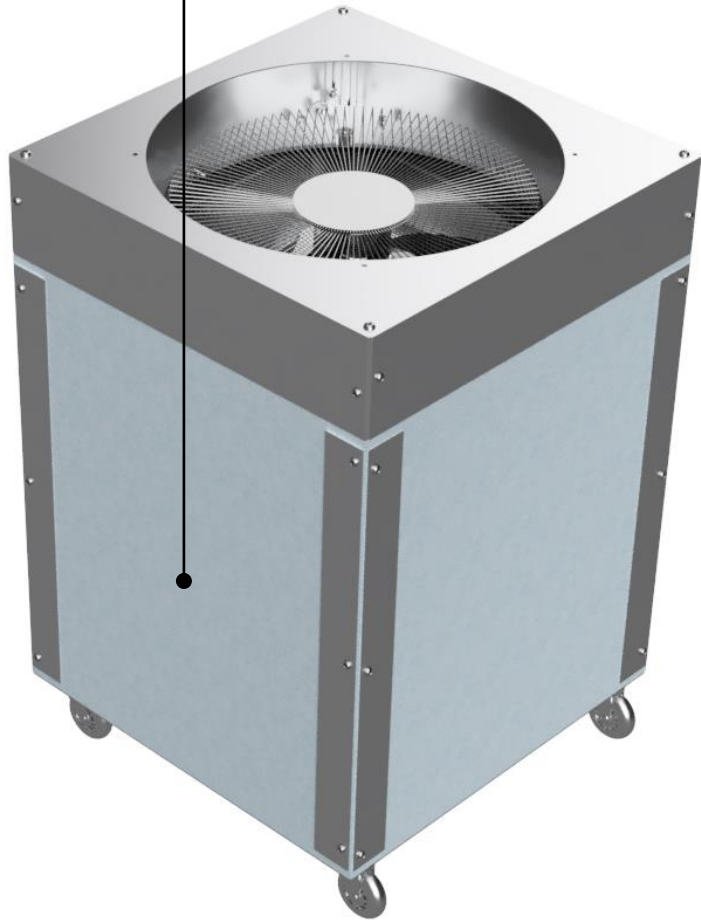


Anti tamper



Prefilter

- G3 or 40z fire retardant polyester wadding + Fibreglass insect mesh

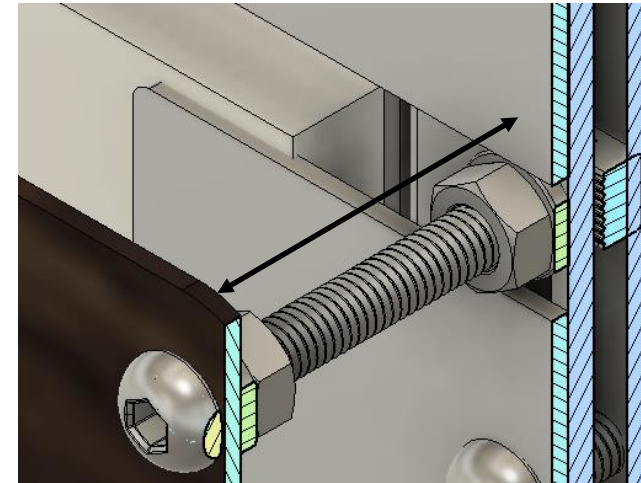


Aesthetic covers

Custom vinyl print or painted panel



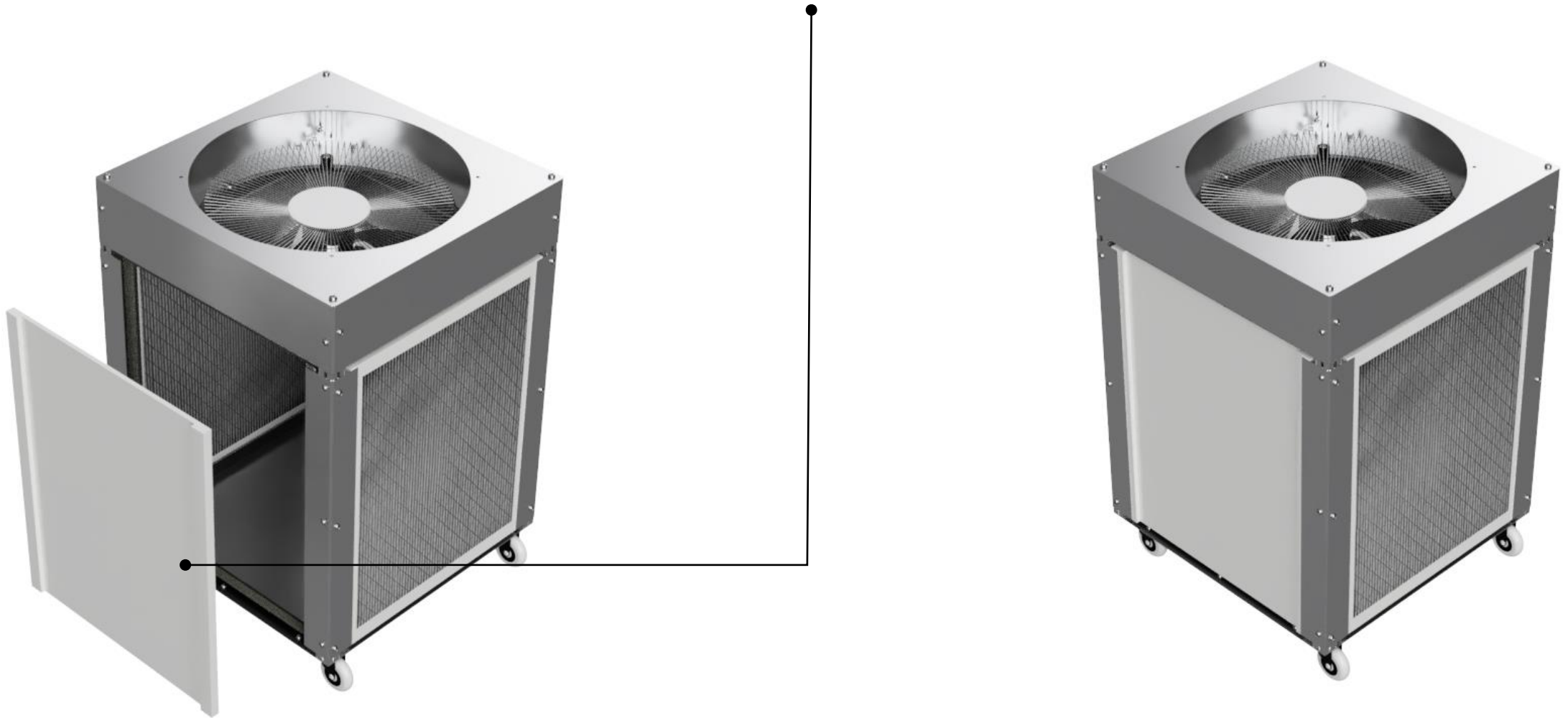
Long M6 for minimum 50mm gap*



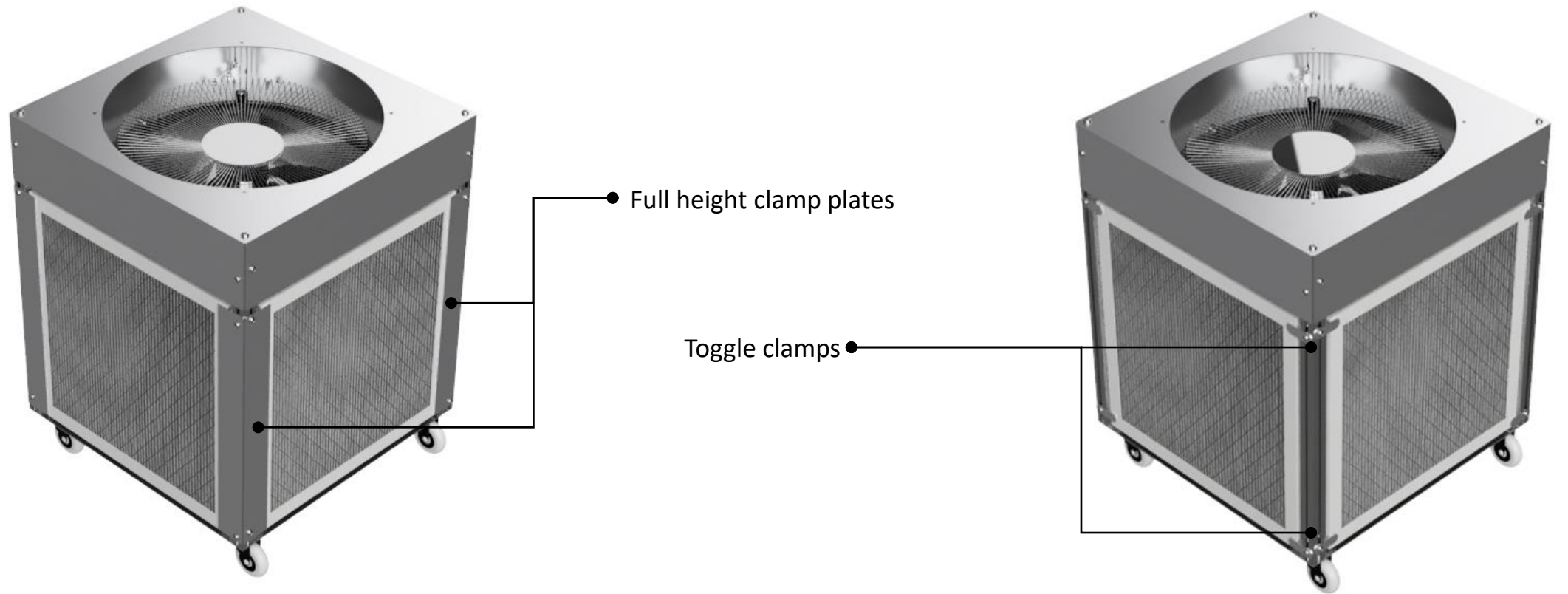
*Covers without perforated surfaces or breathable material will reduce flowrate, 100mm gap required for no restriction to flow.

1-4 filter construction

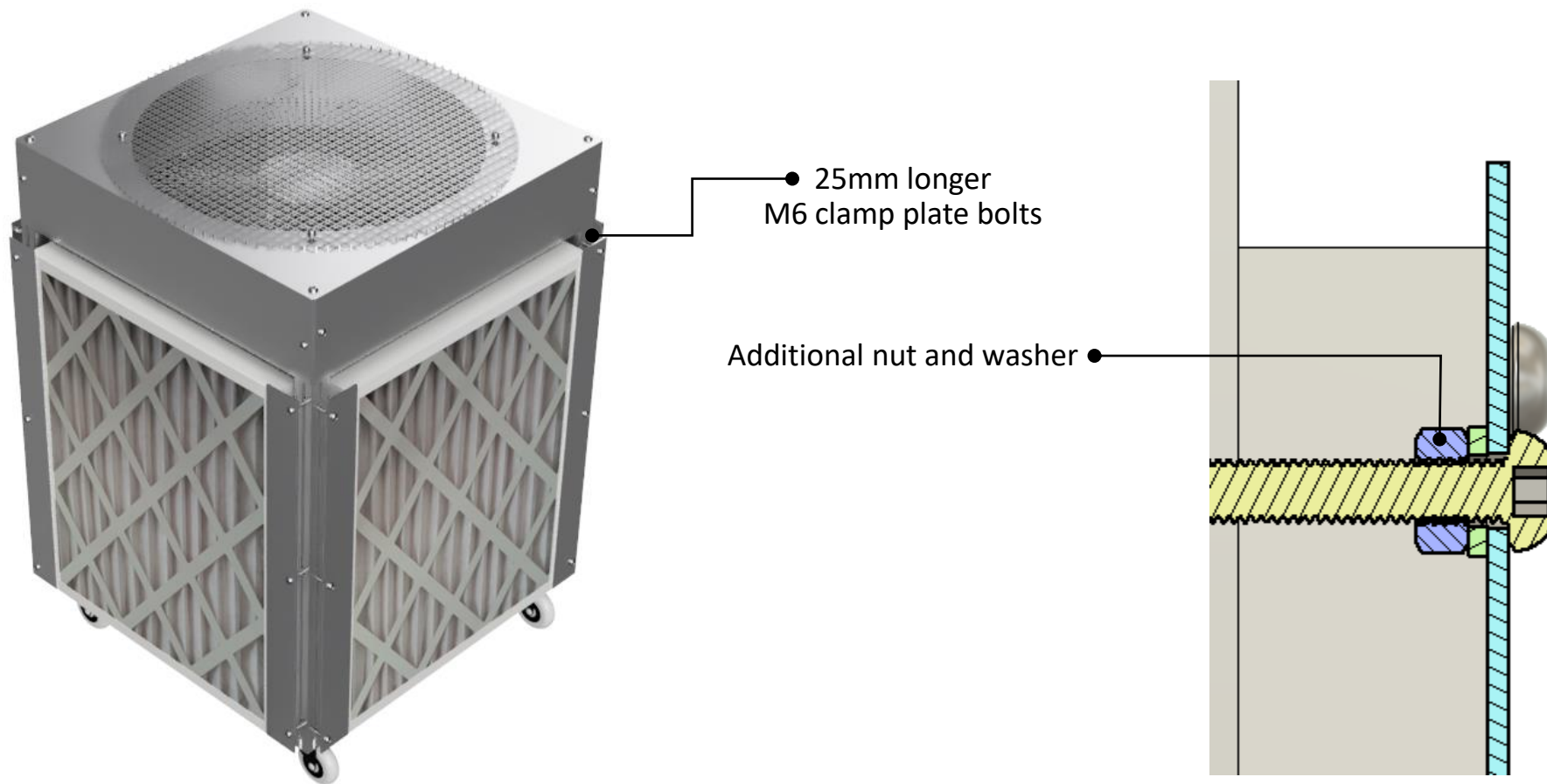
Dummy filter blank plate example



Filter clamp



2" (48mm) deep filters

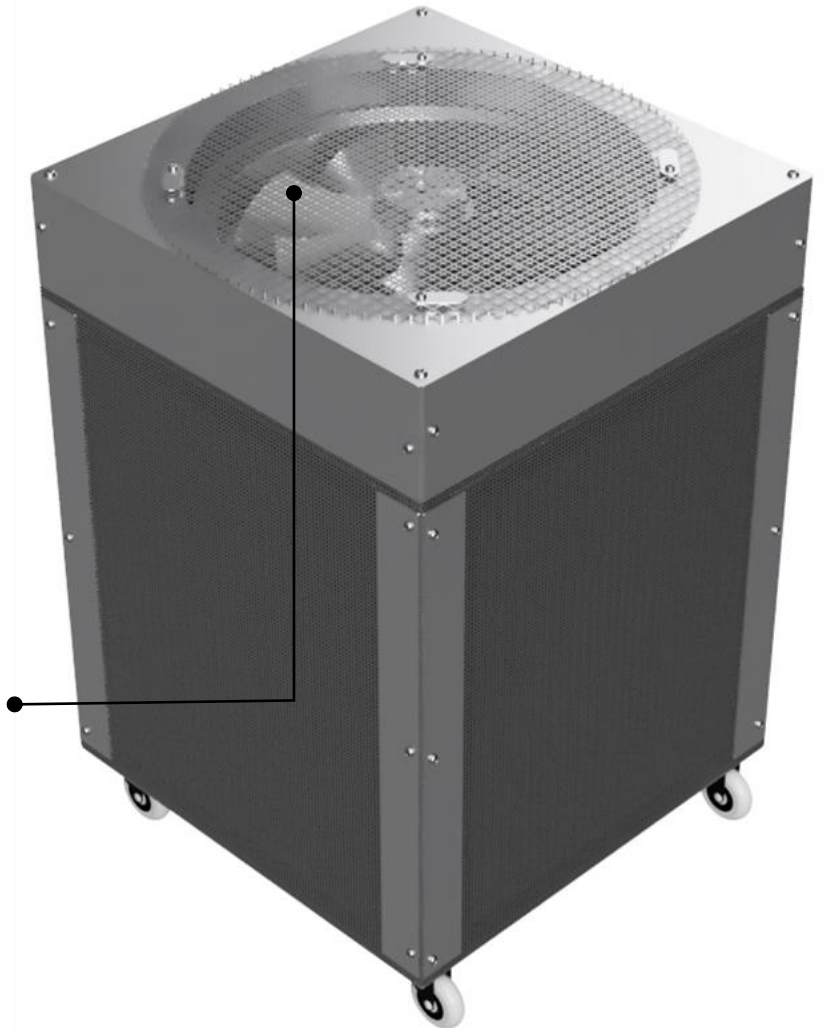
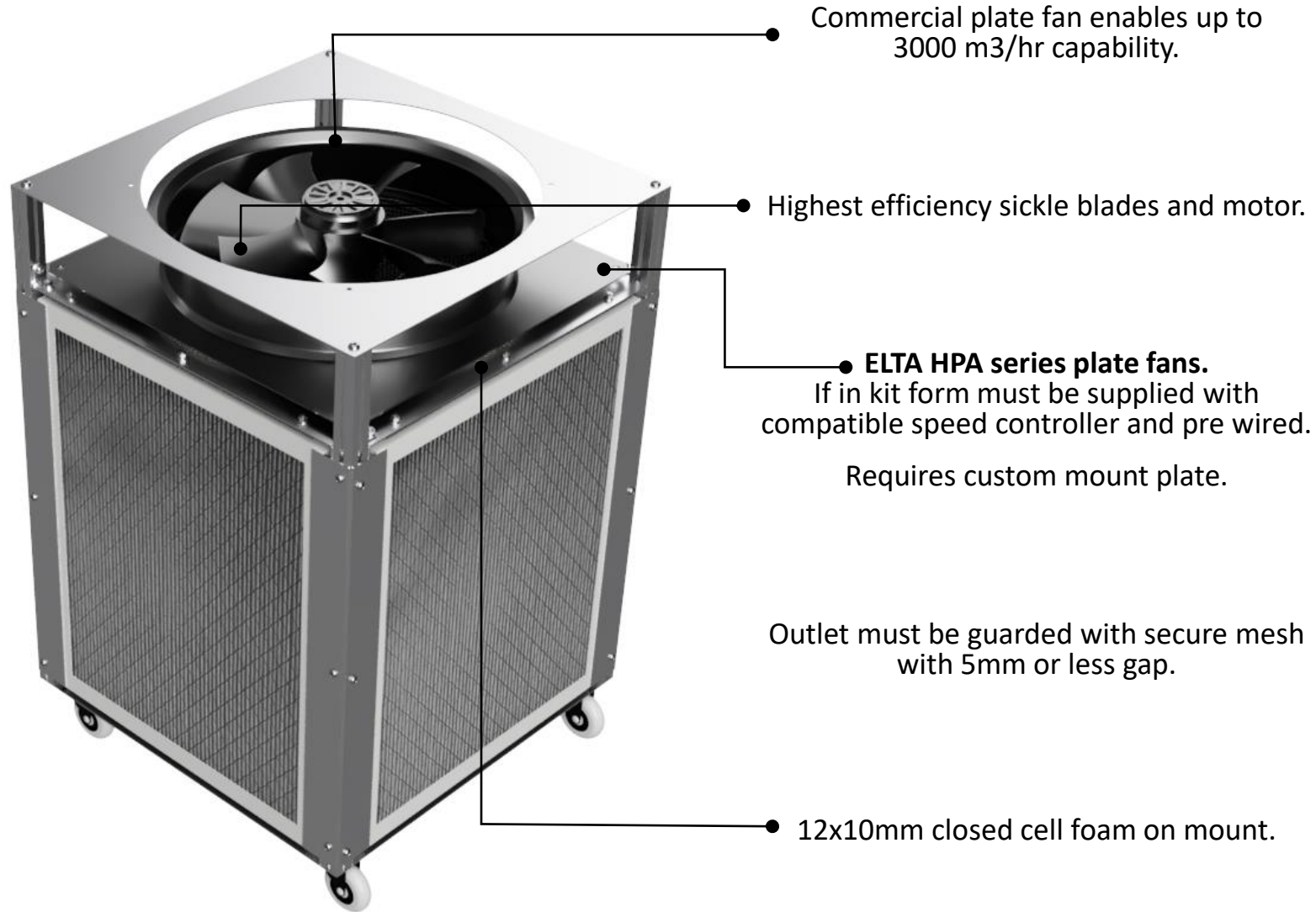


EPA filter adapter example

IKEA STARKVIND E12 EN1822



Commercial plate fan



*HPA 400 may require minor material removal at corners of fan plate.

Fan and filter specifications

FANS – General specifications

20 Inch Box fans

- Speed adjustable models via side mounted dial.
- Max 70w rating advised for noise

18 Inch Cage Fans

- Legs removed
- Single speed (rear controls inaccessible)
- Max 120w rating advised for noise
- 500mm to edges of cage grill

14 Inch Cage Fans

- Legs removed
- Single speed (rear controls inaccessible)
- Max 70w rating advised for noise
- 385mm to edges of cage grill

High Efficiency Commercial Plate fans

20 Inch Filters: HPA315/4-1A, HPA400/6-1A

16 Inch Filters: HPA250/4-1A

- Pre-wired
- Speed switch / controller
- Outlet safety grill with 4mm or less gap

FILTERS – General specifications

Panel types

- ISO F7/F8 ePM1 50% or higher
- MERV 13 or 14
- EPA 11, EPA 12
- Use filter with ASHRAE Standard 52.2, EN1822 or GB/T 14295 rating where appropriate for locality.

Panel sizes

ISO

- 490x592mm (20x24 equivalent)
- 490x620mm (20x25 equivalent)
- 24 or 48mm deep

ASHRAE

- 20x25 Inch
- 20x24 Inch
- 20x20 Inch
- 1 or 2 Inch deep (increase clamp bolt length for 2")

Standard retail replacement filters with custom adapter

- E.g. IKEA STARKVIND EPA 12

Other sizes possible with custom adapter plates.

Recommended

20 Inch Box Fans

US/CA Default box fan: **Lasko 3733**
EU Default box fan: **Sichler VT-241.B**

18 Inch Cage Fans

High quality & flow: **NETTA sickle blade**
High quality & efficient: **Hydor Typhoon**
Budget & low noise: **Prem-I-air EH0522**

14 Inch Cage Fans

Recommendation list WIP, check dimensions of cage and adjust mount plate accordingly.

Filters

Retail Available: **Filtrete MPR 1900, 2200**
Commercial: **EN1822 rated EPA 11/12**

Pre filters

G2/G3 or 40z fire retardant polyester wadding prefilter
+ Fibreglass insect mesh

USE & MAINTENANCE

Filter replacement

Replacement schedule guide*

Every 6 months if used 12 hrs/day

Every 3-6 months 24 hrs/day

OR

Condition Monitoring Options

PM2.5 sensor

RPM by blade pass frequency on tablet/phone spectrogram app

+

Power consumption & voltage

SPL noise measure at 1m from edge of cart.
E.g. NIOSH phone app or type 2 SPL meter

Air velocity meter (E.g. Testo 405i)
sweep average velocity across filter inlet.

I/O Automation



Timer inline socket

OR

IoT WIFI inline plug socket

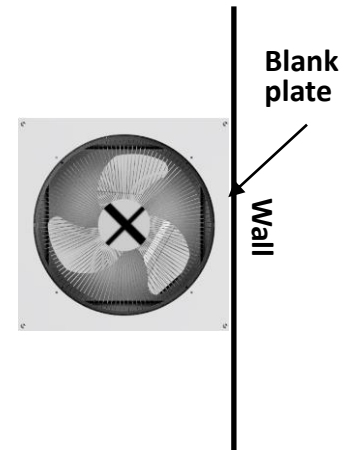
Fan service schedule

Clean fan cage and blades at every filter change.

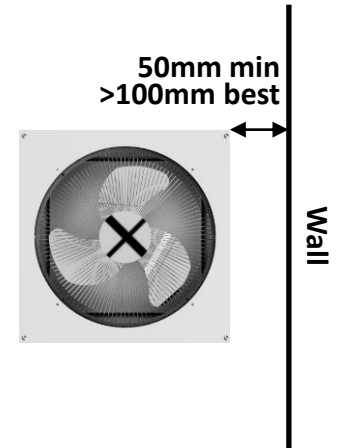
Re oil fan motor bearing every second filter change.

Placement

3 Filters
1 blank plate



4 Filters



Avoid corners

