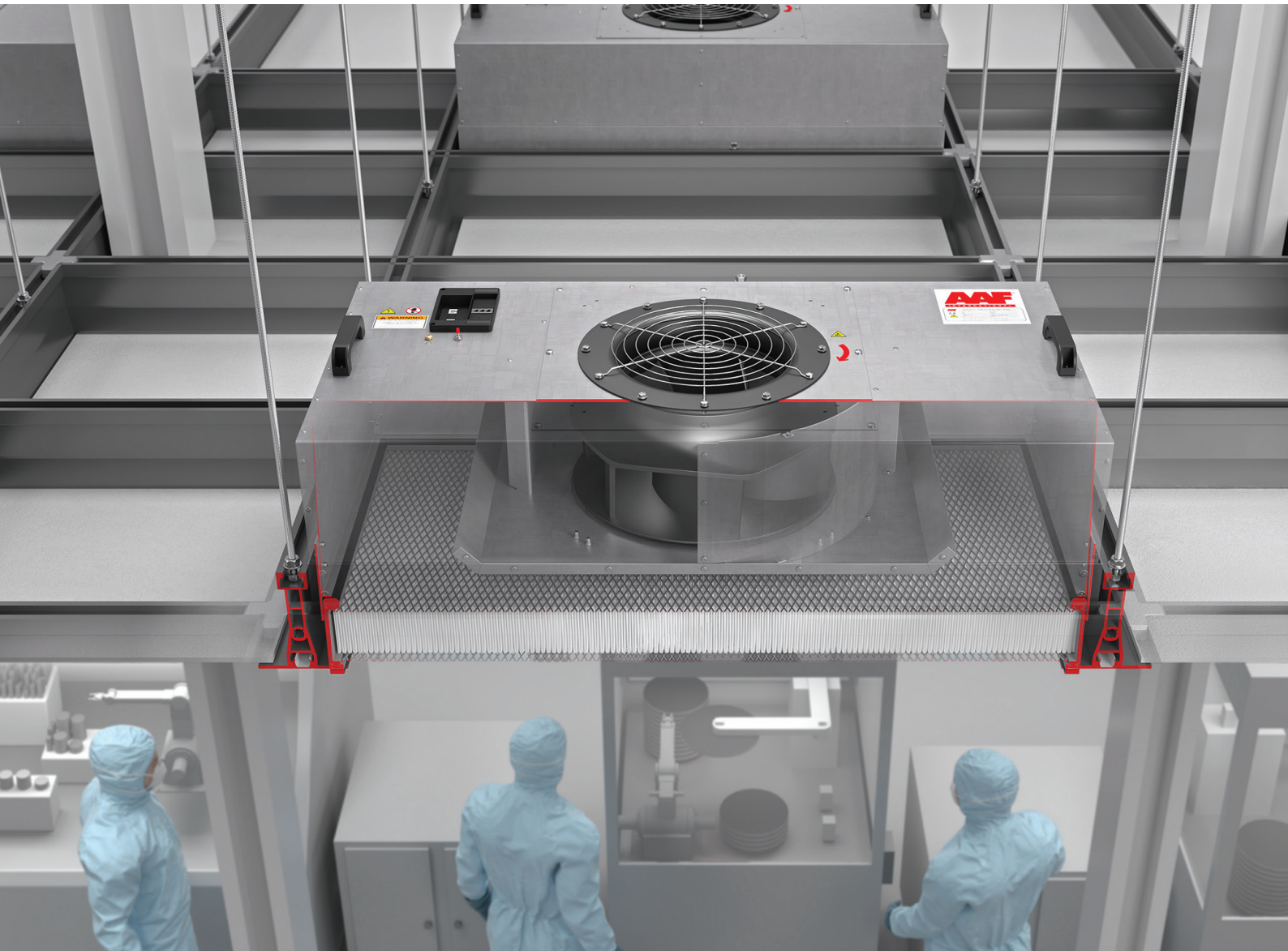


AstroFan Base Instruction Manual



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2. Safety Instructions

AAF AstroFan FFU are not ready-to-use products and are not meant to be used until such time as they have been built into machines, ventilation equipment and installations or safe operation has been insured by a protection grille to EN 294 or some other fixture has been provided in order to prevent accidental contact.

Installation, commissioning and electrical installation are only to be carried out by trained and qualified service personnel.

The FFU is only to be operated within the areas shown on the type plate.

You must always follow the manufacturer's instructions when using the FFU, which should not be used for any purpose or medium other than stated with the order and order confirmation.

Planners, OEM's, contractors, owners or operators are always responsible for proper and safe installation as well as for safe operation.

Safety features, e.g. protective inlet grill and terminal HEPA/ULPA filter, must not be removed or by-passed, neither are they to be rendered inoperative.

General Information

The AAF AstroFan FFU is a self-contained ceiling filter fan unit, designed for use in turbulent mixing and laminar airflow cleanroom areas. The unit is designed for utilization in the AAF 50 and 55/70 mm T-Bar ceiling grid and compatible ceiling grids.

The lightweight unit is easy to install.

Provided with the correct HEPA/ULPA filter, typical applications include cleanrooms up to

Class 3 to ISO.EN 14644-1 and Class M1.5 (1) to US Federal Standard 209E.

The AAF AstroFan FFU comprises a clean bright aluminium housing, containing a compact design, high performance encapsulated external rotor type motor and a backward curved impeller designed for optimum performance.

- Specialized electronic commutation motor design permits speed control through the built-in electronics, connected with a bus-line to the control unit or a PC operated visualized control.
- All fans are dynamically balanced at two levels in accordance with VDI 2060 or DIN.ISO 1940, Section 1.
- Each unit is provided with 2 or 4 lifting handles for easy installation.
- All pop-rivets are closed head type.
- The unit is completed with an AAF AstroCel II HEPA/ULPA filter, sized and selected to the correct airflow and pressure drop. All AAF AstroCel II HEPA/ULPA filters are factory tested to EN 1822.

- The FFU-housing seals and rests on the internal gasket of the RSC adapter frame which holds the AstroCel II filter. An upside turned skirt on the RSC frame centers the FFU-housing. The flat flange at the air-leaving side of the RSC frame rests on the dry gasket, applied into the ceiling grid.
- Each FFU-housing is provided with an integral inlet protection grille. Standard supply is without pre filter frame. Upon request a pre filter frame extension can be supplied.

Options:

- If required, the inlet grille can accommodate an AAF RedPleat pre filter, sizes 370x440x44 mm (FFU 66), 490x490x44 mm (FFU 69, 612 and 99) or 740x740x44 mm (FFU 912 and 1212). Filter classification G4 to EN779. Special pre filter extensions can be provided for all sizes to accommodate larger size or filters with higher efficiency.

3. Transport & Storage

AAF AstroFan FFU are factory packed, palletized and shrink-wrapped, to comply with the requirements for the agreed method of shipment.

FFU-housing, AstroCel II filter and RedPleat pre filters are packed separately.

Transport the AAF AstroFan FFU only in the original packaging. Use suitable lifting and transportation equipment. Avoid vibrations and shock loads.

Inspect directly upon arrival all cartons and packages and note any visible damage or shortages on the forwarder's carriage slip. Report damages and shortages directly to the supplier. When transporting manually, observe the admissible human lifting and carrying limits. See name plate for weight.

Do not transport the AstroFan FFU or parts of it at the connection cable.

Store the AstroFan FFU in the original packaging in a dry area, protected from the elements, or protect it suitably from dirt and weather until final installation. Avoid exposure to excessive heat or cold.

Avoid excessive storage periods (we recommend no longer than one year) and inspect the motor bearings and gaskets for proper operation prior to installation.

4. Mechanical Installation

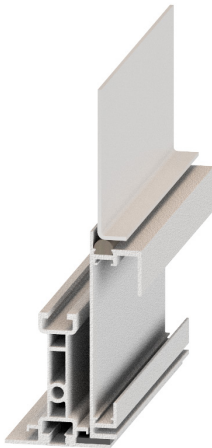
Installation, electrical connection and commissioning are only to be performed by trained and qualified personnel. Adhere to all machinery-related requirements and specifications supplied by the systems manufacturer or OEM. Any misuse will invalidate the guarantee on our AstroFan FFU and accessories.

Installation Room Side Change Execution (RSC):

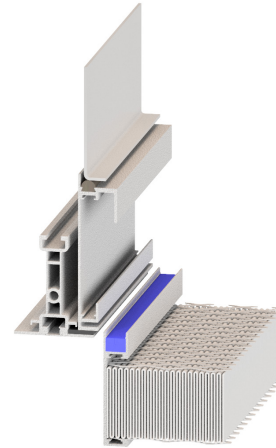
- Installation should preferably take place with 2 persons.
- Ensure that the ceiling grid is provided with clean, undamaged gasket around the entire inner perimeter of each opening. The gasket should be free from cracks or voids. Make sure that the gasket is firmly sealed in the corners.
- Once equipment is ready to be installed and is as close to the final location as possible, the following procedure should be followed.
- Remove all packing material from the RSC adapter frame and remove the 4 support strips, which are taped to the frame. Lift adapter into the grid. Lifting into position takes place from the top (thus from above the grid) or through the openings of the grid.
- Inspect the gasket in the adapter frame for voids or damage.
- Remove all packing material and lift AstroFan fan top into the grid. Lifting into position takes place from the top (thus from above the grid) or through the openings of the grid.

- Positioning is done from above the grid.
- Use the handles of the AstroFan fan top to carefully position the fan top onto the adapter frame. Do not apply force. The unit rests on the gasket of the adapter and seals by its own weight.
- Mechanical fixtures are preferred to avoid movement of the AstroFan + Adapter frame.
- If necessary, place the fan top temporarily on the grid during installation of the AstroCel II fluid seal, adjacent to the opening.
- Remove all packing material and lift AstroCel II HEPA/ULPA filter into the RSC adapter frame. Avoid touching the filtration media. Lifting into position takes place from the Cleanroom. This work has to be carried out with at least 2 persons.
- Lifting into position takes place from the Cleanroom. This work has to be carried out with at least 2 persons.
- Place the two long support strips into the groove of the adapter frame. For this purpose you need to press the filter a few mm into the knife edge of the adapter frame. The rim on the support strips allows only one position to place the filter and prevents the filter from falling out of the frame.
- Place the two short support strips into position and finalize installation. Do not apply point forces. The seal is provided by the Urethane gel in the gel groove at the air entry side of the filter.

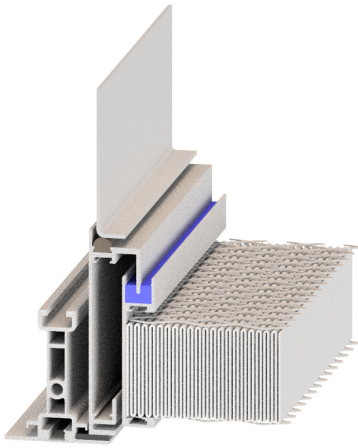
Room Side Change Installation (RSC):



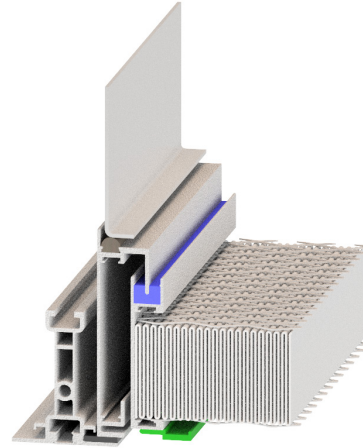
1. Place the Room Side Change adapter frame onto the ceiling grid with the external knife edge pointing upwards. Lower the FFU onto the frame from above. Use the knife edge to centre the FFU.



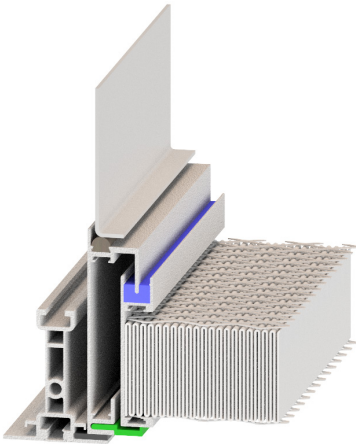
2. Unpack the filter and position it below the unit with the gel seal pointing upwards.



3. Lift the filter into the adapter frame from below and push firmly to engage the knife edge into the gel seal. Take care not to apply force to the filter media.



4. Slide the support strips into the room side change frame to support the filter. For rectangular filters, install the longer strips first.



5. Ensure all 4 strips are installed fully and the filter is firmly secured.

Installation Top Side Change Execution (TSC):

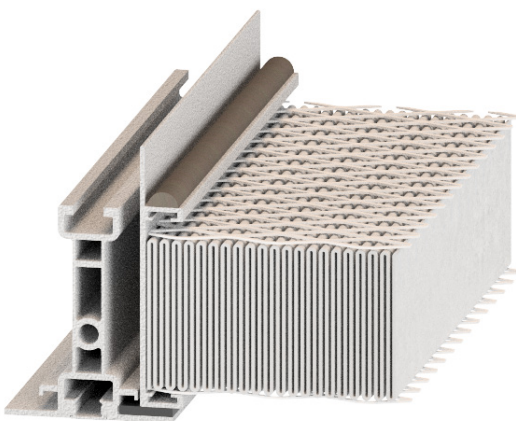
- Installation should preferably take place with 2 persons.
- Ensure that the ceiling grid is provided with clean, undamaged gasket around the entire inner perimeter of each opening. The gasket should be free from cracks or voids. Make sure that the gasket is firmly sealed in the corners.
- Once equipment is ready to be installed and is as close to the final location as possible, the following procedure should be followed.
- Remove all packing material and lift AstroCel II HEPA/ULPA filter into the ceiling grid. Avoid touching the filtration media.
- Lifting into position takes place from the top (thus from above the grid) or through the openings of the grid. This work has to be carried out with at least 2 persons.
- Remove all packing material and lift AstroFan fan top into the grid. Lifting into position takes place from the top (thus from above the grid) or through the openings of the grid.
- Positioning is done from above the grid.
- Use the handles of the AstroFan fan top for carefully positioning the fan top onto the filter. Do not apply force. The unit rests on the gasket of the filter and seals by its own weight. The skirt provided on the filter locates the FFU.
- Mechanical fixtures are preferred to avoid movement of the Astrofan + Filter
- Specialized electronic commutation motor design permits speed control through the built-in electronics, connected with a bus-line to the control unit or a PC operated visualized control.

- All fans are dynamically balanced at two levels in accordance with VDI 2060 or DIN.ISO 1940, Section 1.
- Each unit is provided with 2 or 4 lifting handles for easy installation.
- All pop-rivets are closed head type.
- The unit is completed with an AAF AstroCel II HEPA/ULPA filter, sized and selected to the correct airflow and pressure drop. All AAF AstroCel II HEPA/ULPA filters are factory tested to EN 1822.
- The FFU-housing seals and rests on the internal gasket of the RSC adapter frame which holds the AstroCel II filter. An upside turned skirt on the RSC frame centers the FFU-housing. The flat flange at the air-leaving side of the RSC frame rests on the dry gasket, applied into the ceiling grid.
- Each FFU-housing is provided with an integral inlet protection grille. Standard supply is without pre filter frame. Upon request a pre filter frame extension can be supplied.

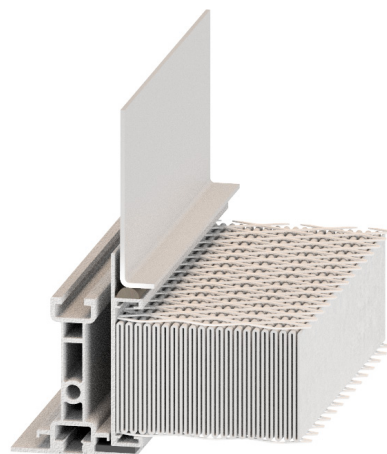
Options:

- If required, the inlet grille can accommodate an AAF RedPleat pre filter, sizes 370x440x44 mm (FFU 66), 490x490x44 mm (FFU 69, 612 and 99) or 740x740x44 mm (FFU 912 and 1212). Filter classification G4 to EN779. Special pre filter extensions can be provided for all sizes to accommodate larger size or filters with higher efficiency.

Top Side Change Installation:



1. Place filter on ceiling grid with knife edge pointing upwards.



2. Lower the FFU onto the filter from above, using the knife edge to centre the FFU.

It is strongly recommended to clamp the complete FFU system in place to avoid that it is pushed upwards while installing or removing the AstroCel filter from the RSC adapter frame.

Once the AstroFan FFU is in position, the electrical wiring can be connected at the terminal box on top of the housing.

Options:

When a pre filter is provided, place pre filter into holding frame/ fan protection grill. Pre filters do not require clamping.

Register serial number of AstroCel II into the GA drawing or on the top of the AstroFan FFU housing.

The filter test report is attached to each individual AstroCel HEPA/ ULPA filter. Please retain the report(s) and file together with this operating manual. PLEASE DO NOT THROW THEM AWAY

5. Network Connections

EC fan motor controlled through a CCU (Cleanroom Control Unit)

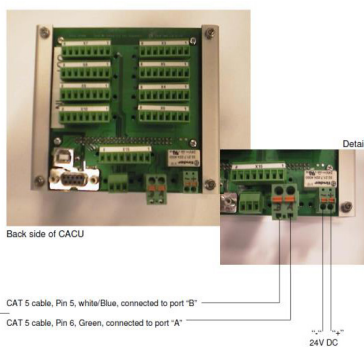
The CCU is suitable of controlling up to 80 to 100 pcs FFU.

A total of 8 separate group of FFU's can be controlled.

The CCU include amongst others, error control, fan control and a timer function.



Please refer to the separate manual of the CCU.



Connection to 230V – 1 phase 50/ 60 Hz



For connections between the CCU and the first FFU and between each FFU a twisted pair line with RS485 is required. (standard CAT 5 network cables)

Installation, electrical connection and commissioning are only to be performed by trained and qualified personnel.

Adhere to all machinery-related requirements and specifications supplied by the systems manufacturer or OEM. Any misuse will invalidate the guarantee on our AstroFan FFU and accessories.

The electrical wiring and connection always has to be executed in accordance with local ordinances and national (local) electrical codes. Only authorized electricians should be utilized.

The mains cable always has to be installed from outside. Avoid mechanical strain on the cable. Do not drill into the housing.

EC EBM Bus or MODbus motor controlled through an AstroDrive PLC

The AstroDrive is suitable of controlling 100 + modular AstroFan FFU and can be equipped with I/O modules that can accept or sent signal to the modular FFU or other equipment. The 3" AstroDrive PLC is equipped with standard layout screen. The 7" and 12" screens have the room as background and fan can be controlled by simple tapping on the screen. A total of 8 separate group of FFU's can be controlled.

The CCU include amongst others, error control, fan control and a timer function.



Control:

- Fan Filter Units
- lighting
- constant pressure
- door interlocks
- AHUs

Monitor and record:

- pressure
- temperature / RH
- airflow
- FFU RPM & status
- error logging

BMS & remote access:

- standby, E-stop inputs
- alarm relay output
- Modbus TCP / BACnet
- desktop remote control

Please refer to the IOM of the AstroDrive for further information.

6. Operating Conditions

AstroFan FFU is designed to for moving clean air with low concentrations of dust or aerosols, as well as slightly aggressive gases and vapours up to a density of 1.3 kg/m³.

Operating temperature to be between -30 °C and +40 °C. Relative humidity to be below 95% to avoid condensation.

Avoid intrusion of water.

Do not operate in explosion hazard areas.

Switching frequencies:

The fan is designed for S1 constant operation.

Avoid operations at the outer range limits of the control equipment.

Observe the special instructions for the EC motors and controls

If the leakage current exceeds 3.5 mA, the equipment has to be earthed in accordance with DIN VDE 0180/5.88, Par. 6.5.2.1.

7. Operating & Commissioning

Before initial operation the following checks need to be carried out:

- Installation and electrical connections are completed and have been carried out in accordance with instructions.
- All safety equipment is properly installed and secured. (protection grills etc.)
- Any debris and materials left-behind and other loose materials have been removed from the FFU housing.
- Thermistors and/or motor cut out switches have been correctly connected and are functional.
- Cable entry points are sealed.
- Nominal power consumption (as per nameplate) is not exceeded.
- Connection data comply with the data from nameplate. See also capacitor rating.
- Keep inlet opening clear.

Switch fan into 'on' position in accordance with the switching arrangement and local conditions. Check for:

- Direction of fan rotation and airflow. The direction of rotation is always indicated with an arrow on the top of the AstroFan FFU housing.
- Check that the fan is running smoothly and in balance.

8. Maintenance

The AAF AstroFan FFU will require very little maintenance.

Due to the selection of bearings with lifetime lubrication (by using a special lubricant), the FFU-fan does not require any maintenance. Under normal operating conditions the lifetime lubrication will provide a working life of 30-40,000 hours. After depletion of the lubricant, the entire bearing needs to be replaced.

Access to the fan and motor is gained from the top by lifting the FFU-housing from the HEPA/ULPA filter.

Periodic checks should be carried out on the filter resistance and also on the air volume / air velocity. Lifetime of AstroCel II HEPA/ULPA filter and RedPleat pre filter depend on local operating conditions (velocity, working point, dust load and running hours) and cannot easily be predicted.

RedPleat pre filter final resistance is 250 Pa maximum. However AAF recommends a periodical check and replacement of the pre filter at, for example, 100 Pa to ensure optimal energy efficiency of the AstroFan FFU.

AstroCel II HEPA/ULPA final resistance depends on the available free static pressure of the AstroFan FFU in the cleanroom arrangement. Depending on operating conditions (velocity, filter class and depth, working point, pre filter or other external static pressure elements) a free static pressure of 80-100 Pa is available.

All maintenance work should be carried out with the highest regard for safety. For access to the fan/motor the AstroFan FFU top plate needs to be lifted from its position and removed before the fan/motor arrangement can be reached.

- Ensure fan impeller is not moving.
- Ensure power supply is interrupted and provisions are taken to avoid accidental closure of circuit.
- Ensure all working instructions are properly followed.
- Always keep fan unobstructed. Regular cleaning helps to prevent motor imbalance; use a cleaning brush where necessary.
- Do not use high-pressure cleaners (water, steam, and air)
- Do not bend fan blades.
- Monitor for unusual fan noise.

Change the fans at the end of their working life, or if a bearing is damaged. Bearings are not replaced. When required, the fan is replaced.

Replace AstroCel II HEPA/ULPA filter and RedPleat pre filter only by original AAF filters. Contact AAF International Filter Sales Department with reference of the part numbers that are always displayed on a label on the filters.

9. Fault Finding

Always follow the working instructions whenever fault finding is carried out. Monitor the fault from the signal given from the internal electronics.

The fault displays as a code on the touch screen of the CCU/AstroDrive unit. See separate manual for protocol on CCU/AstroDrive fault messages

In most cases, if there is an error than this is a connection error.

- Check if all connectors are properly connected. Check the wiring, especially of the RS485 network.
- Check if the CCU/AstroDrive has been connected correctly.
- Check if there is power to all FFUs. No power gives a communication error.
- Check if the impeller is slowed down mechanically.

10. Manufacturer's Declaration of Conformity

The AstroFan FFU is manufactured in compliance with applicable international standards and regulations by:

AAF International

European Headquarters

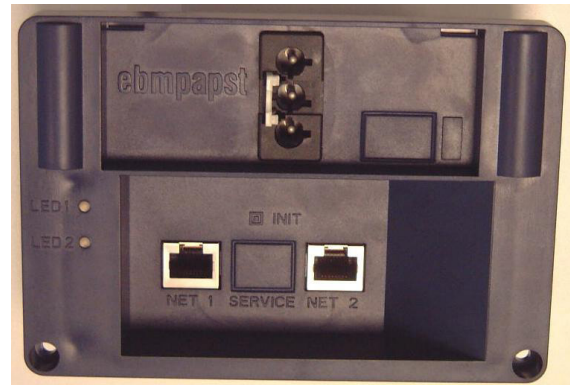
Odenwaldstrasse 4, 64646 Heppenheim

A risk assessment has been conducted referenced on the following certification procedures according the assessment as in machine directive 2006/42/EG and NEN EN IEC 60204-1 the AstroFan Filter Unit is in full compliance to the requirements as mentioned in these guidelines. A technical construction file is available in where a risk assessment on safety have been performed and reported out in a " Veiligheidsrapport t.b.v. 'AAF AstroFan FFU Serie' Inzake de machinerichtlijn" (in Dutch) which is available upon request.



11. Cable Connections

Cable box for FFU Current 230V EC RS485 Execution



This Wieland male connector is supplied with the AstroFan FFU. Partnumber: 92.934.53.1

The power supply has to be connected to the supplied Wieland male connector. The power supply should have a solid core that can be inserted directly into the connector housing. The data supply can be connected with the net 1 or net 2 connectors. Net 1 is for connecting to the fan, Net 2 is for connecting towards the next FFU. Standard Cat 5, type B. UTP cables can be used.

The wires of the standard CAT-5, type B. UTP cable are connected as followed:

Pin 1 white orange

Pin 2 orange

Pin 3 white green

Pin 4 blue

Pin 5 white blue

Pin 6 green

Pin 7 white brown

Pin 8 brown

For connection towards the CCU please connect pin 5 and Pin 6 according to the manual of the CCU.

12. Spares

Project	
Customer:	
Customer PO:	
SAAF Sales Office:	
AAF CN:	
Product:	
Size / Type:	
Quantity:	
Date:	

Item	Description	Style code	Size	Part Number
1				
2				
3				
4				
5				

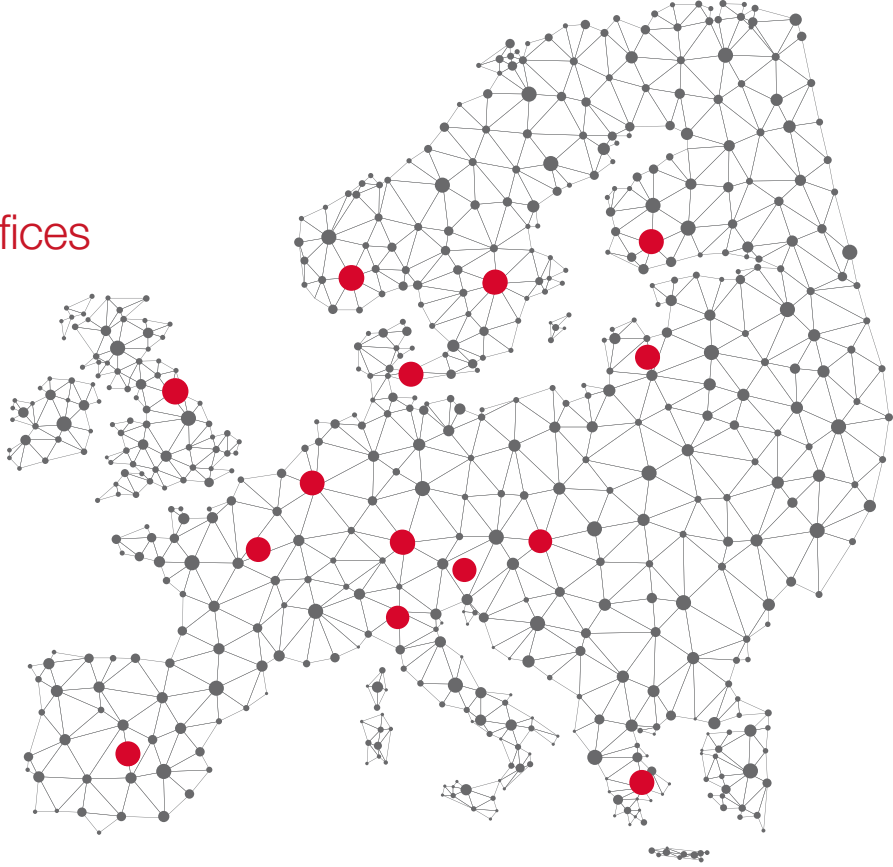
Note: The filter test report is attached to each individual AstroCel HEPA/ULPA filter.

Please retain the report(s) and file together with this operating manual. PLEASE DO NOT THROW THEM AWAY

13. Drawings

Please refer to the attachment of this document for the drawings of the units.

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www.aafeurope.co.uk/



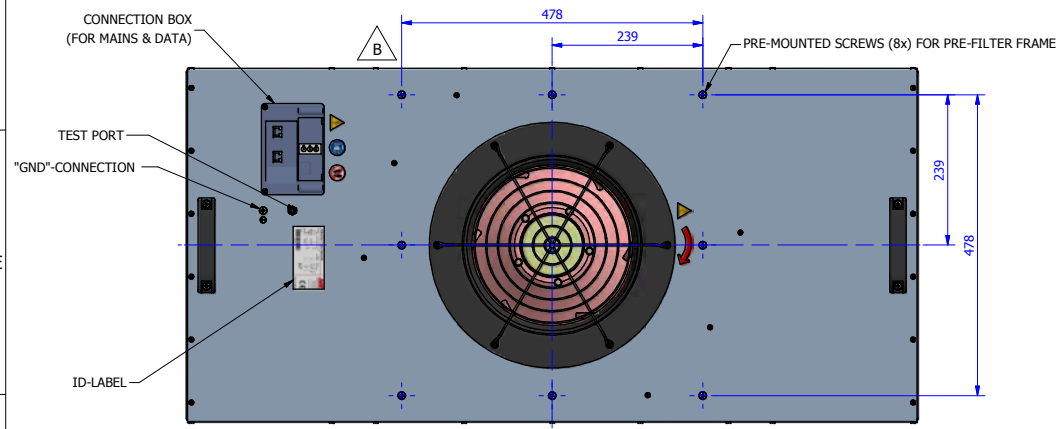
Bringing clean air to life:

AAF International
European Headquarters
Odenwaldstrasse 4, 64646 Heppenheim
Tel: +49 (0)6252 69977-0
aafeurope.com

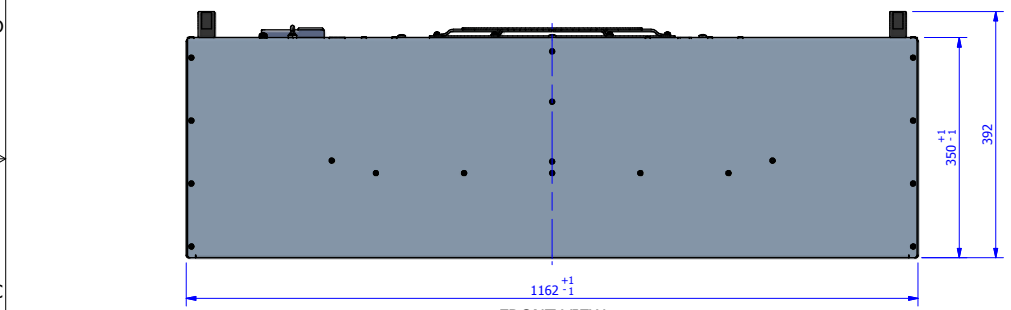
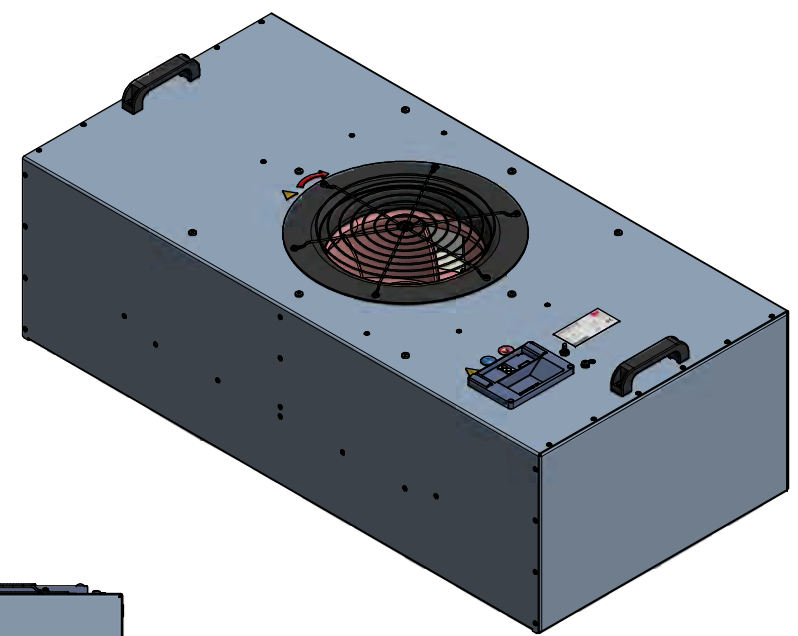
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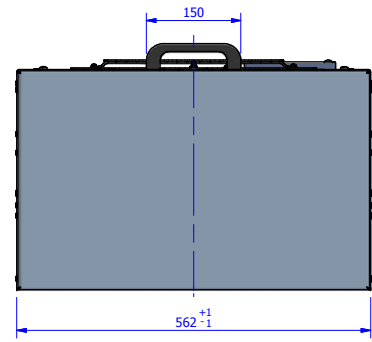
REVISION HISTORY		
REV	DATE	DESCRIPTION
0	1-4-2016	INITIAL RELEASE
B	27-5-2016	EDIT INLET NOZZLE + PRE FILTER FRAME



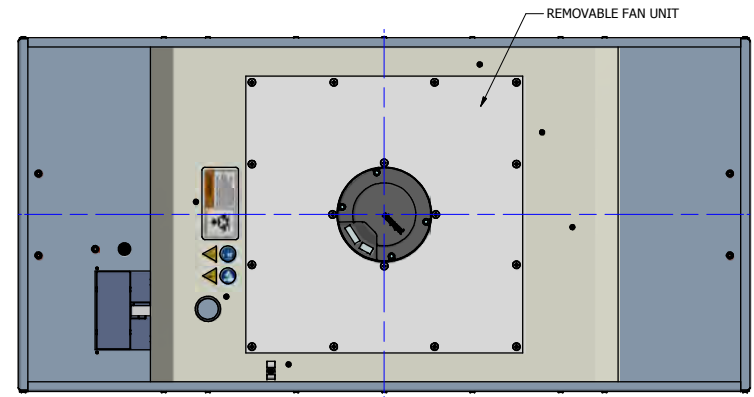
TOP VIEW



FRONT VIEW



SIDE VIEW

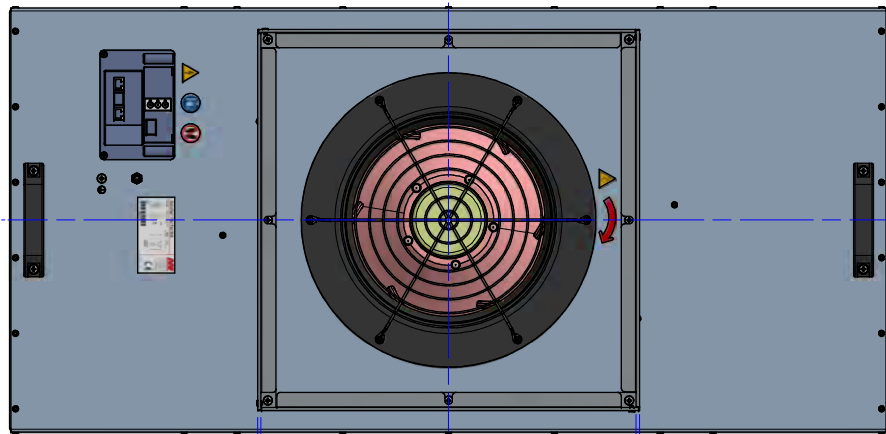


BOTTOM VIEW

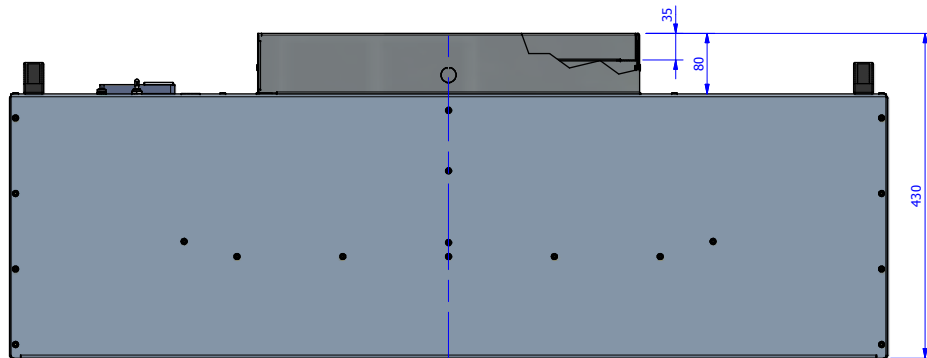
FILTER FAN UNIT SPECIFICATIONS (ROOM SIDE CHANGE)	
DIMENSIONS	1162 x 562 x 350 mm
NOMINAL AIR FLOW @ 0,45 m/s	1080 m ³ /h
HOUSING MATERIAL	ALUMINIUM
FAN ACCESS TYPE	BOTTOM
FAN (EC-TYPE) SIZE	Ø400 mm
REQUIRED FILTER SIZE	W x H x D = 1170 x 570 x D mm
OPTIONAL PRE-FILTER SIZE	W x H = 494 x 494 x D mm (20" x 20")
REQUIRED FILTER SIZE = FFU SIZE + 8 mm	

SHEET 2: FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

TITLE:		AAF Filter Fan Unit 612	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 27-5-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 6	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
	AAF AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands	REVISION:	DRAWING. NO.:
A2 SHEET: 1 OF 2		B	G960-01-S



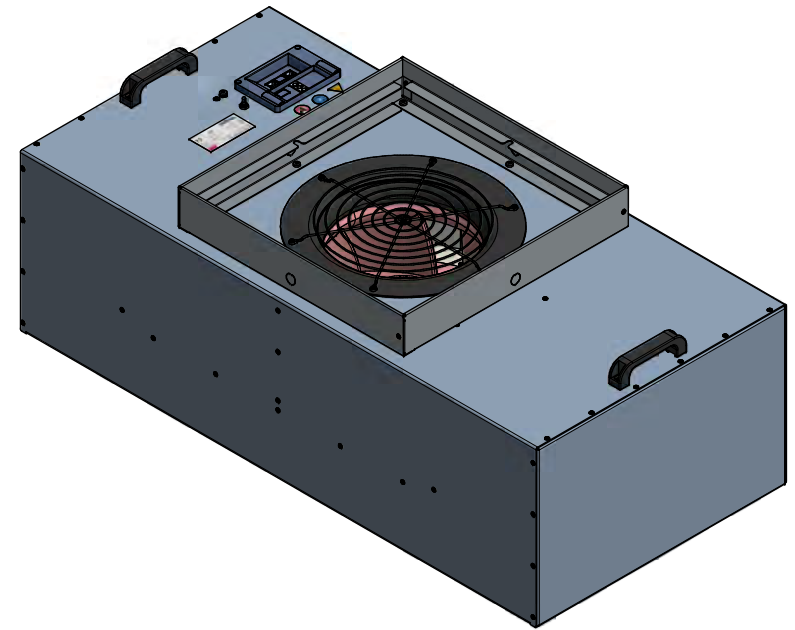
INNER DIMENSION □497
□505



35

80

430

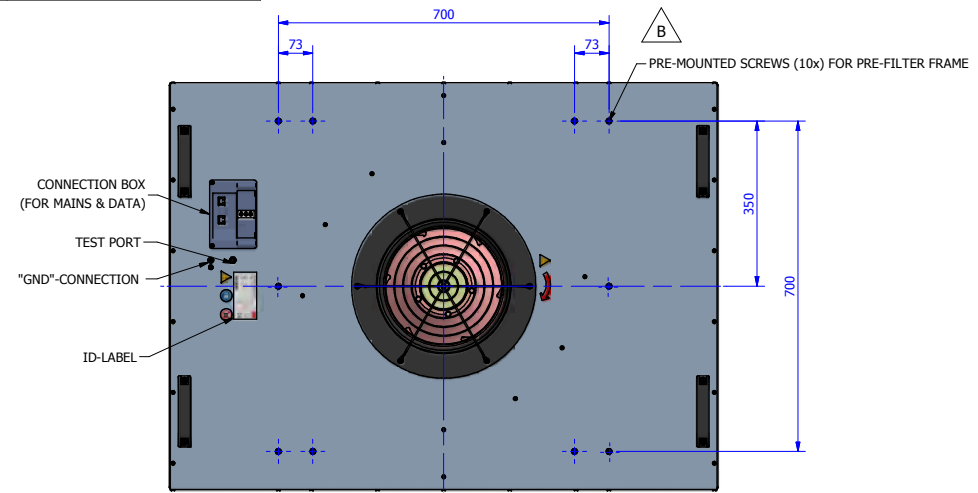


FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

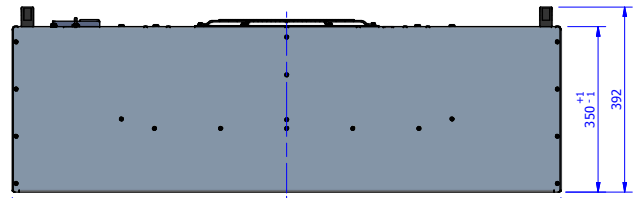
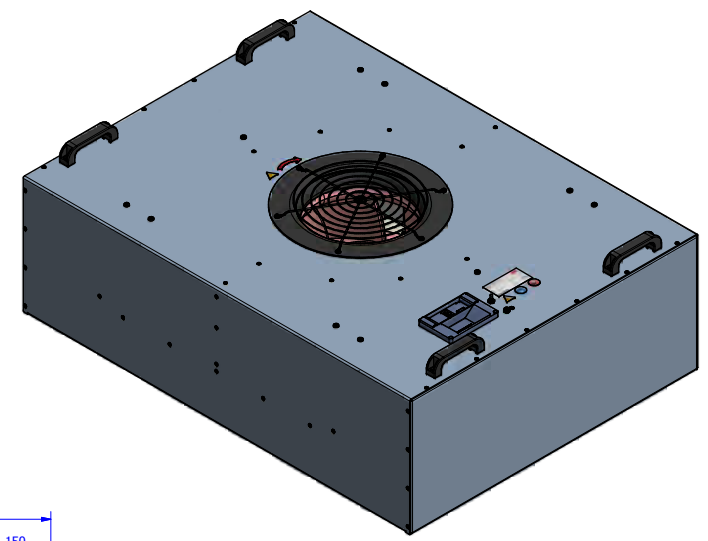
TITLE:		AAF Filter Fan Unit 612	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 27-5-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 6	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
	AAF AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands	REVISION: B	DRAWING. NO.: G960-01-S
A2	SHEET: 2 OF 2		



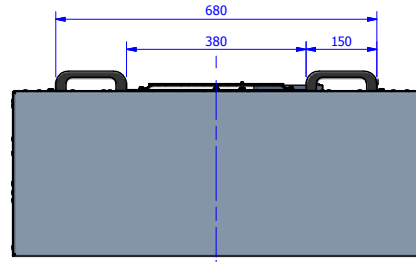
REVISION HISTORY		
REV	DATE	DESCRIPTION
0	1-4-2016	INITIAL RELEASE
B	27-5-2016	EDIT INLET NOZZLE + PRE FILTER FRAME



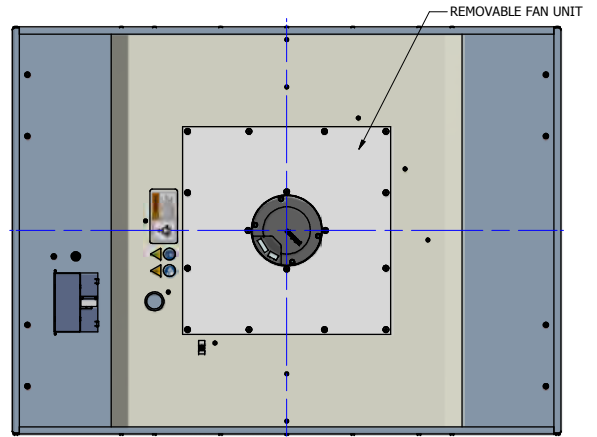
TOP VIEW



FRONT VIEW



SIDE VIEW

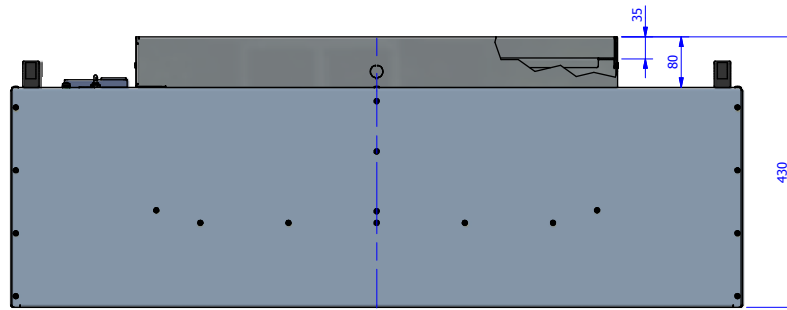
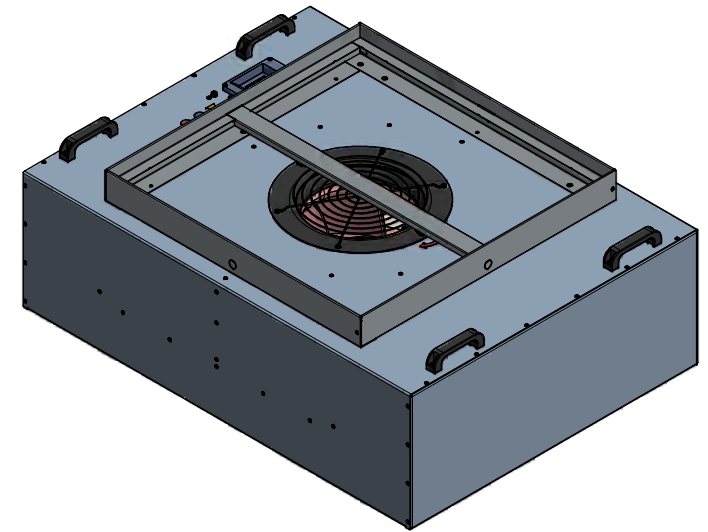
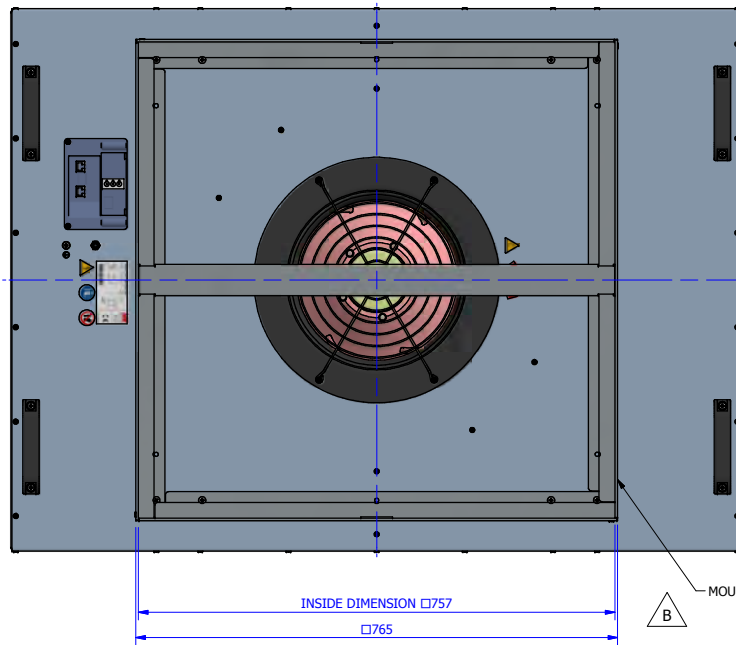


BOTTOM VIEW

FILTER FAN UNIT SPECIFICATIONS (ROOM SIDE CHANGE)	
DIMENSIONS	1162 x 862 x 350 mm
NOMINAL AIR FLOW @ 0,45 m/s	1500 m ³ /h
HOUSING MATERIAL	ALUMINUM
FAN ACCESS TYPE	BOTTOM
FAN (EC-TYPE) SIZE	Ø400 mm
REQUIRED FILTER SIZE	W x H x D = 1170 x 870 x D mm
OPTIONAL PRE-FILTER SIZE	W x H = 753 x 753 x D mm (30"x 30")
REQUIRED FILTER SIZE = FFU SIZE + 8 mm	

SHEET 2: FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

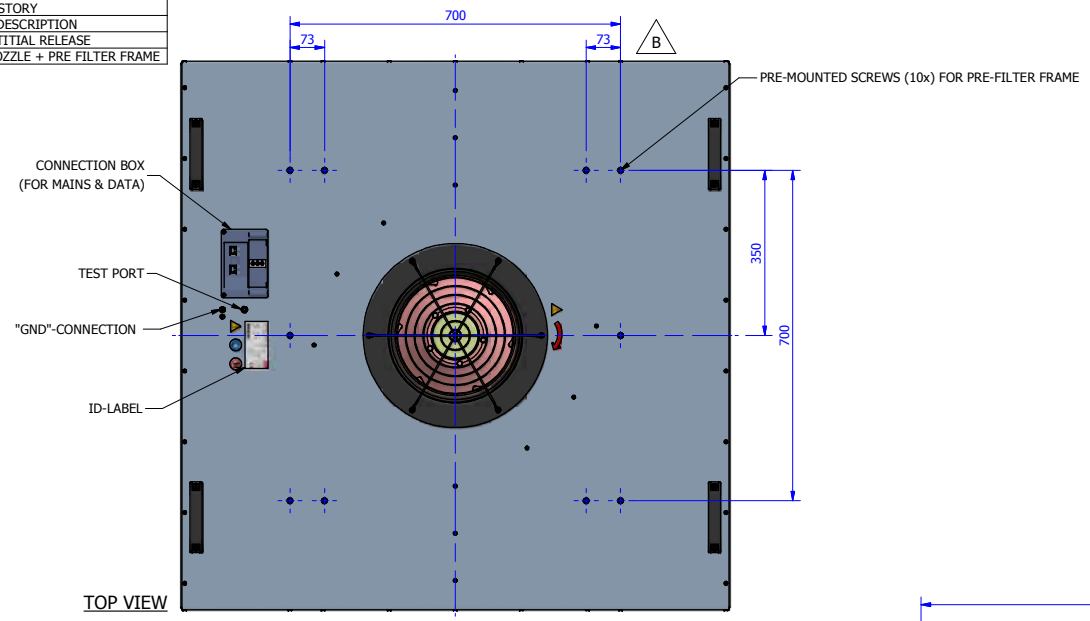
TITLE:		Filter Fan Unit 912	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 27-5-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 6	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
		REVISION: B	DRAWING NO.: G960-02-S
A2	SHEET: 1 OF 2		



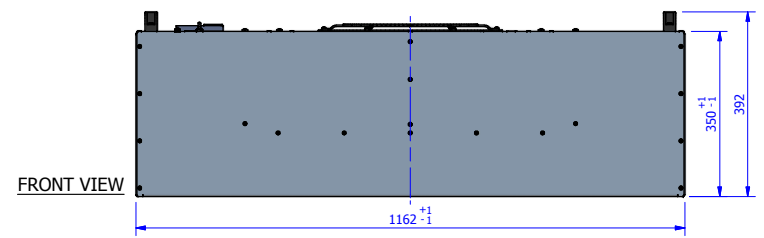
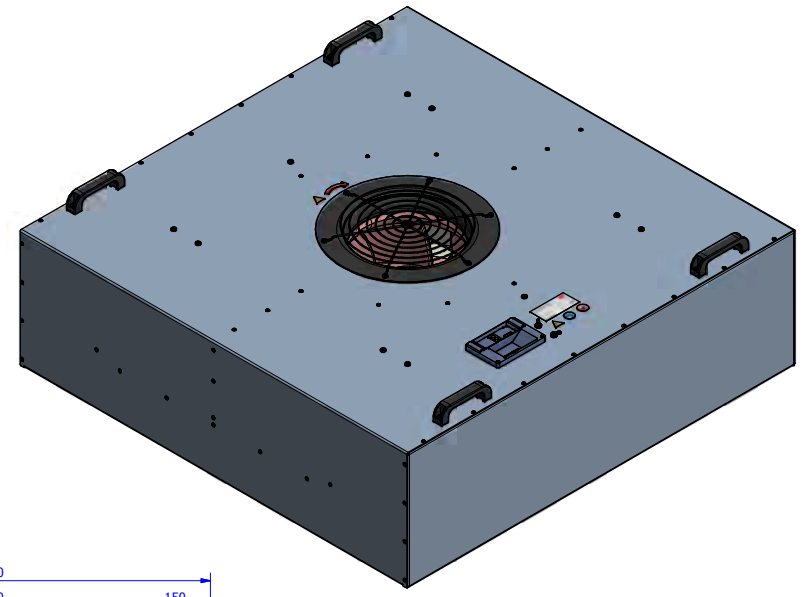
FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

TITLE:		Filter Fan Unit 912	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 27-5-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 6	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
	AAF AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands	REVISION: B	DRAWING. NO.: G960-02-S
A2	SHEET: 2 OF 2		

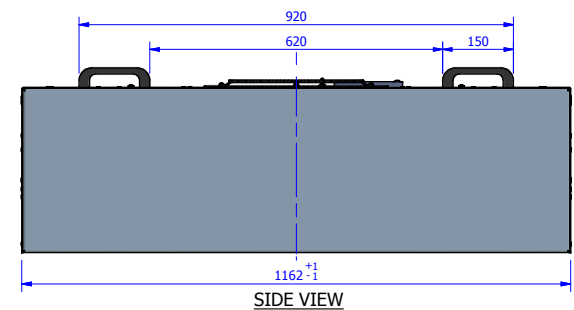
REVISION HISTORY		
REV	DATE	DESCRIPTION
0	1-4-2016	INITIAL RELEASE
B	27-5-2016	EDIT INLET NOZZLE + PRE FILTER FRAME



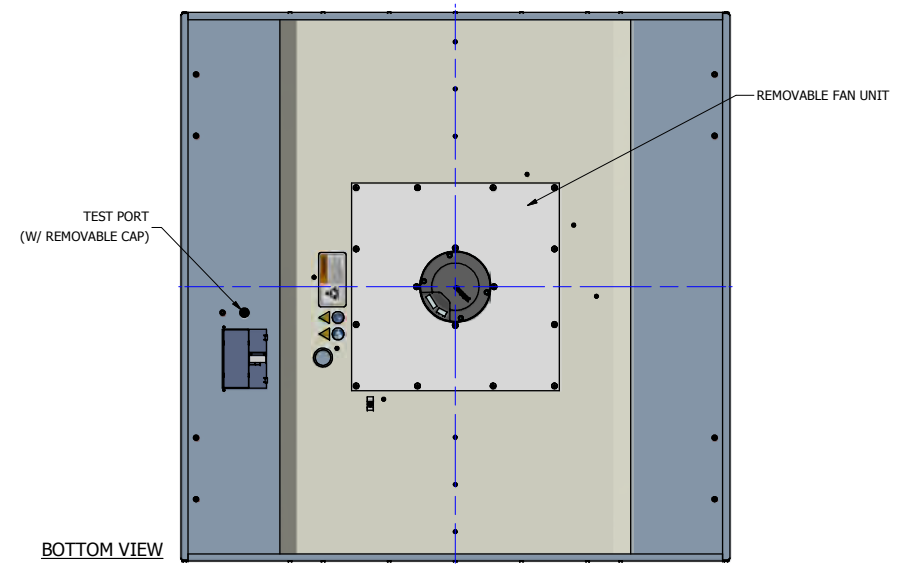
TOP VIEW



FRONT VIEW



SIDE VIEW

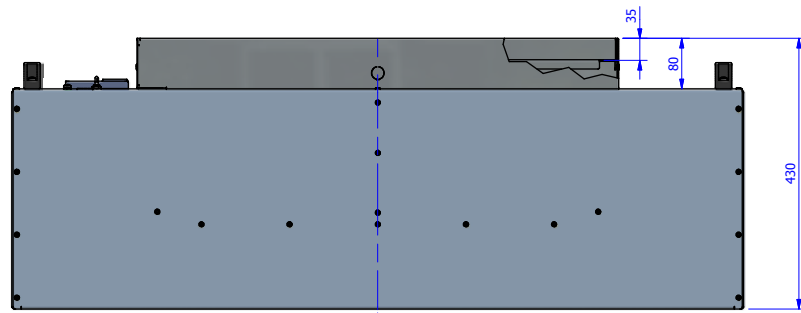
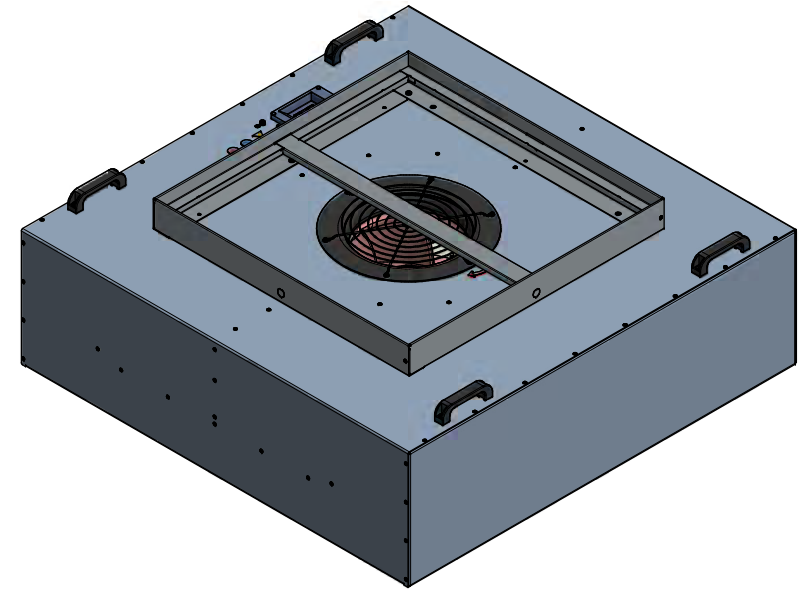
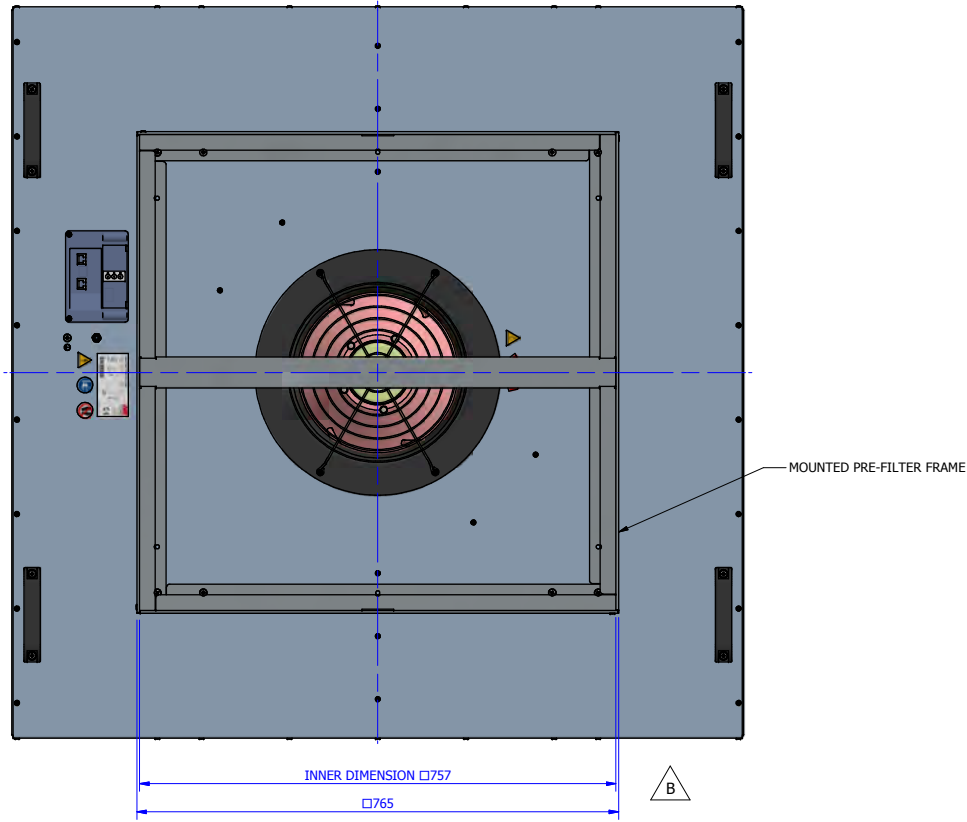


BOTTOM VIEW

FILTER FAN UNIT SPECIFICATIONS (ROOM SIDE CHANGE)	
DIMENSIONS	1162 x 1162 x 350 mm
NOMINAL AIR FLOW @ 0,45 m/s	2220 m ³ /h
HOUSING MATERIAL	ALUMINUM
FAN ACCESS TYPE	BOTTOM
FAN (EC-TYPE) SIZE	Ø400 mm
REQUIRED FILTER SIZE	W x H x D = 1170 x 1170 x D mm
OPTIONAL PRE-FILTER SIZE	W x H = 753 x 753 x D mm (30" x 30")
REQUIRED FILTER SIZE = FFU SIZE + 8 mm	

SHEET 2: FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

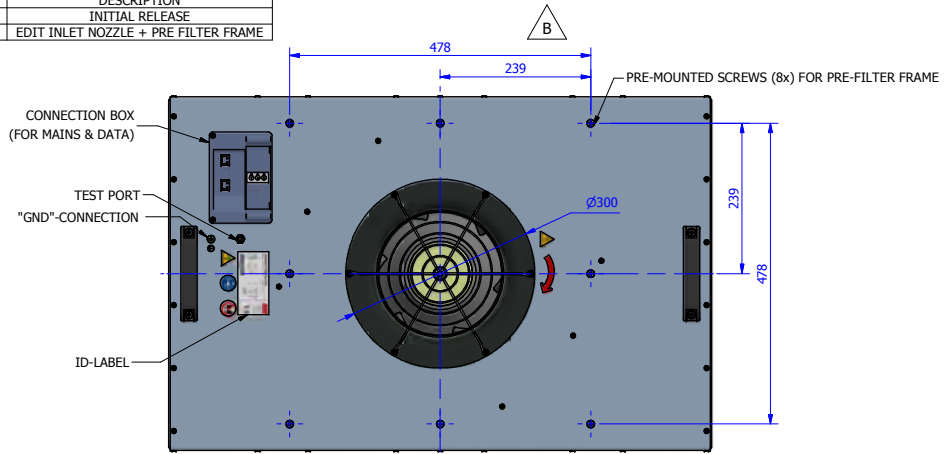
TITLE:		AAF Filter Fan Unit 1212	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 27-5-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 8	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
AAE	AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands <small>© 2015 AAF International B.V. All rights reserved. AAF and its logo are trademarks of AAF and its parent subject to conditions that shall not be reproduced, distributed or otherwise made public without the written consent of AAF.</small>	REVISION: B	DRAWING NO.: G960-03-S
A2	SHEET: 1 OF 2		



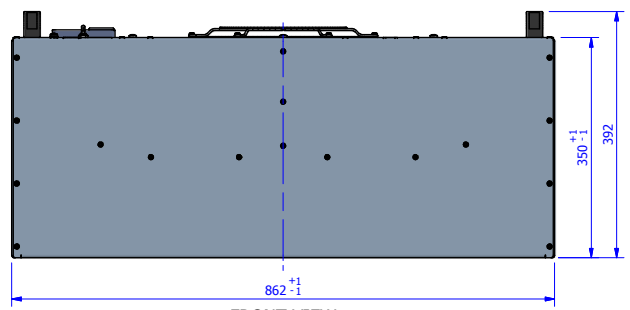
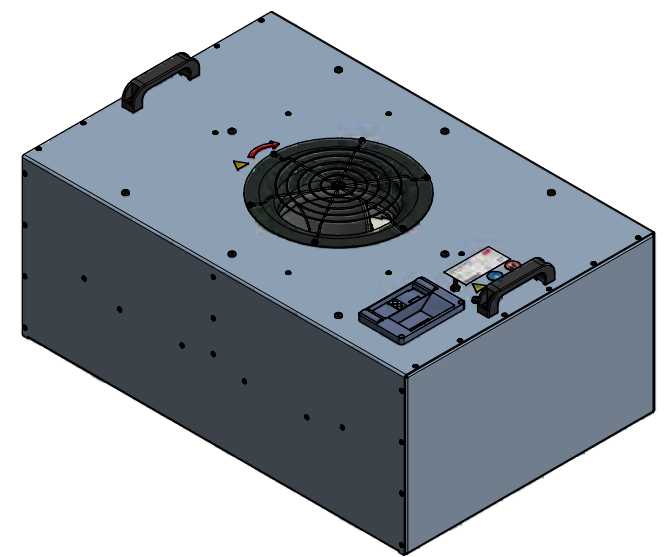
FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

TITLE:		AAF Filter Fan Unit 1212	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 27-5-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 8	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
	AAF AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands	REVISION:	DRAWING. NO.:
A2 SHEET: 2 OF 2		B	G960-03-S

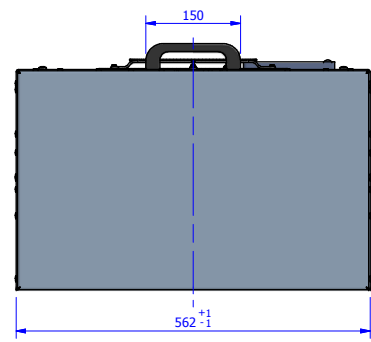
REVISION HISTORY		
REV	DATE	DESCRIPTION
0	1-4-2016	INITIAL RELEASE
B	27-5-2016	EDIT INLET NOZZLE + PRE FILTER FRAME



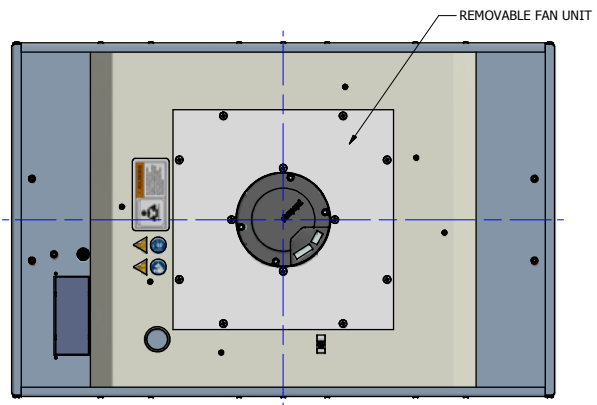
TOP VIEW



FRONT VIEW




SIDE VIEW

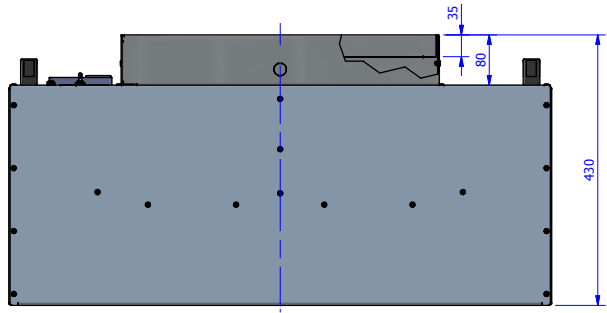
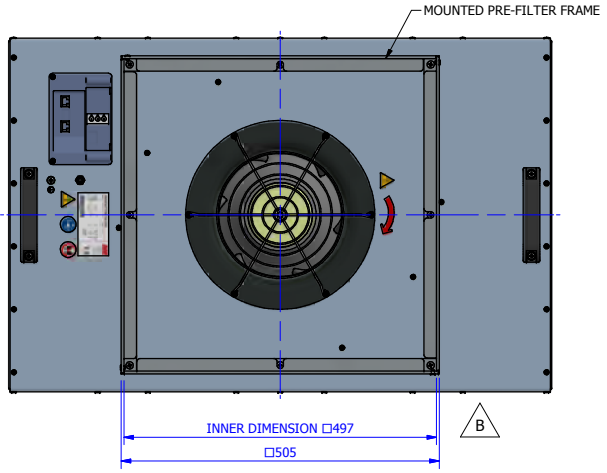
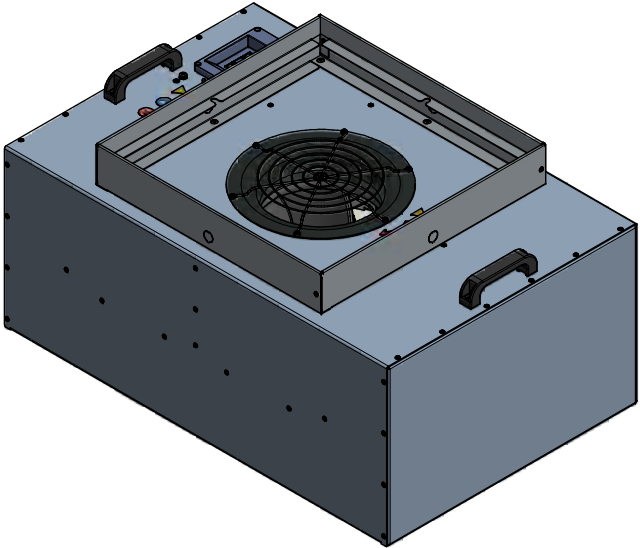


BOTTOM VIEW

FILTER FAN UNIT SPECIFICATIONS (ROOM SIDE CHANGE)	
DIMENSIONS	862 x 562 x 350 mm
NOMINAL AIR FLOW @ 0,45 m/s	800 m ³ /h
HOUSING MATERIAL	ALUMINUM
FAN ACCESS TYPE	BOTTOM
FAN (EC-TYPE) SIZE	Ø310 mm
REQUIRED FILTER SIZE	W x H x D = 870 x 570 x D mm
OPTIONAL PRE-FILTER SIZE	W x H = 494 x 494 x D mm (20" x 20")
REQUIRED FILTER SIZE = FFU SIZE + 8 mm	

SHEET 2: FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

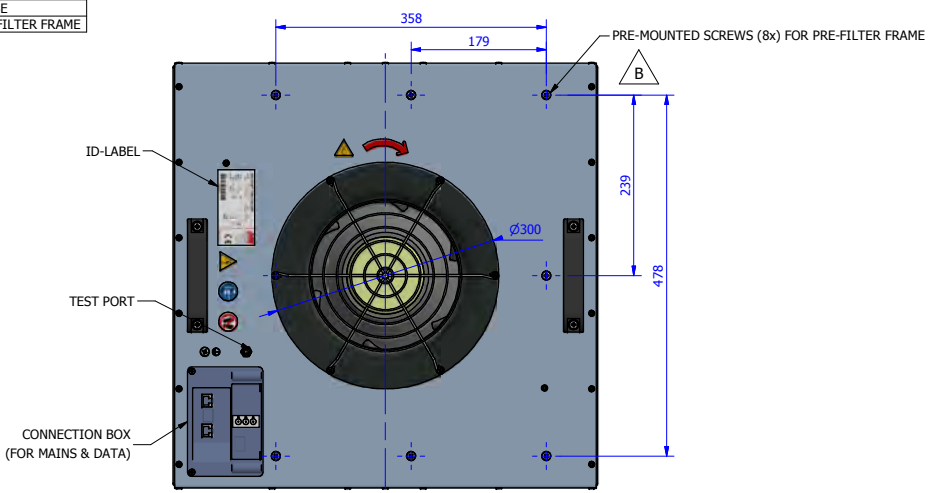
TITLE:		Filter Fan Unit 69	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 27-5-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 6	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
	 AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands	REVISION: B	DRAWING NO.: G960-04-S
A2	SHEET: 1 OF 2		



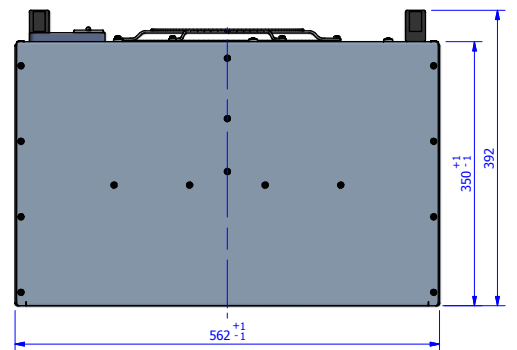
FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

TITLE:		Filter Fan Unit 69	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 27-5-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 6	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
	AAF AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands	REVISION: B	DRAWING. NO.: G960-04-S
A2	SHEET: 2 OF 2		

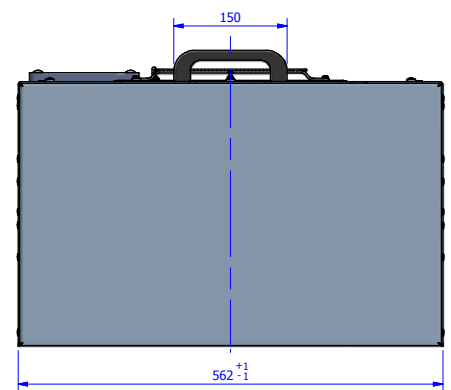
REVISION HISTORY		
REV	DATE	DESCRIPTION
0	1-4-2016	INITIAL RELEASE
B	27-5-2016	EDIT INLET NOZZLE + PRE FILTER FRAME



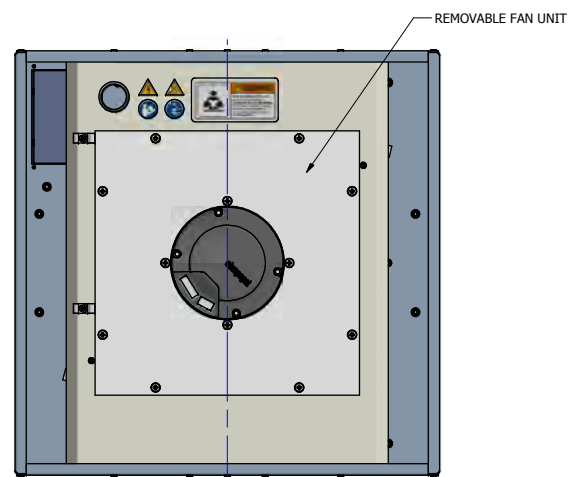
TOP VIEW



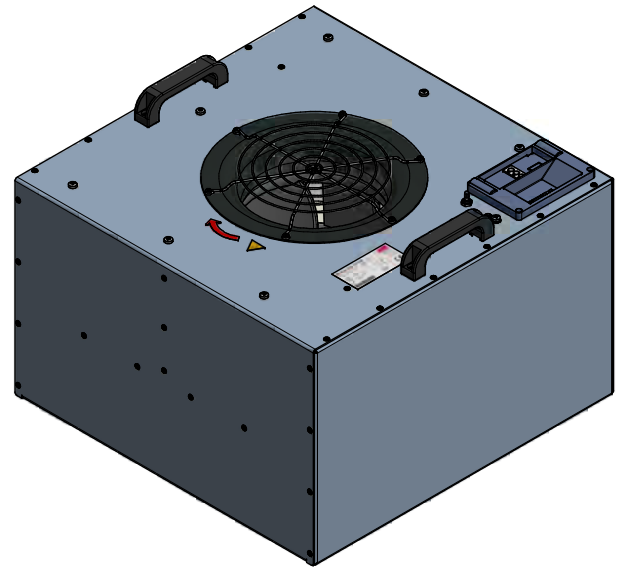
FRONT VIEW



SIDE VIEW



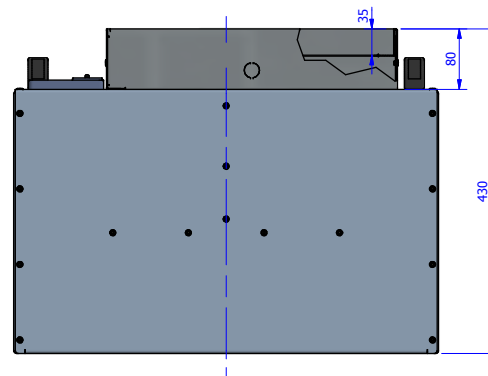
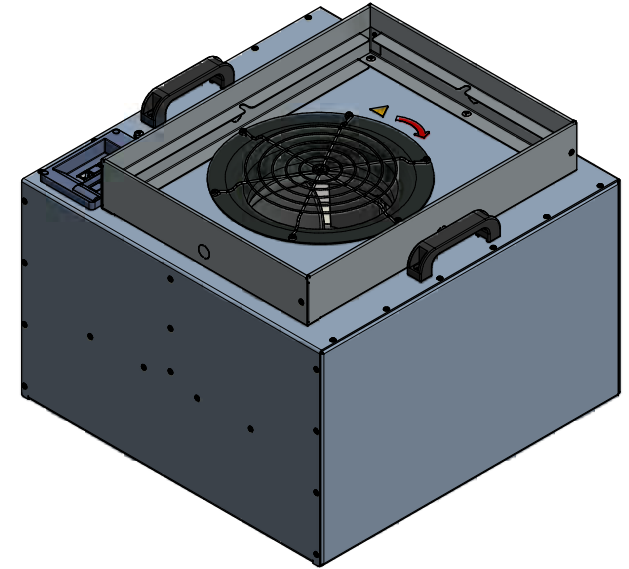
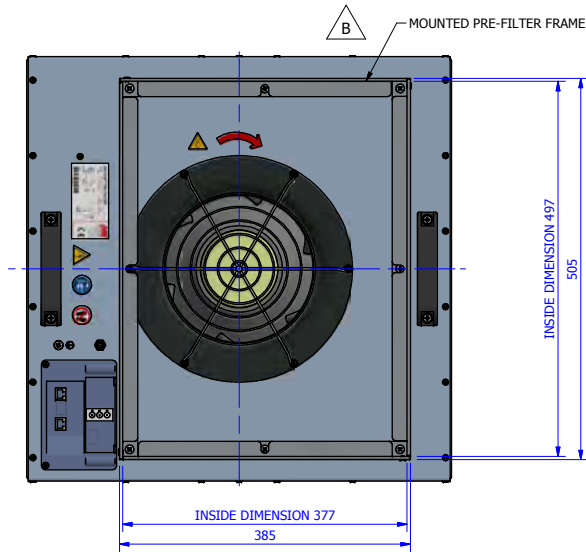
BOTTOM VIEW



FILTER FAN UNIT SPECIFICATIONS (ROOM SIDE CHANGE)	
DIMENSIONS	562 x 562 x 350 mm
NOMINAL AIR FLOW @ 0,45 m/s	520 m ³ /h
HOUSING MATERIAL	ALUMINUM
FAN ACCESS TYPE	BOTTOM
FAN (EC-TYPE) SIZE	Ø310 mm
REQUIRED FILTER SIZE	W x H x D = 570 x 570 x D mm
OPTIONAL PRE-FILTER SIZE	W x H = 374 x 494 x D mm (15"x 20")
REQUIRED FILTER SIZE = FFU SIZE + 8 mm	

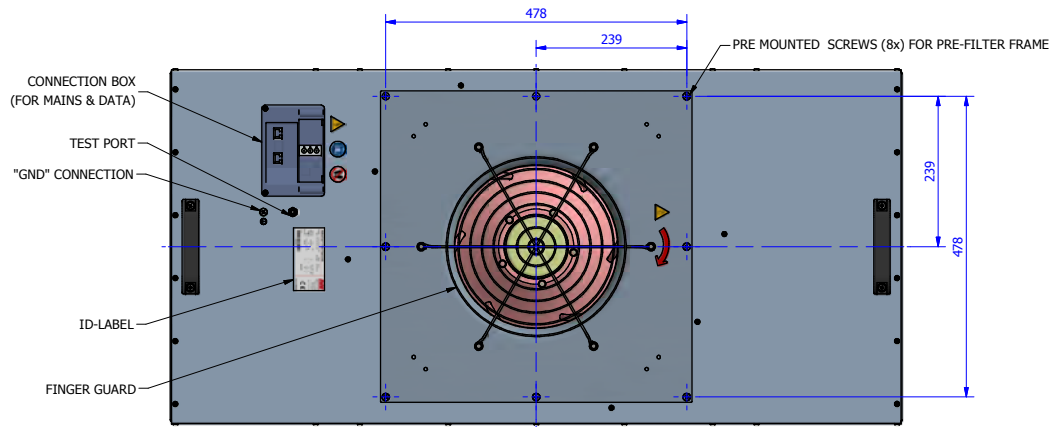
SHEET 2: FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

TITLE:		Filter Fan Unit 66	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 27-5-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 5	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
	AAF AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands	REVISION: B	DRAWING NO.: G960-05-S
A2	SHEET: 1 OF 2		

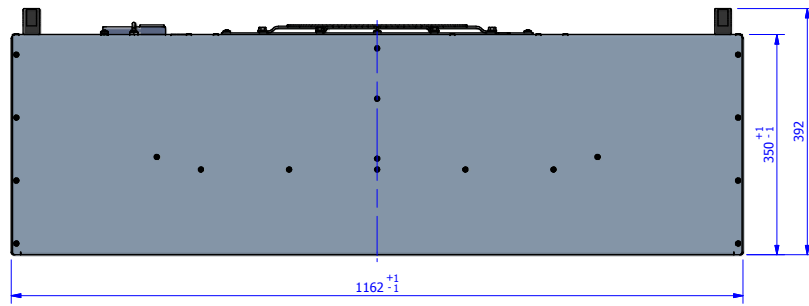


FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

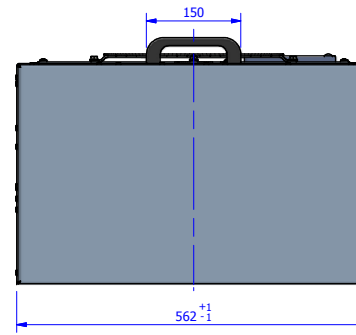
TITLE:		Filter Fan Unit 66	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 27-5-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 5	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
	AAF AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands	REVISION: B	DRAWING. NO.: G960-05-S
A2	SHEET: 2 OF 2		



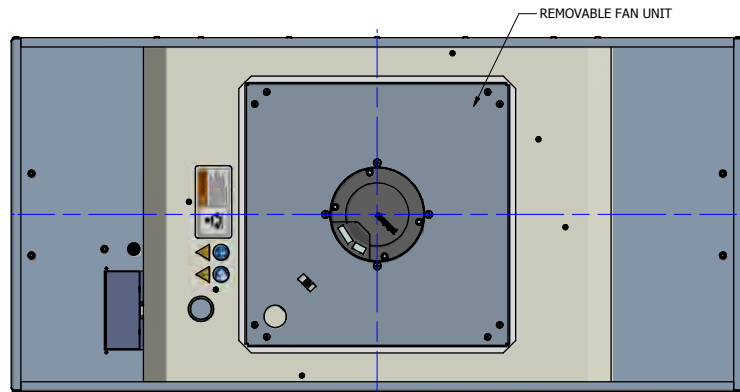
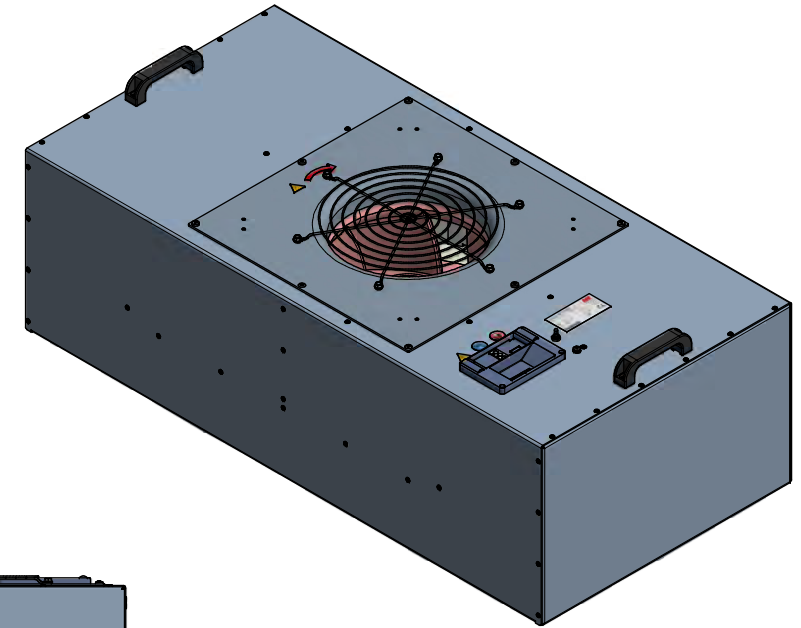
TOP VIEW



FRONT VIEW



SIDE VIEW

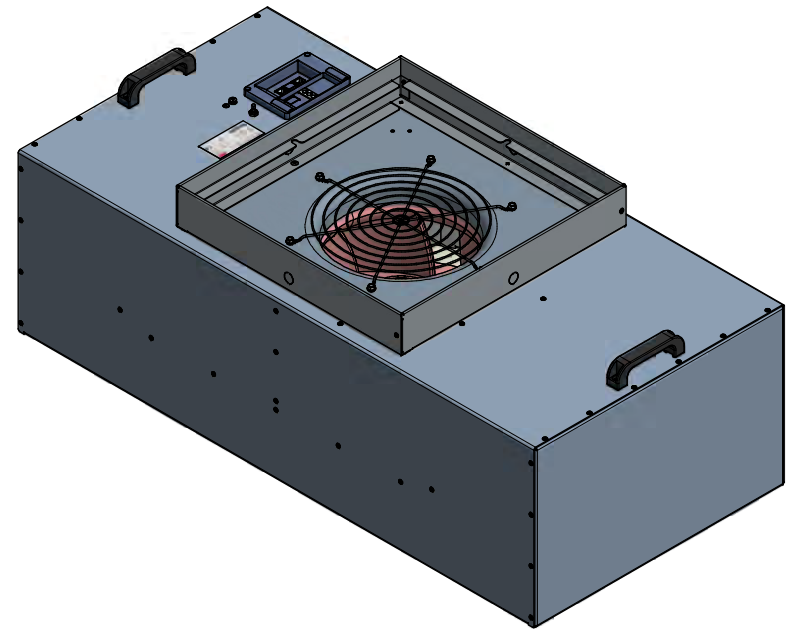
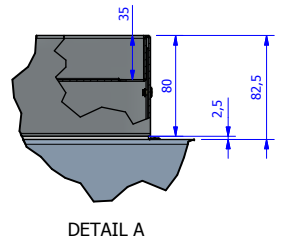
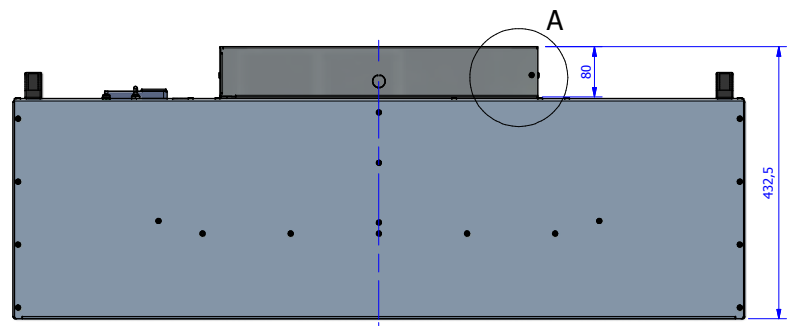
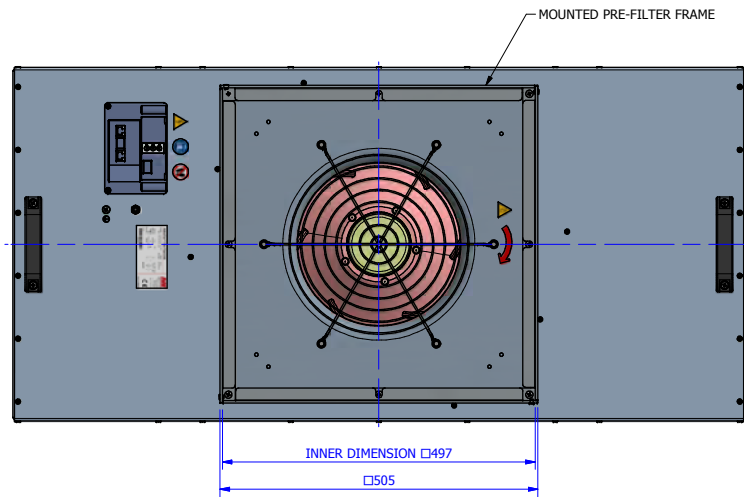


BOTTOM VIEW

FILTER FAN UNIT SPECIFICATIONS (ROOM SIDE CHANGE)	
DIMENSIONS	1162 x 562 x 350 mm
NOMINAL AIR FLOW @ 0,45 m/s	1080 m ³ /h
HOUSING MATERIAL	ALUMINIUM
FAN ACCESS TYPE	BOTTOM
FAN (EC-TYPE) SIZE	Ø400 mm
REQUIRED FILTER SIZE	W x H x D = 1170 x 570 x D mm
OPTIONAL PRE-FILTER SIZE	W x H = 494 x 494 x D mm (20" x 20")
REQUIRED FILTER SIZE = FFU SIZE + 8 mm	

SHEET 2: FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

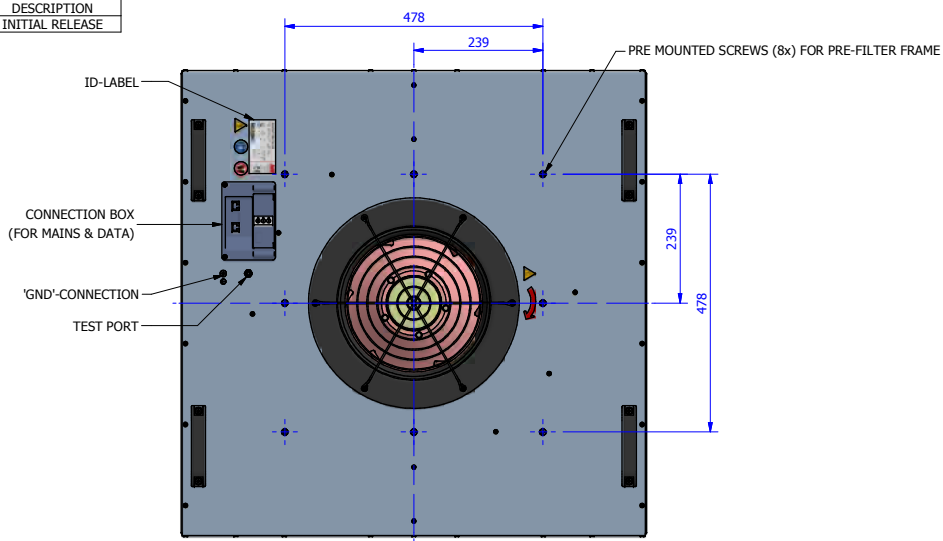
TITLE:		AAF Filter Fan Unit 612 (K-Box)	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 1-4-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 6	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
		REVISION: 0	DRAWING NO.: G960-06-S
A2	SHEET: 1 OF 2	<small>AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands This drawing is property of AAF and is loaned subject to conditions that shall not be reproduced, distributed or disclosed to third parties without our written consent.</small>	



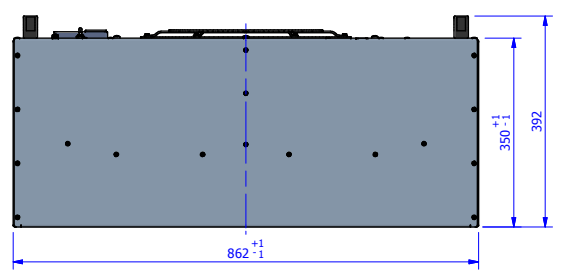
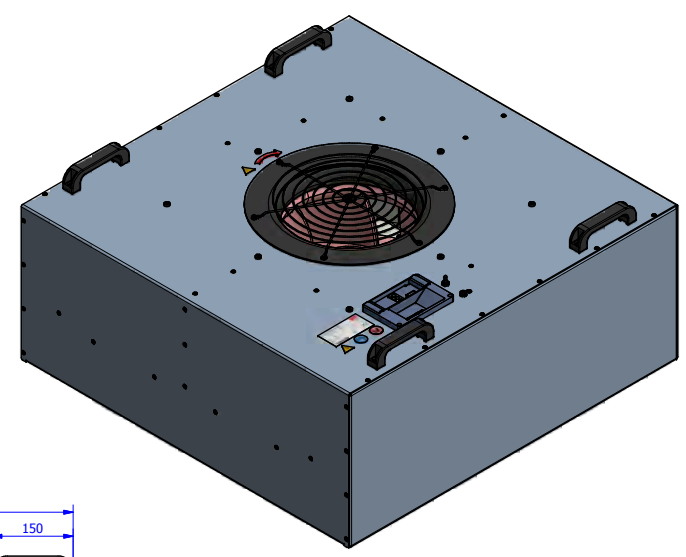
FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

TITLE:		AAF Filter Fan Unit 612 (K-Box)			
DO NOT SCALE DRAWING	PRODUCT OWNER:	AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>	
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE:	1-4-2016	DRAWN BY:	ML / GJD	
	SCALE:	1 : 6	APPROVED:		
	UNIT :	mm	PROJECT :	2015026	REVISION:
A2	SHEET: 2 OF 2	AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands <small>This drawing is property of AAF and is loaned subject to conditions that shall not be reproduced, distributed or published in whole or in part without written consent.</small>		0	DRAWING NO.:
					G960-06-S

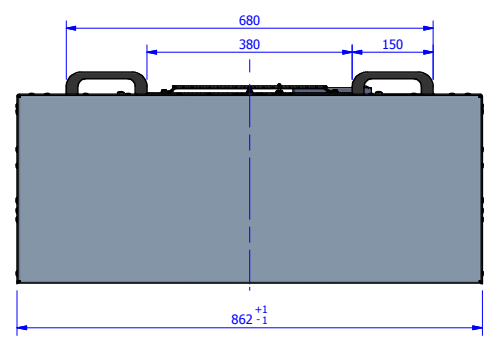
REVISION HISTORY		
REV	DATE	DESCRIPTION
0	17-6-2016	INITIAL RELEASE



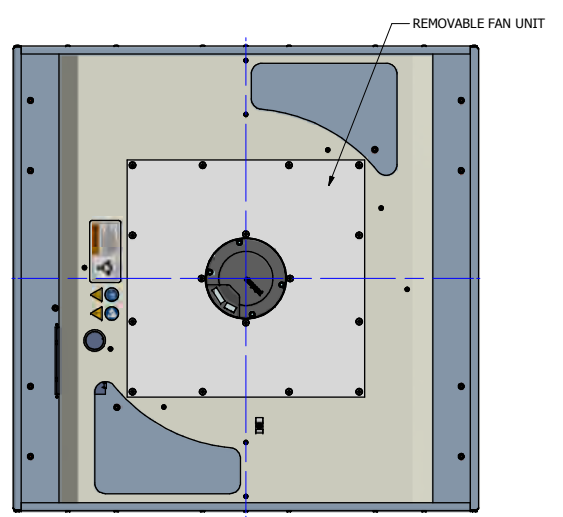
TOP VIEW



FRONT VIEW



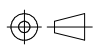

SIDE VIEW

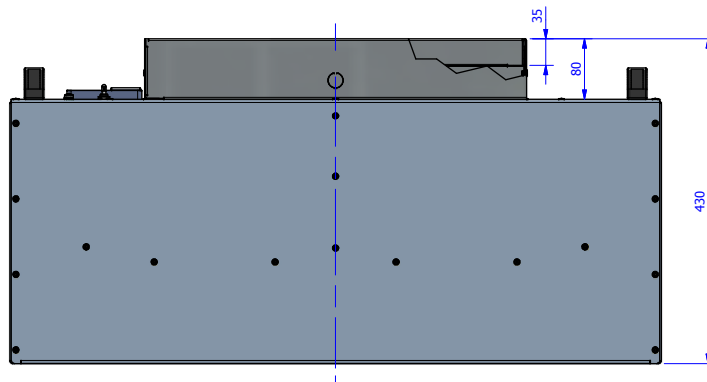
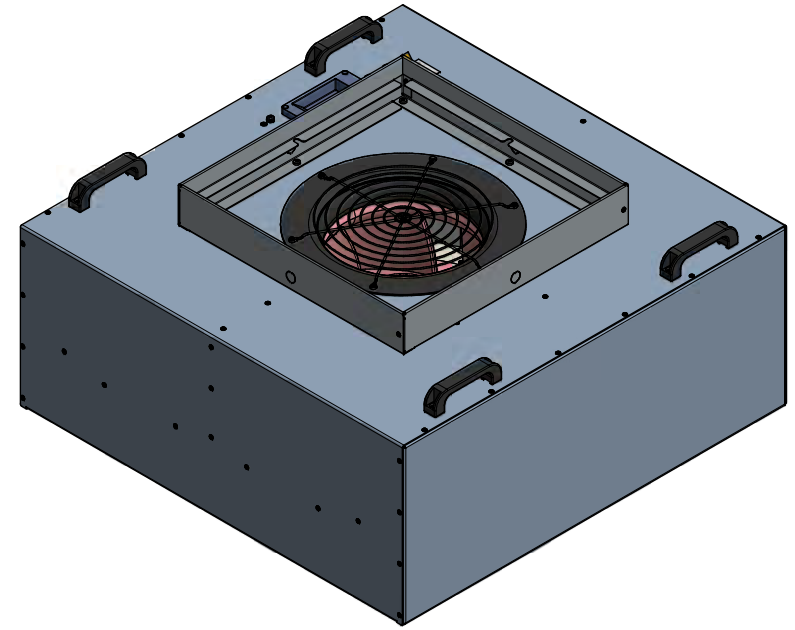
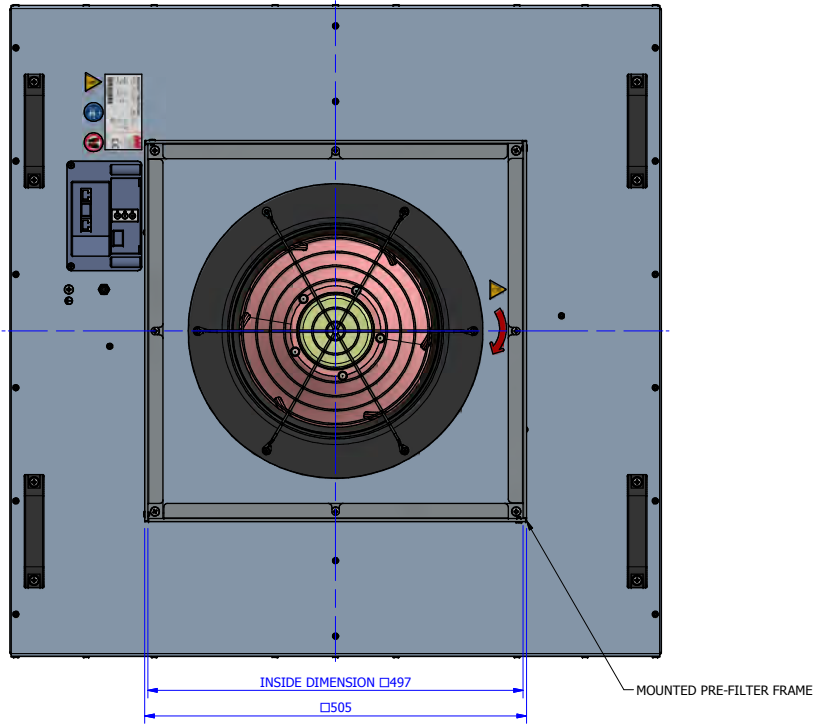


BOTTOM VIEW

FILTER FAN UNIT SPECIFICATIONS (ROOM SIDE CHANGE)	
DIMENSIONS	862 x 862 x 350 mm
NOMINAL AIR FLOW @ 0,45 m/s	1220 m ³ /h
HOUSING MATERIAL	ALUMINUM
FAN ACCESS TYPE	BOTTOM
FAN (EC-TYPE) SIZE	Ø400 mm
REQUIRED FILTER SIZE	W x H x D = 870 x 870 x D mm
OPTIONAL PRE-FILTER SIZE	W x H = 494 x 494 x D mm (20" x 20")
REQUIRED FILTER SIZE = FFU SIZE + 8 mm	

SHEET 2: FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

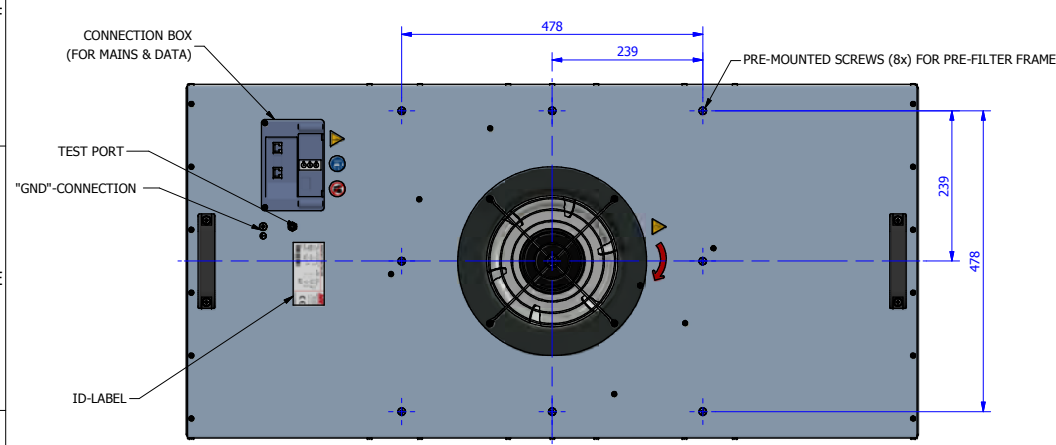
TITLE:		AAF Filter Fan Unit 99			
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>		
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 17-6-2016	DRAWN BY: ML / GJD			
	SCALE: 1 : 6	APPROVED:			
	UNIT : mm	PROJECT : 2015026		REVISION:	DRAWING. NO.:
A2	SHEET: 1 OF 2	 <small>AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands</small>		0	G960-08-S



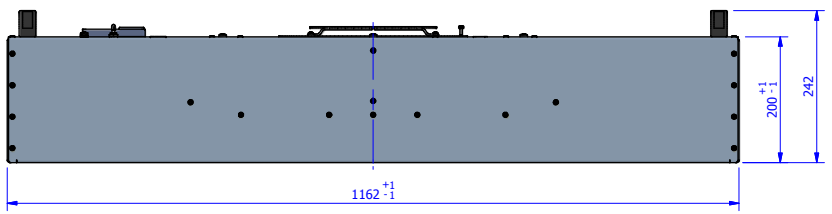
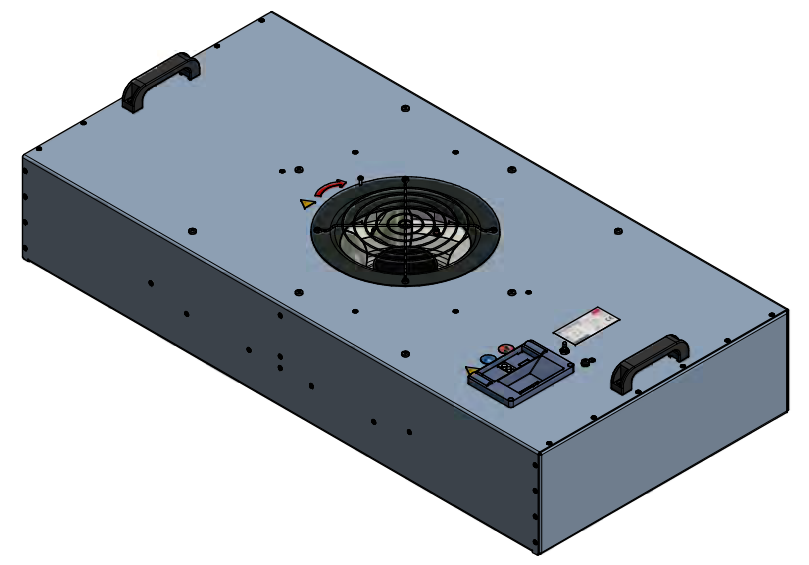
FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

TITLE:		AAF Filter Fan Unit 99	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 17-6-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 6	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
	AAF AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands	REVISION: 0	DRAWING. NO.: G960-08-S
A2	SHEET: 2 OF 2		

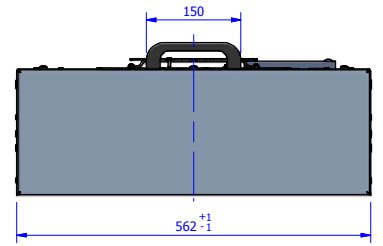
REVISION HISTORY		
REV	DATE	DESCRIPTION
0	16-06-2016	INITIAL RELEASE



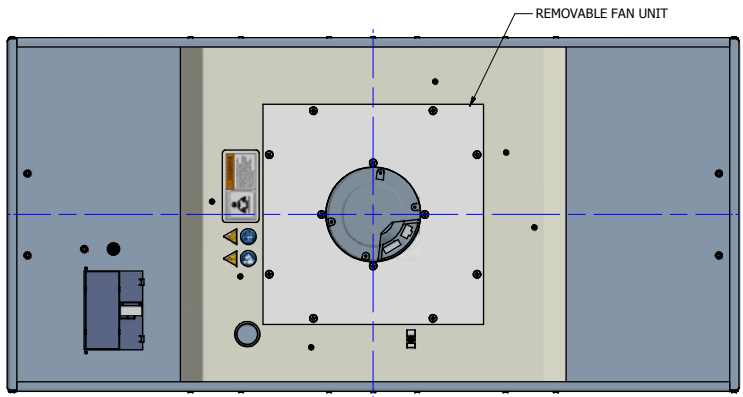
TOP VIEW



FRONT VIEW



SIDE VIEW

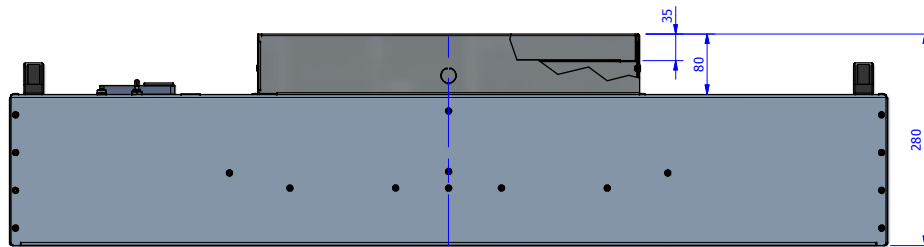
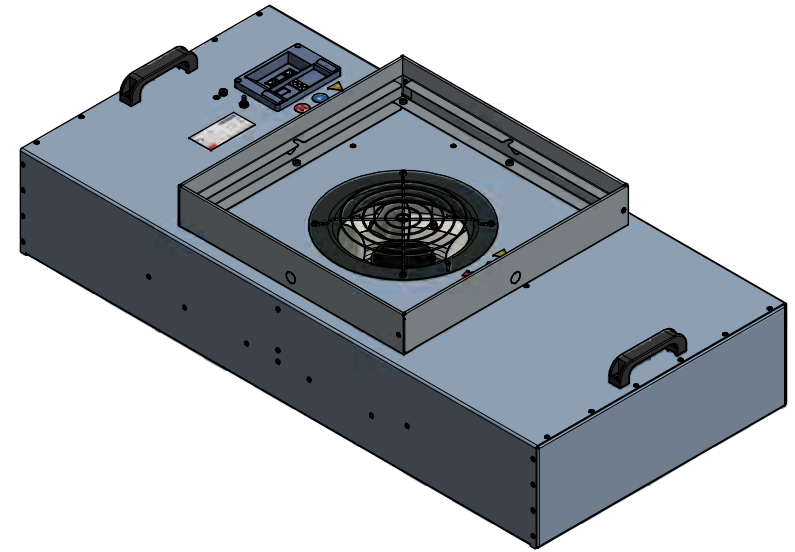
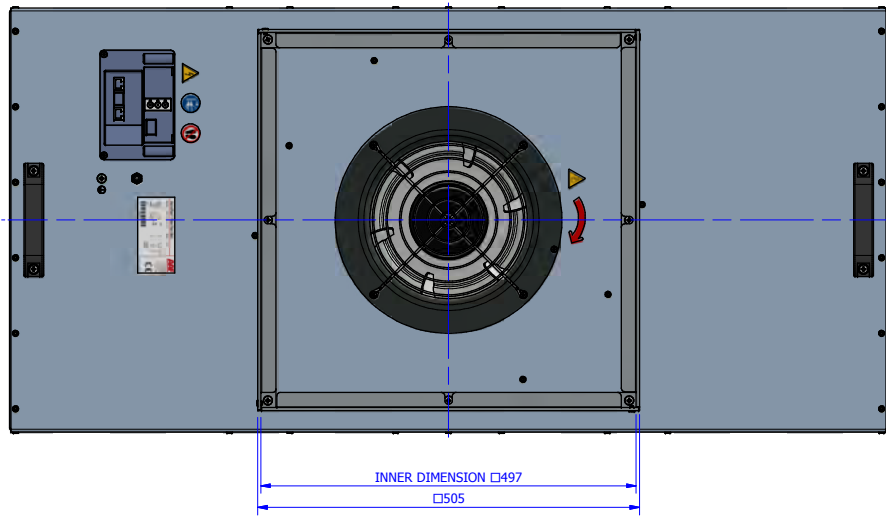


BOTTOM VIEW

FILTER FAN UNIT SPECIFICATIONS (ROOM SIDE CHANGE)	
DIMENSIONS	1162 x 562 x 200 mm
NOMINAL AIR FLOW @ 0,45 m/s	1080 m ³ /h
HOUSING MATERIAL	ALUMINUM
FAN ACCESS TYPE	BOTTOM
FAN (EC-TYPE) SIZE	Ø310 mm
REQUIRED FILTER SIZE	W x H x D = 1170 x 570 x D mm
OPTIONAL PRE-FILTER SIZE	W x H = 494 x 494 x D mm (20" x 20")
REQUIRED FILTER SIZE = FFU SIZE + 8 mm	

SHEET 2: FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

TITLE:		AAF Filter Fan Unit 612 SL	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 16-6-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 6	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
A2	SHEET: 1 OF 2	 <small>AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands The drawings are property of AAF and is loaned subject to conditions that shall not be reproduced, distributed or published in whole or in part without the written consent of AAF.</small>	REVISION: 0 DRAWING NO.: G960-11-S



FILTER FAN UNIT W/ MOUNTED FRAME FOR PRE-FILTER

TITLE:		AAF Filter Fan Unit 612 SL	
DO NOT SCALE DRAWING	PRODUCT OWNER: AAF EUROPE	FM: <input type="checkbox"/>	UL: <input type="checkbox"/>
- ELECTRONIC DOCUMENT - PRINTED COPIES ARE UNCONTROLLED	DATE: 16-6-2016	DRAWN BY: ML / GJD	
	SCALE: 1 : 6	APPROVED:	
	UNIT : mm	PROJECT : 2015026	
	AAF AAF International B.V. P.O.Box 60, 7800 AB Emmen The Netherlands	REVISION:	DRAWING. NO.:
A2	SHEET: 2 OF 2	0	G960-11-S