

AVANI Ambient Cartridge Collector



Customer:	3M		
Customer PO#:	10987		
AVANI SO#:		Tested By:	
Serial #:	153102 - 153103		
Ship Date / Install Date:			

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.



AVANI Ambient Cartridge Collector

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Specifications

Motor 2HP
 230V / 60Hz / 3Ph
 Air Volume (C.F.M.) 2340 Ft³/Min (3973.32 M³/Hr)

UL Individual Control Boxes for Cartridge Collector and Blower

Filtration Stages 1st – aluminum mesh x (2) pcs
Spec: 440 x 540 x 22mm (17.4" x 21.3" x 0.87")
 2nd – cartridge filter x (4) pcs
Spec: 380 x 660mm (15" x 26"L)
Filter area : 15M x 4 = 60m² (645.6ft²)
 Material: Polyester with TEFLON treatment & coatin

No. of valve: 1
 Compressed Air Requirement: 90 PSI
 Compressed Air Reservoir: 2.63 gallon

Inlet Opening 17.3" x 19.7" (440 x 500mm)
 Outlet Opening 28.5" x 23.8" (724 x 604mm)

Construction: 8 gauge steel to 14 gauge steel
 Max. Operating Temp.: 120°C
 Paint Color: Blue
 Dimension (L x W x H) 44.6" x 31.6" x 24.5" (113.3 x 80.25 x 62.12 cm)

***gauge hole pre-drilled.

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General Safety Information

MACHINE WARNING SIGNS



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Used without the safety alert symbol (▲) indicates potentially hazardous situation which, if not avoided, may result in property damage.



Warning of electric shock



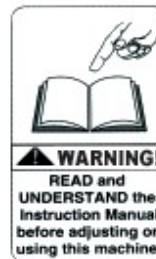
Do not expose the equipment to rain or use in damp locations.



Figure 1



Do not use the equipment around flammable products, if not avoided, sparks can ignite vapors from flammable products. Read and understand all warnings and operating instructions before using this equipment. Failure to follow all instructions may result in electric shock, fire, and/or serious personal injury or property damage.



Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

avani
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General Safety Information

(Continued)



Use this product carefully to

effectively avoid any possible danger. Observe the following safety regulations to avoid bodily injury due to electrocution during use.

Read this Manual carefully before operating the product and preserve the Operation Manual properly.

1. Keep work area clean and organized.
 - A disorderly working environment will cause inconvenience and danger during operation.
2. Check if the working environment is suitable for using the product.
 - Do not use the product in a humid environment.
 - Use the product in a good working environment to reduce risks.
 - Do not use the product in a flammable gas or liquid environment to avoid danger.
3. Keep other persons away from the product, except for the operator, to avoid danger.
 - Do not let children get close to the product. All wires used by the product shall be in a safe location to prevent children from touching them.
4. All tools shall be safely stored.
 - When the tools are not used, please store them in a dry place safely beyond the reach and access of children.
5. If the machine breaks down, contact a service technician. Do not attempt to repair and possibly damage the machine.
6. When using the product, be sure to put on a welding suit and mask.
7. Use the electrical wires correctly.
 - During use, do not drag the electrical wires forcefully. Do not use these wires if fraying or current leakage occurs to avoid injury to the operator.
8. Before replacing parts, shut off power to the machine.
 - Check that the switch is in "on" or "off" position. Do not attempt the

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replacement when the machine is running. To replace parts or filter material, make certain that the switch is "off".

9. Use the power cord correctly. The total length of power cord shall not exceed 10 feet to avoid low power due to a drop in voltage and to prevent a possible hazard.

▲WARNING *When connecting the product, always follow the instructions in the Operation Manual to avoid injuries.*

10. Care and Maintenance:

- Confirm that the parts/accessories have been fully assembled and will not adversely affect the machine operation.
 - Check if the machine is operated properly.
 - Replace damaged parts or accessories according to the instructions of the Manual. If the said instructions are not specified in the Manual, have a professional technician carry out the maintenance or replacement.
- Check that the electrical specifications of this machine meet safety requirements, and that the maintenance is carried out by a professional technician. Use original manufacturer's parts and accessories to avoid injury.
 - If a problem occurs, contact your dealer immediately.

ADDITIONAL AMBIENT CARTRIDGE COLLECTOR SAFETY RULES

The Ambient Cartridge Collector can be dangerous if it is operated incorrectly. Therefore, the product must be used cautiously to avoid causing a hazard or damage. Unnecessary injuries may occur by failing to follow the instructions of the Safety Rules Manual. Be sure to put on protection equipment or suit that can protect your body, such as helmet and eye mask to avoid injuries from occurring. If any doubts or any unfitness occurs during use, be sure to stop the operation immediately. Keep in mind that the user shall be liable for using according to the specified safety rules and

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for operating the machine correctly.

1. Read this Manual carefully before operating the product.
2. Be sure to follow local electrical and safety regulations and observe the electrical safety standards practiced in the relevant area. All electrical wire connections and installation shall be carried out by a professional technician.
3. Do not operate the product near flammable materials, as sparks may ignite these materials and cause an explosion. Please confirm there aren't any flammables near the working site to avoid hazard.
4. This product is suitable for collecting smoke and welding oil gas. Do not use it in collecting iron chips and dust at the same time to avoid producing sparks.
5. Before replacement of parts or filter materials, be certain that the switch is disconnected.
6. Do not kink the power cord and keep it away from oil, chemicals or flammables.
7. Check that the voltage, phase count and grounding wire match the machine

requirements.

8. When the fan blades are operated at high speed, do not reach hand near these blades to prevent finger from breaking or clothes/necktie from getting caught. Do not put the hand or foreign matter into the air inlet to avoid getting caught in the high-speed rotation of fan blades.
9. When not in use, all air inlets of Welding Smoke Treatment Machine shall be covered.

▲ WARNING

Assembly

Do not connect the Welding Smoke Treatment Machine before the assembly is finished and you have read and understood all of the precautions stated in the Manual.

NOTE: For correct assembly, refer to the Illustrations and Parts List on pages 21-27.

Installation

MOVING AND TRANSPORTATION

The net weight of this machine is about 1172.86 lbs. It CANNOT be handled and transported without the help of lifting tools.

▲ WARNING

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For your safety, read all instructions carefully.

Do not move without the help of others to avoid causing danger.

ELECTRICAL INSTALLATION

POWER CONNECTION

1. Confirm that the power is properly connected under normal power supply condition. It is recommended to provide manual shutdown device before connecting power.
2. It is recommended to protect the control equipment with suitable grade of fuse, and the length of fuse and power cord shall not be over 10 feet.

SHUTDOWN

1. Disconnect power by manual method.
2. When stopping operation, check if the switch is under off status.

EARTHING WIRE

Connect yellow/green wires to the earthing wire power jack. Confirm that the earthing wire has been properly connected before connecting main power cord to the machine at all times.

▲WARNING

Do not disconnect the wiring jack

before cutting off power!

POWER INSTALLATION AND STORAGE

The electrical power is configured as following. If conditions are beyond the scope stated below, then it is required to ensure that the power is well arranged and safe.

- Ambient temperature: Between 41°F and 131°F. If the time is over 24 hours, then the ambient average temperature shall not be over 122°F.
- Humidity: Between 30% and 95%
- Altitude: 3,280 feet
- Moving and Storing: -13°F to 131°F. For short-time storage (less than 24 hours), the storage temperature can be up to 158°F.

Operation

PRIOR TO START UP

Purpose: The Ambient Cartridge Collector is specially suitable for treating the smoke generated during ordinary welding processing work, which can effectively collect and screen the smoke resulting from

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the welding work in maintaining the air quality of the working environment.

- Before starting the machine, be sure to read this Manual carefully.
- Before starting the machine, check if relevant safety protection measures have been taken according to the Manual.
- Before starting the machine, watch the motor turning direction according to the instruction of arrow direction.

START UP

1. To ensure satisfactory performance for the Welding Smoke Treatment Machine, please confirm the air volume, power and the matching table of the Welding Smoke Treatment Machine.
2. Connect power according to electrical installation procedure after installing the Welding Smoke Treatment Machine and the table. Disconnect power according to electrical installation procedure when the machine is not used.
3. The Welding Smoke Treatment Machine shall be turned on and off by pushing I/O button. Under normal operation status,

use such I/O button.

Unpacking

The machine should be unpacked carefully. Check if the machine and components are consistent with those indicated in the Parts List. If any doubt arises or when the components are incomplete, contact your dealer.

OPERATION –Filter Cleaning / Preventive Maintenance

1. Attached compressed air to the unit for cleaning purposes, at a source pressure of 90 PSI. The connection point is accessed by removing the panel on the side of the unit where the PSI label is in place and requires a 1/4" NPT fitting. A regulator must be incorporated in line to set pressure. Do not exceed 90 PSI pressure.

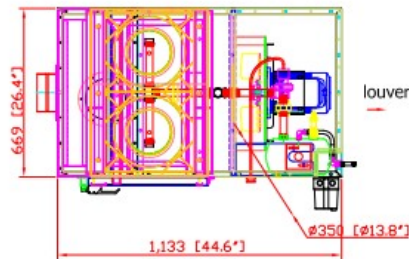
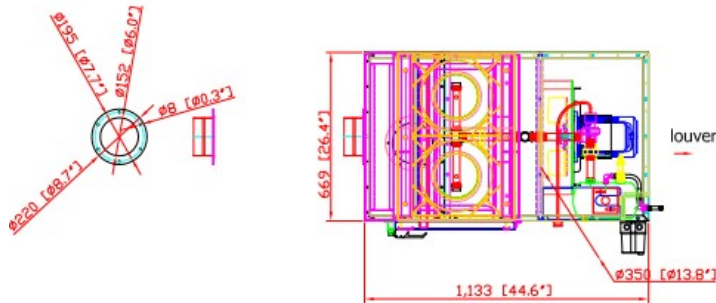
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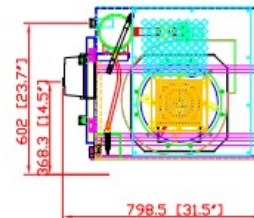
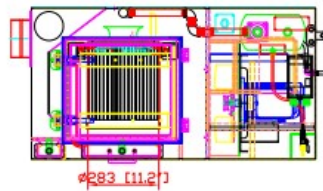
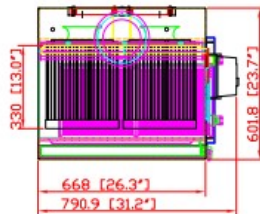
2. Verify that compressed air is attached to the unit for cleaning purpose at a pressure of 90PSI.
 3. Refer to control panel for initiating power to the motor and subsequent vacuum from the unit.
 4. During operation, the pressure gauge should maintain a reading of 4" WIC pressure or less.
 5. If pressure exceeds 4" WIC, or you experience a reduction in vacuum, proceed with the following action(s)
 - Turn Power off to the unit and push the pulse cleaning button. Allow the pressure to rebuild and push the button again. This procedure should be followed
- prior to every startup with the power off.
- Adjust cleaning frequency via the timer board by increasing the frequency of pulses.
 - Cleaning as noted above should be daily or as any decrease in vacuum is observed.
6. If pressure exceeds 4" WIC with the collector at maximum cleaning frequency:
 - Remove the metal filter if applicable and clean with water and re-install.
 7. If pressure exceeds 4" WIC with the collector at maximum cleaning frequency and/or vacuum is not sufficient for optimal operation, contact Avani for filter replacement (See contact information in this manual)

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Dimensions (in mm/inches)

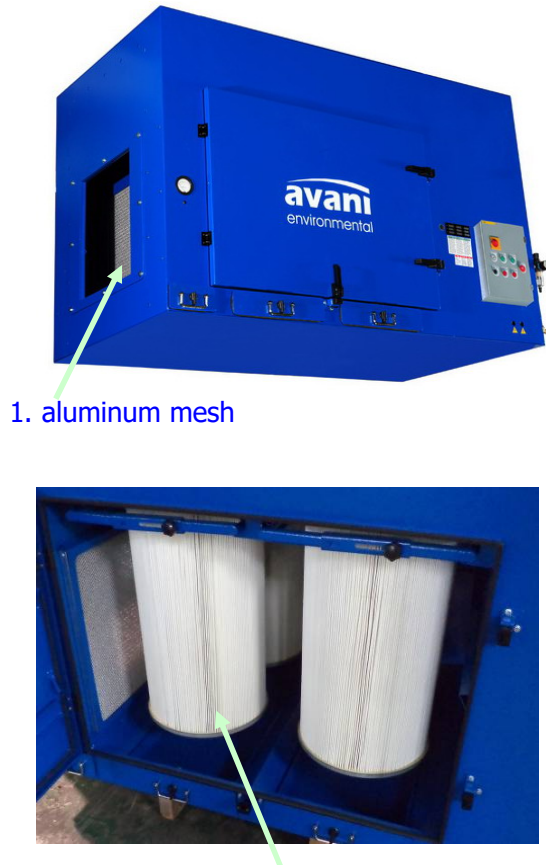


SAU-X2 Ambient Cartridge Collector SPECIFICATIONS	
Motor:	2 HP NEMA
Airflow:	1100 ft ³ /min 1867.8 m ³ /hr
Filtration Stages:	1st - aluminum mesh x (2) pcs Spec: 305 x 285 x 22mm (12" x 11.2" x 0.87") 2nd - cartridge filter x (2) pcs Spec: Dia. 283 x 353mmL (dia. 11.1" x 13.8") Filtering area: 15M ² x 4 = 60M ² (645.6 FT ²)
Polyester Spin bond:	Polyester with TEFLON treatment & coating
No. of Valves:	1
Compressed Air Requirement:	90 PSI
Compressed Air Reservoir:	2.63 gallon
Dimension:	1133 x 669 x 601.8 mm (44.6 x 26.4 x 23.7 inch)
Construction:	8 gauge steel to 14 gauge steel
Max. Operating Temp.:	120°C
Paint Color:	Blue
Control Box:	- Magnetic switch with manual pulse jet cleaning
Standard Accessories:	inlet & exhaust outlet with screen



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Filters



1. aluminum mesh

2. cartridge filter

Figure 2 - Filters

1. **ALUMINUM MESH** captures sparks and steel chips.
 - (1) specification: 440 x 540 x 22mm

[17.4" x 21.3" x 0.87"]

(2) filter efficiency: 25 ~ 30%

(3) quantity: 2 pcs

2. **PLEATED CARTRIDGE FILTER** that can be cleaned by push-button pulse-jet cleaning of the cartridge filter from an onboard air tank.

(1) specification: Ø380 x 660 mm [Ø15" x 26"]

(2) quantity: 4 pcs

(3) material: Polyester with TEFLON treatment & coating.

(4) filtering area: 15 m² x 4 = 60 m² (645.6 ft²)

Filter Assembly

- **Aluminum mesh and cartridge filter installation procedure:**

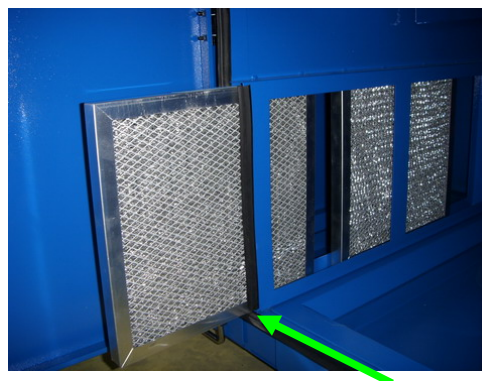
AVANI Ambient Cartridge Collector



1. Open the front maintenance door.



2. (2) pcs of aluminum mesh are at the left side of the machine.

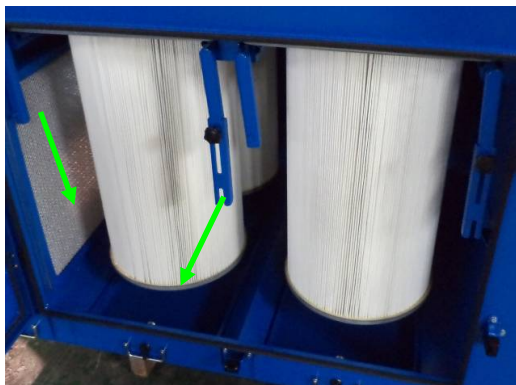


3. Pull out the aluminum mesh for replacement.



4. Loosen the knobs (circled in green).
Release the filter handle fixing plates.
Slide the filter handle fixing plates.

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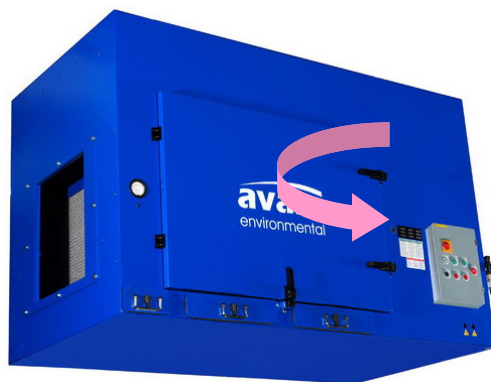
5. Pull down the left and right filter handles.
6. Take out the cartridge filter set.
7. Slide the new cartridge back into the track and push it to the end.
8. Push pack the left and right filter handles to secure the cartridges in position.



9. Pull up the left and right filter handles.



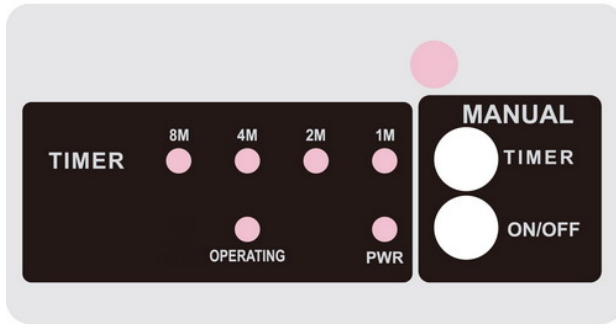
10. Attach the filter handle fixing plate upon the left and right filter handles. Adjust and secure them in position. Fasten the plates and handles with knobs (circled in green).



11. Close the front maintenance door.
Assembly completed.

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Control Panel Explanation



8M/4M/2M/1M: Time setting indicating light (accumulated function)

TIMER: Time adjusting button

ON/OFF: ON / OFF button

PWR: Power indicating light

OPERATING: Operation indicating light

Accumulated Function:

1. When operating, timer will automatically set to release air in every 1 minute.
2. Press TIMER once, the time setting light will be switched to 2M. Press it one more time, both 1M and 2M lights will be on, so the time is accumulated to clean in every 3 minutes.
3. Press TIMER again, the time setting light

will be switched to 4M.

4. Press it one more time, both 1M and 4M lights will be on and the time is accumulated to clean in every 5 minutes. Press it again, both 2M and 4M lights will be on and the time is accumulated to clean in every 6 minutes. Press it again, the 1M, 2M and 4M lights will be on and the time is accumulated to clean in every 7 mins.
5. Following this cycle, the time setting may be adjusted manually to 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12 and 15 mins. The maximum allowance time setting would be 15 mins.

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Pulse Cleaning Setting:

Timer Operation (Accumulated Function)				
Pulse Frequency	8M	4M	2M	1M
ON				●
1			●	
2			●	●
3		●		
4		●		●
5		●	●	
6		●	●	●
7	●			
8	●			●
9	●		●	
10	●	●		
11	●	●	●	●

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Optional Accessories – Inlet Separator

inlet separator



outlet



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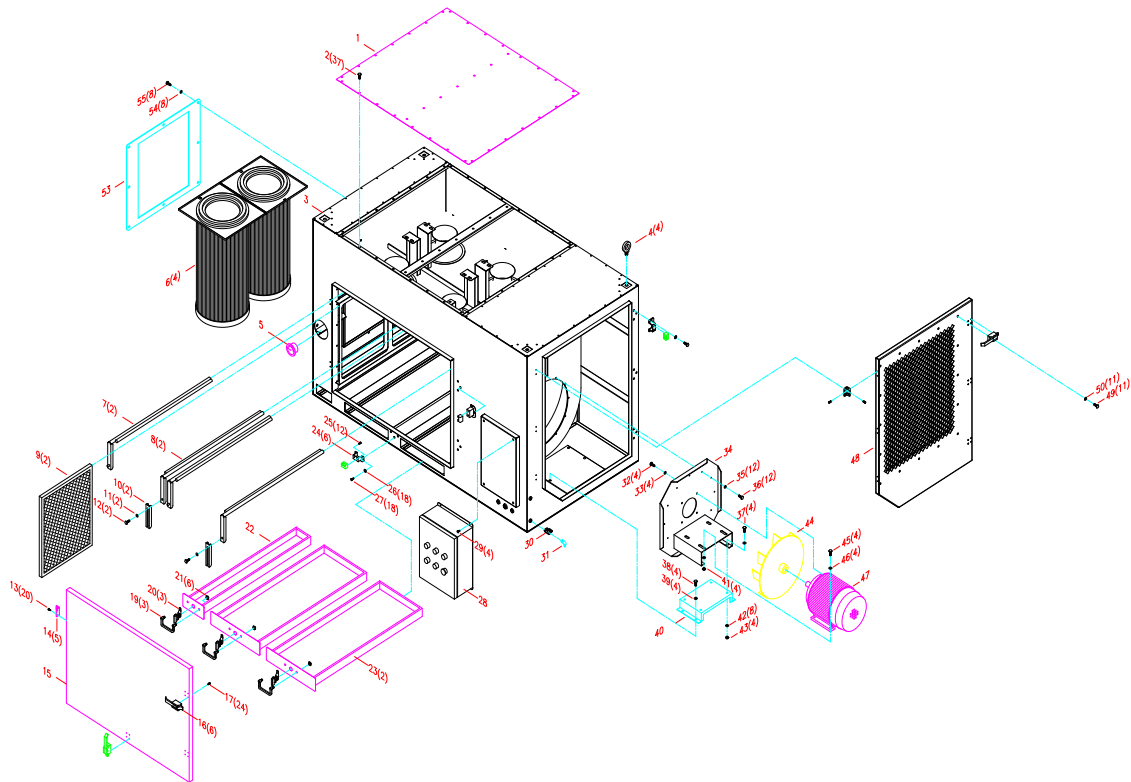
Repair Parts Illustration

For Repair Parts, call +1-919-570-2862

24 hours a day – 365 days a year

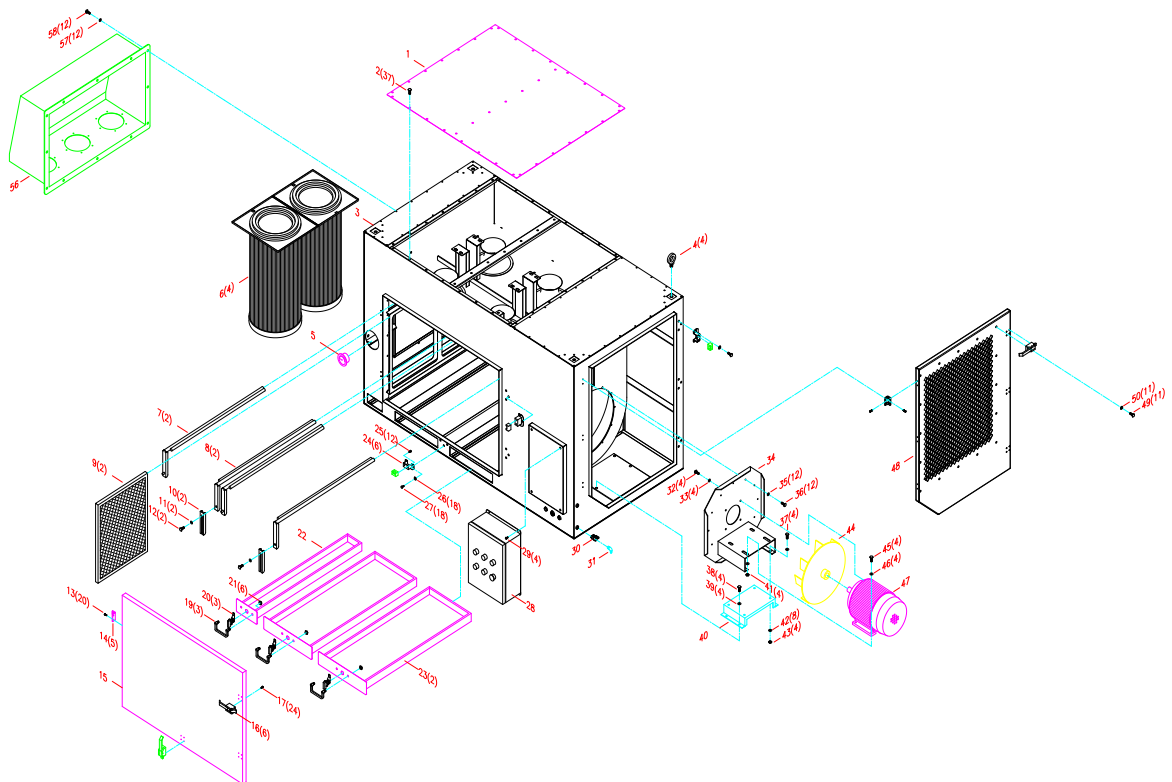
Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list



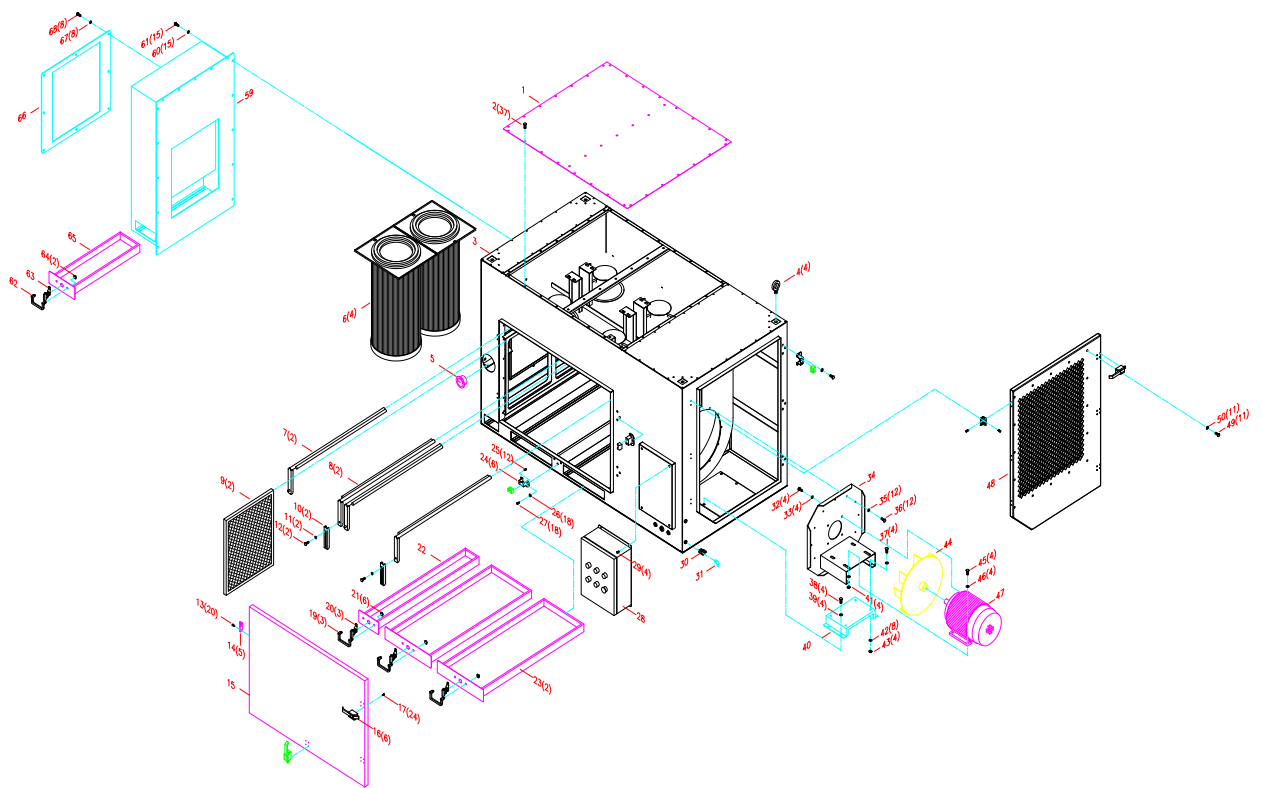
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***Standard



***w/ optional arm base

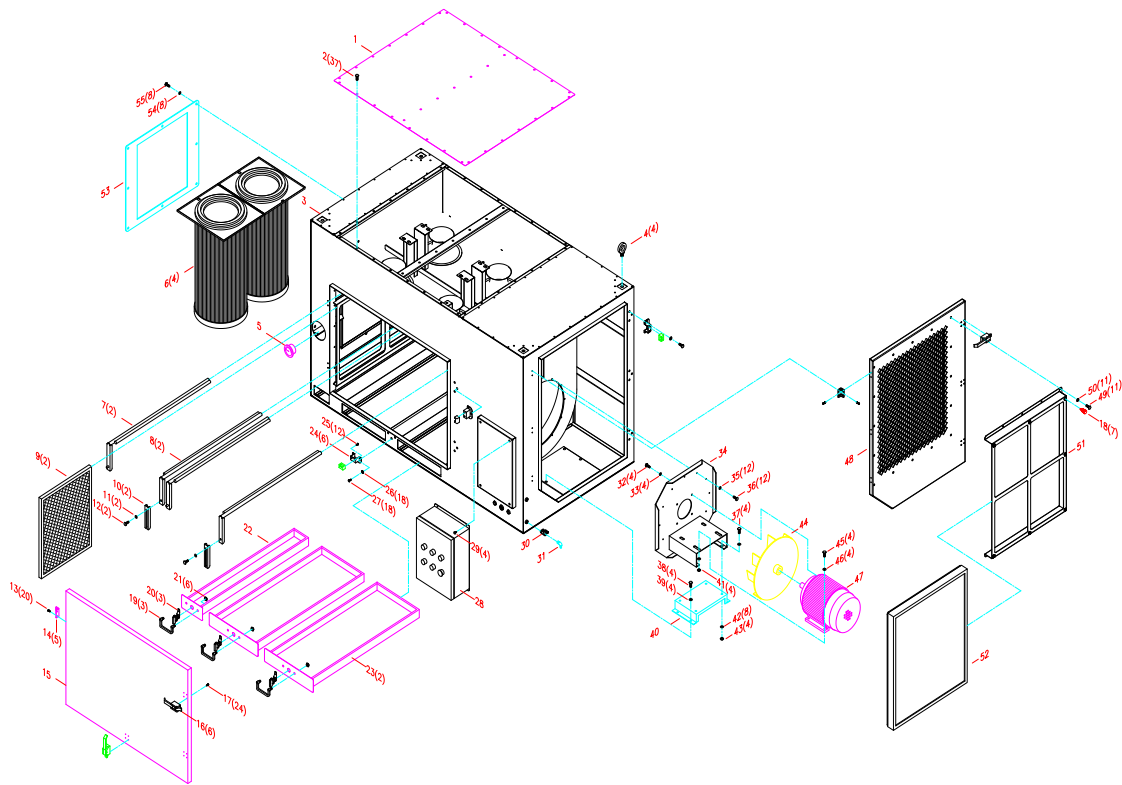
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***w/ optional inlet separator



AVANI Ambient Cartridge Collector

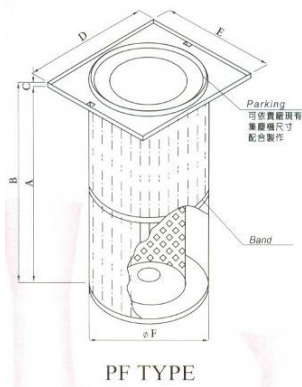


***w/ optional HEPA Cage and HEPA



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Reference Number	Description	Part Number	Quantity
6	Cartridge Filter	SV-FT-C-08-380*660LC	2



PF TYPE (Measurement m/m)

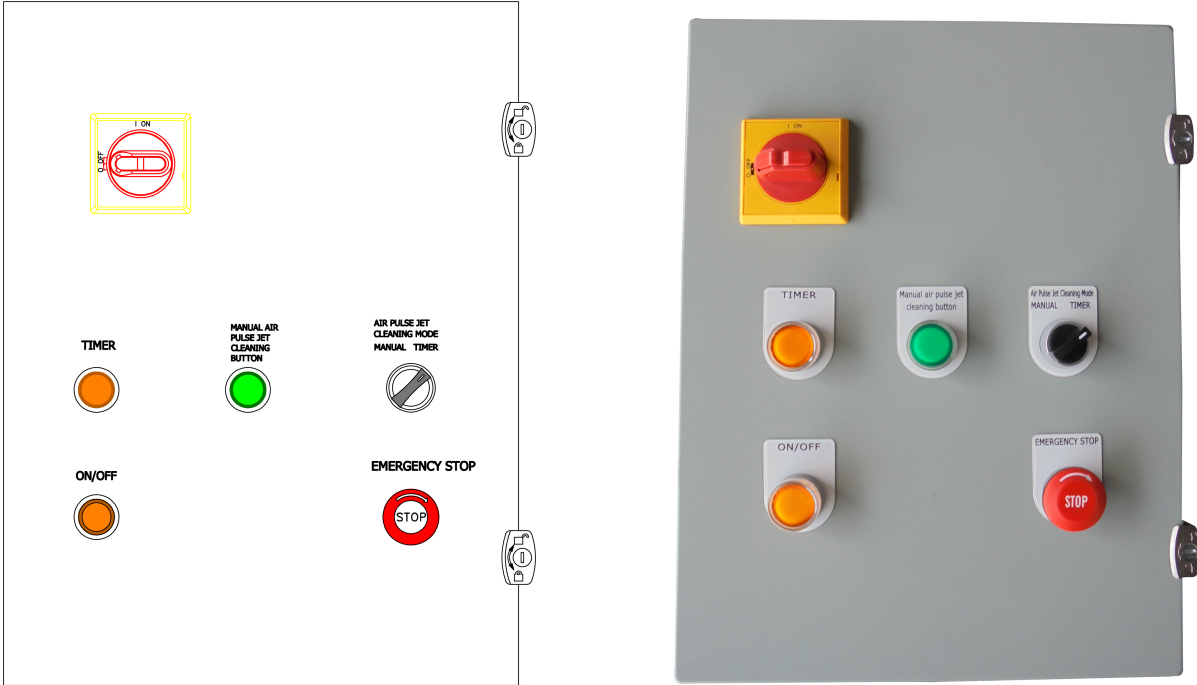
Diameter	Fold Depth	A	B	C	D	E	F	Weight kg	Filtering Area M ²
380	48	660	673	13	459.2	421.4	379	7.0	25



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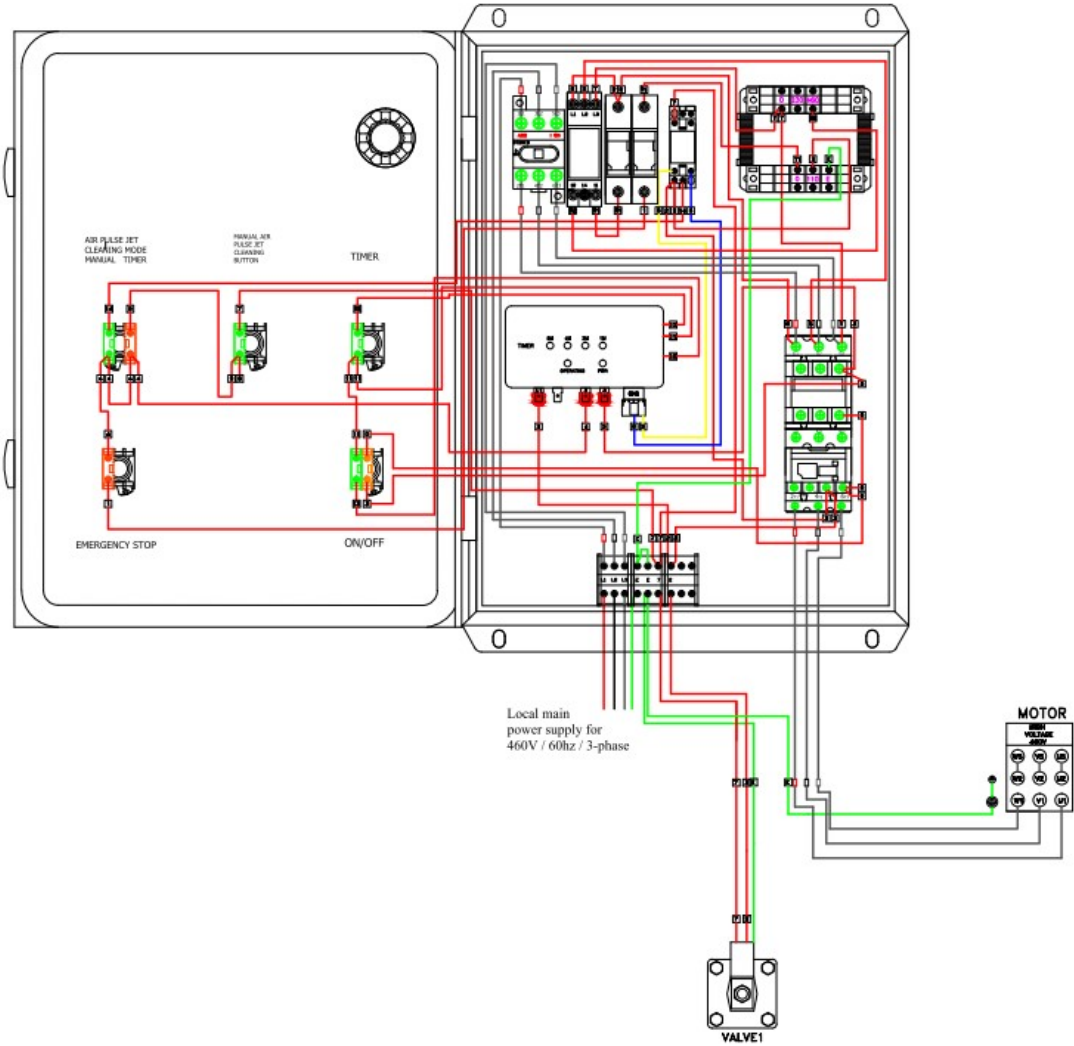
Appendix 1 - Electrical Circuit Diagram

Main Electrical Components for ACC-2



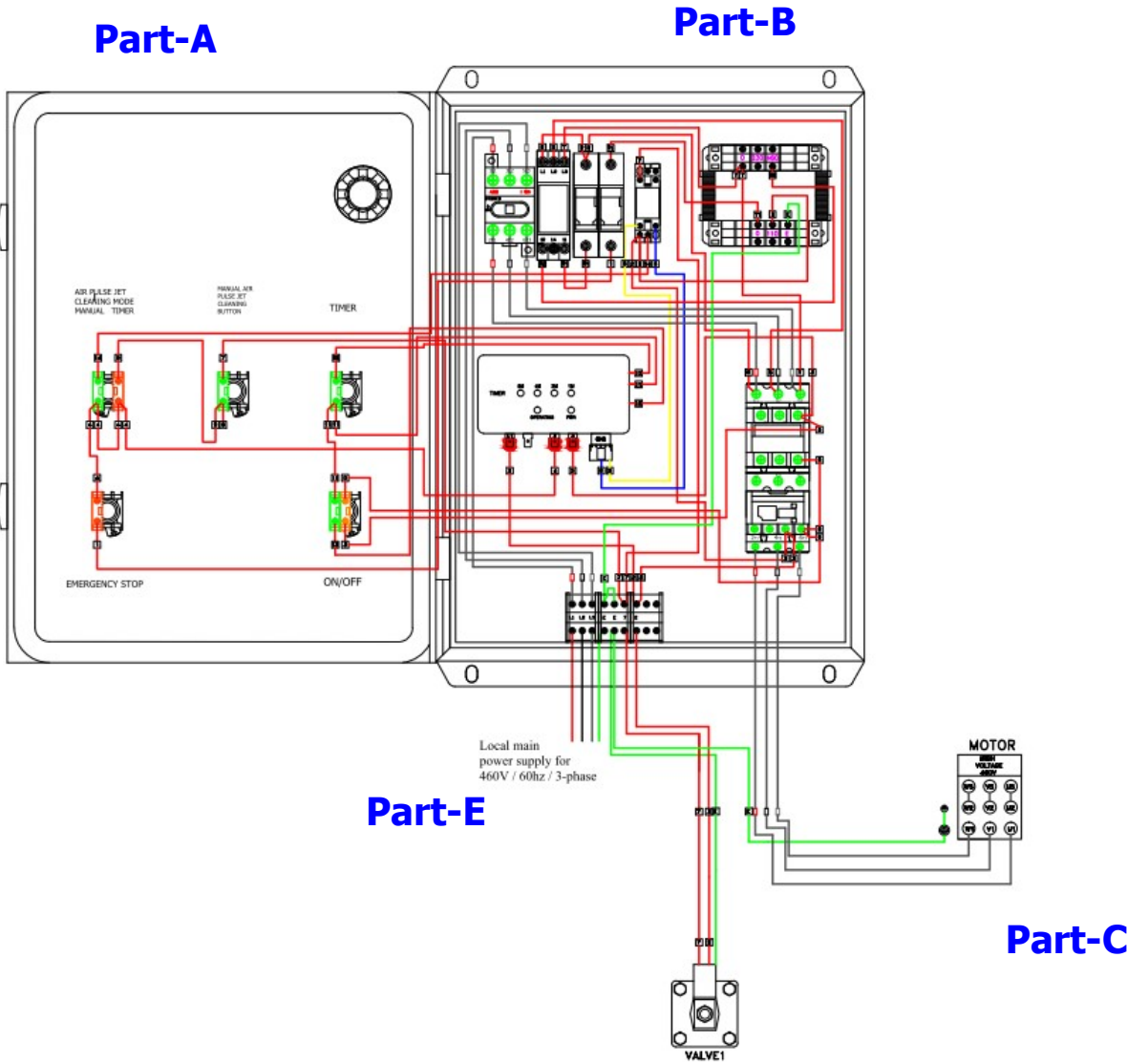
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Main Electrical Wiring for ACC-2 Control Panel



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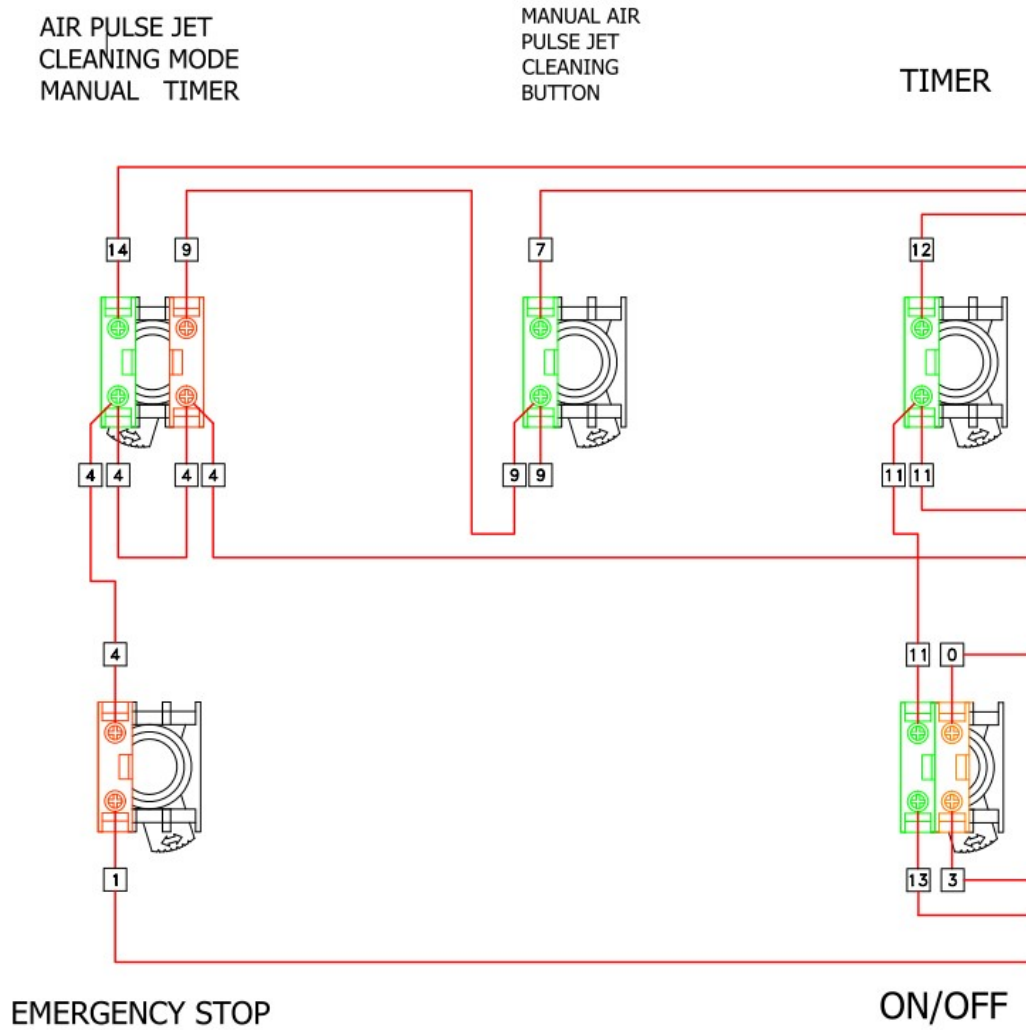
Main Electrical Wiring for ACC-2 Control Panel



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Main Electrical Wiring for ACC-2 Control Panel

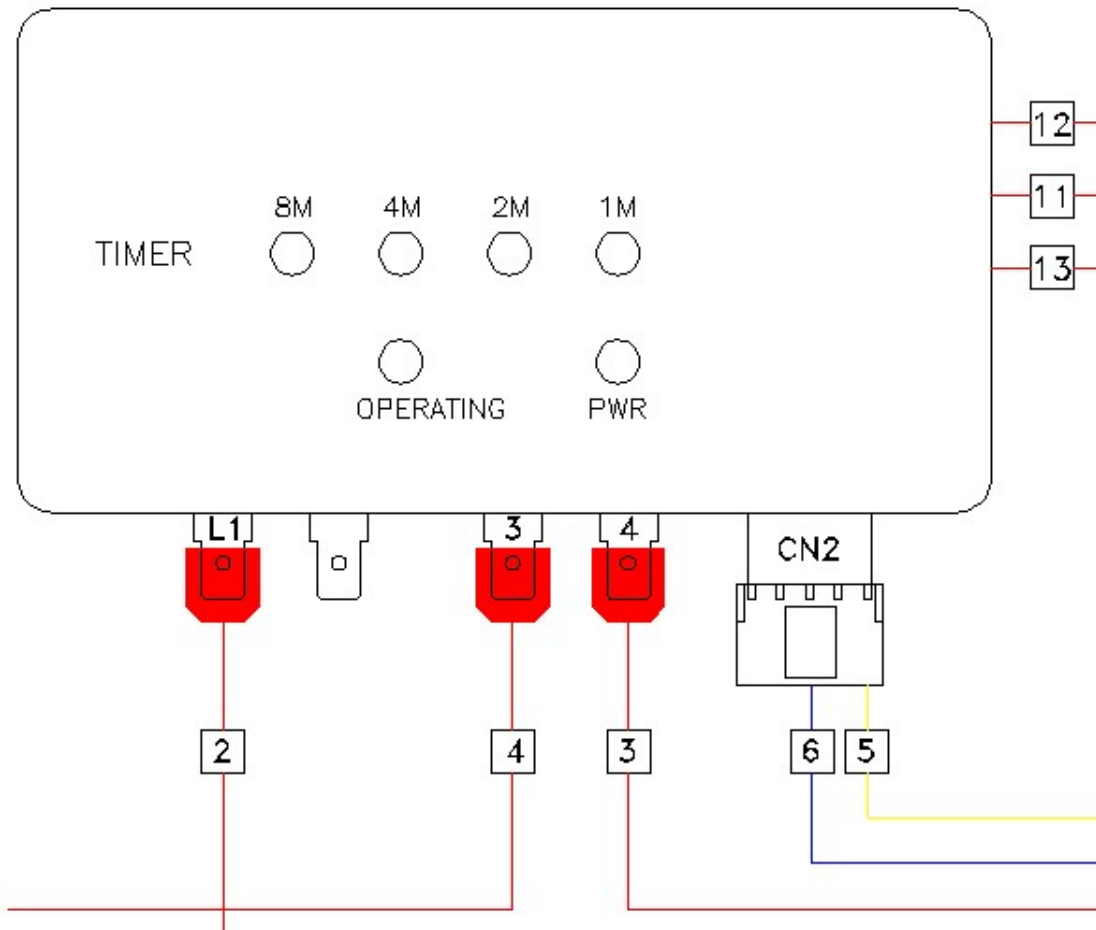
Part-A



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Part-B-1 :

IC Board



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Main Electrical Components for ACC-2 Control Panel

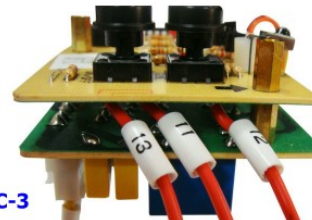
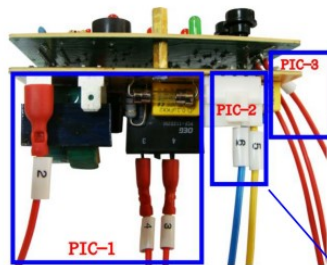
Part-B-1



◆ IC Board (Front)

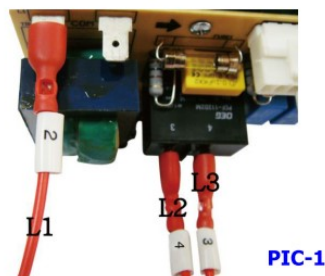


◆ IC Board (Back)



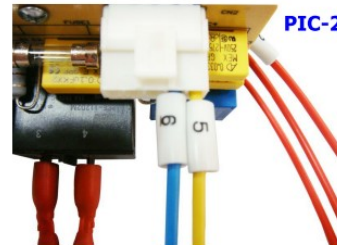
PIC-3

- ◆ 11 : Common Point
- ◆ 12 : TIMER.
- ◆ 13 : ON/OFF



PIC-1

- ◆ L1/L2 : The main power.
- ◆ L3 : The blower.



PIC-2

- ◆ Air pulse jet system.

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Main Electrical Wiring for ACC-2 Control Panel

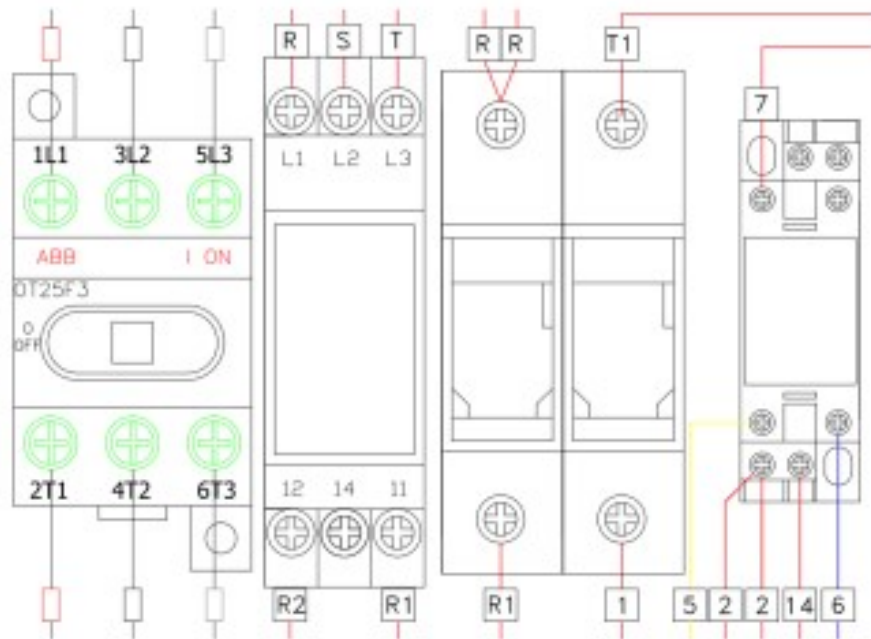
Part-B-2 :

Panel disconnect switch.

3-Phase Monitoring Relay.

Fuse bus.

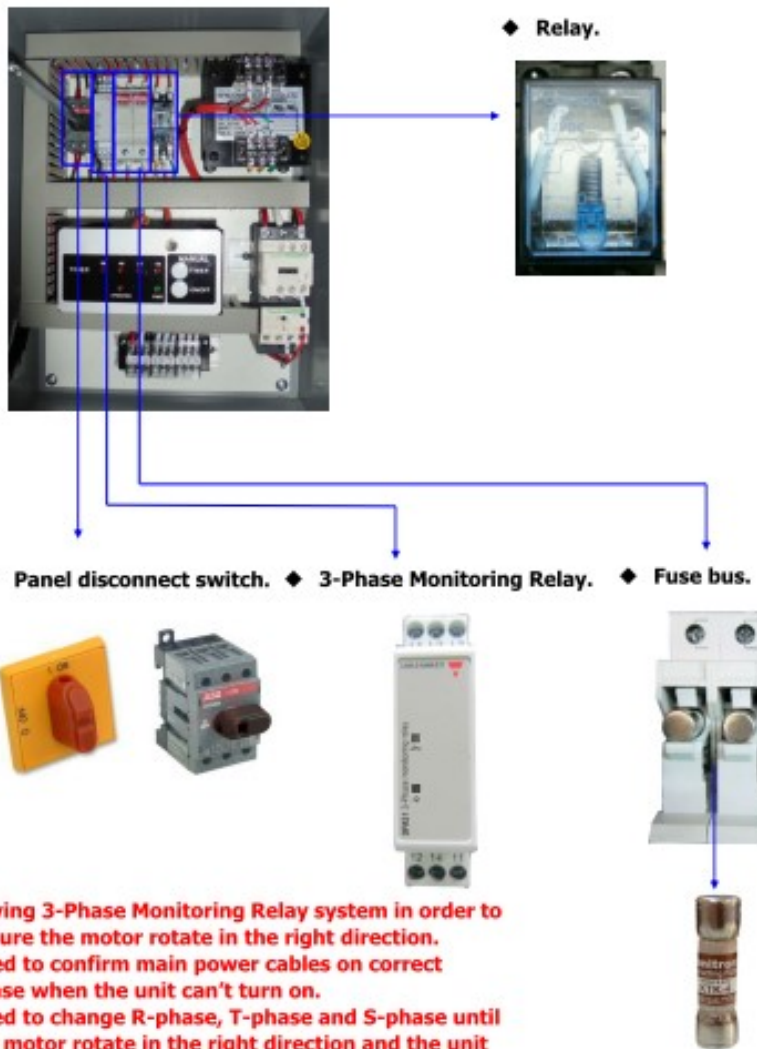
Relay.



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Main Electrical Components for ACC-2 Control Panel

Part-B-2

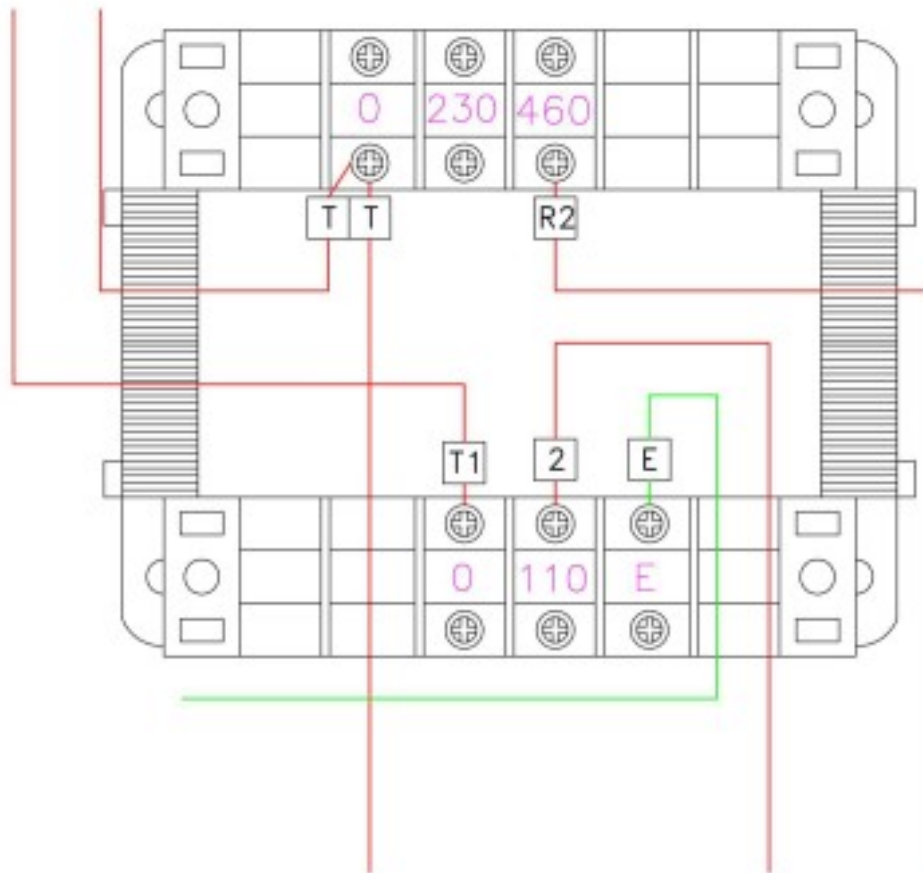


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Main Electrical Wiring for ACC-2 Control Panel

Part-B-3 :

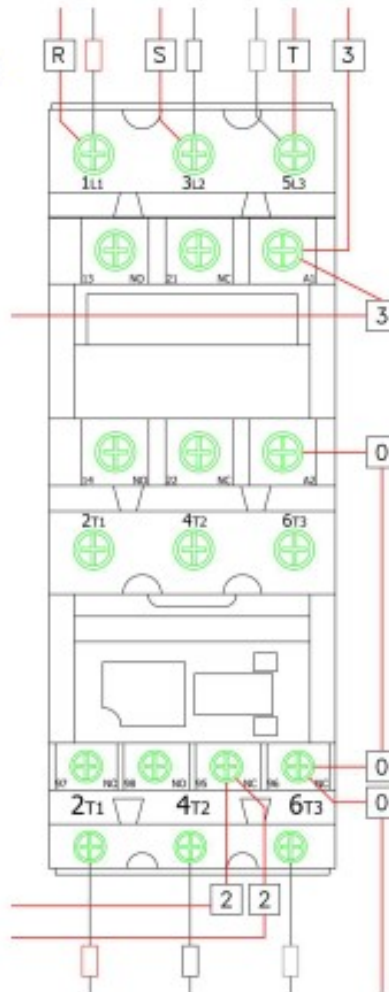
Transformer.



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Main Electrical Wiring for ACC-2 Control Panel

Part-B-4 :
 Magnetic Contactor.
 Thermal Relay.



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Main Electrical Components for ACC-2 Control Panel



Part-B-3

- ◆ Transformer for 460V.

Part-B-4

- ◆ Magnetic contactor.
- ◆ Thermal Relay for motor of 2HP.

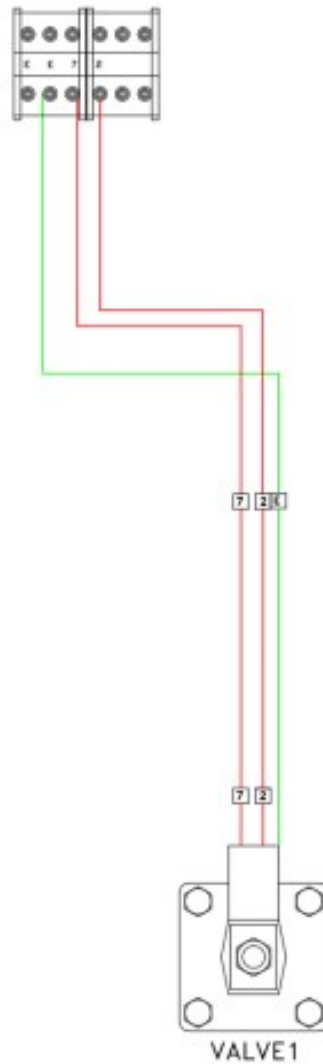


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Main Electrical Wiring for ACC-2 Control Panel

Part-C :

Valve.



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Main Electrical Components for ACC-2 Control Panel

Part-C



◆ Air pulse jet system.



◆ Valve.

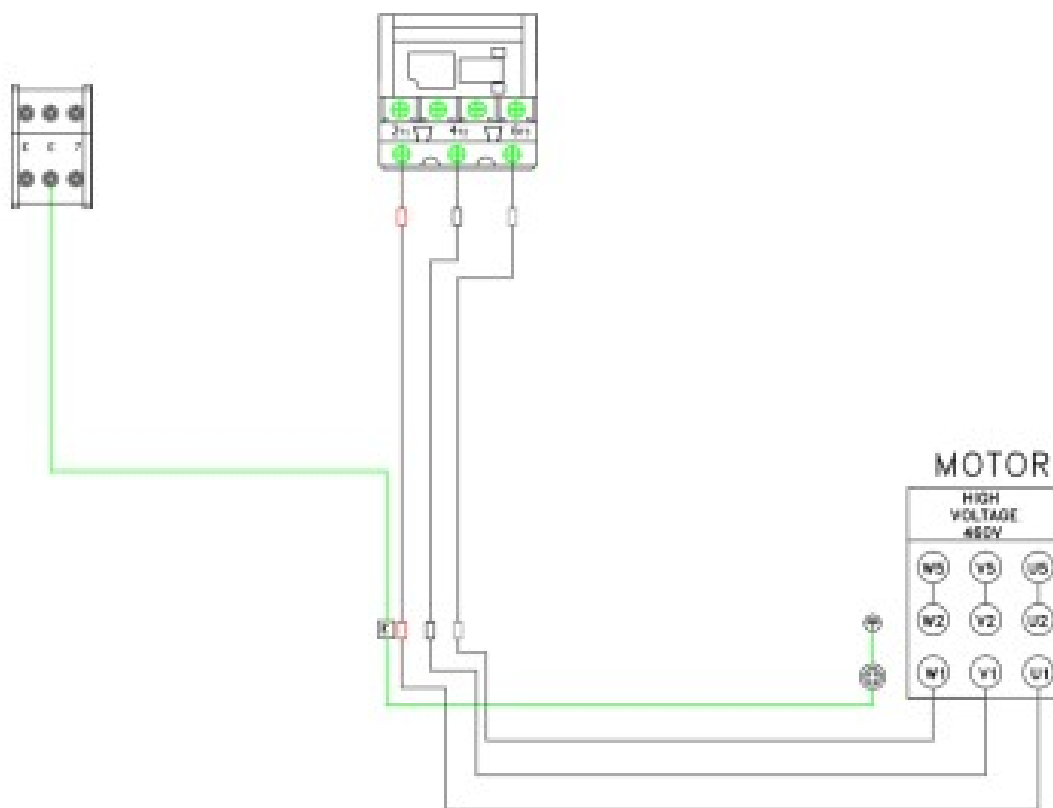


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Main Electrical Wiring for ACC-2 Control Panel

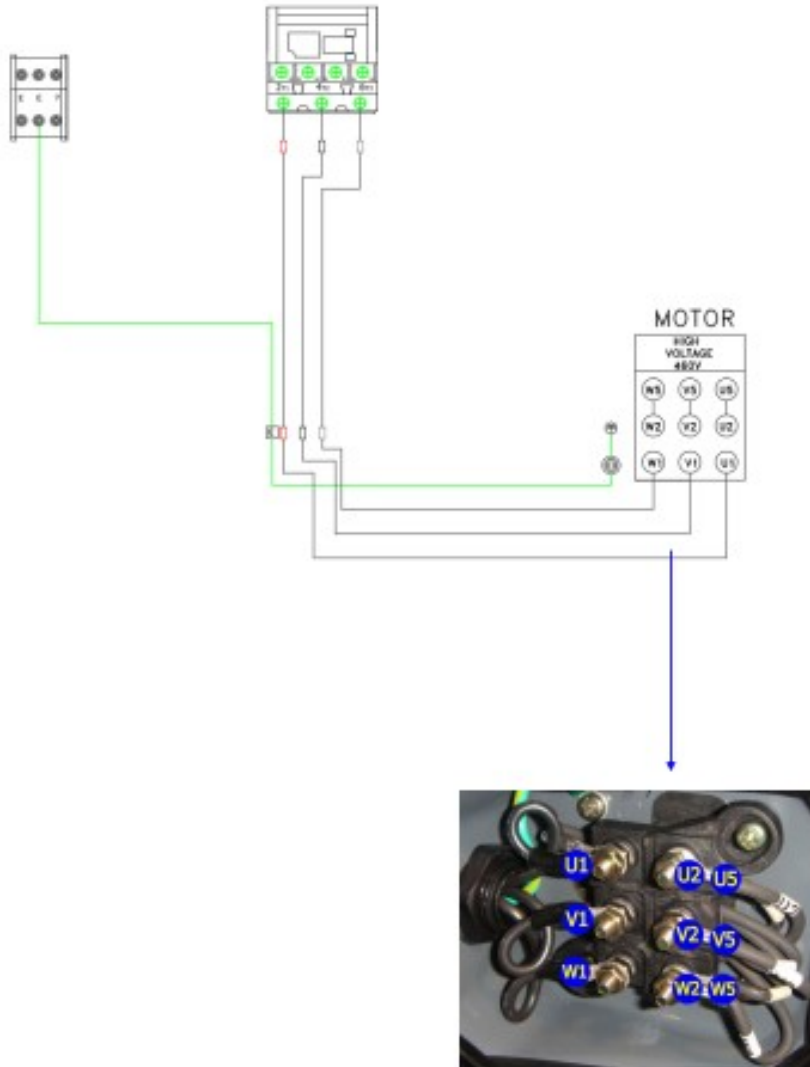
Part-D :

Connect to motor



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Main Electrical Components for ACC-2 Control Panel

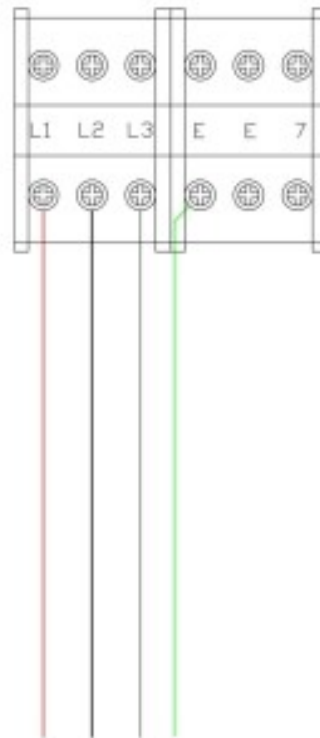


AVANI Ambient Cartridge Collector

Main Electrical Wiring for ACC-2 Control Panel

Part-D :

Connect to main power supply for 460V / 60HZ / 3-Phase

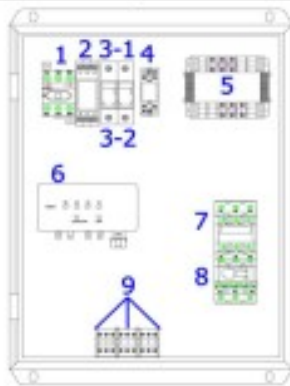


Local main
power supply for
460V / 60hz / 3-phase

AVANI Ambient Cartridge Collector

ACC-2 Blower and Pulse Valve Control Panel

Number #	Part Name	Description	Q'ty	Voltage	Brand	Item #	Web
1	Switch-disconnector	OT25F3	1		ABB	1SCA104857R1001	www.abb.com
	Selector type handles	DHYS2AJ	1		ABB	1SCA105296R1001	www.abb.com
	Shafts	OX56X180	1		ABB	1SCA101659R1001	www.abb.com
2	3-Phase Monitoring Relay	208-480VAC 50/60HZ	1	208-480VAC	Gerlo Gavazzi	DPA51CM448003	http://www.gavazzi-automation.com/
3-1	Fuse : KTK	4A	2	600VAC	Granger	6F132	www.granger.com
					Bussmann	KTK-4	http://www.cooperindustries.com
3-2	Fuse Holder	30A	2	600VAC	Granger	13M221	www.granger.com
					Bussmann	CHM1DIU	http://www.cooperindustries.com
4	Relay Socket : 8 Pins	7A	1	250VAC	Granger	4KN18	www.granger.com
	Square-Base Low-Amp Relays : 8 Pins, DPDT	7A	1	120VAC	Granger	52H99	www.granger.com
5	Transformer	150VA (0.230.460 / 0.110)	1	2HP/460V	San Mao		
6	Ic Board	0.3A	1	110V	San Mao		
7	Contactor	110V	1	2HP/460V	Schneider-electric	LC1D09	www.schneider-electric.com
					Schneider-electric	LRD-10	www.schneider-electric.com
					Schneider-electric	LR3D-10	www.schneider-electric.com
9	Terminal Block : 1 Pole	15A	9	600VAC	Granger	58362	www.granger.com
Terminal Block Accessories	Mounting Channels	35mm x 1M	1		Granger	58357	www.granger.com
	Terminal Block End Barrier		2		Granger	58361	www.granger.com
	Screw On End Clamp		2		Granger	58373	www.granger.com



AVANI Ambient Cartridge Collector

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