RESPA®-CF/CFX/FF SERVICE & INSTALLATION

Thank you for purchasing a RESPA Cab Air Quality System.

In This Manual:

Introduction

RESPA-CF and CFX provides precleaned and filtered air through integrated Gideon power precleaning technology. The RESPA-FF provides filtered air in a filter housing that is upgradable to include the Gideon powered precleaning technology. Filtration is provided by a MERV 16/EU P2* filter. The RESPA-CF powered precleaner system provides a positive airflow without adding resistance. The most common use is to supply precleaned and filtered, fresh or make-up air to HVAC systems in enclosed cabins, thus reducing operator exposure to airborne contaminants. It is recommended that the Sy-Klone Cab Pressure Monitor System be installed to alert the operator when it is time for the RESPA filter to be changed. RESPA products may be used for other purposes as well. **RESPA IS NOT CERTIFIED FOR USE IN EXPLOSION RISK ENVIRONMENTS.**

***SYSTEM RATING:** RESPA system with specified filter produces air of rated quality with airflow ≤ 100 cfm (2.832 m3/m). System rating does not apply when filter is used in a recirculation system.

Vortex HYPER Flow: How RESPA-CF works

Creating the Vortex

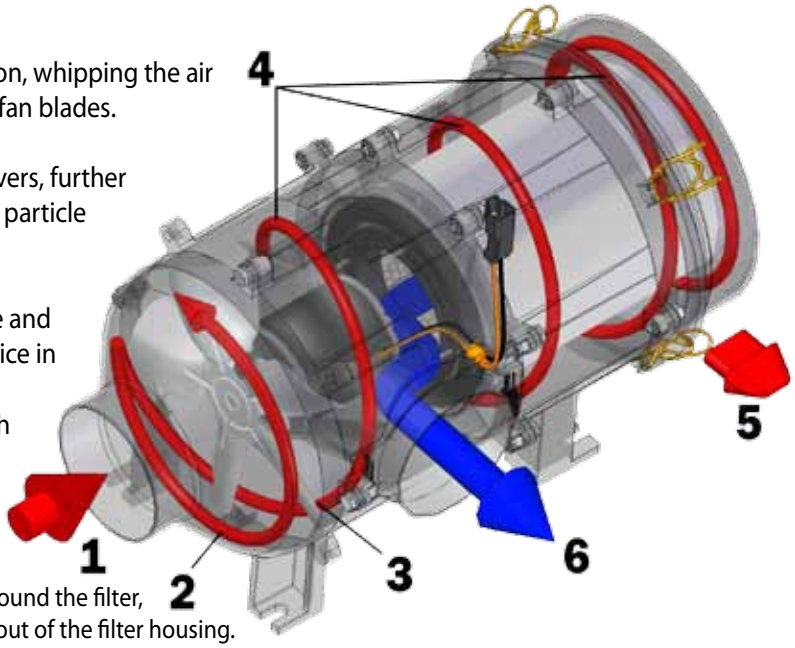
1. Particulate-laden air enters the precleaner inlet.
2. The fan creates a VORTEX, a tornado-like spinning motion, whipping the air and particulate to the outside wall as it approaches the fan blades.

Creating the Hyper spin

3. Spinning air HYPER-accelerates as it passes through louvers, further enhancing centrifugal forces powerful enough to affect particle separation down to 5 µ.

Creating the continuous Flow

4. Particulate is spun against the outside wall of the device and propelled rapidly around the filter to the rear of the device in one continuous FLOW of air.
5. Particulate is ejected back into the environment through two ejection slots located at the rear of the device.
6. Precleaned air passes through the filter. Filtered air continues to the outlet.



Self-cleaning Filter:

Vortex HyperFLOW hyper accelerates particulate-laden airflow around the filter, continually vacuuming particulate off of the filter and ejecting it out of the filter housing. Unlike any previous technology, the entire filter housing remains essentially particulate-free.

Harnessing the Pressure Surge:

The RESPA-CF with Sy-Klone's unique MERV 16/EU P2* filter harnesses the pressure surge that occurs whenever the door of the cabin is slammed closed. The RESPA-CF is designed to act as a pressure release valve that converts vibrations and pressure fluctuations into filter cleaning events by allowing the filter to flex, thereby releasing arrested particulate back into the filter housing to be ejected, thus lowering filter restriction and extending filter life.

Mounting Considerations

IMPORTANT CONSIDERATIONS:

Leave adequate room to release filter latches and remove filter from the filter housing. Approximately 6.50 Inches *(16.51 cm)* for the standard filter or 11.50 inches *(29.21 cm)* for the extended length filter, minimum distances, will be necessary to service filter.

The location should be selected to require the **shortest amount of plumbing with as few bends** as possible.

The RESPA-CF unit can be mounted in a variety of locations and orientations, as long as the ejection slots are oriented in a fashion that **water can NOT fall/run into the filter housing**. The RESPA-CF unit ejects debris at a high rate. Make sure the ejection slots are pointed **away from any surface** and a**way from the operator's field of vision**.

When mounting the RESPA vertically, with the inlet down:

- RESPA-CF should be mounted under cover or a rain deflector used to prevent rain from entering the filter ejection slots.
- Follow the filter change procedures for adaption removal as accumulated debris could fall into the outlet port while removing the filter.
- The rain cap should not be used as it could retain debris and moisture in this orientation.

When plumbing with rigid piping, you must **use a soft connection such as a flex hose or rubber adaptation between the RESPA unit and the rigid piping.** This is important to prevent mechanical stress of the RESPA and air connections. A soft connection also allows for ease of disconnection and reconnection when changing the filter.

If the HVAC has a **recirculation setting** it should be **disabled or modified to NOT restrict the fresh/make-up air.** Note: Fresh/make-up air is required to pressurize the cabin.

Care should be taken to **prevent water from entering RESPA or ejection slots during cleaning**.

See Maintenance Section for special instructions regarding filter changes.

When using flex hose, take care to **protect the flex hose from potential wear points**.

Installation Guidelines

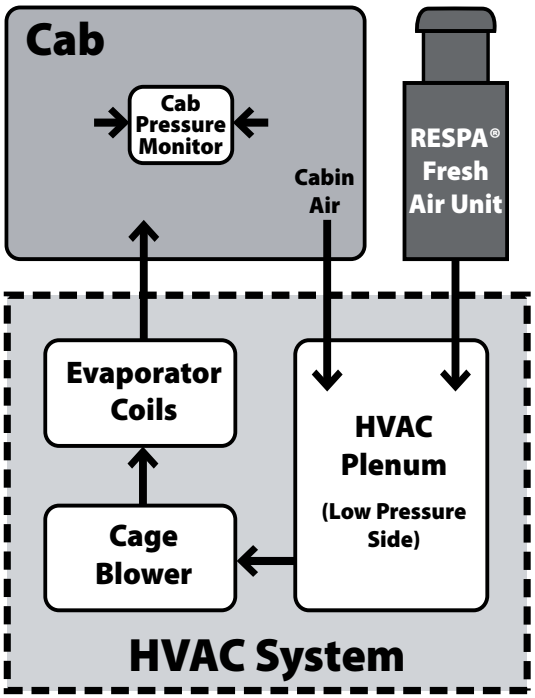
Please read all items before installation of the RESPA System.

Mounting:

1. The machine should be off.
2. Consider the routing and destination of the plumbing when determining the mounting location for the RESPA unit. (See Plumbing Section)
3. The RESPA unit can be mounted in a variety of locations and orientations. (See Mounting Considerations Section)
4. A mounting plate is available. If welding the mounting plate in place:
   a. The plate can be tacked in place with unit mounted. Take care not to heat the unit.
   b. Remove the unit prior to final weld.
   c. Allow mounting plate to cool before reassembly.
5. Do not mount the unit such that it will greatly reduce operator visibility.
6. Avoid mounting the unit in high heat areas.
7. Consider vehicle clearances when mounting the RESPA unit.
8. The standard length RESPA unit has 4 mounting locations. The extended length RESPA unit has 6 mounting locations. The mounting slots will accommodate 3/8 inch mounting hardware.
9. Do not use power tools – **tighten bolts by hand ONLY!!**

PLUMBING RESPA-CF or FF (Fresh Air Plumbing)

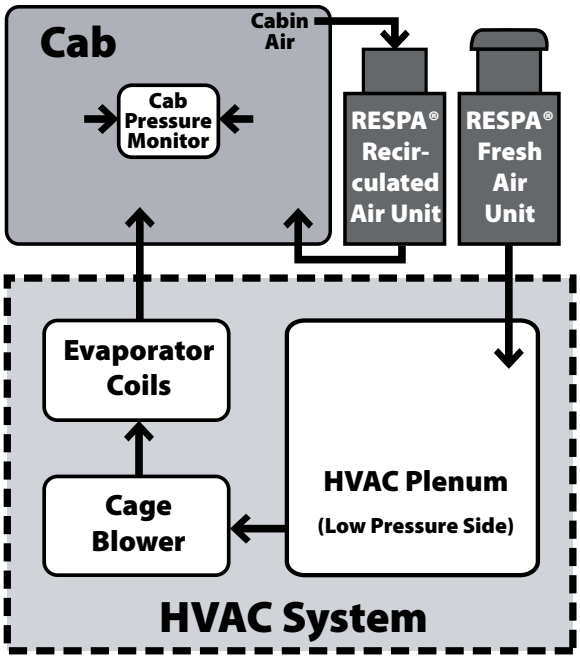
1. The machine should be off.
2. The factory fresh/make-up air and recirculation filters should be removed to allow access to the HVAC system.
   a. Refer to the manufacturer's removal directions.
   b. The fresh/make-up air filter will not be necessary after installation of the RESPA-CF or FF. Note: Not all HVAC systems use a fresh/make-up air filter.
3. Clean the factory HVAC system and cab following the manufacturer's approved methods before and after installing the RESPA system.
4. Routing the clean filtered air provided by the RESPA system:
   a. If available, plumb the clean filtered air into the fresh/make-up air cavity.
   b. If the HVAC system does not include a fresh/make-up air cavity, plumb the clean filtered air into the HVAC plenum between the recirculation filter cavity and the evaporator coils/cage blower. Note: In an HVAC system the position of the cage blower and evaporator coils can be reversed.
   c. It is not recommended to plumb the cleaned filtered air directly into the cab.
5. A RESPA installation kit is available and provides a universal flange adapter that can be used to create a port into the HVAC system.
6. If using the universal flange adapter, the port hole should be slightly larger than the adapter's tubing. Note: Using a hole saw at low RPM is ideal for large holes.
7. When plumbing into a HVAC system ensure that the system and adaptation is sealed. Note: All fresh/make-up air must be drawn through the RESPA unit.



8. The 100% RTV Silicon sealant provided with the RESPA installation kit, or an equivalent sealant, can be used to create gaskets or seal minor leaks.
9. A new recirculation filter should be installed.
10. Routing the hose or tubing:
    a. 3" or 4" plumbing should be used. Hard tubing is suggested to reduce restriction.
    b. Each bend in the routing adds restriction; reducing the functional distance the RESPA can be mounted.
    c. Avoid high heat areas, routing across walkways, tight bends, and reducing operator visibility.
    d. Secure plumbing as routed.

PLUMBING RESPA-CFX (Recirculated Air Plumbing)

1. The machine should be off.
2. The factory fresh/make-up air and recirculation filters should be removed to allow access to the HVAC system.
   a. Refer to the manufacturer's removal directions.
   b. The fresh/make-up air filter will not be necessary after installation of the RESPA-CF or FF. Note: Not all HVAC systems use a fresh/make-up air filter.
3. Clean the factory HVAC system and cab following the manufacturer's approved methods before and after installing the RESPA system.
4. The cabin air outlet to the RESPA-CFX system should be mounted at the lowest point possible.
5. Routing the clean filtered air provided by the RESPA-CFX system:
   a. If possible, plumb the clean filtered air into the recirculation air cavity.
   b. If not, plumb the clean filtered air into the cabin the highest point possible.
6. A RESPA installation kit is available and provides a universal flange adapter that can be used to create a port into the HVAC system. Additional universal flange adapters are available. Note: Use the flange adapter to locate the correct port location.
7. If using the universal flange adapter, the port hole should be slightly larger than the adapter's tubing. Note: Using a hole saw at low RPM is ideal for large holes.
8. When plumbing into a HVAC system ensure that the system and adaptation is sealed.
9. The 100% RTV Silicon sealant provided with the RESPA installation kit, or an equivalent sealant, can be used to create gaskets or seal minor leaks.



10. A new recirculation and fresh/make-up air filter should be installed. Note: The fresh/make-up air filter is not necessary if installing the RESPA-CF or FF.
11. Routing the hose or tubing:
    a. 3" or 4" plumbing should be used. Hard tubing is suggested to reduce restriction.
    b. Each bend in the routing adds restriction; reducing the functional distance the RESPA can be mounted.
    c. Avoid high heat areas, routing across walkways, tight bends, and reducing operator visibility.
    d. Secure plumbing as routed.

Wiring Powered Units (RESPA-CF or CFX):

1. The machine should be off.
2. Finding proper power is critical for system performance.
   a. The unit must receive power when the ignition key is in the on position.
   b. The power must terminate when the ignition key is in the off position.
   c. Do not wire the unit to a variable voltage source.
   d. A master system relay or ignition switch can be a good source of constant power when the ignition key is in the on position.
   e. The source power must provide sufficient current.
3. The current requirement for the 12 volt system is 12 amps maximum initial draw with 6 amps constant.
4. The current requirement for the 24 volt system is 6 amps maximum initial draw with 3 amps constant.
   a. An appropriate relay can be used to provide suitable power from a non-terminating constant source.
5. Ensure the input voltage correlates to the 12 or 24 volt unit being installed.
6. The RESPA system must be fused inline to at least twice the current requirements.
7. Use 16 GA or larger wire for the system.
   a. Black wire = neutral (negative) and red wire OR white wire with red trace = active (positive)
   b. Incorrect electrical connection will reverse motor direction and the RESPA will not function correctly.
8. The master power switch should be set to the off position after appropriate power is located and ignition key removed.
9. Finding a good ground is also critical to system performance. Use an existing grounding point if possible. If not, grind a small area to bare metal and use a self-tapping screw to ground the system.
10. Route the wiring, avoiding high heat areas, routing across walkways, and reducing operator visibility.
11. Use wire loom and grommets as necessary to protect wiring.
12. Secure wiring as routed.

Inspecting RESPA-CF or CFX (Powered) installation:

1. Turn the master power switch ON to inspect the RESPA system. Note: If the system powers on while the ignition key is off, an alternate power source must be located.
2. Turn the ignition key to the ON position and inspect the following:
a. System is running. If not, an alternate power source must be located.
b. Airflow out of RESPA-CF ejection slots is strong. If not, check proper wiring polarity or that the power source is not variable voltage.
c. From inside cabin, check that airflow is strong entering the cabin air outlet to the RESPA-CFX system or if possible check that airflow is strong entering the cabin from the cabin air inlet.
3. With HVAC system to OFF and RESPA-CF operating, cabin pressure should be greater than 0.00 inches of water column *(0 pascal)*.
4. Increase HVAC system fan speed. Cabin pressure should increase as fan speed increases.
5. If cabin pressure never reaches 0.20 inches of water column (49 pascal), check for leaks, improve sealing of cabin, and test again. **Note:** Ideal pressure, with new filters and a sealed cab, is 0.40 inches of water column *(100 pascal)*.

Use the Sy-Klone Cab Pressure Monitor to inspect RESPA-CF installation.
Note: Initial pressure readings should be taken with new fresh/make-up and recirculation filters.

RESPA-CF, CFX & FF FILTER CHANGE & MAINTENANCE

WHEN TO REPLACE FILTER:

Replace filter when the cab pressure drops below the minimum pressure threshold when cab is sealed. (Refer to Pressure Sensor Installation Manual)

Change the RESPA filter after every 1000 hours of operating time, even if the pressure monitor does not alert and there are no noticeable changes.

Sy-Klone recommends the use of a Pressure Monitor System with all installations.

FILTER REPLACEMENT:

1. Work in a clean covered area to reduce operator and HVAC exposure to harmful particles.
2. Wear appropriate personal protection equipment such as gloves, mask, and coverall to protect against contaminants.
3. The machine should be off.
4. Remove any loose debris from the RESPA housing before removing any components.
5. Inspect the RESPA system for any damage.
6. Disconnect the clean air adaptation from the RESPA-CF, CFX, or FF air outlet. Plug or cover the clean air adaptation to prevent contaminants from entering the HVAC system or cabin.
7. Disconnect the inlet air adaptation, where applicable, from the RESPA-CF, CFX, or FF air inlet. Plug or cover the inlet air adaptation.
8. Release the 4 filter latches that retain the filter element noting the orientation of the ejection ports when applicable.

9. Once the filter latches are released remove the filter element. **Note:** Place thumbs on RESPA's exterior hardware for additional leverage when removing filter element.
10. Bag and seal used filter element and dispose of according to local regulation.
11. Inspect and remove any loose debris using a suitable vacuum unit and clean rags – never use compressed air.
12. Before installing the new filter, the powered systems, RESPA-CF or CFX, should be inspected for proper operation.
    a. Turn on the RESPA system staying clear of the open end of filter housing.
    b. Ensure that air is blowing out of the empty filter housing cavity.
    c. Turn off the RESPA system.
13. Install new filter element ensuring the ejection port orientation, when applicable, is correct and that the filter element end cap seats properly on the filter housing.
14. Restrain the filter element by reattaching the 4 filter latches.
15. Reattach any adaptation that was removed from the RESPA inlet or outlet ensuring that contamination of tubing, HVAC, and cabin air does not occur. Take care not to over tighten clamps, as this could cause "crush" damage.

Replace filter only!
Do not clean or re-use filters.
Re-using filters can create health hazards!
Replace with Sy-Klone filters only.
Order from your dealer or from Sy-Klone.

WARNING:

When cleaning equipment, care should be taken to **prevent water from entering RESPA Unit or Ejection Slots**!

Never use compressed air or water to clean RESPA. Instead, use a rag to wipe/clean.

When replacing the **Slotted Ejection Filter or Exteneded Slotted Ejection Filter** (RESPA-CF), make sure ejection slots are oriented in a way that will **NOT allow water to run into the filter housing**. Also do not point ejection slots at a solid surfaces in close proximity to slots.

FIELD SERVICE PARTS:

- **Rain Cap** *(Part number REA0122)*
- **Screened Inlet** *(Part number REA0121)*
- **Ducted Inlet** *(Part number REA0127)*
- **Non Motor Housing** *(Part number REA0134)*
- **12 Volt Motor Housing** *(Part number REA0020-12-0)*
- **12 Volt Motor Housing w/Connector** *(Part Number REA0120-12-1)*
- **4 Volt Motor Housing** *(Part number REA0020-24-0)*
- **24 Volt Motor Housing w/Connector** *(Part Number REA0120-24-1)*
- **Body Gasket** *(Part number REA0135)*
- **Filter Housing** *(Part number REA0018)*
- **Standard Filter Manifold** *(Part number REA0129)*
- **Standard Filter Ring** *(Part number REA0128)*
- **Extended Filter Ring** *(Part number REA0133)*
- **Filter Clips** *(Part number REA0131)*
- **MERV 16 Slotted Ejection Filter** *(Part number FEFF008)*
- **MERV 16 Slotted Extended Ejection Filter** *(Part number FEFF009)*
- **MERV 16 Closed Inline Filter** *(Part number FEFF011)*
- **MERV 16 Closed Extended Inline Filter** *(Part number FEFF012)*

TECHNICAL SUPPORT

Contact your dealer for technical support, or:

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