

# Powered Precleaner/ Filter/Pressurizer Systems

Please read all items before installation of the Powered Precleaner/Filter/Pressurizer System (PP/F/P)

## INSTALLATION INSTRUCTIONS

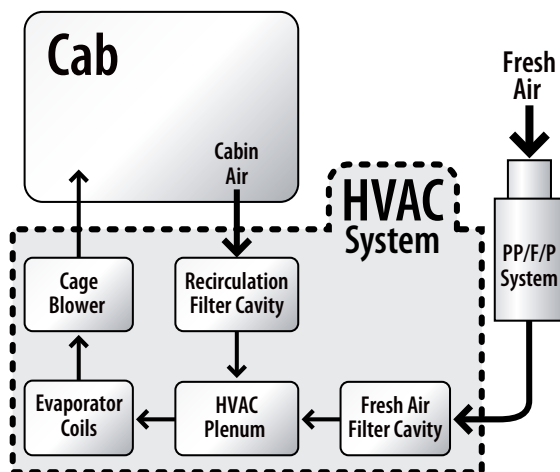
### Fresh Air System Installation

#### MOUNTING

1. The machine should be off.
2. Consider the routing and destination of the plumbing when determining the mounting location for the PP/F/P System. (See Plumbing)
3. The PP/F/P system can be mounted in any orientation from horizontal to vertical.
  - a. Mounting the unit with the lid or inlet facing down may lead to difficulties when replacing filter.
  - b. Leave adequate room to remove lid and filter.
4. A mounting plate with hardware is available when the unit's mounting holes are not accessible.
5. If welding the mounting plate:
  - 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 re-assembly.
6. Do not mount the unit such that it will greatly reduce operator visibility.
7. Avoid mounting the unit in high heat areas (unit operating temp.  $-40^{\circ}$  to  $100^{\circ}$  C,  $-40^{\circ}$  to  $212^{\circ}$  F).
8. Consider vehicle clearances when mounting the PP/F/P unit.

#### PLUMBING

1. The machine should be off.
2. The factory fresh air and recirculation filters should be removed to allow access to the HVAC system.
  - a. Refer to manufacturer removal directions.
  - b. The recirculation air filter will not be necessary after installation of the PP/F/P Recirculation system. **Note:** Not all HVAC systems use a fresh air filter. The fresh air filter may also be referred to as a make-up air filter.
3. Clean the factory HVAC system and cab following the manufacturer approved methods before and after any fabrication. **Note:** Cleaning the HVAC system and cab when installing the PP/F/P system can improve the performance of the HVAC system.
4. The cabin air outlet to the PP/F/P system should be mounted at the lowest point possible.
5. Routing the clean air provided by the PP/F/P system: (See Diagram. lower left)
  - a. If possible, plumb the clean air into to recirculation filter cavity.
  - b. If not, plumb the clean air into the HVAC plenum between the recirculation filter cavity and the evaporator coils/cage blower. **Note:** In a HVAC system the cage blower and evaporator coils positions can be reversed.
6. The universal adapters, provided in the PP/F/P installation kit, can be used to locate the correct port location.
7. If using a universal adapter, the port hole should be slightly larger than the adapter's tubing. Using a hole saw at low RPM's is ideal for large holes.
8. When plumbing into the recirculation filter cavity or HVAC plenum ensure the cavity, plenum, factory recirculation filter inlet, and any adaptation required is sealed from the cabin or outside air. **Note:** All recirculation air should be drawn through the PP/F/P unit.
9. The 100% RTV Silicon sealant provided with the PP/F/P installation kit, or an equivalent sealant, can be used to create gaskets or seal minor leaks.
10. A new fresh air filter should be installed.
11. Routing the hose:
  - a. 4" tubing should be used for installations. Total inlet and outlet hose length should not exceed 8 feet.
  - b. Each bend in the hose creates restriction reducing the functional distance the PP/F/P can be mounted.
  - c. Avoid high heat areas, routing across walkways, tight bends in hose, and reducing operator visibility.
  - d. Limit the hose route to two 90 degree bends.
  - e. Secure hose as routed.



# Fresh Air System Installation *continues*

## INSPECTING THE SYSTEM

1. Turn the master power switch on.
2. Turn the ignition key to the on position and set the HVAC blower motor to its highest setting. If available, turn on recirculation setting. Check for leaks.

# Fresh Air System Maintenance

## SYSTEM CLEANING/FILTER REPLACEMENT

1. The machine should be off.
2. Remove any loose dirt from PP/F/P unit before removing any components.
3. Prior to removing filter, remove the inlet and outlet hoses from PP/F/P unit. Plug the hoses with rags, or equivalent, to prevent dirt from entering hose. Remove hose from inlet and plug.
4. Use compressed air to clean outside of PP/F/P unit.
5. Remove the filter.
  - a. Remove the four (4) 5mm bolts, in the lid, from housing.
  - b. Lift bolted side of lid and slide off mounting tabs.
  - c. Slide filter towards PP/F/P inlet. A slight side to side motion may be necessary to free filter from outlet port.
  - d. Remove and discard filter in proper receptacle.
  - e. Do not blow out or reuse filter.
6. With compressed air:
  - a. Remove debris from rain cap and lid.
  - b. Blow out inlet and filter cavity.
7. After blowing out unit, check for any remaining build-up of debris in housing.
8. Before installing the new filter, apply a small amount of lubricant, supplied with filter, to filter's o-ring.
9. Reassemble PP/F/P system and check for leaks and proper operation.

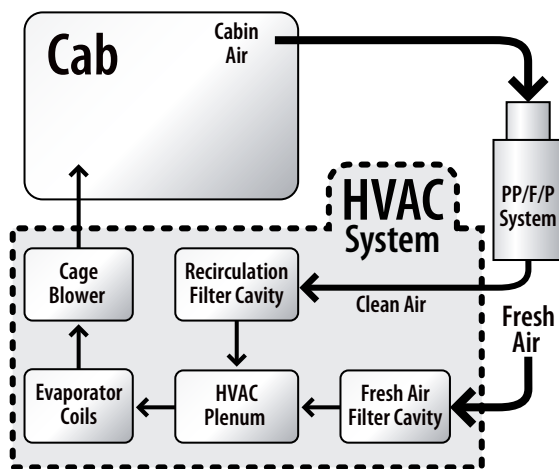
# Recirculating Air System Installation

## MOUNTING

1. The machine should be off.
2. Consider the routing and destination of the plumbing when determining the mounting location for the PP/F/P System. (See Plumbing)
3. Mount the PP/F/P unit as close to the new fresh air inlet as possible to reduce hose length. (See Plumbing)
4. The PP/F/P system can be mounted in any orientation from horizontal to vertical.
  - a. Mounting the unit with the rain cap downward is not recommended as it may collect water.
  - b. Mounting the unit with the lid or rain cap facing down may lead to difficulties when replacing filter.
  - c. Leave adequate room to remove lid and filter.
5. A mounting plate with hardware is available when the unit's mounting holes are not accessible.
6. If welding the mounting plate:
  - a. The plate can be tacked in place with the PP/F/P unit mounted. Take care not to heat the unit.
  - a. Remove the PP/F/P unit prior to final weld.
  - a. Allow mounting plate to cool before re-assembly.
7. Do not mount the unit such that it will greatly reduce operator visibility.
8. Avoid mounting the unit in high heat areas (unit operating temp. -40° to 100° C, -40° to 212° F), areas of high dirt concentration (wheel wells, undercarriage, etc), or near exhaust emissions.
9. Consider vehicle clearances when mounting the PP/F/P unit.
10. The PP/F/P unit ejects debris at a high rate. Do not point ejection ports at any surface in close proximity.

## PLUMBING

1. The machine should be off.
2. The factory fresh air and recirculation filters should be removed to allow access to the HVAC system.
  - a. Refer to manufacturer removal directions.
  - b. The fresh air filter will not be necessary after installation of the PP/F/P Fresh Air system. **Note:** Not all HVAC systems use a fresh air filter. The fresh air filter may also be referred to as a make-up air filter.
3. Clean the factory HVAC system and cab following the manufacturer approved methods before and after any fabrication. **Note:** Cleaning the HVAC system and cab when installing the PP/F/P system can improve the performance of the HVAC system.
4. Routing the clean air provided by the PP/F/P system: (See Diagram below)



- a. If available, plumb the clean air into the fresh air filter cavity.
- b. If the HVAC system does not include a fresh air cavity, plumb the clean air into to HVAC plenum between the

- recirculation filter cavity and the evaporator coils/cage blower. **Note:** In a HVAC system the cage blower and evaporator coils positions can be reversed.
- c. It is not recommended to plumb the clean air directly into the cab, recirculation filter cavity, or HVAC plenum if there is a recirculation setting in the HVAC system. **Note:** The recirculation setting in a HVAC system greatly reduces the flow of fresh air into the system. The clean air must enter into the same cavity as the factory fresh air inlet.
5. The universal adapter, provided in the PP/F/P installation kit, can be used to locate the correct port location.
6. If using the universal adapter, the port hole should be slightly larger than the adapter's tubing. Using a hole saw at low RPM's is ideal for large holes.
7. When plumbing into the fresh air filter cavity or HVAC plenum, ensure the cavity, plenum, factory fresh air inlet, and any adaptation required is sealed from outside air. **Note:** All fresh air should be drawn through the PP/F/P unit.
8. The 100% RTV Silicon sealant provided with the PP/F/P 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:
  - a. 3" Tubing can be used for installations mounting the PP/F/P system up to 4' away.
  - b. 4" Tubing can be used for installations mounting the PP/F/P system up to 8' away.
  - c. Each bend in the hose creates restriction; reducing the functional distance the PP/F/P can be mounted.
  - d. Limit the hose route to two 90 degree bends.
  - e. Avoid high heat areas, routing across walkways, tight bends in hose, and reducing operator visibility.
  - f. Secure hose as routed.

# Recirculating Air System Installation *continues*

## WIRING

1. The machine should be off.
2. Finding proper power is critical for system performance.
  - a. The unit must always 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 PP/F/P system must be fused inline to at least twice the current requirements.
7. Use 16 GA or larger wire for the system.
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:
  - a. Avoid 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 THE SYSTEM

1. Turn the master power switch on to inspect the PP/F/P system.
2. If the system powers on with the ignition key off, an alternate power source must be located.
3. Turn the ignition key to the on position and inspect the following:
  - a. System is running. If not, alternate power source must be located.
  - b. Remove the rain cap and ensure the fan blade is spinning in the counter-clockwise direction. If not, check the proper wire polarity.
  - c. Airflow out both ejection ports is strong. If not, check that power source is not variable voltage.
  - d. There are no are leaks.

# Recirculating Air System Maintenance

## SYSTEM CLEANING/FILTER REPLACEMENT

1. The machine should be off.
2. Remove any loose dirt from PP/F/P unit before removing any components.
3. Prior to removing filter, remove the hose from PP/F/P unit outlet and plug with rag, or equivalent, to prevent dirt from entering hose.
4. Use compressed air to clean outside of PP/F/P unit.
5. Remove the filter.
  - a. Remove the four (4) 5mm bolts, in the lid, from housing.
  - b. Lift bolted side of lid and slide off mounting tabs.
  - c. Slide filter towards PP/F/P inlet. A slight side to side motion may be necessary to free filter from outlet port.
  - d. Remove and discard filter in proper receptacle.
  - e. Do not blow out or reuse filter.
6. Remove rain cap from PP/F/P unit to gain access to inlet.
7. With compressed air:
  - a. Remove debris from rain cap and lid.
  - b. Blow out ejection ports.
  - c. Blow out inlet and filter cavity.
8. After blowing out unit, check for any remaining build-up of debris in housing.
9. Apply power to unit. Check the rotation of the fan blade. Looking into the inlet, the fan blade should be spinning in a counter clockwise direction.
10. Before installing the new filter, apply a small amount of lubricant, supplied with filter, to filter's o-ring.
11. Reassemble PP/F/P system and check for leaks and proper operation.

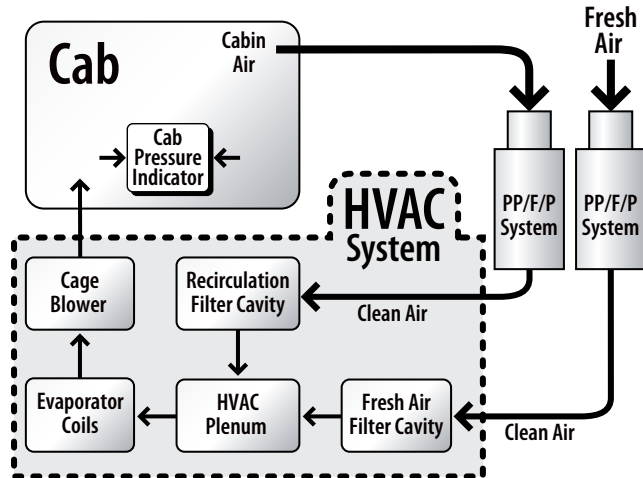
# DPM Fresh Air System Installation

## FRESH AIR SYSTEM

Follow installation instructions on pages 1 and 2.

## RECIRCULATING AIR SYSTEM

Follow installation instructions on pages 3 and 4.



## Cab Pressure Indicator Installation

### MOUNTING

1. The machine should be off.
2. The cab pressure indicator must be mounted inside the cab.
3. The cab pressure indicator can be mounted in any orientation.
4. Consider the routing and destination of the wiring/ plumbing and the visibility of the operator when determining the mounting location of the cab pressure indicator.
5. Do not mount the unit such that it will greatly reduce operator visibility.

### PLUMBING

1. The air line supplied with the cab pressure indicator must exit the cab to measure atmospheric pressure.
2. The open end of the air line should be placed in the area of lowest debris concentration.
3. The 100% RTV Silicon sealant provided with the PP/F/P installation kit, or an equivalent sealant, can be used to seal leaks around the air line as it exits the cab.

### WIRING

1. The unit must always receive power when the ignition key is in the on position.
2. The power must terminate when the ignition key is in the off position.
3. A master system relay or ignition switch can be a good source of constant power when the ignition key is in the on position.
4. The cab pressure indicator requires 10 – 30 volts.
5. The cab pressure indicator must be fused inline.
  - a. For 24 volts use a 10 amp fuse.
  - b. For 12 volts use a 20 amp fuse.
6. An appropriate relay can be used to provide suitable power from a non-terminating constant source.
7. Use 18 GA or larger wire for the cab pressure indicator.
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 important. 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. Use wire loom and grommets as necessary to protect wiring.
11. Secure wiring as routed.

# DPM System *continues*

## INSPECTING THE CAB PRESSURE INDICATOR

- 1.** Turn the master power switch on to inspect the cab pressure indicator.
- 2.** If the system powers on with the ignition key off, an alternate power source must be located.
- 3.** Turn the ignition key to the on position and inspect the following:
  - a.** The gauge is operational. If not, alternate power source must be located.
  - b.** If the cab pressure indicator alarm is indicating low pressure:
- 4.** Check that all doors and windows are closed.
- 5.** Check cab for any leaks.
- 6.** Increase the HVAC systems blower motor setting.
- 7.** The plumbing for the fresh air PP/F/P system may be too restrictive requiring fewer bends or a larger hose.
- 8.** The plumbing for the recirculation PP/F/P system may be oversized and require a smaller hose.
  - a.** If the cab pressure indicator alarm is indicating high pressure:
- 9.** Decrease the HVAC systems blower motor setting.
- 10.** The plumbing for the recirculation PP/F/P system may be too restrictive requiring fewer bends or a larger hose.
- 11.** The plumbing for the fresh air PP/F/P system may be oversized and require a smaller hose.

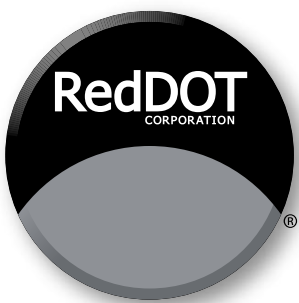
# DPM System Maintenance

## CAB PRESSURE INDICATOR

1. A low pressure alarm can be an indication that the fresh air filter needs replacement.
2. A high pressure alarm can be an indication that the recirculation filter needs replacement.

## SYSTEM CLEANING/FILTER REPLACEMENT

1. The machine should be off.
2. Remove any loose dirt from PP/F/P unit before removing any components.
3. Prior to removing filter, remove the hose from PP/F/P unit outlet and plug with rag, or equivalent, to prevent dirt from entering hose. For recirculation systems, also remove hose from inlet and plug.
4. Use compressed air to clean outside of PP/F/P unit.
5. Remove the filter.
  - a. Remove the four (4) 5mm bolts, in the lid, from housing.
  - a. Lift bolted side of lid and slide off mounting tabs.
  - a. Slide filter towards PP/F/P inlet. A slight side to side motion may be necessary to free filter from outlet port.
  - a. Remove and discard filter in proper receptacle.
  - a. Do not blow out or reuse filter.
6. If installed, remove rain cap from PP/F/P unit to gain access to inlet.
7. With compressed air:
  - a. Remove debris from rain cap and lid.
  - a. Blow out ejection ports. (Fresh air system only.)
  - a. Blow out inlet and filter cavity.
8. After blowing out unit, check for any remaining build-up of debris in housing.
9. Apply power to unit. Check the rotation of the fan blade. Looking into the inlet, the fan blade should be spinning in a counter clockwise direction. (Fresh air system only)
10. Before installing the new filter, apply a small amount of lubricant, supplied with filter, to filter's o-ring.
11. Reassemble PP/F/P system and check for leaks and proper operation.



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