


Field Fixes/Equipment Fails






Copyright © 2019 NADCA. All Rights Reserved.
No part of this publication may be reproduced or distributed by any means, electronic or mechanical, including photocopy, recording, or any other information storage and retrieval system, without prior written consent from the publisher.


Presenters







Disclaimer



This presentation is not intended to be a comprehensive program covering all aspects of this topic. All technicians are encouraged to read and follow all applicable standards, codes and regulations related to this topic.

- ✓ It is the responsibility of each individual contractor to follow local building codes and licensing requirements and to work safely in accordance with OSHA guidelines.
- ✓ It is the contractor's responsibility to take proper precautions on each project to prevent cross contamination. Always take the health and safety of the building occupants into consideration before you conduct any cleaning procedures.
- ✓ All of the following tips are only general tips. They do not cover every situation and it is your responsibility to adapt these tips to the individual system you are working on.
- ✓ The Instructor is not responsible in any way for the work you perform after viewing this slide show. You are responsible for your own work.
- ✓ The views and opinions following are the instructors opinions and not necessarily the official position of the National Air Duct Cleaners Association.

TECHNICAL NADCA CONFERENCE


What We'll Learn

- POWER SOURCE
- EQUIPMENT ISSUES
- JOB SITE OBSTACLES

TECHNICAL NADCA CONFERENCE

Field Fixes/ Equipment Fails

Power Source:



- The melted plug situation happens occasionally. It is most frequently associated with pulling a plug out of the wall by yanking on the cord instead of grabbing the plug and pulling it out. This should be able to be a field repair.
- Simple wiring convention; the green (ground wire) goes on the green screw, the white wire (neutral wire) goes on the silver screw that goes to the wider of the 2 prongs or sockets, the black or red wire goes to the brass screw that goes to the narrower of the prongs or sockets.

TECHNICAL NADCA CONFERENCE

Field Fixes/ Equipment Fails

Power: Electric Outlet Protocol with Portable Electric Duct Vacuums:

- NEVER UNPLUG A FREEZER OR REFRIGERATOR TO PLUG IN YOUR VACUUM.
- NEVER UNPLUG A CONDENSATE PUMP/TANK CONNECTED TO A FURNACE OR AC.
- NEVER UNPLUG A COMPUTER ROUTER.
- IF A CIRCUIT BREAKER TRIPS, DON'T STOP LOOKING FOR IT UNTIL YOU FIND IT AND RESET IT.
- If the house is old and only has 60 Amp service with screw in fuses, you are going to have real problems. Don't try to run a duct vacuum unless there is a supply or replacement fuses available.



Field Fixes/
Equipment
Fails

Power: Electric Outlet Protocol with Portable Electric Duct Vacuums:

- Portable Duct Vacuum Electrical Needs:
 - All of the manufacturers have wound up using the same type of electric motors to maximize performance.
 - Each motor needs to be fed from a separate 15 amp or greater circuit that does not have a significant load on it already.
 - Most electrical outlets in a house are wired for 15 amp service. Some appliances, like freezers, and old microwaves ought to be wired for 20 amps, but those are single outlet circuits and you may not want to use them because of the risk of forgetting to plug them back in.
 - With the current demands of duct vacuum motors it is easy to see that you can't run 2 motors on the same circuit. You may have trouble running a vacuum on a single circuit if the homeowner already has a considerable load on it.



Field Fixes/
Equipment
Fails

Equipment Issues





Field Fixes/
Equipment
Fails

Equipment Issues

Portable Electric Duct Vacuum Loses Suction on Job Site:

- HEPA filter is clogged and needs replacement, but the job still needs to be completed.
- DO NOT:
 - try to vacuum the HEPA filter,
 - try to blow compressed air through the HEPA filter like it is an engine filter
 - Both of these will damage the HEPA filter fabric and the filter will no longer be HEPA.



Field Fixes/
Equipment
Fails

Equipment Issues

Portable Electric Duct Vacuum Loses Suction on Job Site:

- Carefully remove the HEPA filter without impacting the filter paper.
- Find a flat clean space to "tap out" the filter.
- Place the filter flat on the surface inlet side of the filter facing down.
- Lift the filter holding the frame about 1/2" to 1" above the ground and let go, letting it drop evenly on the flat surface.
 - Repeat this 2 or 3 times.



Field Fixes/
Equipment
Fails

Equipment Issues

Portable Electric Duct Vacuum Loses Suction on Job Site:

- Move to a new area and repeat.
- Keep doing this until no significant amount of dust is coming out of the filter on the ground.
- Carefully reinstall the filter.
- Complete the job.
- Doing this does compromise the seal of the filter and the HEPA rating of the machine. It would not likely pass a DOP test after the procedure. But, in most cases, it will get you through the job without problems until you can get the filter replaced.
- After doing this procedure we have measured with an ABM200 an increase in vacuum air flow in the range of 40%-50%.



Field Fixes/
Equipment
Fails

Portable Electric Duct Vacuum Loses Suction on Job Site:



- This HEPA filter was "tapped out" in 24 locations. This one got clogged doing a large scale dryer exhaust cleaning project.



Field Fixes/
Equipment
Fails

Portable Electric Duct Vacuum Loses Suction on Job Site:



- This is the pile of debris that was swept up from the preceding tap out (3# 13oz). Now, when we are forced to use one of our portable electric duct vacuums for one of our large scale dryer vent cleaning projects we are costing a replacement HEPA filter.



Field Fixes/
Equipment
Fails

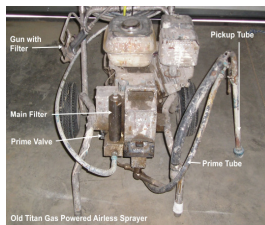
Airless Paint sprayer:






Field Fixes/
Equipment
Fails

Airless Paint sprayer:



- Not Spraying
 - Plug in
 - Filters clogged
 - Gun
 - Sprayer
 - Paint strainer
 - Tip clogged
 - All else fails
 - Rental company




**Field Fixes/
Equipment
Fails**

Equipment Issues

GAS ENGINE DRIVEN MACHINE WON'T START (Vacuum or air compressor):

- Any engine driven appliance has a simple systematic troubleshooting procedure:
 - Everyone should have the right size spark plug wrench and a replacement spark plug.
 - Make sure that the gas tank is full of gas.
 - Make sure the fuel valve is open.
 - Make sure the oil sump is full to the correct level.
 - The larger engines, like the Kohler 20HP, have low oil shut offs to prevent major damage.




**Field Fixes/
Equipment
Fails**

Equipment Issues

GAS ENGINE DRIVEN MACHINE WON'T START (Vacuum or air compressor):

- There are 2 main systems that make a gas engine run;
 - the fuel delivery system, and the ignition (electrical) system.
 - A failure to start is most frequently a failure of one of these 2 systems.



**Field Fixes/
Equipment
Fails**

Equipment Issues

GAS ENGINE DRIVEN MACHINE WON'T START (Vacuum or air compressor):

- The fuel delivery system is the easiest to troubleshoot so start with the troubleshooting checks here.
 - Eliminate the possibility of a flooded engine.
 - Eliminate the possibility of interrupted fuel flow to the carburetor.
 - Tablespoon of gas on fuel filter: if engine sputters, then it's a fuel delivery problem.
 - Check fuel hose connection problem.



Field Fixes/
Equipment
Fails

GAS ENGINE DRIVEN MACHINE WON'T START (Vacuum
or air compressor):

- If none of these things has a result, then the problem is likely to be in the ignition system.
- Clean the spark plug electrodes.
- Check for visible signs of spark by connecting plug to wire outside of engine, grounding plug to engine, and turning over engine.



Field Fixes/
Equipment
Fails

GAS ENGINE DRIVEN MACHINE WON'T START (Vacuum
or air compressor): Ignition System Continued:

- Sometimes when the appliance has its own battery, a dead battery that won't charge will keep it from starting by being a constant drain on what the magneto produces. You can't successfully start one of these by jumping from a truck battery with jumper cables. Take the dead battery out and replace it with your truck battery. The battery won't die leaving you stranded at the end of the day because the magneto will keep it charged.



Field Fixes/
Equipment
Fails

Ecobee, Nest, Carrier Infinity and the like:

- It is always a good idea to perform pre-cleaning system checks to ensure that the system is operating properly prior to cleaning. The problem with not doing this is that there may be system problems pre-existing that you will get blamed for after system cleaning because you were the last guy to touch it.
- When we encounter Ecobee, Nest, Carrier Infinity and the like systems, our policy is to have the homeowner do the turning on and shutting off of the thermostats for the pre-system checks.





Field Fixes/
Equipment
Fails

Ecobee, Nest, Carrier Infinity and the like:

- A basic thermostat, even a simple digital thermostat, is fundamentally a switching device turning power on or off to certain wires when certain conditions are present.
- A basic thermostat doesn't need a power supply to operate it. There will be no common wire run from the system transformer (in the air handling unit) to the thermostat location.
- Being small computers, these new "thermostats" consume more power than digital thermostats and so need more power.
- For those that didn't care to go to the trouble of running an actual common wire so that the device will work properly, there are a large group of "common wire adapter" devices that have hit the market to "solve the problem".
- So we encounter a bunch of these systems that "tech geeks" who think they know what they are doing are adding these mini-computer thermostats to their systems the best they know how, or that Youtube video clips teach them.



Field Fixes/
Equipment
Fails

Ecobee, Nest, Carrier Infinity and the like:

- If you find yourself having cleaned one of these equipped systems and the system won't restart after cleaning, there are some things you can do before you get in a fight with your customer:
 - Shut the power off to the system at the circuit breaker and leave it off for 10 minutes. This is a method of doing a hard restart on the control system, kind of like clearing a check engine light on your vehicle by disconnecting the battery.
 - After 10 minutes, restore the power and try to turn the system on. This is doing a reboot of the software in the devices.
 - If that doesn't work you need to differentiate whether this is a control problem or an air handling unit problem.



Field Fixes/
Equipment
Fails

JOBSITE OBSTACLES:



TECHNICAL NADCA CONFERENCE

Field Fixes/
Equipment Fails

JOBSITE OBSTACLES:

- **Safety Toolbox**
 - Safety glasses, Gloves, Respirator, First aid kit, Hard hat etc.

TECHNICAL NADCA CONFERENCE

Field Fixes/
Equipment Fails

JOBSITE OBSTACLES:


- Review job site hazards before leaving to jobsite

TECHNICAL NADCA CONFERENCE

Field Fixes/
Equipment Fails

JOBSITE OBSTACLES:


- **General Fix Tool Box:**
 - Duct Tape, Foil Tape, Hose clamps 1/2" to 2"
 - Teflon tape, Electrical tape; Wire nuts
 - Fuses
 - Batteries, USB Charger
 - Flashlight
 - Multi tool
- Create a box that fits your general daily routine



Field Fixes/
Equipment
Fails

JOBSITE OBSTACLES:

- Vendor File
 - Depending on job site location be aware of local vendors/suppliers
 - Home depot, Harbor Freight, rubber & gasket company
 - If equipment fails are unable o be fixed on site, HAVE a backup plan





Field Fixes/
Equipment
Fails


Conclusion

- Prevention is the KEY
- But....When FAILS happen...
 - Be PREPARED

Thank you
for
Participating!

Field Fixes/
Equipment
Fails



Q&A
you have
Questions
We have
Answers
