Quick Start Guide

MODELS RV, RVE & RVC

RV/RVE/RVC IOM

DOAS START-UP REPORT

GREENHECK
Building Value in Air.

This quick start document is intended to help complete the initial unit startup, but does not replace the IOM. Please read the IOM for all safety information and precautions before performing any work on the equipment. See Model RV/RVE/RVC Installation, Operation and Maintenance Manual. Complete pre-start checks prior to this procedure.

Damper & Fans

See Model RV/RVE/RVC Installation, Operation and Maintenance Manual.

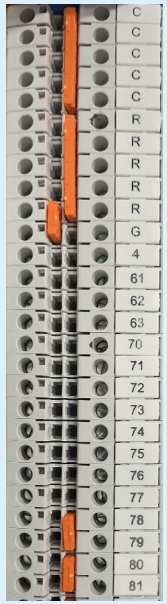
1. Verify discharge air sensor field installation at least three to five duct widths downstream of unit discharge.
2. Verify proper phasing and voltage of incoming power. See **Figure 1** and LED status.
3. Jumper or install fire alarm contacts and remote start:
   a. Install **S6** fire alarm contacts or jumper terminal [R] to [70] or [70P] to [701] Heat Cool Only (HCO) Controls.
   b. Verify **S1** jumper [R] to [G] or if applicable, [R] to [Y1] and [Y2]. For model RV/RVE-20 [C] to [G].
4. Enable Manual Override - Test Damper and Fans:
   a. Press the program ⦿ key on the unit controller.
   b. Scroll to Ctrl Variables, press the ↵ enter key.
   c. Scroll to **Advanced**, press the enter key.
   d. Scroll to **Login**, press the enter key then down arrow then enter to input password **9998**. (After login user is back in Advanced Menu).
   e. Scroll to **Manual Overrides**, press enter.
   f. Scroll to **Manual Override Mode** Enable [ ] press enter then scroll to check Enable **[x]**, press enter again to confirm duration time.
   g. When testing is complete, deselect Enable [ ] to release all overrides and return to Auto.
5. Prevent components from starting in auto when system is enabled by disabling fans, cool and heat devices using Override: Auto to **Manual**, Command: **Off**, Value: **0%**.
6. Press the program key, scroll to Unit Enable: **Enabled** return to Manual Overrides Menu.
7. Override Damper signal to 35% and 100% to verify that modulating OA damper matches signal and re-circulation damper operates inverse of OA damper direction.
8. Override Fan(s) On at 100%. Check rotation, compare motor FLA to nameplate and record in Start-up Report.

Air Tunnel Leak Detection & Fire Alarm System Verification

1. **Overrides Off & Disable unit through main menu.**
2. Remove A2L Mitigation Jumper between terminals [78] and [79]. See **Figure 2**.
3. Supply fan forced to start and ramp to minimum required airflow parameter via digital input on VFD.
4. Alarm on controller indicates Airstream Sensor Trip.
5. Recirculation damper will remain open – If no recirculation damper, the OA damper will open.
6. Compressor operation prevented via HPS circuit relay.
7. Bipolar ionization module will power off.
8. Remove fire alarm system contact or jumper at terminals [R] to [70].
9. Fire alarm overrides A2L air tunnel mitigation response.
10. Verify supply fan(s) stop operation.
11. Reinstall A2L Mitigation Jumper and fire alarm contact once all is proven.

Figure 1:
Typical Phase Monitor

Figure 2:
Example Terminal Block



Compressor section jumper system response

1. Remove A2L Mitigation IG Jumper between terminals [80] and [81]. **See Figure 2.**
   a. Only installed on units with refrigeration systems and indirect gas heat
2. Alarm on controller indicates Compressor sensor trip.
3. Indirect gas furnace will disable.
4. Supply fans will not be forced to start.
5. Dampers will remain in off position.
6. Compressor operation prevented via HPS circuit relay.
7. Bipolar ionization module remains energized.
8. Reinstall A2L Mitigation Jumper once proven.

Energy Wheel

If Present, see Model RV/RVE/RVC Installation, Operation and Maintenance Manual.

1. Verify energy wheel rotation direction (speed may vary depending on wheel model).
2. Check energy wheel motor amp draw, and compare to motor nameplate FLA and record in Start-up Report

Cooling

Complete above 55°F outdoor air temperature. If charge is added, record in Startup Report and Charge Label. Nominal Operating pressures vary with leaving air temp, ambient temperature, entering air temp, and supply airflow.

1. Place a refrigeration manifold gauge set onto each refrigeration circuit. For the high side connection utilize the liquid line service valve and a temp sensor to measure subcooling.
2. Scroll to Pressure Control in Manual Override Mode, briefly enable outdoor condenser fan(s), check rotation with paper to ensure air forced away.
   a. Check that the fan blade doesn't contact the guard around the fan impeller.
   b. Check motor amperage, compare to nameplate or unit data and record in Start-up Report.
3. If hot gas reheat is present in unit, scroll to **Hot Gas Reheat Ramp** in **Manual Overrides** menu, and set **Override** to **Manual** and **Value** to 100%
4. Scroll to **Cooling Ramp 1**, set the Override to manual and Demand to **100%** to enable all circuits
   a. Or override each compressor On and signal: 100%
5. Run system for 2-minutes at 100% valve position, then set **Hot Gas Reheat Valve** Override to **0%** to close.
6. Allow the system to run unimpeded for 10-15 minutes while system stabilizes within these conditions:
   a. 100% Airflow and Dampers set to flow warmest air
   b. Saturated Suction Temp above 35°F
7. **Record Circuit Subcool.** (Increases below 60°F OA)
   a. Ideal subcooling is **6-14°F** and changes with ambient
   b. If subcooling is below 6°F and sight glass is not clear, add refrigerant until 6°F or sight glass clear.
   c. If subcooling is above 14°F check SH and verify the Expansion Valve is 100%. If 90% or less and SH maintaining setpoint, remove charge.
   d. If above 19°F and two circuit system with one circuit active (Cir. B / TXV), remove charge.
8. **Record Circuit Superheat.**
   a. Superheat setpoint is **10°F**. Controlled by ExV on inverter comp circuits. Ensure ExV is between 10-90%.
   b. If TXV and SH below 8°F and SC nominal, adjust the TXV clockwise.
   c. If TXV and SH above 12°F and SC nominal, adjust the TXV counter-clockwise.
9. Ensure that only the reheat compressor is running.
10. Increase HGRH valve to 100% (if equipped) wait 5 minutes then measure reheat circuit SH and SC.
    a. Ideal SH 30°F or less. Sight glass bubble expected.
    b. If SH is above 30° with low suction pressure, add charge until under 30° and record on charge label.
11. Return to 0% HGRH, confirm SH and SC in range.

R-454B		
Value	**Range**	**Nominal***
Suction Pressure	96-132 psi	113psi
Discharge Pressure	228-422 psi	344 psi
Liquid Pressure	within 15 of discharge	329 psi
Superheat	8-12ºF	10ºF
Subcooling	6-14ºF	10ºF
Cond. Air In	0-115ºF	55-95ºF

Heating Start-Up

If heating components are present.

1. Press the program key.
2. Scroll down to **Ctrl Variables**, press enter key.
3. Scroll down to **Advanced**, press enter key.
4. Scroll down to **Login**, enter **9998** as password for service level access.
5. Scroll down and enter the **Manual Overrides menu.**
6. Press the down key once, if promoted to begin IG furnace commissioning, press enter key.
   a. Complete IG Furnace Commissioning to set gas pressure shown on controller screen. See **Figures 4-6**.
7. If not prompted to begin IG furnace commissioning unit has HMA IG or other heating type. Gas pressures set at factory, but verification is required. See **Figure 3**.
8. Scroll to Furnace Request, set Override to manual and output(s) set to On
   a. Furnace Request On, Signal 100% for High Fire.
   b. Verify furnace mid fire pressure during 60s warm-up period.
   c. Furnace Request On, Signal 0% for Low Fire.

Figure 3: Gas Pressure Settings

Combo Valve Natural Gas	
Inlet Pressure Tap	5.0 to 13.5 in. wc
Mid Fire (warm-up)	1.2 in. wc
High Fire Pressure Tap	3.5 in. wc
Manifold Port Natural Gas	
Low Fire Pressure	0.4 in. wc
High Fire Pressure	3.5 in. wc
Combo Valve Liquid Propane	
Inlet Pressure Tap	10.0 to 13.5 in. wc
Mid Fire (warm-up)	2.3 in. wc
High Fire Pressure Tap	10.0 in. wc
Manifold Port Liquid Propane	
Low Fire Pressure	1.1 in. wc
High Fire Pressure	10.0 in. wc

Furnace Commissioning

Recommended to use dual port or multiple manometers on high turndown and dual furnaces.

1. Enter Gas Type: Natural or LP.
2. Adjust outlet pressure on the combination valve. **See Figure 4.**
   a. Connect manometer to outlet pressure tap on combination valve.
   b. Adjust outlet pressure using outlet pressure adjustment screw.
3. Adjust the High Fire setting on the modulating valve.
   a. Connect manometer to test tap on burner manifold.
   b. Press and hold button #1 until the Setting LED lights solid GREEN on the mod valve. Release button and observe pressure on manometer. **See Figure 5.**
   c. Adjust modulating valve by pushing button #1 to increase the pressure and button #2 to decrease the pressure. **See Figures 5 & 6.**
   d. Save the High Fire setting by simultaneously pressing button #1 and #2 until the LED turns off.
4. Adjust Low Fire setting on mod valve
   a. Press and hold button #2 until setting LED blinks GREEN**.** Release button and observe pressure on manometer. **See Figure 5.**
   b. Adjust low fire setting by pushing button #1 to increase or button #2 to decrease the pressure. **See Figures 5 & 6.**
   c. Save the Low Fire setting by simultaneously pressing button #1 and #2 until the Setting LED turns off.
5. Repeat steps 2 and 3 for high turndown furnaces.
6. Complete verification prompts for gas pressure two speed combustion blower operation high limit cutout.

Figure 4:
Combined Regulator Valve

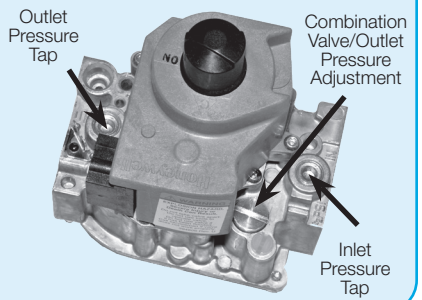


Figure 5: EXA Modulating Gas Valve (with cover removed)

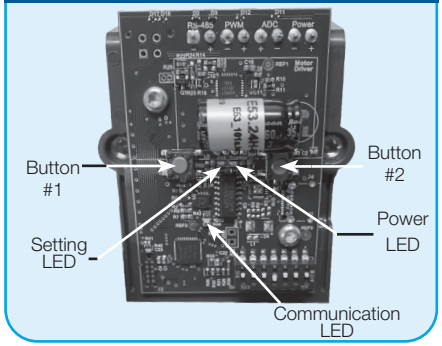


Figure 6:
PVG Gas Pressure Settings

Combo Valve Natural Gas	
Inlet Pressure Tap	5.0 to 13.5 in. wc
Outlet Pressure Tap	5.0 in. wc
Manifold Port Natural Gas	
Low Fire Pressure	0.33 in. wc
High Fire Pressure	3.5 in. wc
Combo Valve Liquid Propane	
Inlet Pressure	10.0 to 13.5 in. wc
Outlet Pressure	11.5 in. wc
Manifold Port Liquid Propane	
Low Fire Pressure	1.1 in. wc
High Fire Pressure	10.0 in. wc

GREENHECK

