



# Refill compressor with gas

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## INTRODUCTION

Checking the compressor pressure and refilling it with coolant is essential to ensure optimum performance of the temperature management system. It can be done as part of scheduled servicing or as a troubleshooting exercise.

The coolant in the compressor is a common refrigerant gas - R134a (1,1,1,2-Tetrafluoroethane). The gas must be purchased locally because Aeroqual cannot ship gas.

To understand how often you should perform this service activity, [click here](#).



### PARTS:

- [Pressure gauge](#) (1)
  - [Coolant can](#) (1)
  - [Coolant can valve](#) (1)
  - [Refrigerant charging hose](#) (1)
-

## Step 1 — Enter service mode

Calibration and Service ▾ Instrument ▾ Sales & Support Demo AQY (AQY Demo-001) ▾

Normal operation

Calibration

History

Manual Entry >

Manual service mode **Start**

**Calibration parameters**

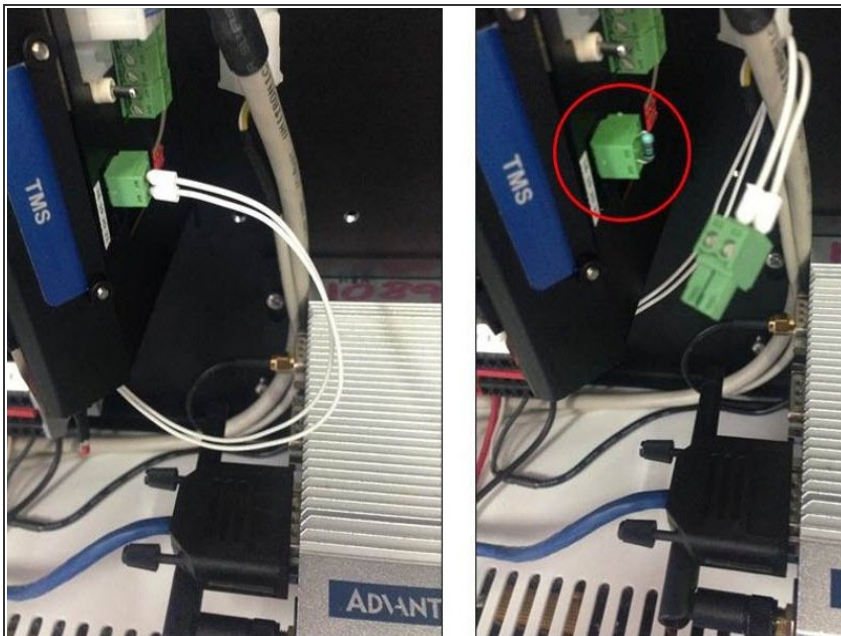
	NO2 ppb	Ox ppb	O3 ppb	O3 raw ppb	PM2.5 raw µg/m³	PM2.5 µg/m³	TEMP °C	RH %
Gain	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Offset	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00
a	1.100		2.550					
b			1.870					


**Real time measurements**

Time	NO2 ppb	Ox ppb	O3 ppb	O3 raw ppb	PM2.5 raw µg/m³	PM2.5 µg/m³	TEMP °C	RH %
11:42 a.m.	2.9	29.6	24.2	23.7	1.7	1.1	15.74	86
11:41 a.m.	2.8	29.2	24.0	23.5	1.6	1.0	15.63	86
11:40 a.m.	3.1	29.7	24.2	23.8	1.9	1.2	15.60	86
11:39 a.m.	3.6	30.2	24.1	23.7	1.5	1.0	15.55	87
11:38 a.m.	4.7	30.4	23.4	23.0	1.3	0.8	15.48	87

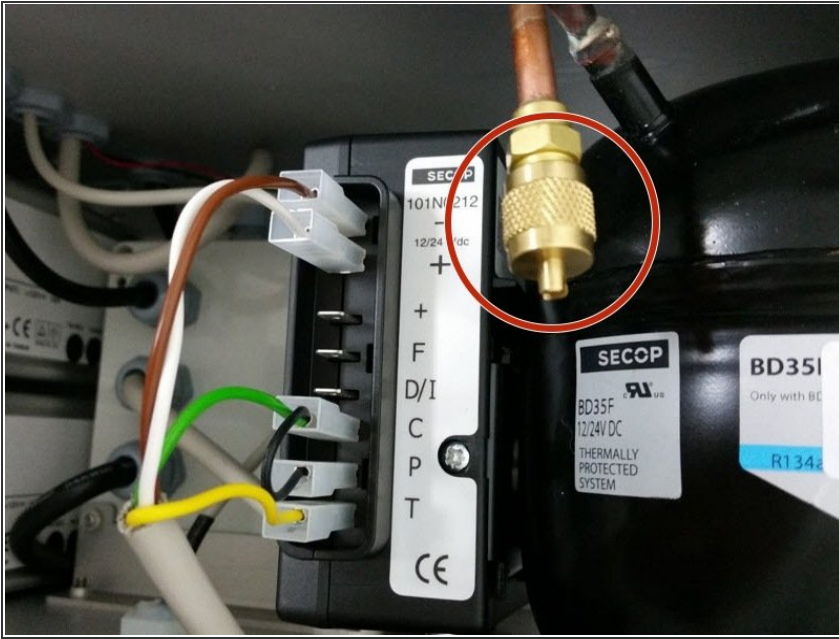
- Enter service mode so any fluctuations in the data caused from this activity can be excluded from air quality reports.

## Step 2 — Unplug temperature sensor



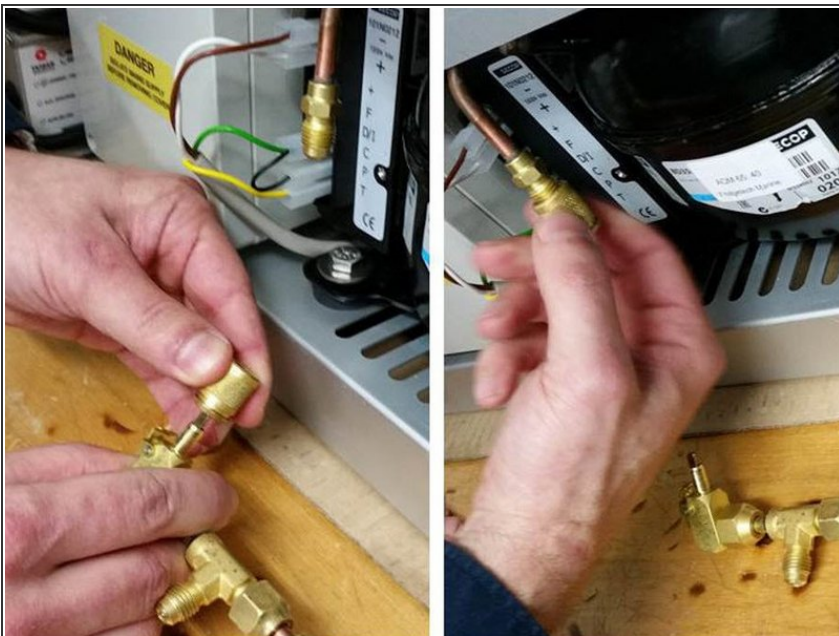
-  Make sure the monitor has been running for at least 1 hour with the door closed before attempting to refill the compressor.
- Open the door to the monitor and leave the door open during this process.
  - Find the internal temperature sensor which is plugged into the side wall of the TMS module.
  - Unplug the temperature sensor and replace it with the temporary plug.
  - Leave the temporary plug in for the rest of this procedure.

### Step 3 — Remove cap



- Unscrew the protective cap from the gas inlet, and put in a safe place because you will need to put it back on later.

### Step 4 — Move charging cap



- Remove the charging cap from the end of the pressure gauge.
- Screw the charging cap from the pressure gauge on to the gas inlet on the compressor.

## Step 5 — Attach gauge



**⚠** The compressor requires that gas be added to a specific pressure, not a specific weight, so it's very important to use the pressure gauge provided by Aeroqual when re-filling the compressor with gas.

- Attach the pressure gauge by pushing it into the fitting on the compressor inlet.
- ⓘ The gauge will respond SLOWLY.
- Wait 5 minutes for the gauge to stabilize before continuing with the next step.

## Step 6 — Attach hose




- Attach one end of the charging hose to the pressure gauge and the other end to the can or cylinder of R134a.


**⚠ DO NOT** open the valve on the can or cylinder yet.

## Step 7 — Identify target PSI

Ambient temperature (°C)	Minimum pressure set-point (PSI)	Target pressure set-point (PSI)	Maximum pressure set-point (PSI)
15 – 17.9	6	7	8
18 – 19.9	8	9	10
20 – 22.9	10	11	12
23 – 24.9	12	13	14
25 – 27.9	13	14	15
28 – 29.9	15	16	17
30 – 32.9	16	17	18
33 – 34.9	17	18	19

- Your target pressure depends on the current temperature of the room or environment where you are performing this exercise.
- Find out the current ambient temperature, then use the following table to identify your target pressure in PSI.
- The pressure variation is only a few PSI. It's important to try to achieve the target pressure point.

 The risk of under pressurizing is that the monitor won't be able to control the internal temperature in hot outdoor conditions.

 The risk of over pressurizing is that during the cooling cycle the monitor will cool too rapidly. This leads to an overshoot of the target temperature and unstable sensor readings.

## Step 8 — Open valve



- Gently open the valve of your can or cylinder and watch the pressure gauge increase until just over your desired set point.
- Shut the valve and wait 3 to 5 minutes for the pressure to stabilize.
  - ⓘ The gauge might slowly come down again as the gas pressure equilibrates in the cooling system.
- If the needle drops below your target pressure, repeat the process, each time only letting in a small amount of gas and waiting for the needle to stabilize.

**⚠ Make sure that you read the gauge correctly. The PSI scale is the inside blue scale (the outside scale is bar).**

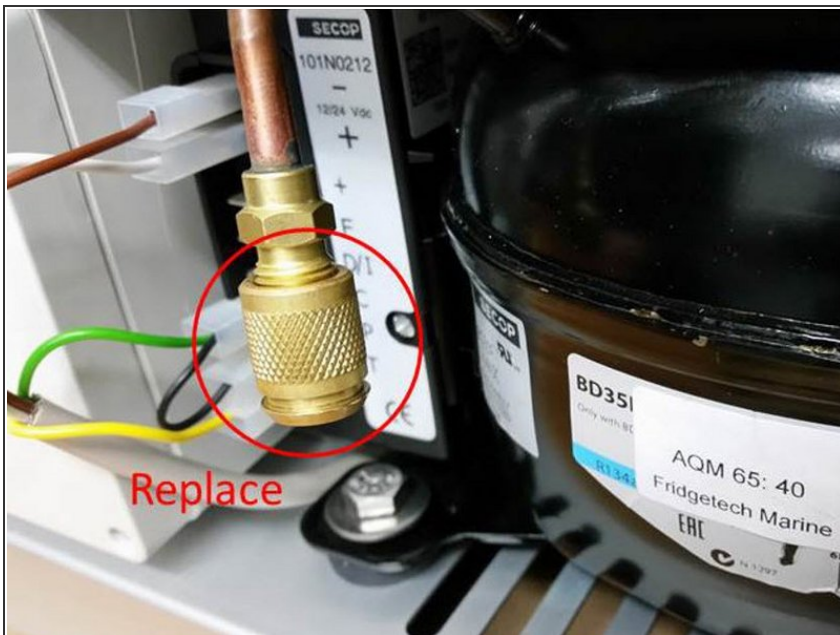
## Step 9 — Release pressure



**⚠** You should not overfill the compressor. If you overfill by mistake, you can release pressure using the valve on the tee.

- Unscrew the connection to the valve.
- Use a pen to press in the valve pin for 2 seconds.
- Wait 2 to 3 minutes for the pressure to stabilize.
- Repeat the process until the pressure reaches the target level.

## Step 10 — Replace cap



- Gently detach the valve connection.
  - ⓘ You will lose a very small amount of gas during this process.
- Screw the protection cap back on.
- Replug the internal temperature sensor into the side wall of the TMS module.

## Step 11 — Record in journal

Instrument

Air Quality Monitor (AQM65 04082015-437)

All journal types

User entry | Cloud user - John Wagner

1. Site Inspection:	No new local emission sources Instrument in good condition No obstructions to monitoring equipment	2. Instrument inspection:	Cooling fan operational PM and gas inlet secure Instrument has been running at stable
3. Equipment:	Aeroqual Gas dilution calibrator: Aircal 1000 Aeroqual Ozone calibrator: AQM O3Cal Aeroqual Flow meter: AQM R7	4 Gas cylinders:	CO 1000 ppm in Air (expiry March) SO2 20 ppm in Air (expiry December) NO2 20 ppm in Air (expiry November)
4. Flow rate check:	Expected flow rate = 0.450 ml per min, Measured flow rate = 0.452 ml per min Main inlet flow rate OK, individual module flow rates were not measured.	5. Open door and change gas inlet filter	
6. Zero calibration	All modules passed zero calibration, all modules were stable and all offsets were within acceptable limits.		
7. Span Calibration	CO @ 10.00 ppm Module response was 8.95 ppm gain adjustment to 1.15 pass SO2 @ 0.2 ppm Module response was 0.210 ppm gain adjustment to 0.92 pass NO2 @ 0.2 ppm Module response was 0.090 ppm gain adjustment to 2.10 pass (module may need replacing soon contact Aeroqual)		
8 Pack up. Next scheduled calibration 3 months from now. June 2017.			

- [Record this service activity in the monitor's journal.](#)
- [Exit service mode.](#)

For further support, contact [Technical Support](#).