RheoSense
Simply Precise™

Steps in Setting Up Air Purge

Breaking this up into two separate sections.
This list will be more detailed, as I will include the fittings recommended for the dessicant dryer that we did not explicitly include in the last list.

Section 1. Dry Air Purge for the Instrument.

These are the requirements for the dry air supply:

Purge air supply flow: 20 – 40 scfh (10-20 slpm) at 5-10 psig
Purge air supply quality: < 1 °C dew point

To that end, we need the following:

1. Air Dryer. This is what the dessicant dryer is for: http://www.airdryers.com/air-dryers/mdh.html . It has an effective pressure range of 30PSIG to 120PSIG. The exact model depends on their air supply pressure: Assuming their air supply is 80PSI, I would recommend the MDH5, just to make sure that flow rate out is sufficient.
2. Air Filter. For the dessicant dryer, a combination 5 micron particle filter and .01 micron coalescing filter w/ auto drain is recommended by the manufacturer.

a. 5 micron particle filter: http://www.mcmaster.com/#4274k31/=11rqrt1
b. .01 micron coalescing filter: http://www.mcmaster.com/#59185k11/=11rqsg4
c. (optional) Manufacturer also recommends a 1um filter for the outlet of the dessicant dryer. This is not particularly important as the mVROC air purge connection already has a 5um filter built-in, and this air does not get into any components where particles this small would be an issue- but it can be included. http://www.mcmaster.com/#2990k11/=11rr2um

3. Air supply line. Assuming this is approx. 80PSI
4. Air Flow Meter. This meter needs to handle the air pressure in their air supply line. Assuming their Air supply is ~80PSI, this air pressure flow meter http://www.mcmaster.com/#41945k57/=vw9cs9 will work (it has a max pressure of 100PSIG), and setting the air supply flow to 20-40SCFH will bring the pressure down to the desired range in the specifications. I recommend the 6-60scfh model.

The connections would be made as follows: Air Supply Line>5um filter>.01um coalescing filter>Air Dryer>filter>Flow Meter>mVROC unit.
Both Air filters have 1/4NPT Connections.
The dessicant air dryer has a 1/4in NPT connection (for the MDH5 model)
The Flow Meter is also ¼ NPT.
The instrument itself has a push-to-connect fitting for ¼ in tubing.

Assuming they have ¼ tubing coming off of the air supply, they can use this Push-To-Connect fitting that is 1/4in OD to ¼ male NPTF http://www.mcmaster.com/#7852t12/=11rqxtx to connect air supply to the 5um filter.
The filters, air dryer, additional (optional) filter, and flow meter can all be connected together using ¼ male-male NPT fittings like http://www.mcmaster.com/#4830k131/=11rqz9h
The Flow meter can be connected to the mVROC unit using the Push-To-Connect fitting that is 1/4in OD to ¼ male NPTF http://www.mcmaster.com/#7852t12/=11rqxtx and a short length of 1/4in OD tubing.

Section 2: Air Supply for the Chip Drying

This section is considerably simpler. Requirements are as follows:
Particle size <5um
No oil contamination in air line
Pressure of 5kPa (~.72 PSI)

To attain this, they would need the following:

1. Air Supply. Assuming this is approx. 80PSI
2. Air filter. If there is no possibility of oil in the line, a 5um filter is sufficient: http://www.mcmaster.com/#4274k31/=11rqrt1

a. If there is a possibility of oil contamination, a fine coalescing filter should also be included: http://www.mcmaster.com/#59185k11/=11rqsg4

3. Air Pressure Regulator. This one (the .5-3.5PSI range version) has a max inlet pressure of 150PSI and a reasonable pressure range for our application http://www.mcmaster.com/#43275k16/=11rr7ed
4. Air Pressure Gauge. Since the regulator does not have a gauge built-in, we need a separate one that can work well w/ our pressure range. http://www.mcmaster.com/#4026k3/=11rr7v5

Setup would go Air Supply>Filter 1>Filter 2 (if needed)>Regulator>Gauge>chip.
Assembly up to filter 2 would go identical to the dry air purge setup
Filter 2>Regulator would need a NPT ¼ to 1/8 male thread reducer
http://www.mcmaster.com/#5485k31/=11rrbnl
Regulator > Gauge gets a little tricky. First, we need a 1/8 male NPT to ¼ Male NPT thread reducer http://www.mcmaster.com/#5485k31/=11rrbnl . Then, we need a 1/4in Female NPT Tee so that we can split off the gauge http://www.mcmaster.com/#4429k251/=11rrea8
Then, we need a barbed fitting with a ¼ NPT male thread to barb for 1/16 ID tubing
http://www.mcmaster.com/#barbed-fittings/=11rrh01
Attach a short length of 1/8OD 1/16 ID tubing to this barbed fitting
To couple with the chip, you need a fitting that convert this tube to a ¼-28 male fitting. We recommend using IDEX Frit-and-ferrule fittings for this as they swage on the tubing, making it easy to connect/disconnect frequently. You would need 1 of https://www.idex-hs.com/super-flangelesstm-nut-peek-1-4-28-flat-bottom-for-1-8.html?optionvalue=4536#tab-2 and 1 of https://www.idex-hs.com/super-flangelesstm-ferrule-tefzelr-etfe-1-4-28-flat-bottom-for-1-8-od.html?optionvalue=4516