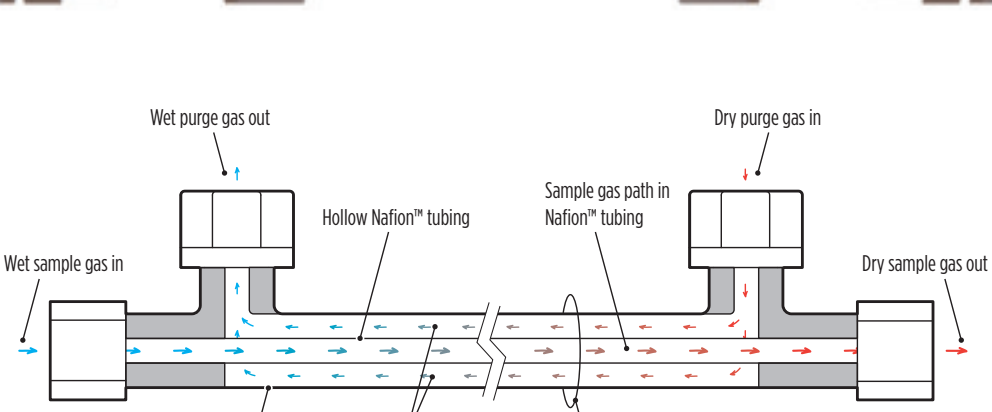
Perma Pure
Breathe Easier. Be Healthier.

MD-Series Gas Dryers

Powered by Nafion™ tubing, Perma Pure gas dryers selectively remove water from a gas sample. This **selectivity for water vapor** allows our dryers to **remove more moisture than other gas drying solutions**, while **keeping analytes in the gas sample**.

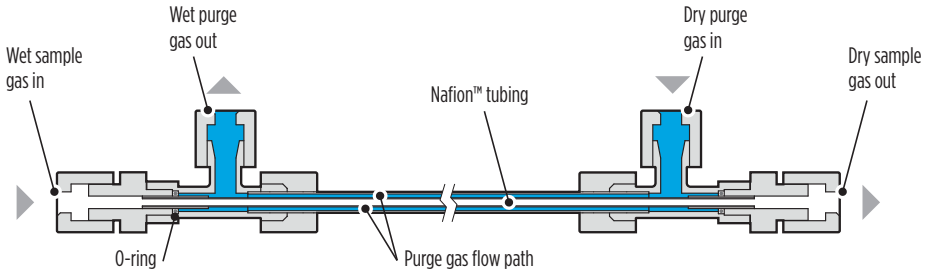
Monotube Dryer Series (MD-Series) gas dryers contain a single Nafion™ tube. The MD-Series can dry a gas to humidity levels **as low as –40 °C dew point** and is ideal for applications with flow rates **up to 4 lpm**.



HOW IT WORKS

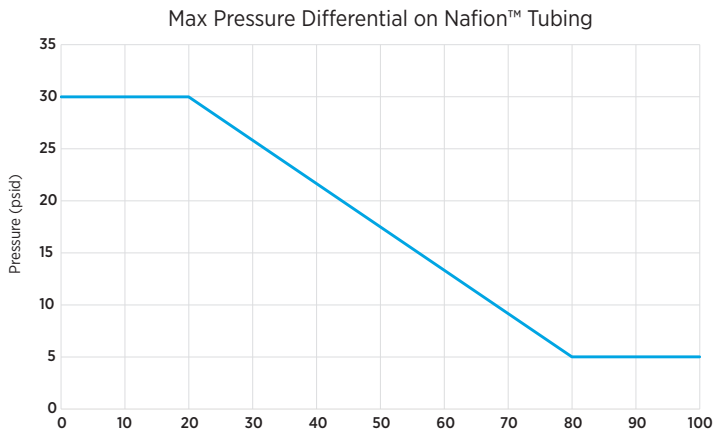
Flow your sample gas **through** the Nafion™ tubing and flow a dry purge gas **outside** the Nafion™ tubing, countercurrent to the sample gas flow.

While the partial pressure of water in the purge gas is less than in the sample gas, Nafion™ polymer will selectively transfer water and water vapor from the sample gas across its membrane and into the purge gas flow, yielding a drier sample gas at the sample gas output.



SPECIFICATIONS

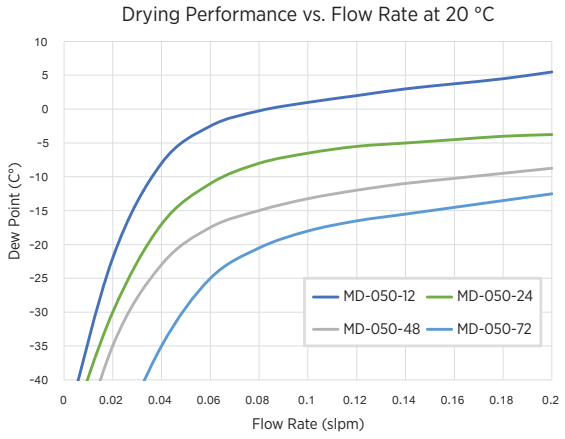
Nafion™ Tubing Outer Diameter Options	0.050″ (MD-050), 0.070″ (MD-070), 0.110″ (MD-110)
Max. Flow Rate	0.2 lpm (MD-050), 4 lpm (MD-070), 4 lpm (MD-110)
Housing Materials Available	Polypropylene, Fluorocarbon, or Stainless Steel
Max. Operating Temperatures	80 °C for polypropylene housing, 100 °C for fluorocarbon or stainless steel housing
Sample Gas Port – End Fitting Options	Port 1/16″ Compression (MD-050, Stainless Steel Only) Port 1/8″ Compression (All models) Port 1/4″ Compression (MD-070, MD-110)
Purge Gas Port – End Fitting Size	Port 1/8″ Compression (MD-050) Port 1/4″ Compression (MD-070, MD-110)
Purge Gas Recommendations	• Purge gas must be drier than sample gas • Purge gas can be instrument quality air (max -40 °C dew point) or nitrogen • Purge gas should flow at 2 or 3 times the sample rate *Alternate methods to using a purge gas are possible, such as recycling the dry sample gas, or pulling vacuum through the purge gas flow path. See website for more information.
Coiled Configurations	Certain models are shipped coiled based on length. See page 4 for nominal diameters. Contact us for custom coiled solutions.

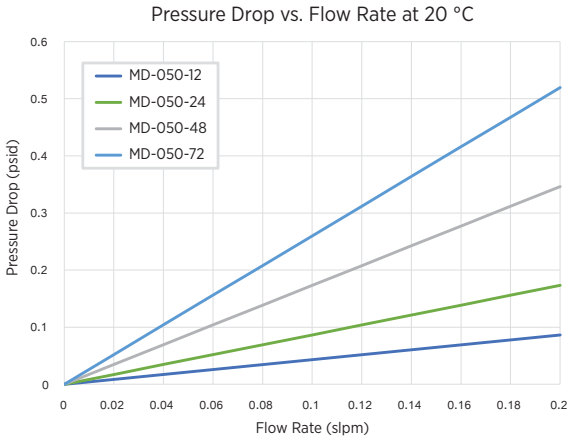


psid (psi-differential) = [sample gas pressure (psig) at inlet] - [sample gas pressure at outlet (psig)]

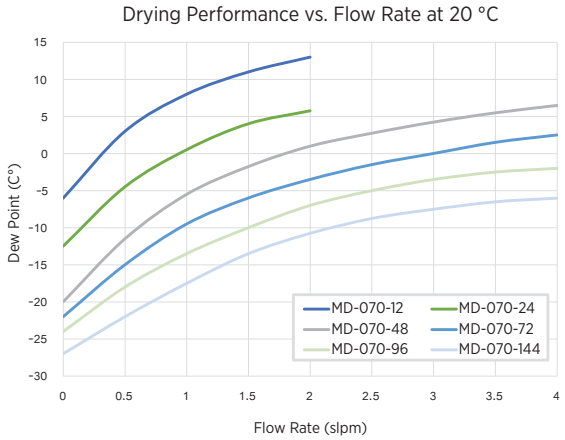
PERFORMANCE BY MODEL

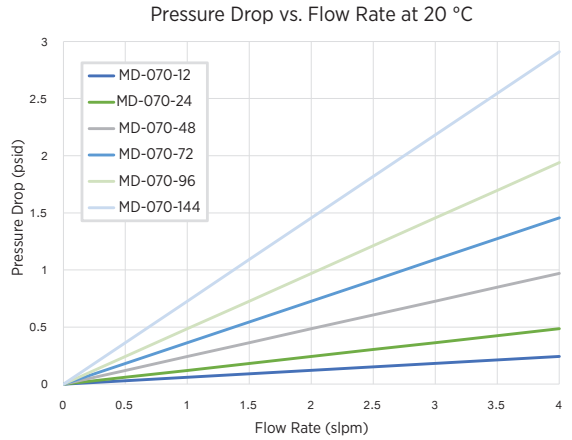
MD-050 Model: Flow rates up to 0.2 lpm



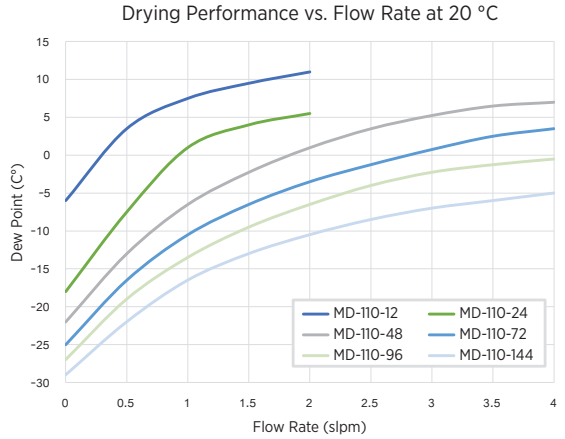


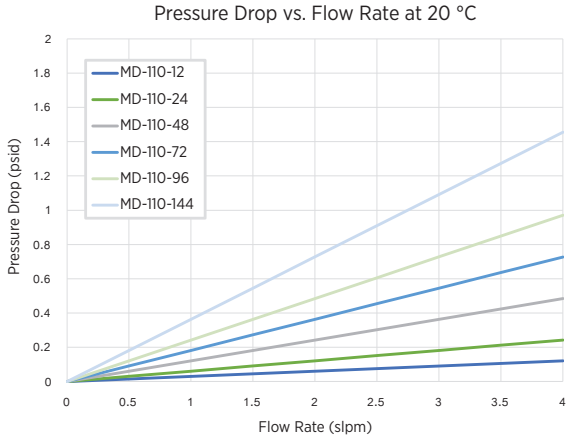
MD-070 Model: Flow rates up to 4 lpm





MD-110 Model: Flow rates up to 4 lpm





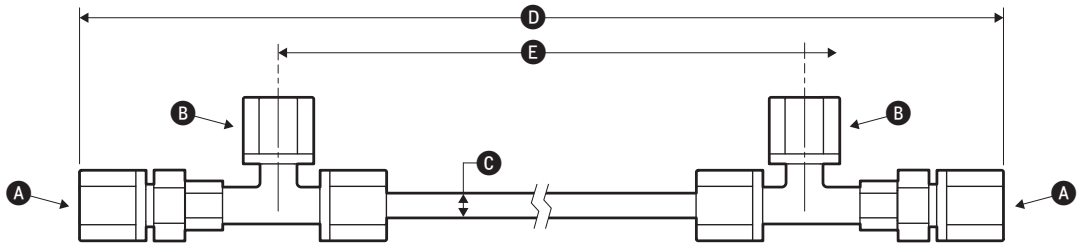
The performance curves above are based upon a sample inlet dew point of 20°C and purge flow rate of 2x the sample flow rate. Consult our team for operation with sample gases condensing above ambient temperature. psid (psi-differential) = [sample gas pressure at inlet (psig)] - [sample gas pressure at outlet (psig)], based on atmospheric pressure at outlet.

MATERIAL OPTIONS

MATERIAL CODE	MATERIALS FOR END FITTINGS AND SHELL
P	Molded polypropylene fittings, polypropylene shell
F	Molded fluorocarbon fittings, fluorocarbon shell
FP	Molded fluorocarbon fittings, polypropylene shell
S	Stainless steel fittings, stainless steel shell
FS	Molded fluorocarbon fittings, stainless steel shell

END FITTING CODE	MATERIALS FOR END FITTINGS
1	1/16" Compression (MD-050, Material codes S and FS only)
2	1/8" Compression (All models)
4	1/4" Compression (MD-070 and MD-110 only)

PHYSICAL DIMENSIONS BY MODEL



MODEL	NOMINAL COIL DIAMETER*	MATERIAL CODES: F, P, FP					MATERIAL CODES: S, FS				
		A	B	C	D	E	A	B	C	D	E
MD-050-12	--	1/8"	1/8"	1/8"	14 3/8"	11 1/8"	1/8" or 1/16"	1/8"	1/8"	13 5/8"	11 1/8"
MD-050-24	--	1/8"	1/8"	1/8"	26 3/8"	23 1/8"	1/8" or 1/16"	1/8"	1/8"	25 5/8"	23 1/8"
MD-050-48	4"	1/8"	1/8"	1/8"	50 3/8"	47 1/8"	1/8" or 1/16"	1/8"	1/8"	49 5/8"	47 1/8"
MD-050-72	4"	1/8"	1/8"	1/8"	74 3/8"	71 1/8"	1/8" or 1/16"	1/8"	1/8"	13 5/8"	71 1/8"
MD-070-12	--	1/4" or 1/8"	1/4"	1/4"	14 1/4"	10"	1/4" or 1/8"	1/4"	1/4"	13 3/4"	10 3/4"
MD-070-24	--	1/4" or 1/8"	1/4"	1/4"	26 1/4"	22"	1/4" or 1/8"	1/4"	1/4"	25 3/4"	22 3/4"
MD-070-48	7"	1/4" or 1/8"	1/4"	1/4"	50 1/4"	46"	1/4" or 1/8"	1/4"	1/4"	49 3/4"	46 3/4"
MD-070-72	7"	1/4" or 1/8"	1/4"	1/4"	74 1/4"	70"	1/4" or 1/8"	1/4"	1/4"	73 3/4"	70 3/4"
MD-070-96	7"	1/4" or 1/8"	1/4"	1/4"	98 1/4"	94"	1/4" or 1/8"	1/4"	1/4"	97 3/4"	94 3/4"
MD-070-144	7"	1/4" or 1/8"	1/4"	1/4"	146 1/4"	142"	1/4" or 1/8"	1/4"	1/4"	145 3/4"	142 3/4"
MD-110-12	--	1/4" or 1/8"	1/4"	1/4"	14 1/4"	10"	1/4" or 1/8"	1/4"	1/4"	13 3/4"	10 3/4"
MD-110-24	--	1/4" or 1/8"	1/4"	1/4"	26 1/4"	22"	1/4" or 1/8"	1/4"	1/4"	25 3/4"	22 3/4"
MD-110-48	7"	1/4" or 1/8"	1/4"	1/4"	50 1/4"	46"	1/4" or 1/8"	1/4"	1/4"	49 3/4"	46 3/4"
MD-110-72	7"	1/4" or 1/8"	1/4"	1/4"	74 1/4"	70"	1/4" or 1/8"	1/4"	1/4"	73 3/4"	70 3/4"
MD-110-96	7"	1/4" or 1/8"	1/4"	1/4"	98 1/4"	94"	1/4" or 1/8"	1/4"	1/4"	97 3/4"	94 3/4"
MD-110-144	7"	1/4" or 1/8"	1/4"	1/4"	146 1/4"	142"	1/4" or 1/8"	1/4"	1/4"	145 3/4"	142 3/4"

*Models with a Nominal Coil Diameter are shipped coiled.

Part Number = [Model][Material Code]-[End Fitting Code]. For example: MD-050-12-P-2