

# LACO TECHNOLOGIES

## CALMASTER™ LEAK STANDARD MATRIX

SECTION	CODE	OPTION
<b>CALIBRATED LEAK</b>		
1	CM	CalMaster™
<b>LEAK ELEMENT</b>		
2	1	Teflon Permeation
	2	Metal Capillary
	3	Glass Permeation
	4	Multiple Glass Elements
	5	Micro Tube Capillary
<b>GAS</b>		
3	1	Helium (He)
	2	Air
	3	Argon (Ar)
	4	Nitrogen (N <sub>2</sub> )
	5	Carbon Dioxide (CO <sub>2</sub> )
	6	Nitrous Oxide (N <sub>2</sub> O)
	7	Helium 3 Isotope (He <sup>3</sup> )
	A	R-12 Refrigerant
	B	R-22 Refrigerant
	C	Hydrogen (H <sub>2</sub> )
	D	Deuterium (D <sub>2</sub> )
	E	Sulfur Hexafluoride (SF <sub>6</sub> )
	F	Neon (Ne)
	G	Xenon (Xe)
	H	R-134a Refrigerant
	J	Methane (CH <sub>4</sub> )
	K	Krypton (Kr)
	L	R-404a Refrigerant
	M	R-290 Refrigerant
	O	Carbon Monoxide (CO)
P	R-407c Refrigerant	
R	R-410 Refrigerant	
S	Ammonia (NH <sub>3</sub> )	
T	Halon 1301	
<b>LEAK RATE MANTISSA</b>		
4	X	Any value in designated range
	M	Middle range (4 to 6 in the designated range)
	L	Low range (1 to 3 in the designated range)
	H	High range (7 to 9 in the designated range)
##	Special value: within +10% of prescribed leak rate	
<b>LEAK RATE EXPONENT</b>		
5	+2 to -10	Specifies leak rate decade range
	##	Multiple ranges for adjustable leak rate leaks
<b>NUMBER OF CALIBRATION POINTS</b>		
6	1	Single pressure calibration
	#	Additional calibration points
<b>ISOLATION VALVE</b>		
7	0	No isolation valve
	1	Manual valve
	2	Solenoid isolation valve, 3 way, SS, 24 VDC
	3	Zero-volume isolation manual valve
	4	Bakeable manual isolation valve
	5	Zero-volume valve with pneumatic actuator
6	Miniature pneumatic valve (for production leak testing)	
<b>GAS RESERVOIR</b>		
8	0	None
	1	115cc Standard (below 400 psi)
	2	300cc DOT (400 to 1500 psi)
	4	150cc DOT (for high pressures where size is a constraint)
	5	Dual fabricated reservoir (for refrigerant leaks only)
	6	1000cc DOT (for large leak rates – mid 10 <sup>-5</sup> and lgr.)
	7	500cc DOT (for lg. leak rates – mid 10 <sup>-5</sup> and lgr.)

SECTION	CODE	OPTION
<b>GAS RESERVOIR (CONTINUED)</b>		
8 (CONT'D)	8	Alcatel internal leak – 180T, 182T, ASI 20
	9	Proprietary reservoir provided by customer
	A	1/8" FNPT
	B	1/8" MNPT
	C	1/4" FNPT
	D	1/4" MNPT
	E	1/4" MVCR
	F	1/4" SL COMP
	G	3/4" O.D. tube
	H	1/2" MVCR
	J	NW 16
	K	NW 25
	L	NW 40
	M	2.75" CF
	N	1.33" CF
	P	3/8" O.D. tube
	Q	10-32 male thread
	R	1/4" MVCO
	S	1/4" Push Tube
U	50cc reservoir	
T	VIC / Edwards internal leak standard	
V	Varian internal leak	
W	Ultra miniature leak (10 <sup>-7</sup> to 10 <sup>-10</sup> only)	
Y	Alcatel internal leak – 142, 122D	
	Special reservoir (Contact LACO)	
<b>CONNECTION</b>		
9	0	NW 16 flange
	1	NW 25 flange
	2	NW 40 flange
	3	1 1/8" O.D. tube
	4	3/4" O.D. tube
	5	VCR4 male
	6	1/4" swagelock
	7	1/8" FNPT
	8	1/4" MNPT
	9	10-32 male thread w/o-ring
	A	3/8" O.D. tube (for vacuum applications only)
	B	1/8" MNPT
	C	1/4" FNPT
	D	Alcatel sniffer probe adaptor
	E	2.75" Con-Flat flange
	F	Gas Check 3000 leak detector
	G	1/2" – 20 straight thread
	H	Leybold sniffer probe
	J	1 1/3" mini Con-Flat flange
	K	Varian Sniffer Probe
L	M8 Screw	
M	MGD 2002	
N	NO OUTLET CONNECTION	
P	1/4" MVCO	
Q	NW 50 flange	
R	1/8" Swagelok	
S	Swagelok Q.D. SS-QC4-S-2PF	
T	10-32 female thread	
U	VCR4 female	
V	3/8" O.D. tube (for sniffing applications only)	
W	Gas Check SF6	
Y	1/2" O.D. tube	
Z/#	Staubli 1/8" Q.D. Add optional code # for coded Q.D. Codes: Yel=0, Red=3, Grn=4, Blu=6, Bn=7, Violet=1, Blk=9	
	Special Connection (Contact LACO)	
<b>OUTLET FLOW CONDITION</b>		
10	A	Into Atmosphere – 760 Torr
	V	Into Vacuum – <100 mTorr
	X	Special Condition, Specify in Sec. 14

Inlet options for leaks with no reservoir. Specify inlet pressure in Section 13.

SECTION	CODE	OPTION
<b>OPTIONS</b>		
11	0	No options
	G	Pressure gauge with fill valve (refillable leaks)
	P	Calibrated via primary rate of rise system Special Connection (Contact LACO)
<b>LEAK RATE UNIT</b>		
12	/1	Atm.cc/sec
	/2	Std.cc/sec
	/3	sccm
	/4	mbar.L/sec
	/5	Torr.L/sec
	/6	Pa.m3/sec
	/7	Oz/year
	/8	Gr/year
	/9	Mol/sec
	/A	MicroL/sec
/B	Std.cc/hr	
/C	CFM	
<b>INLET PRESSURE/PRESSURE UNIT</b>		
13	/#.#-code	Pressure value applied at the inlet
	1	PSI – Absolute
	2	PSI – Relative
	3	Atm – Absolute
	4	Torr – Absolute
	5	mTorr – Absolute
	6	Microns – Absolute
	7	Bar – Absolute
	8	MBar – Absolute
	9	Pascal – Absolute
	A	Kpa – Absolute
	B	InHg – Absolute
	C	InHg – Relative
	D	InWater – Relative
E	mmHg – Absolute	
F	Kpa – Relative	
G	Bar – Relative	
<b>OUTLET PRESSURE/PRESSURE UNIT</b>		
14	/#.#-code	Pressure value applied at the inlet
	1	PSI – Absolute
	2	PSI – Relative
	3	Atm – Absolute
	4	Torr – Absolute
	5	mTorr – Absolute
	6	Microns – Absolute
	7	Bar – Absolute
	8	MBar – Absolute
	9	Pascal – Absolute
	A	Kpa – Absolute
	B	InHg – Absolute
	C	InHg – Relative
	D	InWater – Relative
E	mmHg – Absolute	
M	MPa – Relative	
<b>GAS CONCENTRATION</b>		
15	/#.#	Specific gas concentrate w/ nitrogen as the balance gas
	X	Specify the gas and the balance gas
<b>FLOW DESIGNATION</b>		
16	T	Total Flow
	P	Partial Flow

Leave blank if no inlet pressure is specified.

Use only if Section 10=X. Leave blank if Section 10 is A or V.

Use only if gas concentration is not 100%.

Select one only if Sec. 15 is used.