HOW TO SIZE LIQUID MOTIVE EDUCTORS FOR EXHAUSTING GASES

Example:

Desired Suction Flow, Qs	**5 Lb/Hr air**
Desired Suction Pressure,Ps	**5 In Hg Vac**
Motive Water Pressure, Pm	**40 PSIG**
Outlet Pressure, Po	**11 Ft Head**

Step 1

Convert the figures from given units to units used in the performance tables.

5 Lb/Hr x 13.35 Ft 3 /Lb/60 Minutes = 1.1 SCFM Air

5 In Hg Vac = 29.92 In Hg Abs - 5 In Hg = 24.92 In Hg Absolute

40 PSIG is available - 11 Ft Head/2.3 I(Ft/PSIG)=4.8 PSIG

Step 2

Look down the Outlet Pressure (Po) column until the row is reached that has 5 psig outlet pressure.

Step 3

Locate the suction pressure (Ps) that is equal to the desired suction pressure for the chosen outlet pressure. In this case, go to the section with a suction pressure of 25 In Hg Abs.

Step 4

Find the column in the 25 In Hg row that has a motive pressure (Pm) of 40 PSIG.

Step 5

Divide the suction flow desired by the Tabulated Suction Flow of each of the units to determine the desired S.F.

- **1.1 SCFM Desired/1.8 ML Tabulated Suction Flow = .65 Desired S.F.**
- **1.1 SCFM Desired/3.7 NILE tabulated flow = 30 Desired S.F.**

From the SY's above, it appears that the MLE will be more efficient. The 1" unit has a S.F. of.34. When we multiply the S.F. by the suction flow for the 1-1 /2" unit, we find an actual suction flow of:

- **.34 x 3.7 =1.3 SCFM Actual Suction Flow**

Step 6

The water needed to operate the MLE 1" will be 24.2 GPM x.34 S.F. = 8.2 GPM.

Models SG and HG **Gas Motive Exhausting Gases** **1-1/2" Unit**

Suction Press., PS (In Hg Abs)	Motive Pressure Pm (psig) / Gas Flow Qs (scfm)											
	20 (psig)		40 (psig)		60 (psig)		80 (psig)		100 (psig)		120 (psig)	
	SG	HG	SG	HG	SG	HG	SG	HG	SG	HG	SG	HG
30	-	42	-	33	61	31	59	29	56	-	52	-
25	-	30	-	28	50	25	47	23	44	-	41	-
20	-	16	-	21	39	19	35	17	33	-	30	-
15	-	1	-	13	28	11	24	10	23	-	11	-
10	-	0	-	5	17	2	14	0	12	-	11	-
5	-	0	-	0	0	0	1	0	0	-	0	-
Max Outlet Press., Po (PSIG)	-	0	-	6	2	15	6	20	10	-	12	-
Motive Flow, Qm												
Steam (Lb/Hr)	-	237	-	367	222	499	278	626	335	-	392	-
Air (SCFM)	-	78	-	123	74	167	92	209	112	-	131	-

ML, MLE, SG, HG -- Sizing Factors (S.F.)													
Unit Size	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"	8"	10"	12"
S.F.	0.12	0.21	0.34	0.61	1.00	1.82	3.17	5.92	11.8	24.0	49.0	71.0	123.0

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