Schutte & Koerting

Performance Data on Water Jet Eductors

This supplement should be used in conjunction with S&K Bulletin 2M which describes the construction, operation, and application of Schutte & Koerting Water Jet Eductors (Ejectors).

Bulletin 2M also contains information on available types, sizes and dimensions. This supplement contains capacity data. If you do not have a copy of Bulletin 2M, request one.

For capacity data on the types of eductors offered, refer to the following index.

Fig. 264
Water Jet Eductor

Fig. 265
Water Jet Eductor

Fig. 258
Tank Mixing Eductor

Fig. 268
Tank Mixing Eductor

Index

Table 1. Suction Capacities of Water Jet Eductors, Types 264, 266 and 212 - 1 Inch Size Only. To determine capacities for sizes other than 1 inch, multiply these capacities by the proper capacity ratio factor noted in Tables 2 or 3 (for PVC, KYNAR, or Polypropylene Eductors).

Suction Lift in Ft. of Water	Discharge Pressure psi Gauge		Suction Capacity of Standard 1" Water Jet Eductor - gpm - Water Temp. 80 Deg. F. Operating Water Pressure psi Gauge							
			10	20	30	40	50	60	80	100
0	0	Suction	5.85	8.1	9.5	10.0	12.0	12.0	12.0	12.0
		Operating	3.55	5.0	6.1	7.1	7.9	8.7	10.0	11.0
	5	Suction		1.4	4.1	6.0	8.0	10.0	11.0	12.0
		Operating		4.9	6.1	7.0	7.9	8.6	10.0	11.0
	10	Suction			0.28	2.3	4.8	6.4	8.8	11.0
		Operating			5.9	6.8	7.8	8.5	9.8	11.0
	15	Suction					1.2	3.4	5.9	8.6
		Operating					7.7	8.4	9.8	11.0
	20	Suction						0.3	3.5	5.9
		Operating						8.2	9.7	11.0
	25	Suction							0.83	3.9
		Operating							9.6	11.0
	30	Suction								1.7
		Operating								11.0
5	0	Suction	4.4	6.8	8.6	9.6	11.0	11.0	12.0	12.0
		Operating	3.9	5.3	6.4	7.3	8.1	8.8	10.0	11.0
	5	Suction		1.5	3.2	5.0	7.0	9.0	11.0	11.0
		Operating		5.2	6.3	7.2	8.0	8.7	10.0	11.0
	10	Suction				1.9	3.6	5.6	8.6	10.0
		Operating				7.1	7.9	8.6	10.0	11.0
	15	Suction					1.1	2.6	5.8	8.3
		Operating					7.8	8.6	9.9	11.0
	20	Suction							3.3	5.6
		Operating							9.8	11.0
	25	Suction							0.47	3.6
		Operating							9.8	11.0
	30	Suction								1.5
		Operating								11.0
10	0	Suction	2.0	4.6	6.7	8.3	9.0	10.0	10.0	10.0
		Operating	4.2	5.5	6.6	7.4	8.2	9.0	10.0	11.0
	5	Suction			2.0	4.3	5.9	7.7	9.9	10.0
		Operating			6.5	7.4	8.2	8.9	10.0	11.0
	10	Suction				1.1	3.0	4.5	8.1	9.6
		Operating				7.3	8.1	8.8	10.0	11.0
	15	Suction					1.1	2.1	5.6	7.3
		Operating					8.0	8.7	10.0	11.0
	20	Suction							2.8	5.3
		Operating							9.9	11.0
	25	Suction								2.8
		Operating								11.0
	30	Suction								1.1
		Operating								11.0
15	0	Suction		3.3	5.3	7.9	8.4	8.9	8.9	9.1
		Operating		5.7	6.8	7.6	8.4	9.1	10.0	12.0
	5	Suction				4.0	4.9	7.3	8.6	9.1
		Operating				7.6	8.3	9.0	10.0	11.0
	10	Suction					2.4	4.0	6.4	8.6
		Operating					8.2	9.0	10.0	11.0
	15	Suction							4.2	6.8
		Operating							10.0	11.0
	20	Suction							2.1	4.5
		Operating							10.0	11.0
	25	Suction								1.9
		Operating								11.0
20	0	Suction		2.0	4.0	6.4	7.8	7.8	7.8	7.8
		Operating		6.0	7.0	7.8	8.6	9.3	11.0	12.0
	5	Suction				2.8	3.9	6.3	7.8	7.8
		Operating				7.7	8.5	9.2	10.0	12.0
	10	Suction					1.2	3.1	5.7	7.1
		Operating					8.3	9.1	10.0	12.0
	15	Suction							3.6	5.4
		Operating							10.0	11.0
	20	Suction							1.4	3.8
		Operating							10.0	11.0
	25	Suction								1.5
		Operating								11.0

Performance is for standard stock units. If not satisfactory for your conditions, contact S&K for units to meet conditions.

Table 2. Relative Capacities of Water Jet Eductors, Types 264, 266 and 212.

Size Eductor in Inches	Capacity Ratio
1/2	0.36
3/4	0.64
1	1.00
1 1/2	2.89
2	4.00
2 1/2	6.25
3	9.00
4	16.00
6	36.00

Table 3. Relative Capacities of Water Jet Eductor Made from KYNAR, Polypropylene or PVC, Fig. 264.

Size Eductor in Inches	Capacity Ratio
1/4	0.15
1/2	0.36
3/4	0.64
1	1.00
1 1/2	2.89
2	4.00
3	9.00

Table 265-1. 1" Fig. 265LM Water Jet Eductor Performance (Suction Capacity) (+10 thru -5 Ps)

Suction Lift Ft. (Ps)	Disch. Hd. in Feet (P_2)	OPERATING WATER PRESSURE -- PSIG (P1)														
		15	20	30	40	50	60	70	80	90	100	120	140	160	180	200
+10	0	13	15	16	16	16	16	16	15	15	15	15	15	15	15	15
	5	11	13	15	16	16	16	16	15	15	15	15	15	15	15	15
	10	6	7	12	15	16	16	16	15	15	15	15	15	15	15	15
	15		4	9	12	15	16	16	15	15	15	15	15	15	15	15
	20		1	6	10	12	16	16	15	15	15	15	15	15	15	15
	25			3	7	10	14	16	15	15	15	15	15	15	15	15
	30				4	8	12	13	15	15	15	15	15	15	15	15
	35				2	6	10	12	15	15	15	15	15	15	15	15
	40					3	8	10	13	15	15	15	15	15	15	15
	50						3	6	9	12	14	15	15	15	15	15
	60							3	6	9	11	15	15	15	15	15
	70								2	5	8	13	15	15	15	15
	80									2	4	10	15	15	15	15
	90										1	7	12	15	15	15
	100											4	9	13	15	15
	120												3	8	13	15
	140													3	7	12
	160														2	7
+5	0	12	13	15	15	15	15	14	14	14	14	14	14	14	14	14
	5	8	10	13	15	15	15	14	14	14	14	14	14	14	14	14
	10	3	5	10	13	15	15	14	14	14	14	14	14	14	14	14
	15		2	7	11	13	15	14	14	14	14	14	14	14	14	14
	20			4	8	11	14	14	14	14	14	14	14	14	14	14
	25			1	6	9	12	14	14	14	14	14	14	14	14	14
	30				3	7	10	12	14	14	14	14	14	14	14	14
	35				0	4	8	11	13	14	14	14	14	14	14	14
	40					2	6	9	11	14	14	14	14	14	14	14
	50						2	5	8	11	13	14	14	14	14	14
	60							1	4	8	10	14	14	14	14	14
	70								1	4	7	12	14	14	14	14
	80									1	3	9	14	14	14	14
	90										0	6	11	14	14	14
	100											3	8	14	14	14
	120												2	7	12	14
	140													2	7	11
	160														2	6
0	0	10	11	13	13	13	13	13	13	13	13	13	13	13	13	13
	5	5	8	11	13	13	13	13	13	13	13	13	13	13	13	13
	10	1	5	8	11	13	13	13	13	13	13	13	13	13	13	13
	15		2	5	11	11	13	13	13	13	13	13	13	13	13	13
	20			2	8	9	13	13	13	13	13	13	13	13	13	13
	25				4	7	11	13	13	13	13	13	13	13	13	13
	30				1	5	9	11	13	13	13	13	13	13	13	13
	35					3	7	9	12	13	13	13	13	13	13	13
	40					1	4	8	10	13	13	13	13	13	13	13
	50							4	7	10	12	13	13	13	13	13
	60							0	3	7	9	13	13	13	13	13
	70									3	6	11	13	13	13	13
	80										2	8	13	13	13	13
	90											5	10	13	13	13
	100											2	7	12	13	13
	120												1	7	12	13
	140													1	6	10
	160														1	5
-5	0	7	8	12	12	12	12	12	12	12	12	12	12	12	12	12
	5	2	5	9	12	12	12	12	12	12	12	12	12	12	12	12
	10		3	6	10	12	12	12	12	12	12	12	12	12	12	12
	15			3	7	10	12	12	12	12	12	12	12	12	12	12
	20			1	5	8	12	12	12	12	12	12	12	12	12	12
	25				2	6	10	12	12	12	12	12	12	12	12	12
	30					4	8	10	12	12	12	12	12	12	12	12
	35					2	6	8	11	12	12	12	12	12	12	12
	40						3	7	9	12	12	12	12	12	12	12
	50							3	6	9	11	12	12	12	12	12
	60								2	6	8	12	12	12	12	12
	70									2	5	10	12	12	12	12
	80										1	7	12	12	12	12
	90											4	9	12	12	12
	100											1	7	11	12	12
	120													6	10	12
	140														5	10
	160															5
OP WATER USED GPM (Q1)		5	6	7	8	9	10	11	11	12	13	14	15	16	17	18

Table 265-2. 1" Fig. 265LM Water Jet Eductor Performance (Suction Capacity) (-10 thru -25 Ps)

Suction Lift Ft. (Ps)	Disch. Hd. in Feet (P_2)	OPERATING WATER PRESSURE -- PSIG (P1)														
		15	20	30	40	50	60	70	80	90	100	120	140	160	180	200
-10	0	4	6	10	11	11	11	11	11	11	11	11	11	11	11	11
	5		3	7	10	11	11	11	11	11	11	11	11	11	11	11
	10			5	8	11	11	11	11	11	11	11	11	11	11	11
	15			2	6	9	11	11	11	11	11	11	11	11	11	11
	20				3	7	10	11	11	11	11	11	11	11	11	11
	25				1	4	8	11	11	11	11	11	11	11	11	11
	30					2	6	9	11	11	11	11	11	11	11	11
	35					1	4	7	9	11	11	11	11	11	11	11
	40						2	6	8	11	11	11	11	11	11	11
	50							1	4	8	10	11	11	11	11	11
	60								1	4	7	11	11	11	11	11
	70									1	4	10	11	11	11	11
	80											7	11	11	11	11
	90											3	9	11	11	11
	100												6	10	11	11
	120													5	10	11
	140														4	9
	160															4
-15	0	2	4	8	10	10	10	10	10	10	10	10	10	10	10	10
	5		1	6	9	10	10	10	10	10	10	10	10	10	10	10
	10			3	7	9	10	10	10	10	10	10	10	10	10	10
	15				4	7	10	10	10	10	10	10	10	10	10	10
	20				2	5	9	10	10	10	10	10	10	10	10	10
	25					3	7	10	10	10	10	10	10	10	10	10
	30					1	5	8	10	10	10	10	10	10	10	10
	35						3	6	9	10	10	10	10	10	10	10
	40						1	4	7	10	10	10	10	10	10	10
	50								3	7	9	10	10	10	10	10
	60									3	6	10	10	10	10	10
	70										3	8	10	10	10	10
	80											6	10	10	10	10
	90											2	8	10	10	10
	100												5	9	10	10
	120													4	9	10
	140														4	8
	160															3
-20	0	0	6	7	8	8	8	8	8	8	8	8	8	8	8	8
	5			4	8	8	8	8	8	8	8	8	8	8	8	8
	10			1	5	8	8	8	8	8	8	8	8	8	8	8
	15				3	6	8	8	8	8	8	8	8	8	8	8
	20					4	7	8	8	8	8	8	8	8	8	8
	25					2	5	8	8	8	8	8	8	8	8	8
	30						3	7	8	8	8	8	8	8	8	8
	35						1	5	8	8	8	8	8	8	8	8
	40							3	5	8	8	8	8	8	8	8
	50								3	6	8	8	8	8	8	8
	60									2	5	8	8	8	8	8
	70										2	8	8	8	8	8
	80											4	8	8	8	8
	90											1	7	8	8	8
	100												4	8	8	8
	120													3	8	8
	140														3	7
	160															2
-25	0	0	1	6	6	7	7	7	7	7	7	7	7	7	7	7
	5			3	6	7	7	7	7	7	7	7	7	7	7	7
	10				3	5	7	7	7	7	7	7	7	7	7	7
	15				1	3	7	7	7	7	7	7	7	7	7	7
	20					1	6	7	7	7	7	7	7	7	7	7
	25						4	7	7	7	7	7	7	7	7	7
	30						2	6	7	7	7	7	7	7	7	7
	35						1	4	7	7	7	7	7	7	7	7
	40							2	5	7	7	7	7	7	7	7
	50								2	5	7	7	7	7	7	7
	60									1	4	7	7	7	7	7
	70										1	6	7	7	7	7
	80											3	7	7	7	7
	90											0	6	7	7	7
	100												3	7	7	7
	120													2	7	7
	140														2	6
	160															1
OP WATER USED GPM (Q1)		5	6	7	8	9	10	11	11	12	13	14	15	16	17	18

Table 265-3. Fig. 265LM Water Jet Eductor Capacity Factor

Size in Inches	Factor
3/4	.605
1	1.00
1 1/2	2.91
2	5.29
3	17.21

Table 265-8. 1" Fig. 265LL & Fig. 265LH Water Jet Eductor Performance (+10 thru -5 hs)

1 LL, LH PERFORMANCE (SUCTION CAPACITY GPM Qs)

Suction Lift Ft. (hs)	Disch. Hd. In Feet (hd)	OPERATING WATER PRESSURE - PSIG (hm)																											
		15		20		30		40		50		60		70		80		90		100		120		140		160		180		200	
		L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H
+10	0	17.5	14.1	17.5	14.1	17.5	13.7	17.5	13.4	17.5	13.4	17.5	13.1	17.5	13.1	17.2	12.7	16.8	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7
	5	12.0	10.3	12.7	11.3	15.1	13.4	16.8	13.4	17.5	13.4	17.5	13.1	17.5	13.1	17.2	12.7	16.8	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7
	10	4.8	6.5	7.2	8.6	11.0	11.7	13.4	13.4	15.8	13.4	17.5	13.1	17.5	13.1	17.2	12.7	16.8	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7
	15		2.4	1.7	6.2	6.9	10.0	10.0	12.0	13.1	13.4	15.1	13.1	17.5	13.1	17.2	12.7	16.8	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7
	20				3.1	2.4	7.9	6.9	10.7	10.0	13.4	12.4	13.1	14.8	13.1	16.8	12.7	16.8	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7
	25						6.2	3.4	8.9	7.2	11.7	9.6	13.1	12.4	13.1	14.8	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7
	30						4.1		7.6	4.1	10.3	6.9	13.1	10.0	13.1	12.4	12.7	14.4	12.7	15.8	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7
	35						2.1		6.2	1.4	8.9	4.5	12.0	7.2	13.1	10.0	12.7	12.0	12.7	14.1	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7
	40						0.3		4.8		7.6	1.7	10.7	4.8	13.1	7.6	12.7	10.0	12.7	12.4	12.7	16.5	12.7	16.5	12.7	16.5	12.7	16.5	12.7
	50								1.7		4.8		7.9		11.0	3.1	12.7	5.8	12.7	8.2	12.7	13.7	12.7	16.2	12.7	16.5	12.7	16.5	12.7
	60										2.1		5.2		8.6		11.3		12.7	4.1	12.7	9.6	12.7	12.7	12.7	16.5	12.7	16.5	12.7
	70												2.7		6.2		8.9		10.7	0.3	12.7	5.5	12.7	9.3	12.7	12.7	12.7	16.5	12.7
	80														3.4		6.5		8.6		11.3	1.0	12.7	5.8	12.7	9.3	12.7	13.1	12.7
	90														1.0		3.8		6.2		8.9		12.7	2.1	12.7	6.2	12.7	10.0	12.7
	100																1.4		4.1		6.9		11.7		12.7	2.7	12.7	6.5	12.7
	120																				2.4		7.6		11.7		12.7		12.7
	140																						3.4		8.2		12.0		12.7
	160																								4.8		8.9		12.0
	180																								1.0		5.2		8.6
+5	0	12.7	11.7	14.4	11.7	16.2	12.4	16.2	12.4	16.2	12.4	16.2	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0
	5	6.9	7.9	8.9	8.9	12.0	11.3	14.8	12.4	16.2	12.4	16.2	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0
	10	0.7	4.5	3.4	6.5	7.9	9.6	11.3	12.4	13.7	12.4	16.2	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0
	15		1.0		4.1	3.8	7.9	7.9	10.7	10.7	12.4	13.4	12.0	15.1	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0
	20				1.4		6.2	4.5	9.6	7.9	12.4	10.7	12.0	12.7	12.0	15.1	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0
	25						4.1	1.0	7.9	4.8	10.7	7.9	12.0	10.3	12.0	12.7	12.0	14.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0
	30						2.7		6.5	1.7	9.3	5.2	12.0	7.9	12.0	10.7	12.0	12.7	12.0	15.1	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0
	35						0.7		5.2		7.9	2.4	11.3	5.5	12.0	8.2	12.0	10.7	12.0	13.1	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0
	40								3.8		6.9		10.0	2.7	12.0	5.8	12.0	8.2	12.0	11.0	12.0	15.8	12.0	15.8	12.0	15.8	12.0	15.8	12.0
	50								0.7		4.1		7.2		10.0	1.4	12.0	4.1	12.0	6.9	12.0	11.7	12.0	14.8	12.0	15.8	12.0	15.8	12.0
	60										1.4		4.5		7.6		10.7		12.0	2.7	12.0	9.6	12.0	11.3	12.0	15.1	12.0	15.8	12.0
	70												1.7		5.2		8.2		10.3		12.0	3.8	12.0	7.6	12.0	11.7	12.0	14.8	12.0
	80														2.7		5.5		7.9		10.7		12.0	4.1	12.0	8.2	12.0	11.7	12.0
	90														0.3		3.4		5.8		8.2		12.0	0.7	12.0	4.8	12.0	12.0	12.0
	100																0.7		3.4		6.2		11.0		12.0	1.4	12.0	5.5	12.0
	120																				1.7		7.2		11.3		12.0		12.0
	140																						3.1		7.9		11.7		12.0
	160																								6.9		8.2		11.7
	180																								0.7		4.8		8.6
0	0	8.2	9.6	10.7	10.3	13.4	11.3	14.8	11.3	14.8	11.3	14.8	11.3	14.8	11.3	14.8	11.3	14.8	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3
	5	2.4	6.2	5.5	7.9	9.3	10.3	12.4	11.3	14.8	11.3	14.8	11.3	14.8	11.3	14.8	11.3	14.8	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3
	10		2.7	1.4	5.2	4.8	9.6	8.9	11.3	11.3	11.3	14.1	11.3	14.8	11.3	14.8	11.3	14.8	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3
	15				2.7	0.7	6.9	5.5	10.3	8.6	11.3	11.3	11.3	13.4	11.3	14.8	11.3	14.8	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3
	20				0.3		6.2	2.1	8.9	5.5	11.0	8.6	11.3	11.0	11.3	13.4	11.3	14.8	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3
	25						3.4		7.2	2.7	10.0	5.8	11.3	8.2	11.3	11.0	11.3	13.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3
	30						2.4		5.8		8.6	3.1	11.3	5.8	11.3	8.6	11.3	11.3	11.3	13.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3	14.4	11.3
	35								4.5		7.2		10.3	0.3	11.3	3.4	11.3	6.5	11.3	11.3	11.3	11.3	11.3	14.4	11.3	14.4	11.3	14.4	11.3
	40								3.1		5.8		8.9		11.3	1.0	11.3	4.1	11.3	9.3	11.3	10.0	11.3	13.7	11.3	14.4	11.3	14.4	11.3
0	50								0.3		3.4		6.5		9.3		11.3	2.7	11.3	5.2	11.3	9.3	11.3	13.4	11.3	14.4	11.3	14.4	11.3
	60										0.7		3.8		6.9		10.0		11.3	1.0	11.3	6.2	11.3	10.0	11.3	13.4	11.3	14.4	11.3
	70												1.0		4.5		7.6		10.0		11.3	2.1	11.3	6.5	11.3	10.0	11.3	13.7	11.3
	80														2.1		5.2		7.6		10.3		11.3	3.1	11.3	6.9	11.3	10.7	11.3
	90																2.7		5.2		8.2		11.3		11.3	3.4	11.3	7.2	11.3
	100																0.3		3.1		5.8		10.3		11.3		11.3	4.1	11.3
	120																				1.4		6.5		11.0		11.3		11.3
	140																						3.1		7.6		11.3		11.3
	160																								4.1		7.9		11.3
	180																								0.3		4.5		8.2
-5	0	4.8	7.6	6.9	8.6	10.7	10.7	13.1	10.7	13.4	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7
	5		4.5	5.2	6.2	6.2	9.3	9.6	10.7	12.0	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7
	10		1.4		3.8	2.1	7.6	6.2	10.3	9.3	10.7	12.0	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7
	15				1.7		5.8	2.7	9.3	6.2	10.7	9.3	10.7	11.3	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7
	20						4.1		8.2	3.4	10.0	6.5	10.7	8.9	10.7	11.3	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7
	25						2.4		6.5	0.7	8.6	3.8	10.7	6.2	10.7	9.3	10.7	11.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7
	30						0.7		5.2		7.6	1.0	10.7	4.1	10.7	6.9	10.7	9.6	10.7	11.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7
	35								3.8		6.2		9.3	1.7	10.7	4.8	10.7	7.6	10.7	9.3	10.7	13.7	10.7	13.7	10.7	13.7	10.7	13.7	10.7
	40								2.4		5.2		7.9		10.7	2.4	10.7	5.5	10.7	7.6	10.7	12.0	10.7	13.7	10.7	13.7	10.7	13.7	10.7
-5	50										2.4		5.5		8.6		10.7	1.0	10.7	3.4	10.7	8.2	10.7	12.0	10.7	13.7	10.7	13.7	10.7
	60												3.1		6.2		9.3		10.7		10.7	4.5	10.7	8.6	10.7	12.0	10.7	13.7	10.7
	70												0.3		3.8		6.9		9.6		10.7	0.7	10.7	5.2	10.7	8.6	10.7	12.4	10.7
	80														1.4		3.8		7.2		9.6		10.7	1.7	10.7	5.5	10.7	9.3	10.7
	90																2.1		5.2		7.6		10.0		10.7	2.1	10.7	6.2	10.7
	100																		2.7		5.5		6.2		10.7		10.7	3.0	10.7
	120																				1.0		2.4		10.3		10.7		10.7
	140																								6.9		10.7		10.7
	160																								3.4		7.2		10.7
	180																										4.1		8.2
OP WATER USED GPM (QM)		3.2	8.6	3.8	10.0	4.5	12.4	5.2	14.1	5.8	15.8	6.2	17.5	6.9	18.9	7.2	19.9	7.9	21.3	8.2	22.3	8.9	24.4	9.6	26.5	10.3	28.5	11.0	30.2	11.7	31.6

Table 265-9. 1" Fig. 265LL & Fig. 265LH Water Jet Eductor Performance (-10 thru -25 hs)

1 LL, LH PERFORMANCE (SUCTION CAPACITY GPM Qs)																															
Suction Lift Ft. (hs)	Disch. Hd. In Feet (hd)	OPERATING WATER PRESSURE - PSIG (hm)																													
		15		20		30		40		50		60		70		80		90		100		120		140		160		180		200	
		L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H
-10	0	1.4	5.8	3.8	7.6	7.6	8.9	11.0	9.3	12.4	9.3	12.4	9.3	12.4	9.3	12.4	9.3	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6
	5		3.1		5.2	3.4	8.2	7.6	9.3	10.0	9.3	12.4	9.3	12.4	9.3	12.4	9.3	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6
	10		0.3		3.1		6.5	4.1	8.9	7.2	9.3	10.0	9.3	12.0	9.3	12.4	9.3	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6
	15						4.8	0.3	8.2	4.1	9.3	7.6	9.3	9.6	9.3	12.0	9.3	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6
	20						3.1		6.9	1.4	9.3	4.8	9.3	7.2	9.3	9.6	9.3	12.0	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6
	25								5.5		8.2	2.1	9.3	4.8	9.3	7.6	9.3	10.0	9.6	12.0	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6
	30								4.1		7.2		9.3	2.4	9.3	5.2	9.3	7.9	9.6	10.3	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6
	35								2.7		5.8		8.9		9.3	3.1	9.3	5.8	9.6	8.2	9.6	12.0	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6
	40								1.4		4.8		7.6		9.3		9.3	3.4	9.6	6.2	9.6	10.0	9.6	12.4	9.6	12.4	9.6	12.4	9.6	12.4	9.6
	50										2.1		5.2		8.2		9.3		9.6	2.1	9.6	6.5	9.6	10.7	9.6	12.4	9.6	12.4	9.6	12.4	9.6
	60												2.4		5.8		8.6		9.6		9.6	2.7	9.6	7.2	9.6	10.7	9.6	12.4	9.6	12.4	9.6
	70														3.4		6.5		8.9		9.6	1.4	9.6	3.8	9.6	7.6	9.6	11.3	9.6	12.4	9.6
	80														1.0		4.1		6.5		9.6		9.6	0.3	9.6	4.1	9.6	7.9	9.6	11.0	9.6
	90																1.7		4.5		7.6		9.6		9.6	1.0	9.6	4.8	9.6	8.2	9.6
	100																		2.4		5.2		9.6		9.6	3.0	9.6	5.2	9.6		9.6
	120																				1.0		5.8		9.6		9.6		9.6		9.6
	140																						2.1		3.8		9.6		9.6		9.6
	160																								2.7		7.2		9.6		9.6
	180																										4.1		7.9		9.6
-15	0		4.8		6.2	5.2	8.2	8.6	8.2	10.7	8.2	10.7	8.2	10.7	8.6	10.7	8.6	10.7	8.6	10.7	8.6	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9
	5				4.1	1.4	7.2	5.2	8.2	7.9	8.2	10.7	8.2	10.7	8.6	10.7	8.6	10.7	8.6	10.7	8.6	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9
	10				2.1		5.8	1.4	7.9	4.8	8.2	8.2	8.2	10.3	8.6	10.7	8.6	10.7	8.6	10.7	8.6	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9
	15						4.1		7.2	2.1	8.2	5.5	8.2	7.9	8.6	10.3	8.6	10.7	8.6	10.7	8.6	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9
	20						2.4		6.2		8.2	2.7	8.2	5.5	8.6	8.2	8.6	10.3	8.6	10.7	8.6	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9
	25								4.8		8.2		8.2	3.1	8.6	5.8	8.6	8.2	8.6	10.7	8.6	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9
	30								3.4		6.5		8.2	0.7	8.6	3.8	8.6	6.2	8.6	8.6	8.6	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9
	35								2.1		5.2		8.2		8.6	1.7	8.6	4.1	8.6	6.5	8.6	10.3	8.9	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9
	40								1.0		4.1		7.2		8.6		8.6	2.1	8.6	4.5	8.6	8.6	8.9	10.7	8.9	10.7	8.9	10.7	8.9	10.7	8.9
	50										1.7		4.5		7.9		8.6		8.6	0.7	8.6	5.2	8.9	8.6	8.9	10.7	8.9	10.7	8.9	10.7	8.9
	60												2.1		5.5		8.6		8.6		8.6	1.4	8.9	5.5	8.9	8.9	8.9	10.7	8.9	10.7	8.9
	70														3.1		5.8		8.6		8.6		8.9	2.4	8.9	5.8	8.9	8.9	8.9	10.7	8.9
	80														0.7		5.5		6.5		8.6		8.9		8.9	2.7	8.9	7.6	8.9	9.6	8.9
	90																1.7		4.1		7.2		8.9		8.9		8.9	4.1	8.9	6.9	8.9
	100																		2.1		5.2		8.9		8.9		8.9	0.7	8.9	3.8	8.9
	120																				0.7		5.5		8.9		8.9		8.9		8.9
	140																						1.7		6.2		8.9		8.9		8.9
	160																								2.7		7.2		8.9		8.9
	180																										4.1		7.9		8.9
-20	0		3.8		5.5	2.4	6.9	6.2	6.9	8.9	6.9	9.3	7.2	9.3	7.6	9.3	7.6	9.3	7.6	9.3	7.6	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9
	5				3.4		6.9	2.7	6.9	5.8	6.9	8.9	7.2	9.3	7.6	9.3	7.6	9.3	7.6	9.3	7.6	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9
	10				1.0		5.5		6.9	2.7	6.9	6.2	7.2	8.6	7.6	9.3	7.6	9.3	7.6	9.3	7.6	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9
	15						3.8		6.9		6.9	2.7	7.2	6.2	7.6	8.6	7.6	9.3	7.6	9.3	7.6	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9
	20						2.1		5.5		6.9		7.2	3.8	7.6	6.5	7.6	8.6	7.6	9.3	7.6	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9
	25								4.1		6.9		7.2	1.0	7.6	4.1	7.6	6.5	7.6	8.9	7.6	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9
	30								2.7		6.2		7.2		7.6	2.1	7.6	4.5	7.6	6.9	7.6	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9
	35										4.8		7.2		7.6		7.6	2.7	7.6	5.2	7.6	8.2	7.9	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9
	40										3.8		6.9		7.6		7.6	0.7	7.6	3.1	7.6	6.9	7.9	9.3	7.9	9.3	7.9	9.3	7.9	9.3	7.9
	50										1.0		4.1		7.6		7.6		7.6		7.6	3.4	7.9	7.2	7.9	9.3	7.9	9.3	7.9	9.3	7.9
	60												1.7		5.2		7.6		7.6		7.6	0.3	7.9	4.1	7.9	7.2	7.9	9.3	7.9	9.3	7.9
	70														3.1		5.8		7.6		7.6		7.9		7.9	4.5	7.9	7.6	7.9	9.3	7.9
	80														0.7		3.4		6.2		7.6		7.9		7.9	1.4	7.9	4.8	7.9	8.6	7.9
	90																1.0		4.1		6.9		7.9		7.9		7.9	2.2	7.9	5.5	7.9
	100																		2.1		4.8		7.9		7.9		7.9		7.9	2.7	7.9
	120																				0.3		5.5		7.9		7.9		7.9		7.9
	140																						1.7		5.8		7.9		7.9		7.9
	160																								2.4		7.2		7.9		7.9
	180																										4.1		7.6		7.9
-25	0		3.1		4.5		5.5	4.1	5.8	6.9	5.8	7.2	5.8	7.2	6.2	7.2	6.2	7.2	6.2	7.2	6.2	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5
	5				2.4		5.5	0.3	5.8	3.8	5.8	6.5	5.8	6.9	6.2	7.2	6.2	7.2	6.2	7.2	6.2	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5
	10				0.3		4.5		5.8	0.7	5.8	3.8	5.8	6.5	6.2	7.2	6.2	7.2	6.2	7.2	6.2	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5
	15						2.7		5.8		5.8	1.0	5.8	4.5	6.2	6.9	6.2	7.2	6.2	7.2	6.2	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5
	20						1.0		5.2		5.8		5.8	2.1	6.2	4.8	6.2	6.9	6.2	7.2	6.2	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5
	25								3.8		5.8		5.8		6.2	2.4	6.2	4.8	6.2	7.2	6.2	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5
	30								2.4		5.8		5.8		6.2		6.2	3.1	6.2	5.5	6.2	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5
	35								1.4		4.5		5.8		6.2		6.2	1.4	6.2	3.8	6.2	6.9	6.5	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5
	40										3.4		4.1		6.2		6.2		6.2	1.7	6.2	5.5	6.5	7.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5
	50										0.7		1.4		6.2		6.2		6.2		6.2	2.4	6.5	5.2	6.5	7.2	6.5	7.2	6.5	7.2	6.5
	60														4.8		6.2		6.2		6.2		6.5	2.7	6.5	5.8	6.5	7.2	6.5	7.2	6.5
	70														2.7		5.5		6.2		6.2		6.5		6.5	3.1	6.5	6.2	6.5	7.2	6.5
	80														0.3		3.1		6.2		6.2		6.5	0.3	6.5	3.4	6.5	6.9	6.5		
	90																1.0		3.8		6.2		6.5		6.5	1.0	6.5	5.8	6.5		
	100																		1.7		4.8		6.5		6.5		6.5	1.4	6.5		
	120																				0.3		6.5		6.5		6.5		6.5		
	140																						5.5		5.8		6.5		6.5		
	160																						1.7		2.4		4.1		6.5		
	180																										0.7		6.5		
OP WATER USED GPM (QM)		3.2	8.6	3.8	10.0	4.5	12.4	5.2	14.1	5.8	15.8	6.2	17.5	6.9	18.9	7.2	19.9	7.9	21.3	8.2	22.3	8.9	24.4	9.6	26.5	10.3	28.5	11.0	30.2	11.7	31.6

Table 265-10. Fig. 265LL & Fig. 265LH Water Jet Eductor Capacity Factor

Size in Inches	Factor
1/2A	0.087
1/2B	0.137
1/2	0.35
3/4	0.605
1	1
1 1/2	2.91
2	5.29
3	17.21

Fig. 265 Water Jet Eductor Selection Procedures

1) Locate suction lift (Ps) on Table 265-1 & 265-2 located on page 3 and 4 closest to requirement.
2) In that section of the chart locate the discharge head (P2).
3) Read across the table to the column representing the available operating pressure shown at the top of the chart.
4) This value will represent the suction flow volume in (gpm).
5) By following the column to the bottom of the page, this value will represent the operating flow in (GPM).
6) To determine actual unit size, divide the required suction flow by the suction flow obtained from the chart.
   Qs required/Qs calculated = Capacity Factor
7) Refer to the Capacity factor in Table 265-3 located at the bottom of page 4. Choose the unit size with the capacity factor closest to the value determined in step 6. For capacities that fall between the factors in Table 265-2 choose the larger size unit.

*Determination of Operating Conditions for Fluids other than Water

The following corrections are necessary to convert the above liquid to a water equivalent

1) Suction Lift as Water =
   Suction Lift x Specific Gravity of liquid

2) Suction Flow as Water =
   Suction Flow x $\sqrt{}$ Specific Gravity

3) Discharge Head as water =
   Discharge Head x Specific Gravity of liquid

Note: For viscosity over 100 centipoise please contact the factory.

Fig. 265 Water Jet Eductor Performance

Operating Pressure P1 _____ (psig)
Operating Flow Q1 _____ (gpm)
Specific Gravity _____
Viscosity _____

Fig. 265 Liquid Handling

Suction Lift Ps _____ (ft)
Operating Flow Qs _____ (GPM)
Specific Gravity _____
Viscosity _____

Discharge Head P2 _____ (ft)

*Note: Sizing information is based on water. If liquids are other than water please refer to *"Determination of Operating Conditions for Fluids other than Water"* on this page.

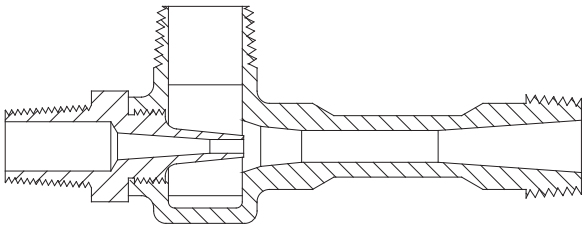


Table 4. Capacities of Automatic Water Jet Eductor, Fig. 2645 - 1 Inch Size Only. To determine capacities for sizes other than 1 inch, multiply these capacities by the proper capacity ratio factor noted in Table 5.

Suction Lift in Ft. of Water	Disch. Press. (psig)	Suction & Motive Capacities of 1" Eductor with water temp. of 80 Deg. F. - gph					
			Motive Water Pressure - psig				
			40	50	60	80	100
5	0	Suction	576	652	681	708	720
		Motive	436	485	529	607	676
	5	Suction	300	420	540	650	675
		Motive	432	478	524	603	673
	10	Suction	114	216	336	515	600
		Motive	425	474	518	597	667
	15	Suction		66	153	348	498
		Motive		470	514	594	662
	20	Suction				200	337
		Motive				590	660
	25	Suction				28	216
		Motive				585	652
	30	Suction					80
		Motive					648

Table 5. Relative Capacities of Automatic Water Jet Eductor, Fig. 2645.
NOTE: For total discharge capacity, add suction and motive capacities.

Size Eductor in Inches	Capacity Ratio
3/4	0.64
1	1.0
1 1/2	2.89
2	4.0
2 1/2	6.25
3	9.0

Table 6. Suction Capacities, Pressure Data, and Motive Liquid Flows of S&K Mixing Eductor, Fig. 241, in Typical Applications. Table Applies to Selected Standard Sizes.
Note: Fig. 241 Mixing Eductors are built on special order for specific operating conditions. The table above is indicative of what is being accomplished in certain representative jobs. For capacity characteristics for your operation, please contact our engineers.

Motive Liquid	Naphtha	Hydro-carbon	Gasoline	Gasoline	Sour Kerosene
Suction Fluid	Copper Chloride Slurry	Hydro-carbon	Slurry	Water	Kerosene Slurry
Pressure, psig					
Motive	165	295	170	75	145
Suction	40	5	75	50	60
Discharge	75	10	100	50	70
Flow, gpm					
Motive	30	10	90	170	482
Suction	20	58	74	42	700
Discharge	50	68	164	212	1182
Eductor Size	1 1/2	3	4	4	6

Table 7. Capacities of Tank Mixing Eductor, Fig. 258.

Size in Inches	Motive Fluid gpm Water							
	Pressure Difference Inlet to Tank - psi Gauge							
	10	20	30	40	50	60	80	100
1/2	3.5	5.0	6.0	7.0	8.0	8.5	10.0	11.0
3/4	8.0	11.5	13.5	16.0	18.0	19.0	22.5	25.0
1	14.2	20.0	25.0	28.0	30.0	34.5	40.0	44.5
1 1/4	22.0	31.0	37.5	44.0	50.0	53.0	62.5	69.0
1 1/2	31.5	45.0	54.0	63.0	72.0	76.5	90.0	99.0
2	56.0	80.0	96.0	112.0	128.0	136.0	160.0	176.0
3	126.0	180.0	216.0	252.0	288.0	306.0	360.0	396.0
4	224.0	320.0	384.0	448.0	512.0	544.0	640.0	704.0
5	350.0	500.0	600.0	700.0	800.0	850.0	1000.0	1100.0
6	494.0	720.0	864.0	1008.0	1152.0	1224.0	1440.0	1584.0

Chart 8. Selection Chart for Determining the Number of Fig. 268 Eductor Required for Proper Mixing.

Note: In order to select the number of eductors required, the volume of the tank in gallons should be divided by the number of minutes estimated for complete turnover. This rate, in gpm, divided by four will give the motive liquid flow requirement of a standard Fig. 268 Eductor. From the chart and the available operating pressure, the number of eductors required can be selected. For good practice, a minimum pressure drop of 20 psi should be maintained between the eductor inlet and the static pressure at the bottom of the tank.

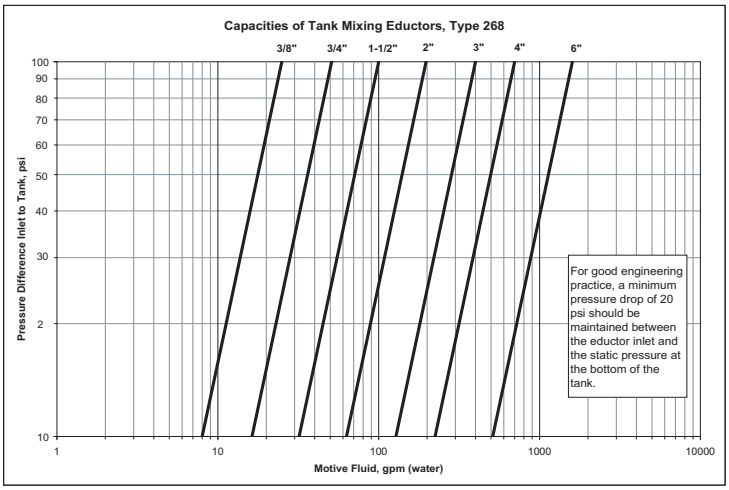


Table 268. Capacities of Tank Mixing Eductor, Fig. 268.

Motive Fluid gpm Water								
Size in Inches	Pressure Difference Inlet to Tank - psi Gauge							
	10	20	30	40	50	60	80	100
3/8	8.0	11.3	13.8	16.0	17.5	19.5	22.5	25.0
3/4	16.3	23.0	28.1	32.6	35.7	39.8	45.9	51.0
1 1/2	32.0	45.0	55.0	64.0	70.0	78.0	90.0	100.0
2	63.0	88.7	108.4	126.1	137.9	153.7	177.3	197.0
3	128.0	180.0	220.0	256.0	280.0	312.0	360.0	400.0

Table 224-12. Capacities of Water Jet Sand and Mud Eductor, Fig. 224 - 3 Inch Size Only.

To determine capacities for sizes other than 3 inch, multiply these capacities by the proper capacity ratio factor noted in Table 13.

Suction Capacity			
Operating Water Pressure, psi Gauge	40	50	60
Total Motive Fluid, gpm	69.5	77.5	85
Net Suction Fluid, gpm	30	34.5	38.5
Maximum Discharge Head in Ft.	22	26	32

Table 224-13. Relative Capacities of Sand and Mud Eductor, Fig. 224.

Size in Inches	1 1/2	2 1/2	3	4	5	6
Capacity Ratio	0.29	0.62	1	1.85	2.8	3.8

Table 9. Suction Capacities and Water Consumptions of Hopper-Equipped Eductor, Fig. 254 - 1.5 Inch Size Only. To determine capacities for sizes other than 1.5 inch, multiply these capacities by the proper capacity ratio factor noted in Table 10.

Operating Water Pressure psi Gauge	30	40	50	60
Suction Capacity Cu. Ft. per Hr.	13	36	72	90
Maximum Discharge Pressure psi Gauge	14	17	18	20
Motive Water Consumption, gpm*	35	40	45	50

*Based on using approximately 10% motive water through wash-down nozzles.
Note: Fig. 254 Eductors are built on special order for specific operating conditions. The table above is indicative only of what can be accomplished under certain conditions. For capacity characteristics for your operation, please contact our engineers.

Table 11. Typical Materials Handled by Hopper-Equipped Eductor, Fig. 254.
Many more can be handled effectively.

Material	Approx. Bulk Density Lbs. per cu. ft.	Material	Approx. Bulk Density Lbs. per cu. ft.
Borax	50 - 55	Salt, Rock	70 - 80
Charcoal	18 - 28	Sand, Damp	75 - 85
Diatomaceous Earth	10 - 20	Sand, Dry	90 - 100
Lime, Pebble	56	Sawdust, Dry	13
Lime, Powdered	32 - 40	Soda Ash, Light	20 - 35
Mash	60 - 65	Sodium Nitrate, Dry	80
Fly Ash	35 - 40	Sulphur, Powdered	50 - 60
Rosin	67	Wheat	48
Salt, Granulated	45 - 51	Zinc Oxide, Powdered, Dry	10 - 35

Chart 267. Performance Summary of 1" Hopper-Equipped Eductor, Fig. 267.

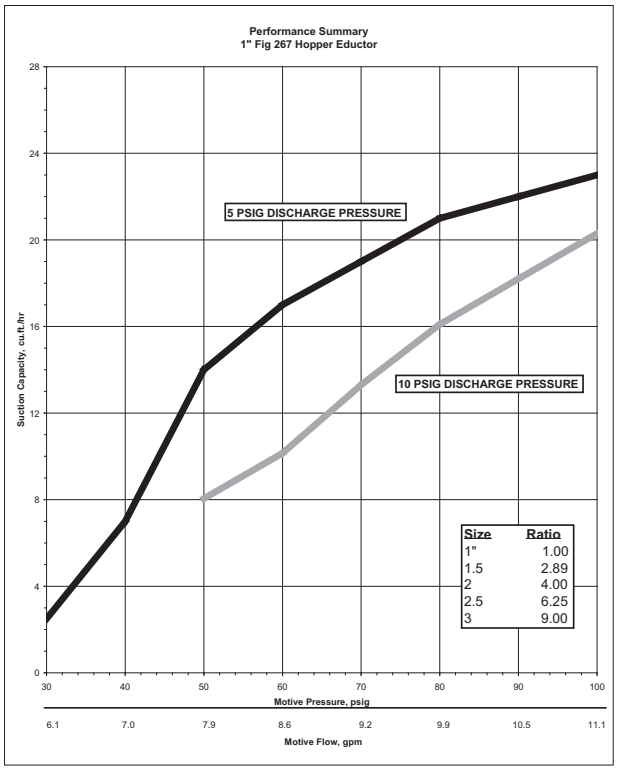


Table 10. Relative Capacities of Hopper-Equipped Eductor, Fig. 254.

Size in Inches	1 1/2	2	3	4	6
Capacity Ratio	1	1.6	3.5	6	18

Chart 254. Performance Summary of 1 1/2" Hopper-Equipped Eductor, Fig. 254.

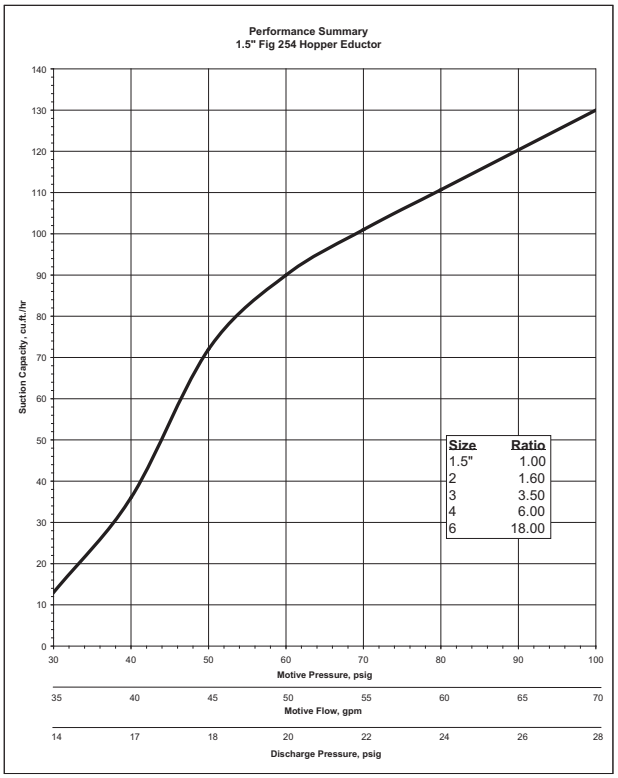


Table 267-1. Estimated Entrainment Capacities for 1" Size Hopper-Equipped Eductor, Fig. 267.
(For capacities for other sizes, multiply by factor given in table of relative capacites, below.)

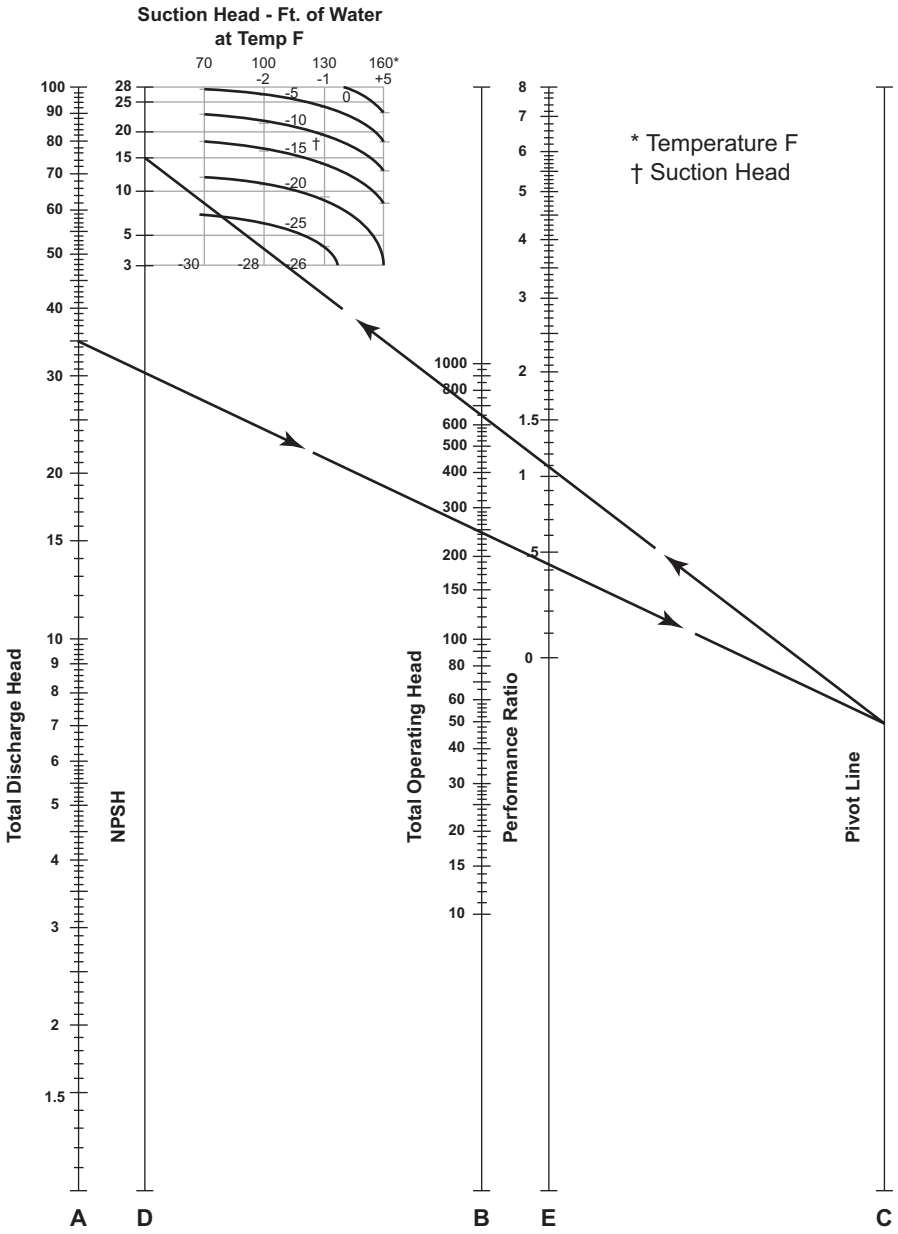
Motive Pressure psig	30	40	50	60	70	80	90	100
Entrainment, cu. ft. per hr. Of Granular Solids	2.5	7.0	14	17	19	21	22	23
Motive Flow, gpm	6.1	7.0	7.9	8.6	9.2	9.9	10.5	11.1

NOTE: Above based on 5 psig discharge pressure

Table 267-2. Relative Capacities of Hopper-Equipped Eductor, Fig. 267

Size, in Inches	1	1 1/2	2	2 1/2	3
Capacity Ratio	1.0	2.89	4.0	6.25	9.0

Nomograph for Determining Approximate Performance Characteristics for Fig. 222, Fig. 242, Fig. 235, and Fig. 222 Portable Water Jet Eductors.
(This nomograph is also suitable for approximate sizing of other types as well).



NOTE: In using the nomograph in connection with an application where the motive liquid is the greater in volume of two liquids, Fig. 242 Eductors are generally used. In applications where the suction fluid is greater, Fig. 264, Fig. 222 and Fig. 235 Eductors are generally used. Approximate sizes can be determined by selecting eductors with pipe connections appropriate to pipe sizes in Step 7 of Sample Procedure on page 12.

Performance Characteristics of standard and general purpose Water Jet Eductors can be determined from the tabular data included with the description of such eductors (Fig. 264, Fig. 224).

The following data and procedures can be used to determine approximate performance characteristics for those eductors which are individually designed to meet specific conditions. Using this procedure along with the nomograph above, the reader can determine whether or not an S&K eductor will perform a given job economically.

It should be noted, however, that the sizes of eductors noted in this bulletin are the sizes commonly manufactured by the company. Since it is possible to design, build, and supply other sizes, if conditions necessitate, it would be wise to submit your requirements to S&K before deciding that an eductor cannot do your job.

The results obtained from the procedure which follows are approximations. Final calculations should be made by Schutte & Koerting engineers who will then recommend to you the proper type and size eductor required to perform a given operation.

Sample Procedure

1. DETERMINE THE SUCTION HEAD

Suction Head = average suction lift during emptying of tank.
(If suction fluid is not water, correct head to feet of water.) (Quantities have a negative sign because of the location of the datum plane.)

Suction Head $= (-4 + \frac{-13}{2})$ X sp. gr. suction fluid

$= -10.5 \times 0.87 = -9.1$ ft. of water

2. DETERMINE THE DISCHARGE HEAD

Assume a specific gravity for the discharge mixture if suction fluid is not water.

Using a sp. gr. of 0.93 (an average between the sp. gr. of Toluene and water) for discharge mixture, then:

Discharge Head = 25 X sp. gr. discharge mixture
= 25 X 0.93 = 23.3 ft. of water

3. CALCULATE THE TOTAL HEAD AND THE TOTAL OPERATING HEAD

$$\text{Total Discharge Head} = \frac{\text{Discharge Head - Suction Head}}{\text{sp. gr. discharge liquid}}$$

$$= \frac{23.3 - (-9.1)}{0.93} = 34.9 \text{ ft. of mixture}$$

$$\text{Total Operating Head} = \frac{\text{Motive Head - Suction Head}}{\text{sp. gr. motive fluid}}$$

$$= \frac{100 \text{ psig} \times 2.31 \text{ ft. water / psig}) - (-9.1)}{1.0}$$

$$= 240.1 \text{ ft. of fluid (in this case water)}$$

4. DETERMINE THE NET POSITIVE SUCTION HEAD (NPSH)

(In this example suction head is a negative quantity because of the location of the datum plane. The governing vapor pressure is motive or suction whichever is higher.)

NPSH = atmospheric pressure plus suction head minus vapor pressure (4.3 psia at operating temperature)

NPSH = 34 + (-9.1) - (+4.3) X 2.31 ft. of water / psig
= 34 - 9.1 - 9.9 = 15.00 ft. of water

5. TO DETERMINE THE PERFORMANCE RATIO

$$\text{Performance Ratio} = 1.1 \times \frac{\text{sp. gr. motive fluid}}{\text{sp. gr. suction fluid}}$$

$$= \frac{1.1 \times 1.0}{0.87} = 1.26 \text{ gal. suction / gal. motive}$$

6. CALCULATE SUCTION FLOW TO EMPTY TANK

$$\text{Suction Flow} = \frac{5000 \text{ gal.}}{15 \text{ min.}} = 333.0 \text{ gpm}$$

$$\text{Motive Flow} = \frac{\text{Suction Flow}}{\text{Performance Ratio}}$$

$$= \frac{333}{1.26} = 264 \text{ gpm}$$

Then, Discharge Flow = 333 + 264 = 597 gpm

NOTE: After the weight ratio of "E" is obtained, the actual sp.gr. of the discharge mixture should be determined, for example:
Sp. Gr. Mixture

$$= \frac{\text{suct. flow x sp. gr. suct. + motive flow x sp. gr. motive}}{\text{Discharge Flow}}$$

$$= \frac{333 \times 0.87 + 264 \times 1.0}{597}$$

If this calculated sp. gr. of the mixture does not closely agree with assumed sp. gr. of the mixture (Step No. 2), the approximation should be repeated using the final specific gravity.

7. DETERMINE HEAD LOSS DUE TO PIPE FRICTION

Using the final discharge flow approximation, refer to the chart below and calculate head loss for the appropriate pipe sizes. Expected head loss should be added to static heads and eductor recalculated.

8. USE PIPE CONNECTIONS AS GUIDE TO APPROXIMATE SIZES

Approximate sizes can be determined by selecting eductors with pipe connections appropriate to pipe sizes in Step 7.

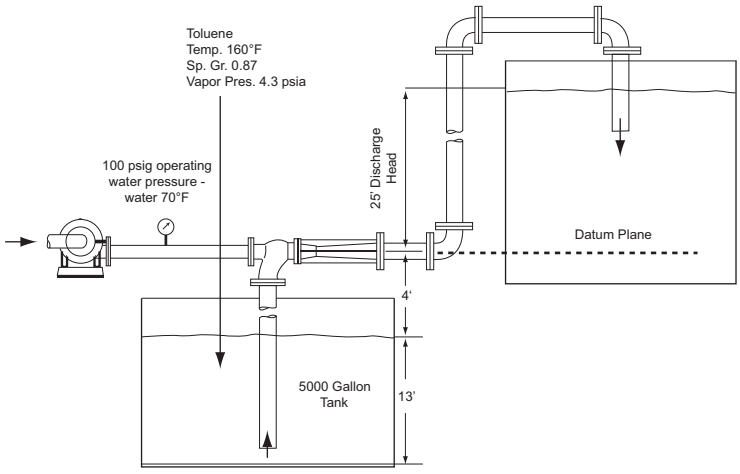
Data Required and Definition of Terms Used in Sample Procedure

1. Total Head (in ft. of fluid flowing): Total difference between suction head and discharge head as measured from the level of the suction liquid to the level of discharge required, including pipe friction.

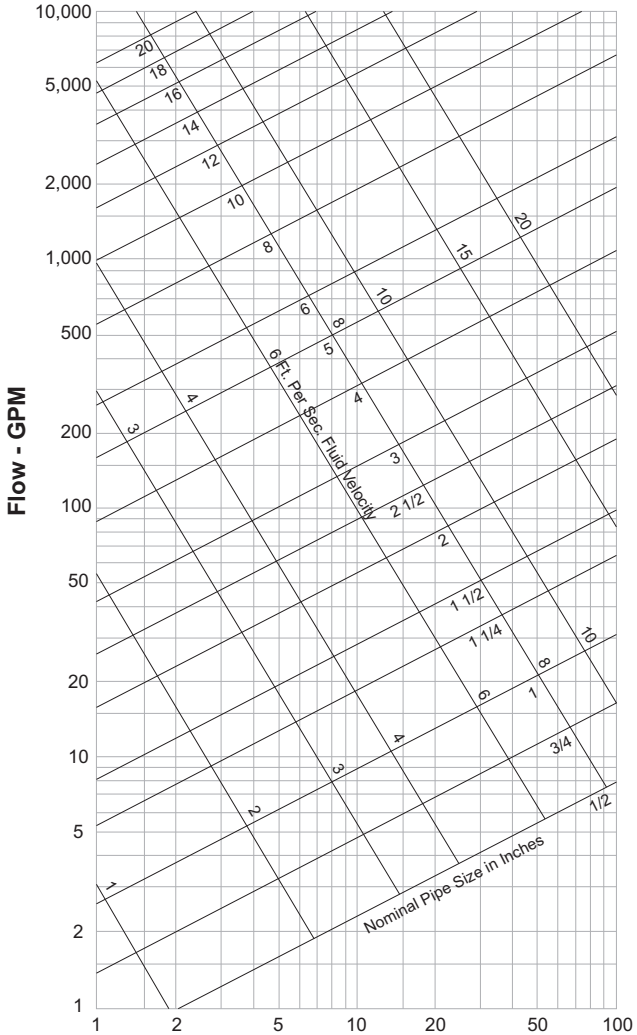
2. Total Operating Head (in ft. of fluid flowing): Total difference between the motive and suction heads - or, the total difference between operating pressure and suction head.

3. Net Positive Suction Head (NPSH): The head available at the centerline of the eductor to move and accelerate suction liquid entering the eductor mixing chamber, (NPSH is the difference between the suction pressure and atmospheric pressure corrected for the vapor pressure of the motive or suction fluid, whichever is higher.)

4. Performance Ratio: Ratio of suction flow to motive flow in lb. of entrained liquid per lb. of motive liquid.



Required: 15 min. to empty starting with 4' suction lift (negative head)



Head Loss - Ft. of Fluid Per 100 Ft. of Pipe

This chart is based on Williams and Hazen Formula using a constant of 1.00 for ordinary Wrought Iron Pipe. For friction loss in other types of pipe multiply the chart reading by the factors below:

1. Very smooth and straight Wrought Iron, Brass, Tin, Copper and Lead Pipe.....0.54
2. Ordinary Straight Brass, Tin, Copper and Lead Pipe.....0.62
3. Smooth New Wrought Iron Pipe.....0.71
4. Fairly Smooth New Wrought Iron Pipe and Rubber Lines Hose..0.84
5. Ordinary Wrought Iron Pipe....1.00
6. Medium Old Wrought Iron Pipe and Linen Fire Hose.....1.22
7. Old Wrought Iron Pipe.....1.52
8. Very Rough Pipe.....2.58
9. Badly Tuberculated Pipe.....5.46