

PUMPING - CONDENSING - LIFTING - HEATING - MIXING - DILUTING - DEWATERING - DRAINING

ELMRIDGE 'TGL Series' Gas-Jet Steam Siphons use steam as the motive fluid, and operate on the Venturi principle to pump liquids or slurries. Steam is discharged through the Siphon nozzle, emerging at a relatively high velocity, creating a zone of lower pressure contained within the Suction Chamber of the Siphon. The secondary or Suction fluid (in this case liquid), is drawn to this lower pressure zone, where the momentum of the motive steam is transferred to the Suction liquid, causing the Suction liquid to be pumped. While the 'TGL Series' design is optimized for use with liquids, the fact that these units will pump gases and vapors dictates that they are also self-priming. Operating characteristics (Steam Motive / Water Suction), for standard models are shown below, and special units are also available to meet your specifications. Standard materials of construction are Bronze/Brass, Cast Iron/Steel, 316L Stainless Steel, Alloy 20, and Hastelloy C®. Other materials are available upon request. Threaded, flanged, sanitary, buttweld, or socket weld connections (except Cast Iron).

Table TGL-1 Suction Capacity (usgpm of water at indicated temp.) for a TGL5 Gas-Jet Steam Siphon using Sat. Steam (at indicated Pressure)

Suction Lift (feet water)	Discharge Head (feet water)	Operating Steam Pressure (pumping 40 deg. F Water)					Operating Steam Pressure (pumping 80 deg. F Water)					Operating Steam Pressure (pumping 120 deg. F Water)					Operating Steam Pressure (pumping 150 deg. F Water)																																																																																																													
		60	80	100	120	140	60	80	100	120	140	60	80	100	120	140	60	80	100	120	140																																																																																																									
		2	0	45	49	50	56	53	46	49	47	48	46	47	41	38	38	37	31	30	29	28	27	10	25	45	50	56	53	25	42	47	48	47	27	41	38	38	37	31	30	29	28	27	20	-	25	42	56	53	-	23	41	48	47	-	26	38	38	37	-	30	29	28	27	30	-	-	25	45	53	-	-	-	48	47	-	-	25	38	37	-	-	26	28	27	40	-	-	-	26	43	-	-	-	27	45	-	-	-	26	37	-	-	-	24	27	50	-	-	-	-	26	-	-	-	-	27	-	-	-	-	26	-	-	-
5	0	43	47	48	52	48	44	46	44	45	44	43	37	35	35	34	28	27	25	24	24	10	23	44	48	52	48	23	41	44	45	44	25	37	35	35	34	28	27	25	24	24	20	-	23	40	52	48	-	22	39	45	44	-	24	35	35	34	-	25	25	24	24	30	-	-	23	43	48	-	-	23	45	44	-	-	23	35	34	-	-	22	24	24	40	-	-	-	23	41	-	-	-	25	43	-	-	-	24	34	-	-	-	21	24	50	-	-	-	-	24	-	-	-	-	24	-	-	-	-	24	-	-	-	-	20
10	0	38	43	44	46	40	40	41	39	39	37	35	32	30	30	30	22	21	19	19	19	10	19	39	44	46	40	19	38	39	39	37	22	32	30	30	30	21	21	19	19	19	20	-	19	37	46	40	-	19	37	39	37	-	20	30	30	30	-	17	19	19	19	30	-	-	19	39	40	-	-	19	39	37	-	-	19	30	30	-	-	15	19	19	40	-	-	-	19	37	-	-	-	21	37	-	-	-	19	30	-	-	-	-	19	50	-	-	-	-	20	-	-	-	-	20	-	-	-	-	19	-	-	-	-	-
15	0	34	37	36	33	32	35	35	33	31	29	26	26	24	24	24	15	15	14	14	14	10	15	35	36	33	32	15	35	33	31	29	17	26	24	24	24	-	15	14	14	14	20	-	14	33	33	32	-	15	33	31	29	-	-	24	24	24	-	-	14	14	14	30	-	-	14	33	32	-	-	16	31	29	-	-	-	24	24	-	-	-	14	14	40	-	-	-	15	32	-	-	-	21	29	-	-	-	24	24	-	-	-	-	14	50	-	-	-	-	15	-	-	-	-	16	-	-	-	-	-	-	-	-	-	-
20	0	27	30	27	25	23	27	27	24	22	20	17	19	17	15	14	-	-	-	-	-	10	8	28	27	25	23	9	27	24	22	20	-	19	17	15	14	-	-	-	-	-	20	-	-	27	25	23	-	-	24	22	20	-	-	17	15	14	-	-	-	-	-	30	-	-	-	25	23	-	-	-	22	20	-	-	-	15	-	-	-	-	-	-	40	-	-	-	-	23	-	-	-	-	20	-	-	-	-	-	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steam Consumption (lb/hr)		195	243	293	341	389	195	243	293	341	389	195	243	293	341	389	195	243	293	341	389																																																																																																									

PUMPING LIQUIDS

Table TGL-2 Capacity Factors

TGL00	TGL0	TGL1	TGL2	TGL3	TGL4	TGL5	TGL6	TGL7	TGL8	TGL9	TGL10	TGL11	TGL12	TGL13	TGL14	TGL15	TGL16
0.027	0.050	0.091	0.165	0.30	0.55	1.00	1.80	3.24	4.30	5.71	7.57	10.1	13.3	17.7	23.5	31.2	41.3

APPLICATION EXAMPLES

EXAMPLE 1:

It is required that water at 40 deg F be removed from a sump at the rate of 14 usgpm. The maximum suction lift is 5 feet and the maximum discharge head is 20 feet. Steam is available at 100 psig for operating an ELMRIDGE Steam Siphon.

1. From Table TGL-1, the TGL5 siphon has a suction capacity of 40 usgpm under the conditions given.

2. The required Capacity Factor is:

$$14.0 / 40 = 0.35$$

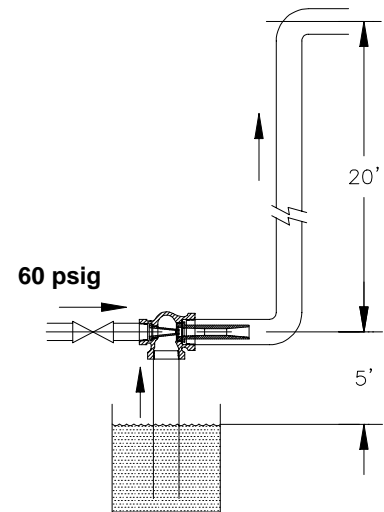
3. From the Capacity Factor Table TGL-2, the Capacity Factor of the TGL4 siphon is 0.55, ie. the suction capacity of the TGL4 at the given operating conditions is:

$$0.55 \times 40 = 22 \text{ usgpm}$$

The capacity can be reduced, if necessary, by throttling the steam pressure.

4. Motive Steam Consumption of the TGL4 at 100 psig is:

$$293 \times 0.55 = 161 \text{ lb/hr}$$



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DIMENSIONAL
DRAWINGS BY
STYLE**

ELMRIDGE Gas-Jet Siphons can also be used with compressed non-condensable gases (ie. compressed air), as the Motive Fluid to pump relatively very small volumes of liquids or slurries. While this is particularly inefficient, it may be useful where small liquid samples are required and can be obtained using a volume of inert gas as the motive fluid. For example, a TGL5 Gas-Jet Siphon will pump approximately 1 usgpm of water from a 5 foot Suction Lift to a 1 psig Discharge pressure consuming approximately 50 scfm of compressed air at 50 psig.

PUMPING LIQUIDS