ELMRIDGE® Gas-Jet Ejectors

TGG Series

PUMPING - INJECTING - EVACUATING - PRIMING - LIFTING - MIXING - DILUTING

ELMRIDGE 'TGG Series' Gas-Jet Ejectors use steam, compressed air, or other pressurized gas as the Motive fluid and operate on the Venturi principle to pump other gases or vapors. Pressurized gas/vapor is discharged through the Ejector nozzle, emerging at a relatively high velocity, creating a zone of lower pressure contained within the Suction Chamber of the Ejector. The secondary or Suction fluid (liquid, gas, or vapor), is drawn to this lower pressure zone, where the momentum of the Motive fluid is transferred to the Suction fluid, causing the Suction fluid to be pumped. 'TGG Series' Gas-Jet Ejectors have been designed for the optimal combination of obtainable vacuum and Suction Flow versus Motive consumption. Operating characteristics (Steam Motive / Air 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).

PUMPING GASES

Table 1

Approx. Suction Capacity (scfm free air) for a TGG5 Gas-Jet Ejector using Steam* (Atmospheric Discharge)

Suction Press. (in. Hg abs.)	Operating Steam Pressure (psig)				
	50	60	80	100	120
8	-	-	4.71	9.25	11.0
9	-	-	7.31	11.4	14.3
10	-	1.46	9.09	14.0	16.2
11	-	4.22	11.4	16.0	18.8
12	-	6.33	13.5	19.2	20.9
13	1.79	8.77	15.6	21.8	23.5
14	3.57	11.4	17.9	24.2	25.8
15	5.84	14.0	20.0	26.8	28.6
16	7.63	16.4	22.0	28.9	31.7
17	10.1	19.6	24.7	32.0	33.9
18	12.3	22.2	27.4	33.9	35.9
19	15.3	25.3	29.7	36.4	38.2
20	18.2	28.3	31.8	38.5	39.9
21	21.1	31.2	34.3	40.6	41.9
22	25.0	33.8	36.7	42.5	43.7
23	29.2	36.4	38.8	44.2	45.3
24	33.1	39.0	40.9	45.8	46.4
25	37.0	41.6	43.3	47.2	47.7
26	40.5	43.8	45.1	48.5	48.7
27	44.0	46.1	46.9	49.6	49.7
28	46.6	47.9	48.6	50.5	50.5
29	49.2	49.6	50.1	50.8	50.8
30 (Atm.)	51.5	51.5	51.5	51.5	51.5
Motive Steam Consumption (lb/hr)	167	195	243	293	341

***Capacity when using Compressed Air is approximately 5% higher than tabulated**

Motive Air Consumption (scfm)	55	64	81	98	115

SEE INDIVIDUAL DIMENSIONAL DRAWINGS BY STYLE

Table 2

Capacity Factors

TGG00	TGG0	TGG1	TGG2	TGG3	TGG4	TGG5	TGG6	TGG7	TGG8	TGG9	TGG10	TGG11	TGG12	TGG13	TGG14	TGG15	TGG16
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

Dimensions and Specifications are subject to change without notice

APPLICATION EXAMPLES

Table 3

Approx. Evacuation Time (min. per 100 cu. ft.) to Given Vacuum for a TGG5 Ejector using Steam* (Atmospheric Discharge)

Suction Press. (in. Hg abs.)	Operating Steam Pressure (psig)				
	50	60	80	100	120
8	-	-	3.7	3.3	3.2
9	-	-	3.3	2.9	2.8
10	-	3.6	2.8	2.6	2.4
11	-	2.9	2.5	2.3	2.2
12	4.0	2.3	2.2	2.1	1.9
13	2.6	2.0	1.8	1.8	1.7
14	2.1	1.7	1.6	1.6	1.5
15	1.7	1.4	1.4	1.4	1.3
16	1.3	1.2	1.2	1.2	1.2
17	1.1	1.0	1.0	1.0	1.0
18	0.9	0.9	0.9	0.9	0.9
19	0.8	0.8	0.8	0.8	0.8
20	0.7	0.7	0.7	0.7	0.7
21	0.6	0.6	0.6	0.6	0.6
22	0.5	0.5	0.5	0.5	0.5
23	0.40	0.40	0.40	0.40	0.40
24	0.35	0.35	0.35	0.35	0.35
25	0.25	0.25	0.25	0.25	0.25
26	0.23	0.23	0.23	0.23	0.23
27	0.18	0.18	0.18	0.18	0.18
28	0.11	0.11	0.11	0.11	0.11
29	0.08	0.08	0.08	0.08	0.08
30 (Atm.)	0.00	0.00	0.00	0.00	0.00
Motive Steam Consumption (lb/hr)	167	195	243	293	341

***Capacity when using Compressed Air is approximately 5% higher than tabulated**

Motive Air Consumption (scfm)	55	64	81	98	115

EXAMPLE 1:

It is required to evacuate a 300 cubic foot vessel to a 10 in. Hg abs. vacuum in a period of 5 minutes using 100 psig steam.

1. From table TGG-2, the TGG5 ejector operating with 100 psig steam will evacuate a 100 cubic foot volume to a 10 in. Hg abs. vacuum in a time of 2.6 minutes. Therefore, a TGG5 will evacu ate a 300 cubic foot volume to a 10 in. Hg abs. vacuum in:

   (300 / 100) x 2.6 = 7.8 minutes

2. As the required evacuation time is 5 minutes, the required Ca pacity Factor is:

   7.8 / 5 = 1.6

3. The TGG6 ejector with a Capacity Factor of 1.8 should be used.

Table 4

Approx. Priming Time (min. per 100 cu. ft.) to Given Lift for a TGG5 Ejector using Steam* (Atmospheric Discharge)

Suction Lift (feet of water)	Operating Steam Pressure (psig)				
	50	60	80	100	120
25	-	-	9.5	8.3	7.6
24	-	-	8.5	7.6	7.0
23	-	9.5	7.6	6.8	6.3
22	-	7.3	6.7	6.2	5.7
21	9.5	6.1	5.8	5.5	5.0
20	6.7	5.1	5.1	4.8	4.5
19	5.3	4.3	4.3	4.3	4.0
18	4.3	3.8	3.8	3.8	3.6
17	3.6	3.3	3.3	3.3	3.1
16	3.0	2.9	2.9	2.9	2.8
15	2.6	2.5	2.5	2.5	2.4
14	2.3	2.3	2.3	2.3	2.2
13	1.9	1.9	1.9	1.9	1.9
12	1.7	1.7	1.7	1.7	1.7
11	1.5	1.5	1.5	1.5	1.5
10	1.3	1.3	1.3	1.3	1.3
9	1.2	1.2	1.2	1.2	1.2
8	1.0	1.0	1.0	1.0	1.0
7	0.8	0.8	0.8	0.8	0.8
6	0.6	0.6	0.6	0.6	0.6
5	0.6	0.6	0.6	0.6	0.6
4	0.4	0.4	0.4	0.4	0.4
3	0.3	0.3	0.3	0.3	0.3
2	0.2	0.2	0.2	0.2	0.2
1	0.1	0.1	0.1	0.1	0.1
0	0.0	0.0	0.0	0.0	0.0
Motive Steam Consumption (lb/hr)	167	195	243	293	341

***Capacity when using Compressed Air is approximately 5% higher than tabulated**

Motive Air Consumption (scfm)	55	64	81	98	115

EXAMPLE 2:

The volume of the pump casing and the suction pipe of a pump totals 30 cubic feet. It is required to prime them to a 20 ‘ lift in a time of 3 minutes using 80 psig compressed air.

1. From Table TGG-3, a TGG5 ejector will prime a 100 cubic foot volume to a lift of 20 feet in a period of 5.1 minutes. Therefore, a TGG5 will prime 30 cubic feet to a lift of 20 ‘ in:

   (30 / 100) x 5.1 = 1.53 minutes

2. As the required priming time is 3 minutes, the required Capac ity Factor is:

   1.53 / 3 = 0.51

3. The model TGG4 ejector with a Capacity Factor of 0.55 should be used.