



LOW-Capacity Ejector Assembly

Installation, Operation & Maintenance

EJE-100 -CL2

EJE-250 -CL2

EJE-500 -CL2

General: The Enchlor ejector assembly is designed to provide vacuum induction and to prevent motive water from entering the vacuum lines.

DESIGN AND INSTALLATION NOTES

1. The “all vacuum” system means that system will shut off at the cylinder valve, should the vacuumline be broken, if water is stopped for any reason, or if the chlorination equipment is physically damaged.
2. Choosing the right feed rate capacity:

VACUUM REGULATOR SHOULD BE ON MAXIMUM POSSIBLE FLOW.

Imperial Units:

$$\text{GPM} \times 0.012 \times (\text{PPM}) \text{ Dosage} = \text{PPD}$$

Gallons Per Minute Parts Per Million Pounds Per Day (Cl 2)

Example: $600 \text{ GPM} \times 0.012 \times 3 \text{ PPM} = 21.6 \text{ PPD}$

In this example a 50 PPD system would be appropriate.

Metric Units:

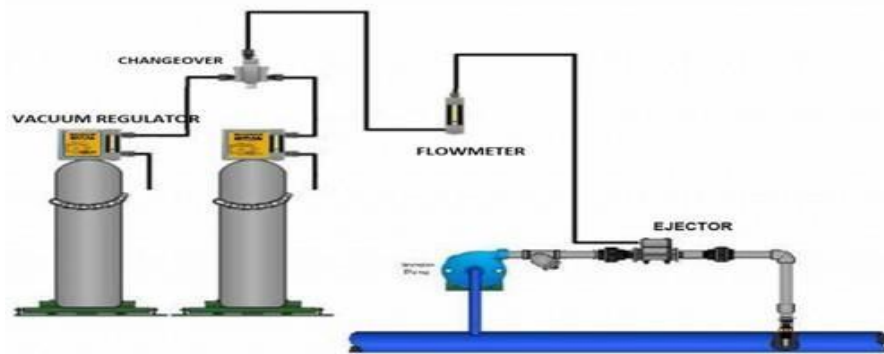
$$\text{LPM} \times 0.0599 \times (\text{PPM}) \text{ Dosage} = \text{GPH}$$

Liters Per Minute Parts Per Million Grams Per Hour (Cl 2)

3. **TOTAL BACK PRESSURE** is the pressure in the pipeline to be chlorinated plus the friction losses in the solution line between the ejector and the point of injection at the pipeline. Ejectors capable of operating with backpressures up to 140 Psig are standard. For higher backpressure consult factory.

4. It is preferable to locate the ejector at the point of solution injection in order to eliminate the need for solution lines. Friction losses in the solution line will increase the ejector backpressure. To reduce the friction losses, increase the solution line internal diameter and limit the number of flow restrictions and turns. Also be sure that the solution line material is resistant to the highly concentrated chlorine mixture. Avoid solution lines wherever possible.

5. The chlorine gas is carried from the vacuum regulator to the ejector through the specified polyethylene tubing. Up to 25 feet of polyethylene tubing between vacuum regulator and ejector is standard. For longer distances consult factory.



A typical installation injecting chlorine into a pipe line using city water.

SYSTEM INSTALLATION

(I) INSTALLATION OF EJECTOR (Refer to Figures 1)

1. Installation of EJECTOR:

- Remove the diffuser from the ejector assembly and place 2 wraps of Teflon tape on diffuser threads.
- Do Not install diffuser into pipeline when assembled with ejector.
- Turn diffuser by hand into NPT threads of pipeline (3/4" or 1 1/4" NPT). Place wrench on diffuser and tighten one half turn maximum.
- Reconnect diffuser to ejector making sure appropriate O-rings are on each side of nozzle and diffuser.

2. Testing of ejector. (Note: The vacuum regulator should still be in the shipping case.)

- Piping hook up to ejector (Refer to Figures 1 and 2 and Servicing Section in this Manual).
 - Ejector should be installed downstream at a sufficient distance so that chlorinated water is not re-circulated through the booster pump. (See Figure 2.)
 - On the water inlet side to the ejector nozzle the following should be installed: a gate valve, Y-strainer, and a pressure gauge.
- Testing for sufficient pump pressure to operate ejector. Also checking that booster pump (if applicable) operating in the proper direction. Refer to ejector performance charts and tables at end of this manual.

Note 1: Ejector must have some back pressure to prevent jetting. (Jetting causes loss of vacuum)

Note 2: When chlorinating into a contact chamber a tee should be installed on the solution line with a vacuum breaker to prevent siphoning.

- If operating with city water pressure (no booster pump), open the water inlet valve to the ejector and

- feel for suction (with your finger) at the fitting on the top of the ejector.
- b. If pump is operating in proper direction there should be a strong vacuum at the fitting on the top of the ejector. Feel for suction (with your finger) at the fitting on the top of the ejector.
- c. If the ejector has tested satisfactorily continue to the next step (Mounting the Vacuum Regulator).

SERVICE EJECTOR/CHECK VALVE ASSEMBLY

(I) LOSS OF VACUUM AT THE EJECTOR: If vacuum is lost at the ejector and water supply is sufficient, then the nozzle is most likely clogged, broken or loose. Before working on the ejector, it must first be isolated so that water will not leak when the ejector is removed.

1. First detach the intake side (nozzle) of the ejector from the pipeline.
2. For 3/4" line size ejectors rotate the complete ejector body counterclockwise. This loosens the threaded portion of the nozzle from the diffuser. It also eliminates the need for pliers on the nozzle which could damage the plastic. For 1 1/4" line size ejectors remove the two flanges to remove the ejector.

3. Inspect the nozzle for:

Pipe scale, stones, dirt, etc...

Build-up of iron, manganese, calcium, etc...

4. The nozzle should be soaked and brushed with warm water mixed with a cleaner like Muriatic Acid. NOTE: TAKE CARE NOT TO SCRATCH OR ATTEMPT TO MODIFY THE ORIFICE IN ANY WAY.

5. Using two new ORE-BUN-121 O-rings the ejector can now be reassembled. When reassembling 3/4" line size ejectors the nozzle and diffuser should be screwed together hand tight leaving the ejector body 90 degrees to the left of its final position. Once the nozzle and diffuser are hand tight, the ejector can then be turned the final 90 degrees.

WARNING: Do not use excessive force in tightening the nozzle, diffuser and ejector assembly. The ejector is constructed of PVC and excessive force can break the parts.

(II) SERVICING THE EJECTOR CHECK VALVE ASSEMBLY: If water leaks back into the system, this means that the ejector check valve has failed. This could be caused by incorrect assembly, a failed gasket, O-Ring or diaphragm, or foreign material lodged in the check valve.

1. Remove the four bolts holding the ejector body together.
2. Inside you will find a diaphragm assembly and a spring.
3. The diaphragm assembly can usually be unscrewed by hand. If it is too tight, carefully try large jaw pliers or a vice. Note that a plastic support diaphragm is on the top side of the rubber diaphragm. The purpose is to protect the softer rubber diaphragm in installations with high pressure.
4. Inspect the rubber diaphragm for holes or weak points.
5. Inspect the ORE-CEM-210 O-Ring. Replace if damaged.
6. Reassemble the diaphragm assembly, preferably with a new rubber diaphragm, DIE-104-500.
7. Install the assembly in the recess between the ejector body halves being careful to install the spring properly below the assembly.

Note: Pressure combinations that plot below the line for any given nozzle are acceptable for operating that nozzle at the stated chemical feed rate for that chart. Pressure combinations that fall above the line for any given nozzle are not acceptable.

Nozzle Tables

50 PPD (1 Kg/hr)

Nozzle >	2		5		UN-102-140		3		UN-102-099D	
Ejector Backpressure	PSI @ GPM		PSI @ GPM		PSI @ GPM		PSI @ GPM		PSI @ GPM	
0	16	4.0	30	4.3	15	2.8	35	2.3	48	1.9
10	25	5.0	43	4.8	28	3.5	55	2.9	70	2.4
20	40	5.8	55	5.1	48	4.1	75	3.5	92	2.8
30	50	6.3	69	5.4	64	4.5	95	4.1	110	3.2
40	65	7.1	81	6.0	82	5.3	120	4.8	124	3.5
50	80	8.0	95	6.6	100	5.7	141	5.4	137	3.7
60	90	8.6	109	6.8	120	6.3	162	6.0	151	4.0
70	105	9.1	120	7.2	132	6.5	183	6.6	164	4.3
80	115	9.6	134	7.6	150	6.9	205	7.3	178	4.6
90	127	10.0	147	7.8	170	7.4	226	7.9	191	4.8
100	139	10.4	160	8.1	185	7.8	247	8.5	205	5.1
110	152	10.8	173	8.4	202	8.2	268	9.1	218	5.4
120	165	11.3	188	8.7	221	8.5	290	9.8	232	5.7
130	176	11.8	200	9.0	239	8.8	-	-	245	5.9
140	189	12.2	213	9.2	255	9.1	-	-	259	6.2
150	200	12.7	226	9.5	273	9.4	-	-	272	6.5
160	216	13.3	240	9.8	290	9.7	-	-	286	6.8

100 PPD (2 Kg/hr)

Nozzle >	2		5		UN-102-140	
Ejector Backpressure	PSI @ GPM		PSI @ GPM		PSI @ GPM	
0	25	5.0	50	5.1	30	3.3
10	50	6.7	65	5.4	59	4.3
20	65	7.3	80	6.1	79	5.0
30	75	8.0	95	6.5	95	5.6
40	89	8.6	110	7.0	110	6.0
50	104	9.0	125	7.2	126	6.4
60	118	9.3	139	7.4	145	6.9
70	131	9.9	155	7.9	160	7.2
80	142	10.5	170	8.3	180	7.5
90	155	11.0	185	8.7	195	7.9
100	170	11.5	200	9.0	210	8.2
110	180	11.9	213	9.3	229	8.5
120	194	12.7	228	9.5	243	8.9
130	208	13.2	244	9.9	260	9.2
140	222	13.7	260	10.2	279	9.5
150	235	14.2	275	10.4	295	9.8
160	250	14.5	291	10.8	310	10.0

Nozzle Tables

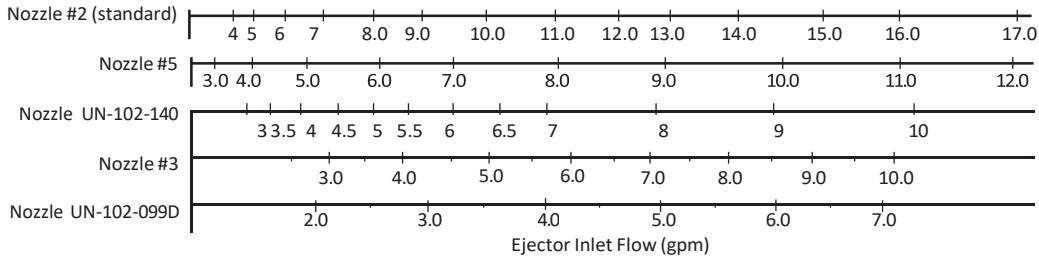
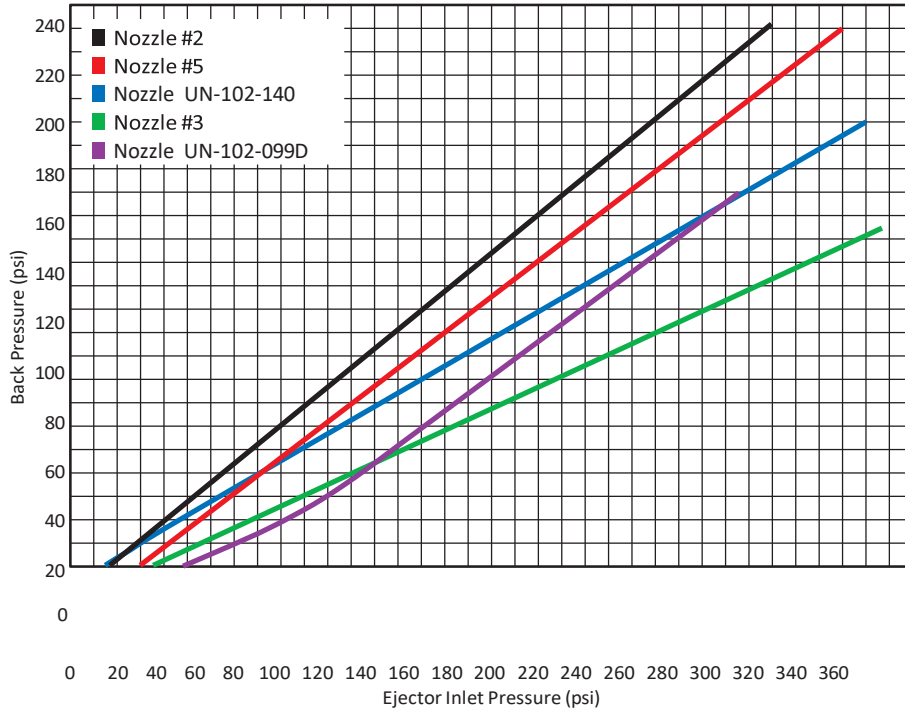
250 PPD (5 Kg/hr)

Nozzle >	0.375		0.296		ENX-290		0.275		0.250	
Throat >	0.560		0.380		0.380		0.380		0.380	
Ejector Backpressure	PSI @ GPM		PSI @ GPM		PSI @ GPM		PSI @ GPM		PSI @ GPM	
0	20	15.0	-	-	30	11.5	30	10.0	25	7.5
10	35	20.0	40	13.2	39	13.0	42	12.0	48	10.8
20	50	25.0	52	15.0	55	15.7	55	14.0	69	12.5
30	65	28.0	65	16.7	69	17.5	70	16.0	85	14.5
40	80	32.0	77	18.2	84	19.4	82	18.0	98	15.8
50	95	34.0	87	19.7	97	20.9	95	19.0	108	17.0
60	110	38.0	100	21.0	113	22.3	110	21.5	120	18.0
70	-	-	113	22.3	127	23.5	122	23.5	130	19.0
80	-	-	125	23.3	142	25.5	135	24.0	143	19.6
90	-	-	137	24.5	157	26.2	150	26.0	155	20.3
100	-	-	148	25.4	172	27.3	162	27.5	-	-
110	-	-	160	26.3	-	-	175	29.0	-	-
120	-	-	172	27.0	-	-	189	31.0	-	-
130	-	-	183	27.8	-	-	201	33.0	-	-
140	-	-	196	28.7	-	-	213	35.0	-	-
150	-	-	208	29.4	-	-	-	-	-	-
160	-	-	217	30.0	-	-	-	-	-	-

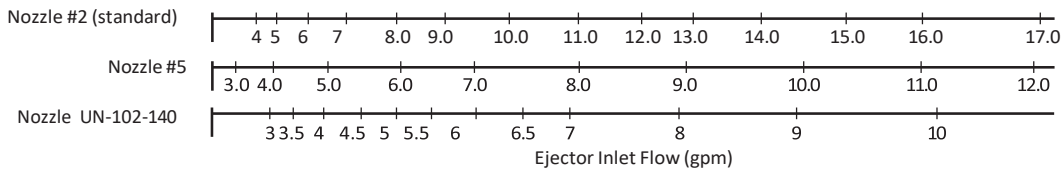
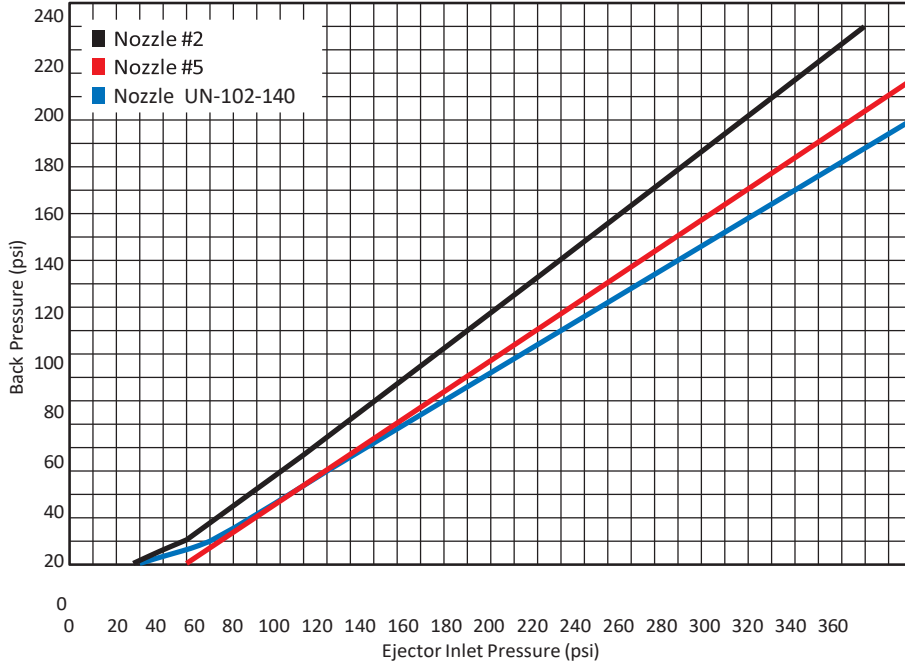
500 PPD (10 Kg/hr)

Nozzle >	0.375		0.296		ENX-290		ENX-290		0.250	
Throat >	0.560		0.560		0.560		0.380		0.380	
Ejector Backpressure	PSI @ GPM		PSI @ GPM		PSI @ GPM		PSI @ GPM		PSI @ GPM	
0	20	15.0	48	14.5	30	11.0	50	15.0	60	12.0
10	35	20.0	72	18.3	52	15.5	67	17.5	90	15.0
20	50	24.9	90	20.6	80	19.3	85	20.0	117	17.5
30	64	27.2	105	22.2	107	22.4	104	22.1	135	19.3
40	80	31.0	123	24.2	132	25.3	118	23.6	154	20.5
50	96	34.0	140	25.5	160	26.5	132	25.1	172	22.0
60	110	37.0	160	26.7	-	-	145	25.8	-	-
70	-	-	175	27.4	-	-	157	26.5	-	-
80	-	-	192	28.5	-	-	168	27.0	-	-
90	-	-	210	29.2	-	-	179	27.7	-	-
100	-	-	229	30.5	-	-	-	-	-	-

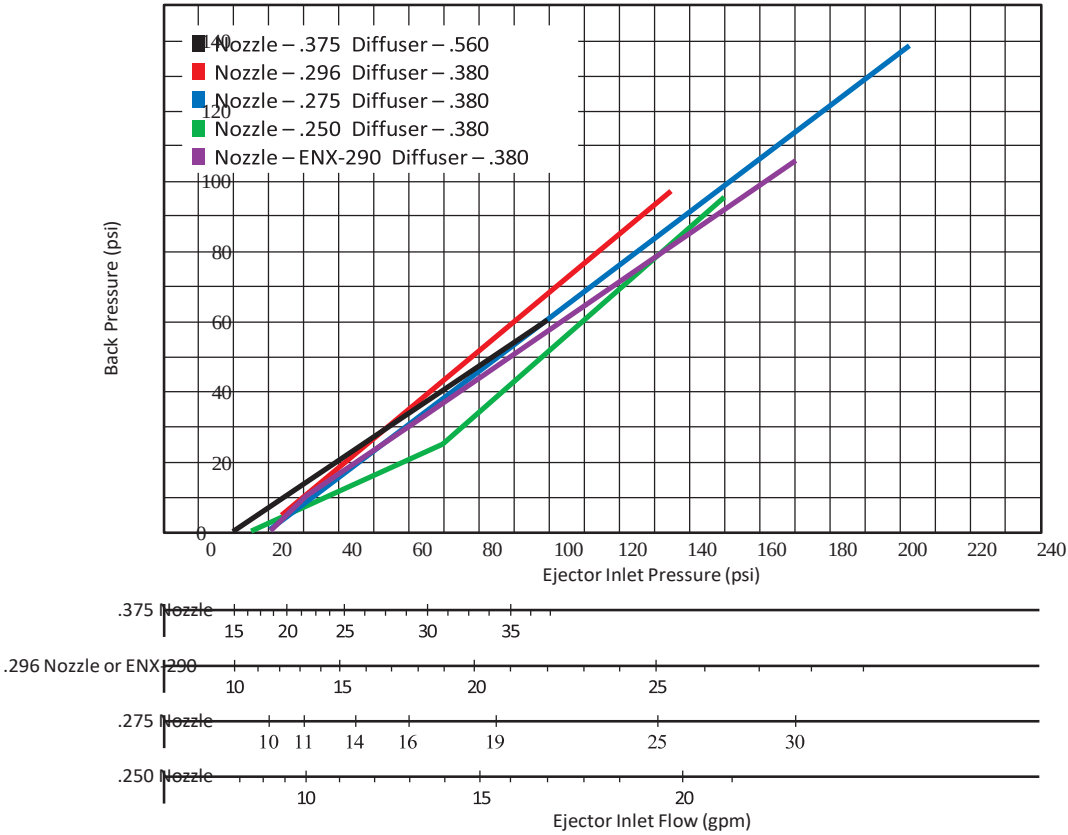
NOZZLE SIZING CHART (50 PPD / 1000 gr/hr)



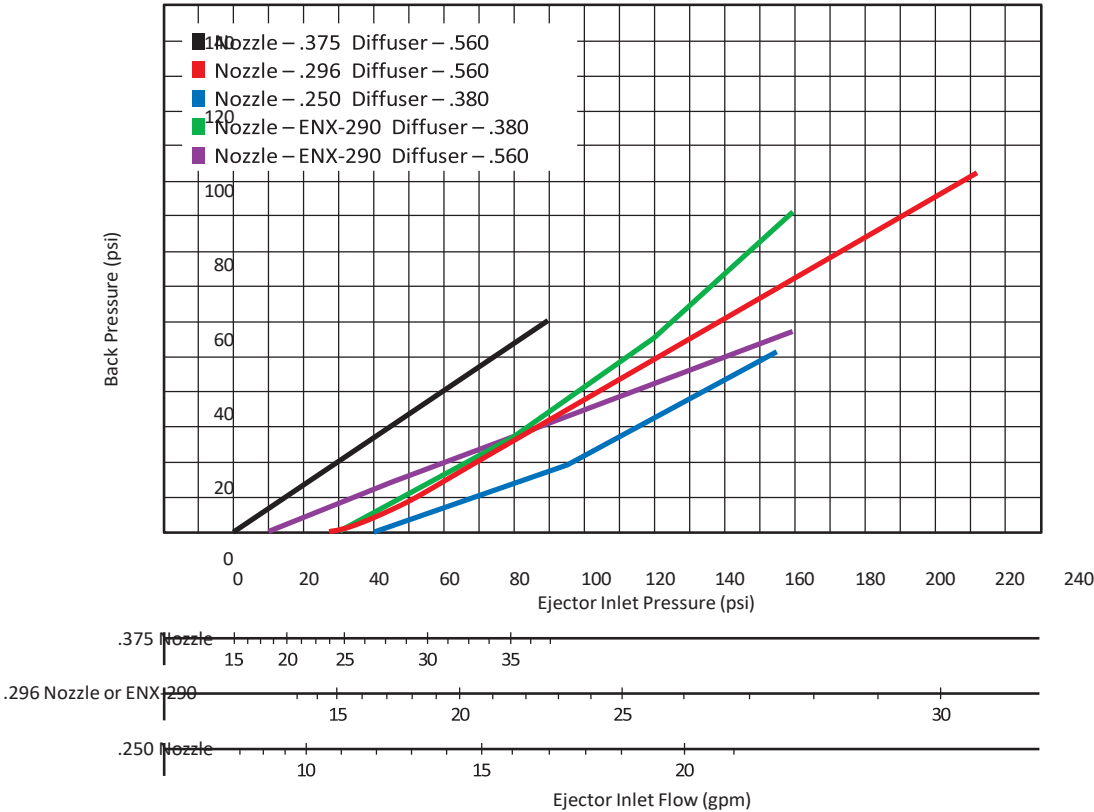
NOZZLE SIZING CHART (100 PPD / 2000 gr/hr)

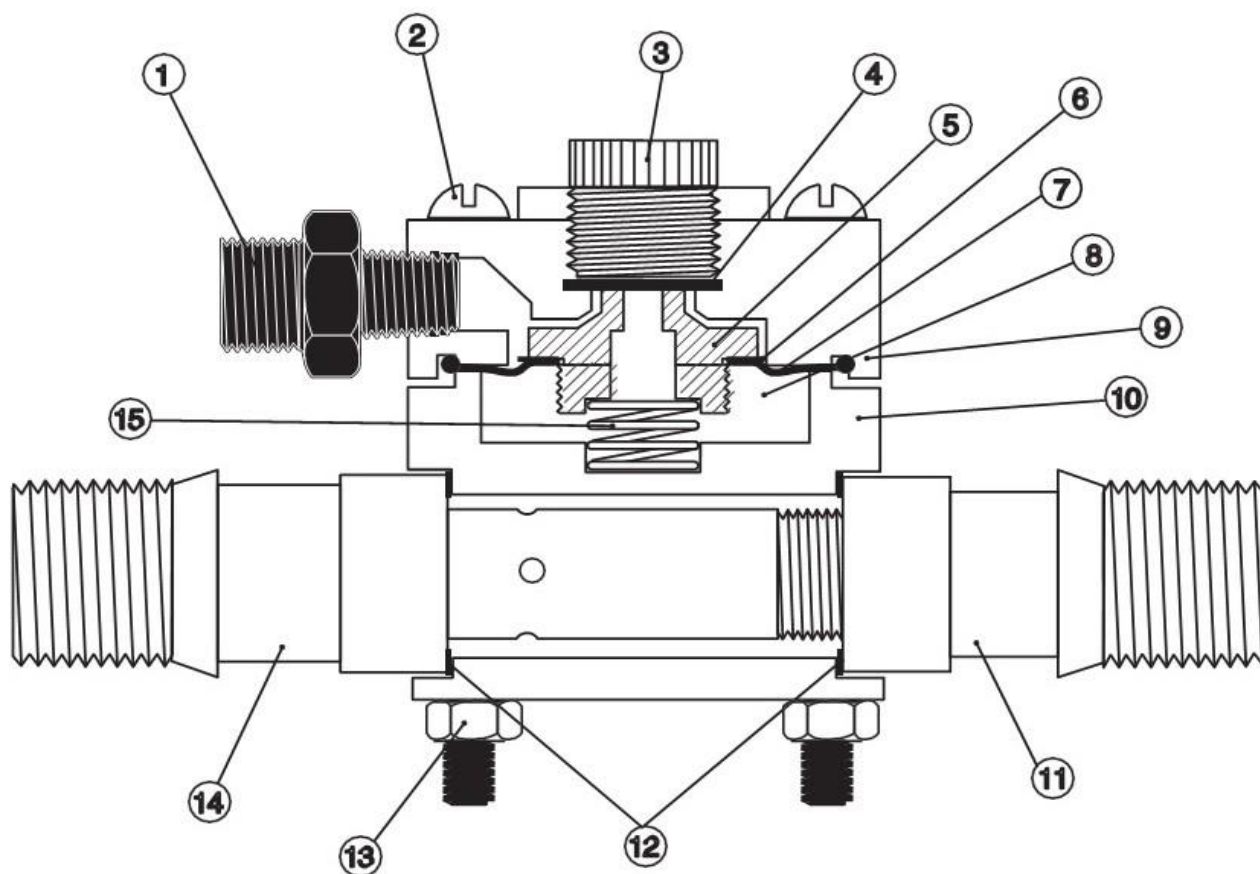


NOZZLE SIZING CHART (250 PPD / 5 kg/hr)



NOZZLE SIZING CHART (500 PPD / 10 kg/hr)





ITEM NO.	DESCRIPTION	QUANTITY	PART NO.
1	$\frac{3}{8}$ " Tubing Connector	1	TCE-64
2	$\frac{5}{16}$ - 18 x $3\frac{1}{2}$ " Bolt	4	BTE-135
3	Seat Plug	1	EJE-311
4	Valve Seat	1	GE-VIT-122
5	Diaphragm Bolt	1	EJE-206
6	Support Diaphragm	1	DIA-105
7	Diaphragm	1	DIA-104
8	Diaphragm Nut	1	EJE-146
9	Top Body	1	EJE-208-250
10	Bottom Body	1	EJE-153
11	Multi-Purpose Diffuser	1	EJE-982
12	O-Ring	2	OE-BUN-214
13	$\frac{5}{16}$ - 18 Nut	4	NTE-104
14	Nozzle	1	* See Note
15	Spring	1	SPE-106

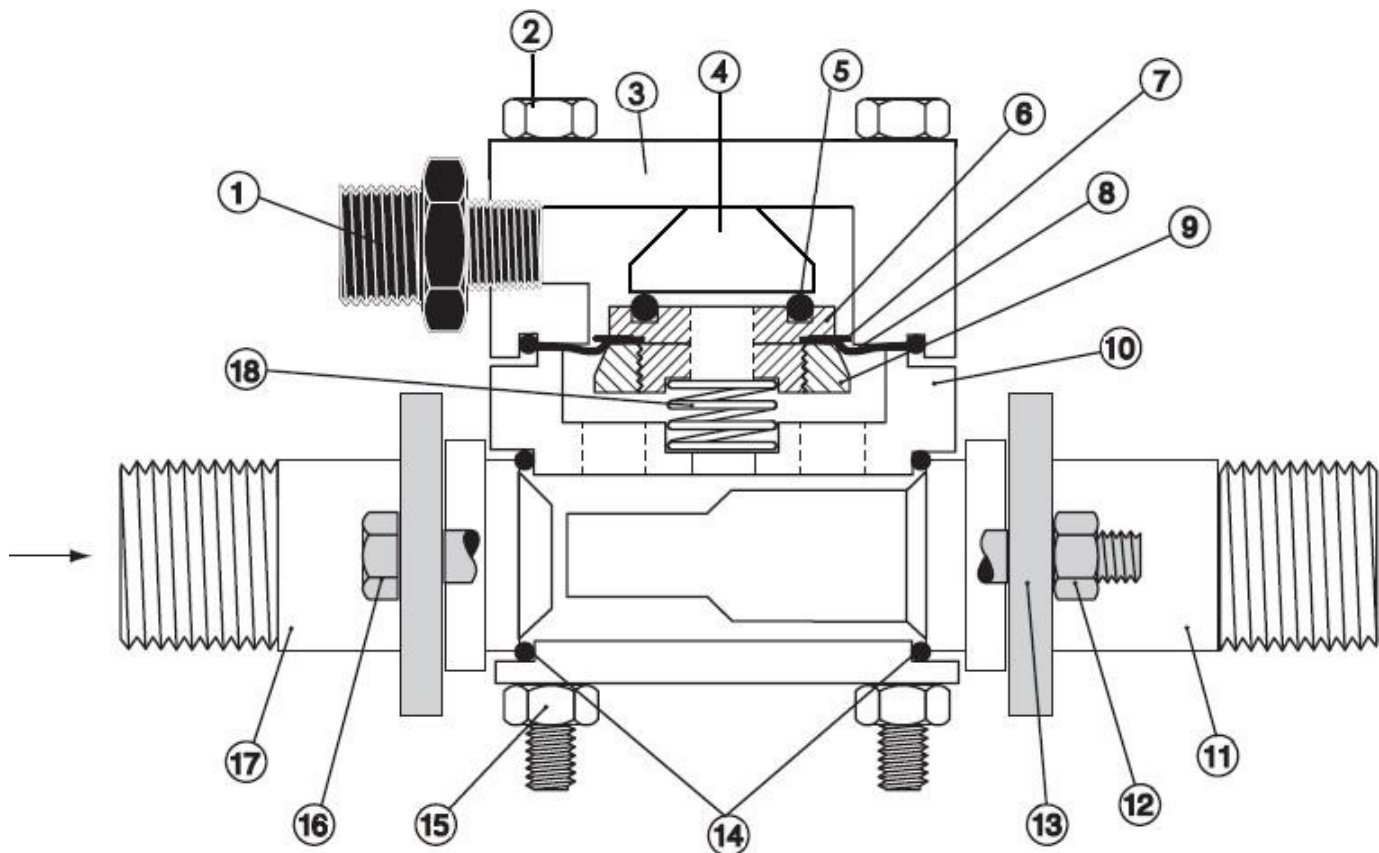
***Note:** Available Nozzles:

#9 - ENA-015-156 (50 ppd std.)

#10 - ENA-012-191 (100 ppd std.)



EJECTOR
Model: EJE-100-CL2



Item#	Qty.	Part #	Description	Item#	Qty.	Part #	Description
1	1	TCE-108	Tube Connector <i>1/2" NPT x 5/8" tube</i>	10	1	EJE-153	Bottom Body
2	4	BTE-136	5/16-18 x 4" Bolt	11	1	*TTE-189-386	Throat
3	1	EJE-238-500	Top Body	12	2	NTE-106	3/8-16 Nut
4	1	CVE-521	Valve Seat	13	2	EJE-136	Flange
5	1	OE-CEM-210	O-Ring	14	2	OE-BUN-214	O-Ring
6	1	EJE-236	Diaphragm Bolt	15	4	NTE-104	5/16-18 Nut
7	1	DIA-105	Support Diaphragm	16	2	BTE-145	3/8-16 x 4-1/2" Bolt
8	1	DIA-104	Diaphragm	17	1	*TNE-187-300	Nozzle
9	1	EJE-146	Diaphragm Nut	18	1	SPE-106	Spring
*NOTE: Several different nozzle / throat combinations are available to work within given hydraulic conditions. The above sizes are supplied as standard equipment. Refer to nozzle sizing charts for correct sizing.							EJECTOR Model: EJE-250-CL2 Model: EJE-500-CL2