

Steam Jet Ejector E1000 Series



Primetech offers complete range of steam jet vacuum ejectors, steam jet syphon for various industrial vacuum applications. Steam jet vacuum ejectors are like a compressor that utilizes high pressure steam as motive fluid to compress gas (suction) to atmospheric pressure from a sub atmospheric pressure (vacuum) at the suction of the system. Compression of a single stage ejector is limited due to its inherent performance characteristics, jet ejectors are mostly staged by connecting the ejectors in series to produce higher vacuum at the inlet of the system.

MOTIVE INLET

High pressure steam or gas enters the steam jet.

SUCTION INLET

Process gas under vacuum is drawn into the jet.

MOTIVE INOZZLE

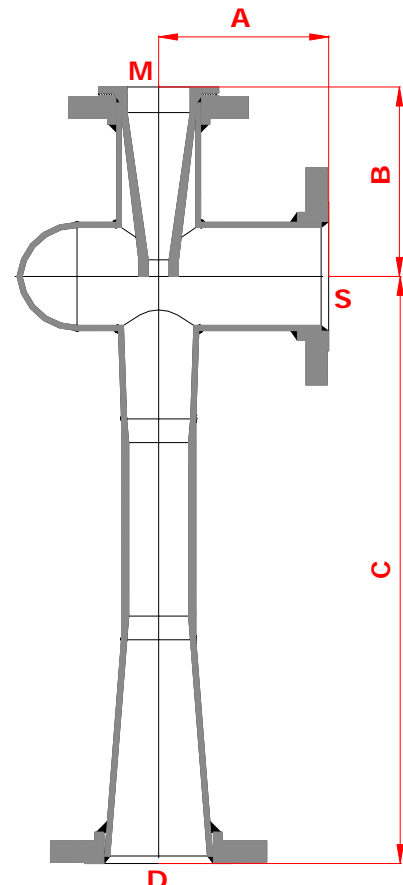
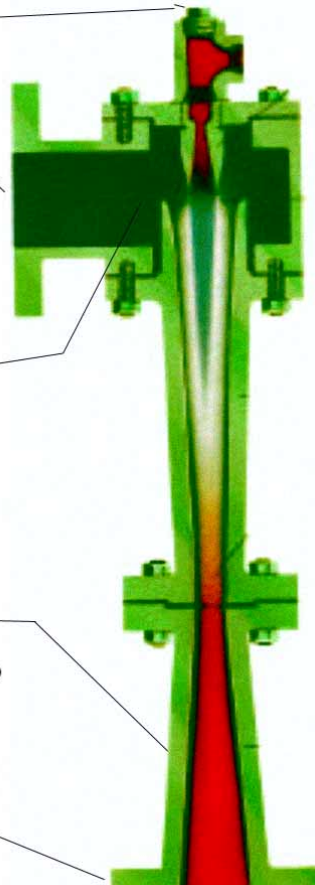
The converging / diverging nozzle converts the high pressure motive fluid into a high velocity stream.

VENTURI TAIL

The venturi converts the velocity energy of the mixed gas to a pressure intermediate to the suction and motive pressures.

DISCHARGE CONNECTION

The mixed gas stream is discharged from the jet.



Ejector Stage	Referred Nomenclature	Suction Pressure Range (Vacuum)	Vacuum System Stage
Stage discharging to atmospheric pressure	Z stage	50 to 800 Torr	Single stage
Stage connected to Z	Y stage	4 to 125 Torr	Two stage
Stage connected to Y	X stage	1 to 25 Torr	Three stage
Stage connected to X	W stage	100 μ to 3 Torr	Four stage
Stage connected to W	V stage	10 μ to 500 μ	Five stage
Stage connected to V	U stage	3 μ to 90 μ	Six stage

The multistage system often incorporates condensers between X & Y stages and Y & Z stages and after Z stage to reduce motive steam consumption for the system and lower emissions to the atmosphere.

Operating Principle:

High pressure motive steam when passed through the ejector nozzle, the steam expands through the nozzle which converts pressure to a high velocity jet of steam at the outlet of the nozzle. This high velocity steam jet entrains and mixes with the suction gas and the combined flow passes through the venturi diffuser where the gas is compressed to an intermediate pressure between suction and motive pressures.

Steam jet ejectors are capable of producing suction pressures up to 50 torr in single stage operation discharging to atmospheric pressure. But in order to reduce the steam consumption, for vacuum requirements below 100 torr, generally multistage ejector system with condenser in between stages can be used. Necessary barometric installation arrangements (11.5 mtrs. Baro leg) will need to be provided for gravity draining of condensate from inter-stage condensers. If barometric installation is not possible due to site limitations, a low level operating system can be provided.

Applications:

1. Vacuum distillation
2. System pre evacuation
3. System operating vacuum maintenance
4. Pumping system priming
5. Vacuum liquid pumping / lifting / transfer
6. Suction of Filter
7. Laboratory applications

Material of Construction

Standard material of construction	Carbon Steel, SS 304 & SS 316	Machined or Fabricated
Corrosive resistant materials	Hastalloy, Monel, Inconnel, Titanium, Teflon, Graphite	Machined or Fabricated

End connections

For Smaller ejectors up to 80 NB size (3 inches), suction & discharge connections will be flanged and motive steam connection will be threaded.

For Large fabricated ejectors, all connections will be of flanged. The standard versions of ejectors are provided with ANSI B16.5 150 # flanges. Alternatively, as per the customers' requirements, the other international standard flanges can also be provided.

Dimensional table

SIZE MM	DIMENSIONS mm				
	S & D	M	A	B	C
25	25	20	100	80	225
40	40	25	120	100	340
50	50	40	125	120	445
65	65	40	150	130	560
80	80	50	150	145	670

Dimensional table

SIZE MM	DIMENSIONS mm				
	S & D	M	A	B	C
100	100	50	180	200	915
125	125	50	215	230	1150
150	150	75	230	250	1370
200	200	75	280	280	1780
250	250	100	320	305	2235
300	300	100	370	330	2700
350	350	100	400	330	3150
400	400	150	430	380	3580
450	450	150	480	400	4040
500	500	200	525	430	4470

Note:

- Dimensions may vary with respect to service duty & moc.
- Steam consumption will be provided against spearfish enquiry.
- Shell & tube type Surface condensers and direct contact type spray condenser can be offered for inter condenser / after condenser application.



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