

## STEAM JET LIQUID EJECTORS GEC TYPE

### Suction and compression of liquids



Carbon steel

Steam jet liquid ejectors are driven by water steam in order to pump and mix liquid. They are self-priming and operate equally well when used continuously or for intermittent service.

Steam jet liquid ejectors are well suited for processes where heating is required in addition to pumping.

They offer numerous advantages over conventional pumps, there are no moving parts to wear or break and therefore no parts require extensive maintenance.

Steam jet liquid ejectors can be used in hazardous areas where electrically operated pumps would require explosion protection at a considerable cost.

Easy to install, they may be located in remote and inaccessible places, where it is complicated to constantly maintain a power pump.

### Operating

Steam jet liquids ejectors consist of three main components: a head or suction chamber, a diffuser and a motive nozzle.

The pressure in the motive nozzle decreases and the velocity rises converting the static pressure energy into kinetic energy. In this phase, the liquid is sucked through the suction connection, the fluids are mixed and steam condenses during this process. In the divergent diffuser, the velocity decreases and kinetic energy is reconverted into pressure energy.

A reduced capacity must be expected in the case of water temperatures exceeding more than 20°C. The suction flow liquid temperature should be at least 30°C lower than the boiling temperature corresponding to the suction pressure.

In addition to temperature, the specific heat, density, viscosity and boiling progress of the fluid, all have an influence on the delivery capacity.

Depending on the service conditions, units can be made from cast iron, carbon steel, bronze, stainless steel or any other workable material.



## Applications



Stainless steel

Steam jet liquid ejectors are used in large numbers throughout the industry for pumping, mixing and heating operations. The most frequent uses are for the following:

- In refinery to empty waste water pits, oil residues from oil tanks, removing liquid from pickling baths, pumping and heating muddy and cloudy liquids, extracting chemicals in reaction chambers
- In the food industry for pumping sugar juice, beer and alcohol
- In textile plants for handling soap solutions, in dye-works, bleaching and sizing
- For heating reactors, double founds and interspace

They are often used where the solution to be sucked also contains small solids dispersed in them.

## Design a steam jet liquid ejector

When designing a steam jet liquid ejector, it is necessary to consider a series of factors that have a profound effect on the performance of this device.

In addition to motive pressure, also the suction lift and discharge head determine the performance of an ejector.

It's important that the ejectors operate in the same conditions for which they were designed, otherwise motive steam could flow back through the suction pipe.

The temperature of the liquid to be pumped deeply influences the efficiency of the ejector.

The higher the liquid temperature, the lower the suction lift and suction flow rate.

For temperatures above 60 ° C, the liquid must reach the ejector by gravity.

If the liquid is too hot, the steam does not condense entirely and therefore does not reduce its volume preventing that total energy available to allow the liquid to become fully effective.

It is preferable that motive steam is saturated or slightly overheated.

The performance of the ejector is also influenced by the specific weight of the liquid to be conveyed.

In general:

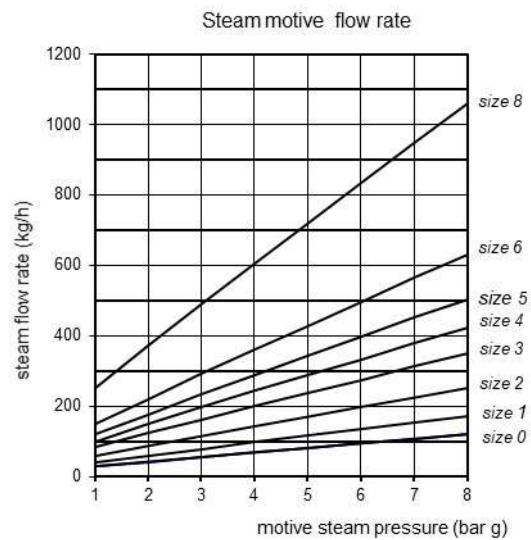
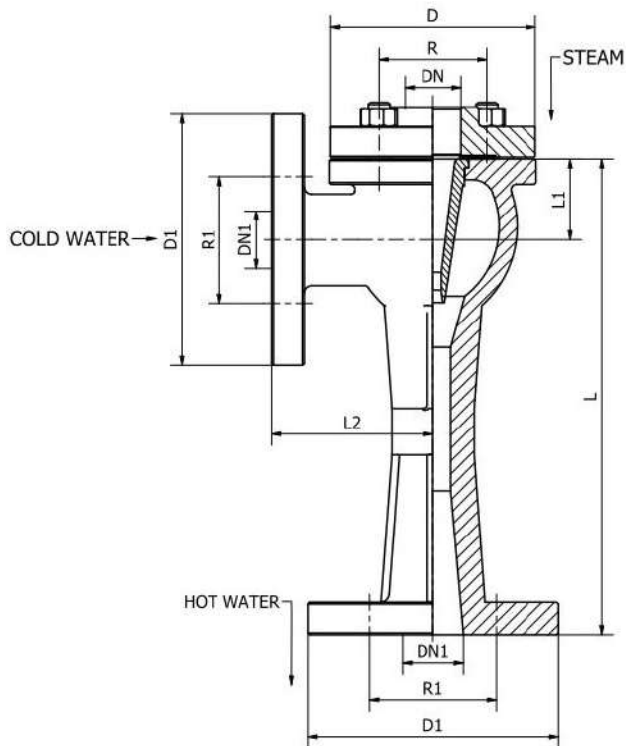
- Maximum suction height is 8 mt, with motive steam pressure of 3 bar g and water of 15°C
- Maximum discharge head is 50 mt with motive steam pressure of 8 bar g and water of 15°C

The technical office of Officine Giudici can size the suitable ejector according to the operating conditions by completing the specific data form.



Cast iron

## Dimensions and performance



### Performance table for cast iron construction

Suction flow rate(l/h)	Size	DN	R	D	dn1	R1	D1	L	L1	L2	Weight (kg)
1200	0	½"	65	95	20	75	105	200	35	80	5
2000	1	¾"	75	105	25	85	115	220	40	85	6,5
3000	2	1"	85	115	32	100	140	265	45	90	9,5
5000	3	1" ¼	100	140	40	110	150	290	45	110	11,5
7000	4	1" ½	100	140	40	110	150	310	45	115	12
8500	5	1" ½	110	150	50	125	165	355	55	125	15
11000	6	2"	125	165	65	145	185	400	70	125	24
18000	8	2" 1/2	145	185	80	160	200	490	85	140	37

Flow rate calculated with 5 bar of saturated steam, 1 mt suction lift and 10 mt of discharge head.  
 For different values contact our technical office.