



SIGMA PUMPY HRANICE



EVACUATION STATIONS

ES-RV, ESP-RV

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Evacuation Stations ES-RV, ESP-RV

Applications

Evacuation stations are designed for the securing of reliable waterworks pumps, suckers, or the other pumps operation by continuously keeping them to be gaged which is reliably and fully automatic.

Evacuation stations serve as preventing against running or the pumps "dry" run both at the pumps with continuous operation (industrial pumping devices) so in intermittent one (pumping waterworks stations) or in a quiet and standby (the fire pumps).

According to the level of monitoring in evacuation station we supply evacuation stations as the electrode ones or the float ones.

Evacuation station represents the standard unit designed for evacuation one or more waterworks pumps which pump from the same common water source.

Description

Evacuation stations consist of the following main parts:

- the water-ring rotary vacuum pumps RV-248 or RV-558 which are supplied together with three phase electric motor of appropriate size on common baseplate;
- evacuation vessels with 150 l volume with electrode or float handling or 400 l volume with float regulation;
- circulation vessels with 50 l volume for working and cooling water of the vacuum pump,
- appropriate electric device and control instruments for electrode and float handling.

Evacuation vessel (150 l or 400 l volume) is connected on the vacuum pump, on the pumps suction chamber and with the piping connected in the bottom vessel part on sucking reservoir (well) or the common suction piping through which the water is led to the pumps.

At evacuation electrode stations there are three electrodes placed in an evacuation vessel, these ones drive the vacuum pump run according to the level state in evacuation vessel. The bottom electrode is the ground one. In a small height above it there is a button up electrode which with emersion from water is switching on the main and starts the vacuum pump. In the upper evacuation vessel part there is a switching off electrode, which switches off the vacuum pump as soon as the water reaches its high. By electrodes interconnectings with the level switch HS 203 and with the starter CADZ 3-12 is secured the automatic water level keeping between the switching on and switching off electrodes.

At float evacuation stations there is a float placed in evacuation vessel, which regulates the float switches VP-5D through the low bars set, these ones are interconnected electrically with starter CADZ 3-12.

Evacuation vessels are equipped among others with vacuometer and the valve for vacuum breaking.

In the low bottom of evacuation vessel there is a branch (G 1 1/2 by 150 l and G by 400 l) for the expansion piping connecting. In the upper bottom there is a branch G 1 1/4 for piping connecting to the vacuum pump.

Circulation vessel for the working water has a drain off hole in the low bottom. The level in circulation vessel is under the atmosphere pressure.

Function description

After the vacuum pump switching on the vacuum pump starts to suck the air from evacuation vessel. As this one is connected with the evacuation piping both with the suction pumps chambers so with the sucking reservoir it becomes the evacuation in the whole system. On the principle of the continuous vessels which represents the whole system, the water rises up together with increasing vacuum not only in the suction pumps main but also in the expansion piping, by this water penetrates to the evacuation vessel and starts to fill it.

Rising water overflows continuously the ground electrodes, the bottom up ones and until the switching off ones.

After reaching the switching off electrode the impulse is transmitted to the switch level which switches off the vacuum pump through the starter CADZ 3-12.

At the float station the float switches off VP-5D fulfill the regulating function, these ones are regulated by the float in vessel.

Non-return valve on the suction vacuum pump side is by the vacuum forcing closed and it doesn't allow the atmosphere pressure penetrating to evacuation vessel and to the whole underpressure system.

By this the evacuation is finished, the pumps are regularly gaged and they can be run. The vacuum pump when running it takes a little water from circulation vessel which returns then back with the air to the circulation vessel through the exhaust piping.

During the pumps operation it becomes with the influence of different untightness, e.g. through the pumps packings, through the fitting packings, e.g. by the untightness in piping, to air sucking and by this to the vacuum decreasing. It causes the level decreasing till up to bottom up electrode or the bottom up level at the float station. The vacuum pump is again actuated to run and the level is raised up to the switching off limit.

Special suggestions to project

- 1) The height difference between the lowest water level in the sucking reservoir (well) and the pump axis (the suction branch axis) must not exceed the maximum allowed suction ability of the used pumps. Evacuation station would keep the vacuum but the pumps would not run reliably.
- 2) The diameter of expansion must be chosen in accordance with the hole in the bottom of appropriate evacuation vessel.
- 3) The whole evacuation and expansion pipings leading to evacuation vessel must rise to the vessel minimum with 2% rising.
- 4) The pumps suction piping need not be settled with sucking strainers. Only the protecting sieve is enough which is suitable for pumping of dirty water.
- 5) The circulation vessel using can be omitted if the continuously water flow is secured through the vacuum pump from another source (e.g. from water-mains). In this case the sewage water is led through the exhaust piping to the outlet.
- 6) When projecting it is important to find out if the evacuated pumps have suitable connection for the evacuation piping connecting. Connections must be located at least at the level of the highest inlet place to the impeller (e.g. in the level of the highest impeller diameter).
- 7) The evacuation piping joining on discharge pump chamber (e.g. spiral) eliminates the ability of automatic operation.
- 8) Electrode evacuation device is not enabled for muddy or the other way polluted water. The impurity settlements on electrodes can cause damaging of their regular function.

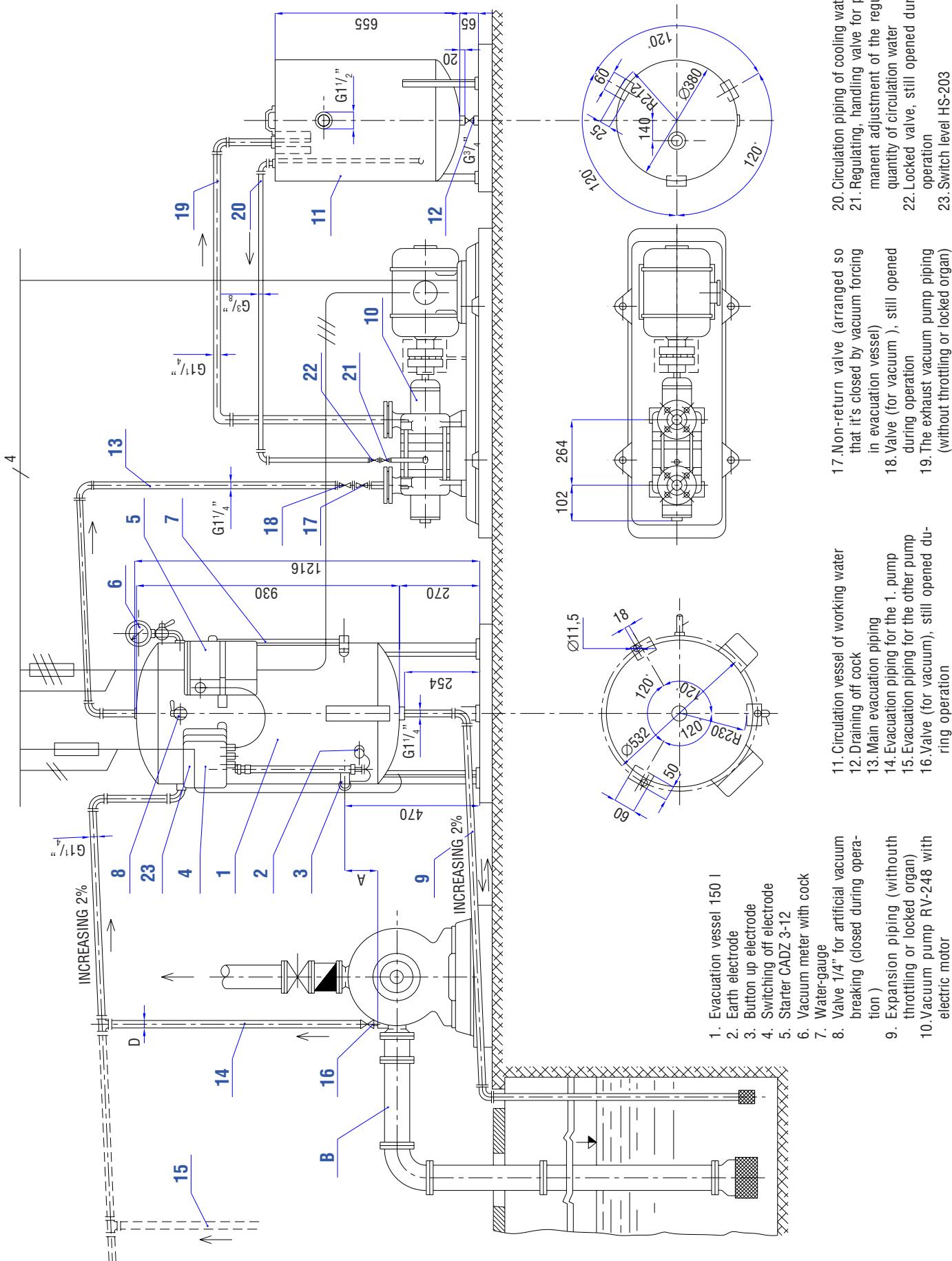
Evacuation Stations ES-RV, ESP-RV

Specification

Parameters	Vacuum pump	
	RV-248	RV-558
Maximum evacuation ability	7 m w. cl.	7 m w. cl.
Maximum air volume of evacuated chamber	3 cbm	5 cbm
Circulation vessel volume	50 l	50 l
Vacuum pump type	RV-248	RV-558
Motor output	3 kW	5,5 kW
Motor speeds	~ 1430 R.P.M.	~ 1430 R.P.M.
Evacuation pump size	150 l; 400 l	150 l; 400 l
Handling, regulating type	Electrode float	Electrode float

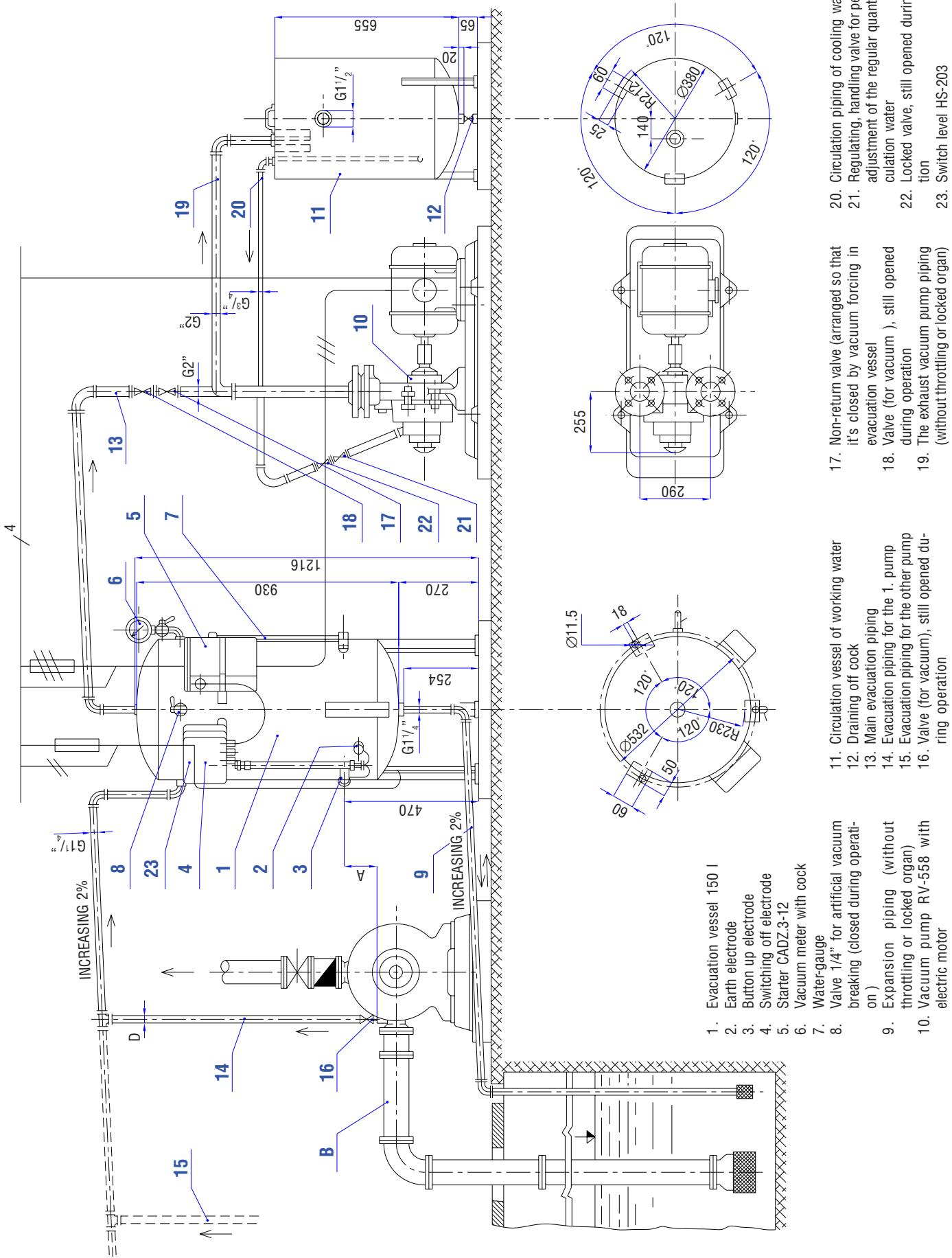
Evacuation Stations ES-RV, ESP-RV

Dimensional drawing- ES-RV-248/150



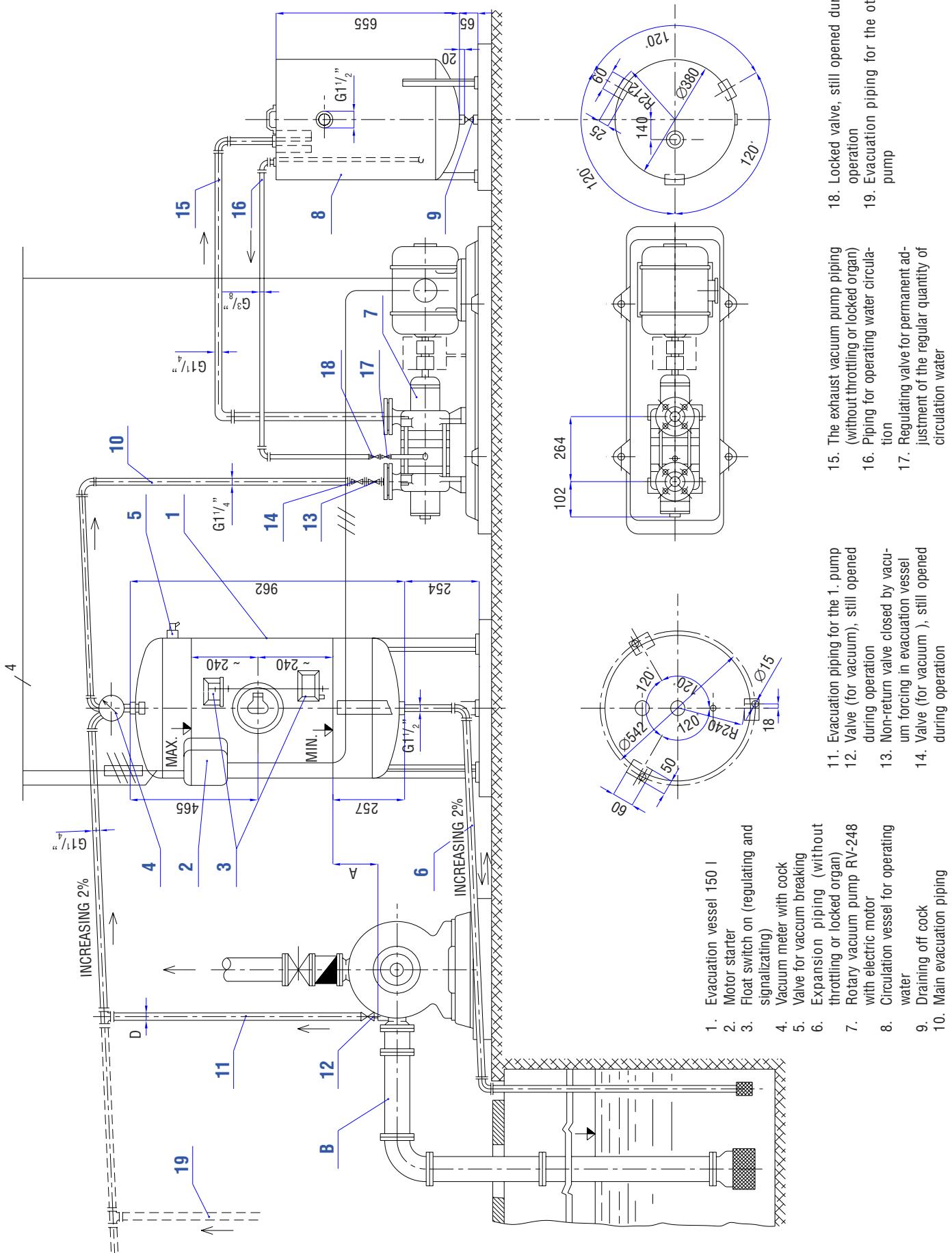
Evacuation Stations ES-RV, ESP-RV

Dimensional drawing- ES-RV-558/150



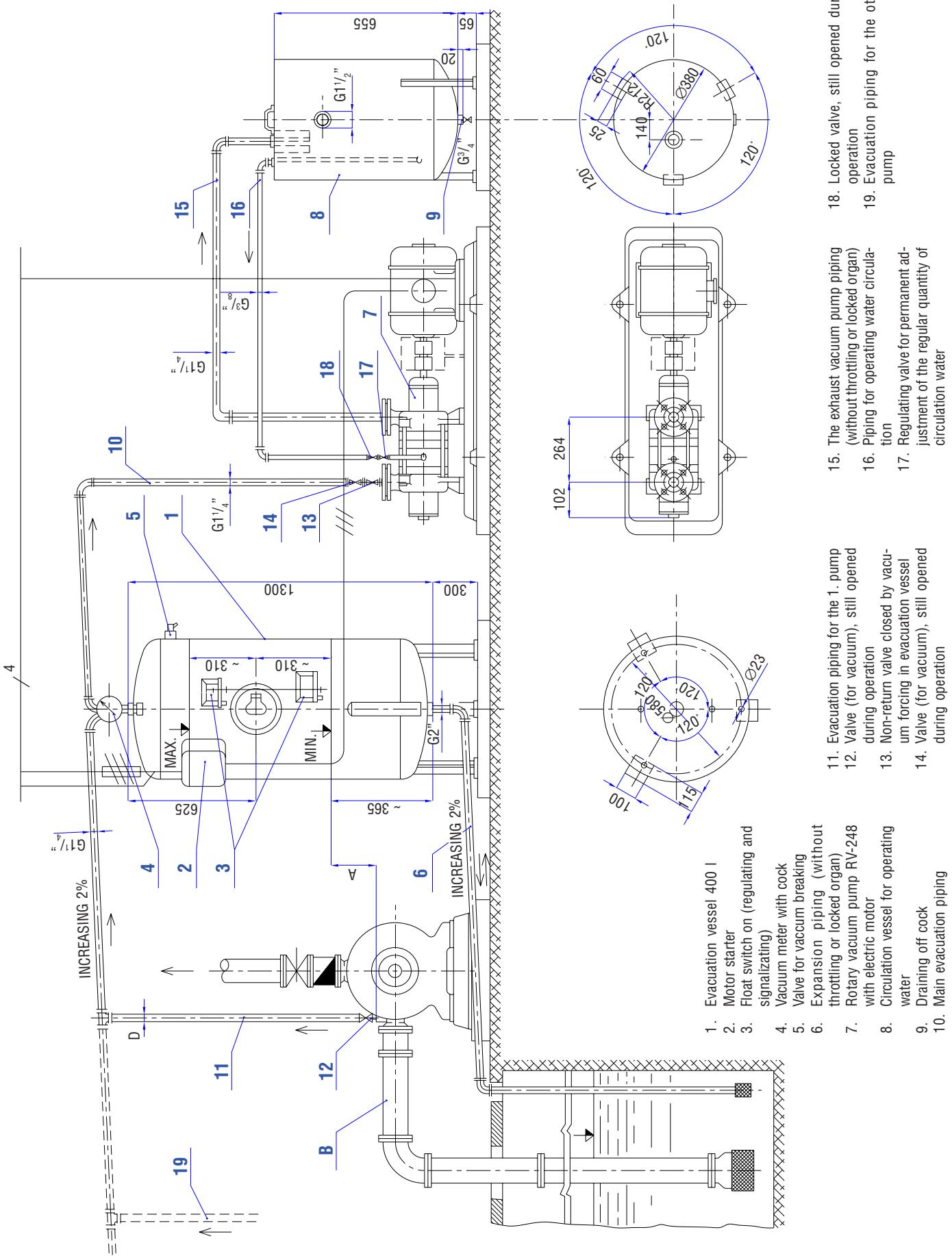
Evacuation Stations ES-RV, ESP-RV

Dimensional drawing- ESP-RV-248/150



Evacuation Stations ES-RV, ESP-RV

Dimensional drawing- ESP-RV-248/400



Evacuation Stations ES-RV, ESP-RV

Dimensional drawing- ESP-RV-558/400

