



LIQUID RING VACUUM PUMPS

Monoblock

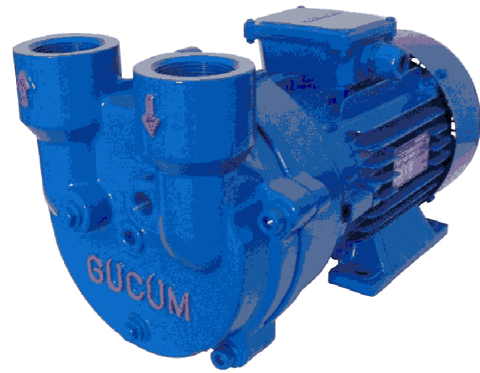
GMVP 145/050 – GMVP 145/080

Pressure Range : 33 - 1013 mbar
Suction Capacity : 25-115 m³/h

GÜCÜM Single Stage Liquid Ring Vacuum Pumps are used for pumping dry and wet gases, small quantities of liquid can be handled. They are used in the areas at which vacuum needed between the pressures 1013 to 33 mbar.

GÜCÜM Single Stage Liquid Ring Vacuum Pumps have the below features:

- Able to pump every kind of gas and vapours,
- Able to handle small quantities of liquid with gases,
- Oil-free, no need to lubrication,
- Pumped gas do not touch the oil,
- Minimum maintenance with high efficiency,
- No metallic contact of the rotating parts,
- Shaft not contact with the medium,
- Works quiet and reduced vibration,
- Nearly everywhere used with suitable material choices.



Service Liquid

During pump working, service liquid must be supplied to replenish the liquid ring and to cool the pump (generally water is used). The exhausted liquid could be use again after seperating the gas inside of it.

The direction of the rotation is clockwise, when looking from the motor on the pump.

TECHNICAL PROPERTIES

Properties	Unit	GMVP 145/050	GMVP 145/080
Motor Power	kW	2,2	4
Motor Speed	rpm	2900	
Max. Service liquid flow	lt/min	8	10
Max. Admissible pressure difference	Bar	1,1	
Max. Gas temperature	°C	100	
Max. Service liquid temperature	°C	70	
Max. Service liquid viscosity	mm ² /s	4	
Sound pressure level (at 80 mbar suc. pressure)	dB A	70 ±3	
Max. Service liquid density	kg/m ³	1200	
Max. Flow resistance of the heat exchanger	Bar	0,2	

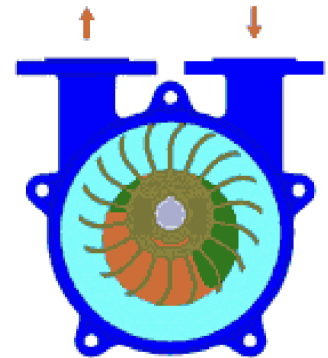
GENERAL INFORMATION

Liquid ring vacuum pumps are in class of positive displacement pumps. Using the expansion and reduction principle in the cell of impeller blade, they vacuum the gases with a liquid ring. If the appropriate liquid is selected (generally water) all the gases and vapors are moved. Maximum reached vacuum level of liquid ring vacuum pumps are limited by evaporation pressure of the working liquid.

Because of their working conditions are in liquid, they are useful for applications which include moisture like filtration, drying, refrigeration and distillation.

WORKING PRINCIPLES

Liquid ring vacuum pumps are suction pumps. While the moving part, (the impeller) which is mounted eccentric from the center axis of the pump casing. As the rotor and the impeller turn the liquid in the pump casing forced outwards by centrifugal force. A liquid ring forms along the body wall. Because of the eccentricity of the rotor the cells between pump casing and the rotor blades are filled with liquid at different amounts. The cells which are in the top position are completely filled with liquid and as the impeller rotates through half a revolution the liquid is replaced by gas. As rotation continues the liquid forces the gas through the discharge port. This cycle is repeated for each cell of the impeller and results in a steady flowing source of vacuum.



APPLICATION AREAS

Liquid ring vacuum pumps are used mainly in the food, chemical, plastic, textile, glass, pharmaceutical and brick and tile industry.

FOOD

- At deodorization and refinery applications during manufacturing edible oil
- Producing yoghurt, milk and juice
- Producing jam and candies
- At the macaroni, tomato paste and conserve factories to remove the vapour
- Sugar refinery
- Producing agricultural products, producing amyl
- Producing cigarettes and alcohol
- Eviscerating poultries

CHEMICAL

- Manufacturing detergent and soap
- Distillation and evaporation

PLASTIC

- Vacuum forming
- Manufacturing plastic pipe and profile

TEXTILE

- Yarn conditioning
- Drying textile products

BRICK AND TILE

- Manufacturing brick and tile

GLASS-CERAMIC

- Vacuum degassing and forming with vacuum

MEDICAL

- Hospital vacuum systems, sterilization

PAPER

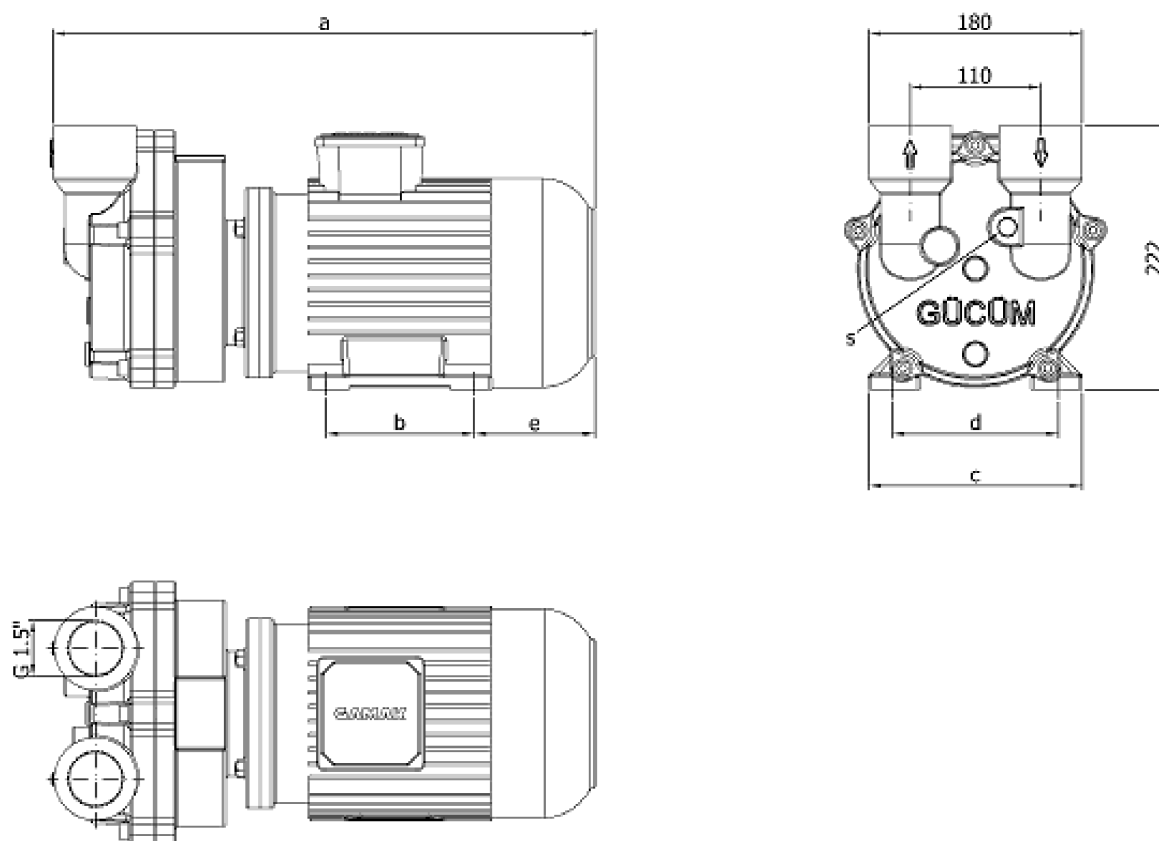
- Removing moisture from machine and drying paper mache
- Manufacturing egg trays

LEATHER

- Drying leather with vacuum

OTHER

- Vacuum impregnation
- Priming pumps
- Vacuum lifting

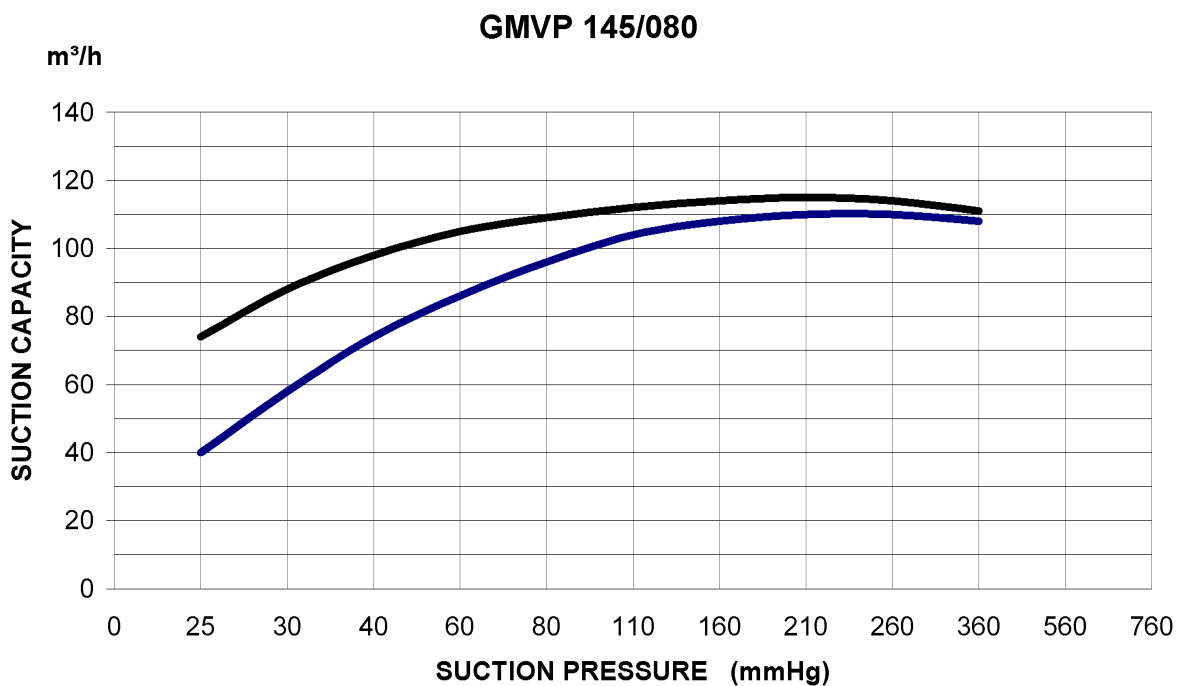
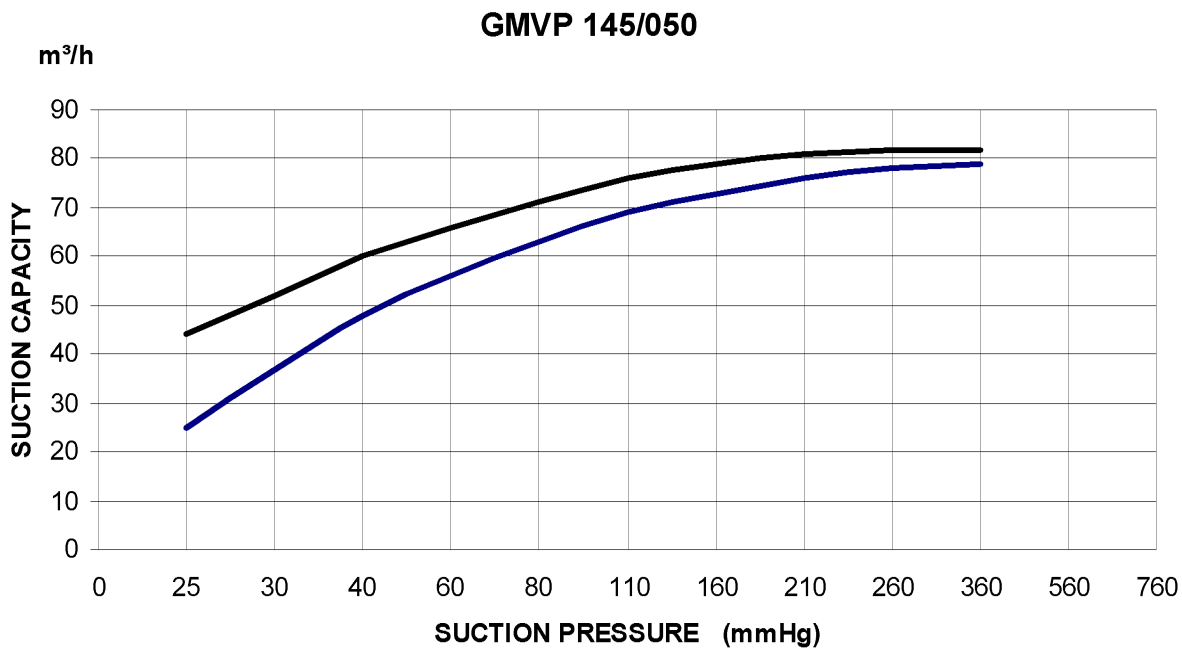


S: Service Liquid Inlet G 3/8"

TYPE	a	b	c	d	e	Weight kg
GMVP 145/050	460	125	180	140	120	32
GMVP 145/080	540	140	230	190	125	47

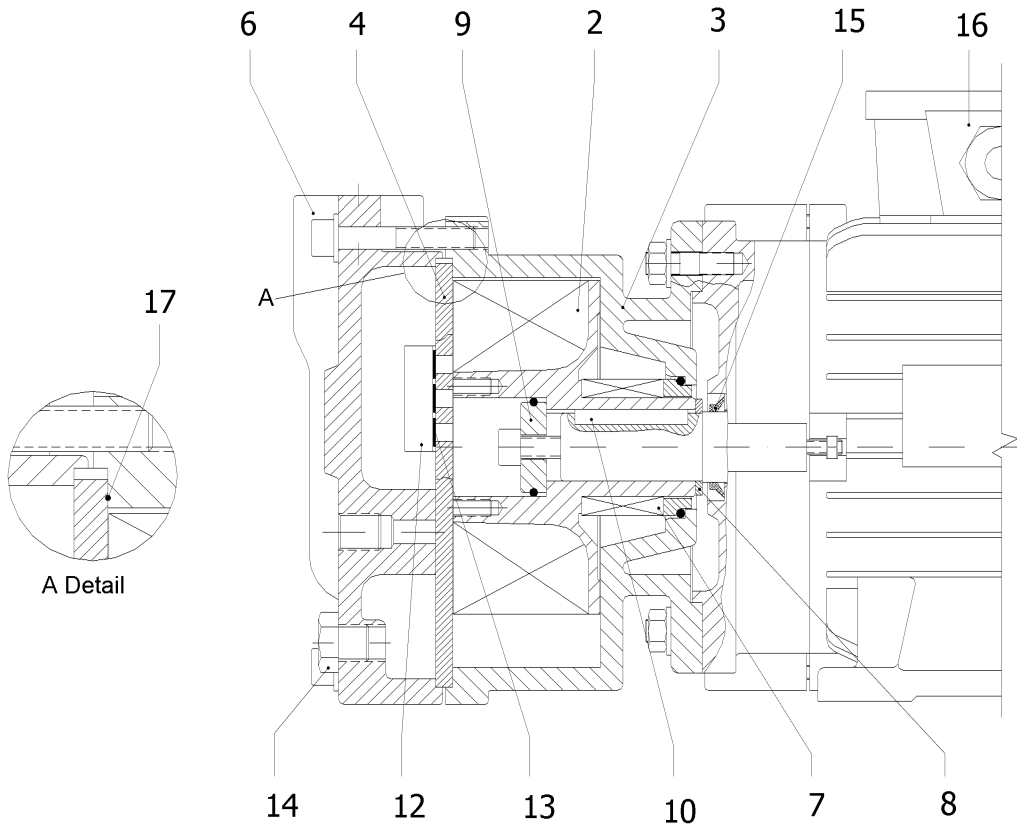
MATERIALS

Part Name	Standard Production	Stainless Steel
Suction & Discharge body	GG 25 Cast Iron	AISI 304-AISI 316 St. Steel
Plate	AISI 304 Stainless Steel	AISI 304-AISI 316 St. Steel
Body	GGG 40 Sph. Cast Iron	AISI 304-AISI 316 St. Steel
Impeller	G Cu Sn 9 Bronze	AISI 304-AISI 316 St. Steel
Mechanical Seal	Si. Carbide/Carbon/Viton	Cr Ni Mo Steel/Carbon/Viton
Valve	PTFE	PTFE



20 °C water vapour saturated air
 20 °C dry air

The capacities shown at the graph are for 760 mmHg atmosphere pressure and service liquid temperature 15 °C .Tolerance of the curves are 10% .



No	Part Name
2	Impeller
3	Body
4	Plate
6	Inlet and Outlet Casing
7	Mechanical Seal
8	Impeller Spacer
9	Impeller Cover
10	Key
12	Valve Cover
13	Valve
14	Plug
15	Gasket
16	Electric Motor
17	Paper Gasket

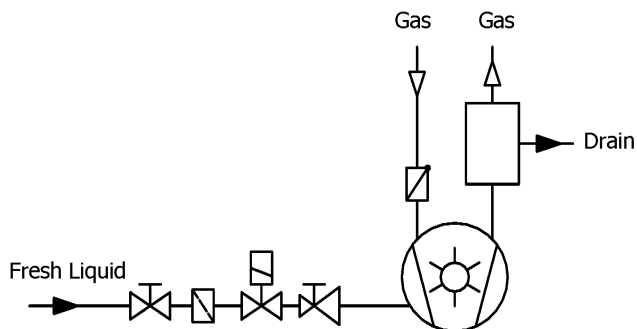


SERVICE LIQUID SYSTEMS

Pump must supplied with service liquid to remove the heat created during compression of the gasses and to make the liquid ring uninterrupted. Generally water is selected for service liquid. To have better efficiency from the pump service liquid must be as cool as possible. Below is some service liquid systems.

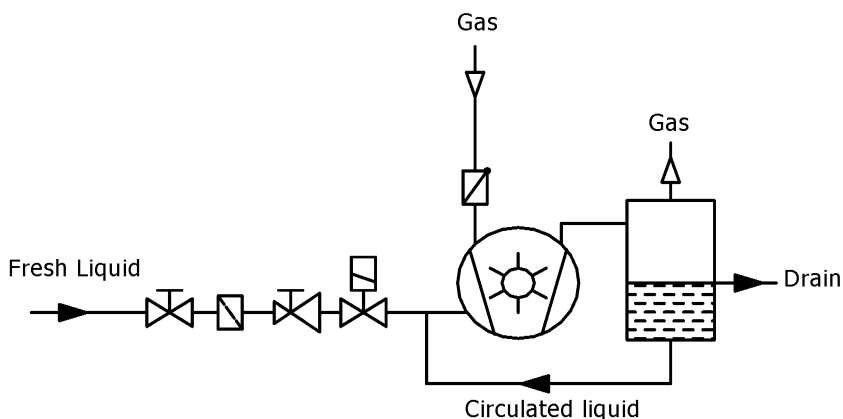
a) Once Through - No Recovery System :

Service liquid is not used again. All the required service liquid is supplied from a plant. If the supplied service liquid is pressurized pressure regulator must be used to regulate the pressure before liquid entering the pump.



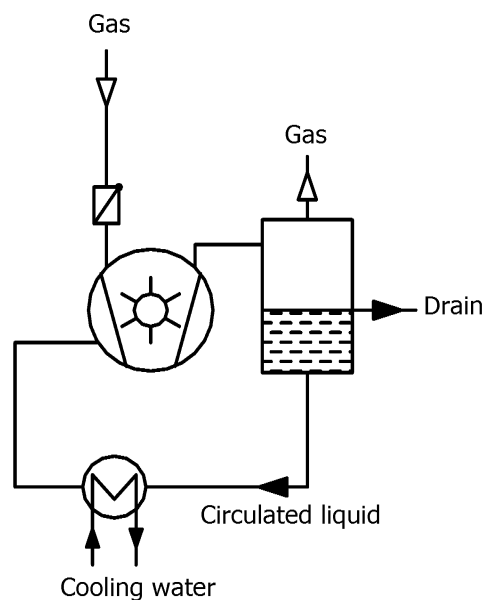
b) Partial Recirculation :

Service liquid is the mix of the liquid from the plant and from separator. The amount of the supplied liquid from the plant is adjusted according to the discharged liquid temperature.



c) Total Circulation :

At this system all the liquid separated from the gas in the separator tank is used as service liquid again. Heated liquid inside the pump must be cooled by the heat exchanger before entering the pump.



Vacuum Pump



Strainer



Separator Tank



Pressure Reducing Valve



Non-return Valve



Solenoid Valve



Shut-off Valve



Heat Exchanger