



## Q&A

### Q1. Is negative rotation of gear pumps possible?

A1. In principle, operation to reverse the specified direction of rotation is not possible. If negative rotation is performed, the leakage amount from the seal section, vibration, noise, current value, and horsepower may increase.

Also, if the gear pump is equipped with a built-in safety valve, the safety valve does not work. Consult us if negative rotation is essential.

### Q2. Do gear pumps need priming water?

A2. If enough liquid is drawn into the pump, priming water is not necessary.

### Q3. Can gear pumps be operated with water?

A3. For plain metal (inner shaft bearing) gear pumps, because water is not lubricating, parts may wear quickly, leading to damage. Therefore, gear pumps should not be operated with water. Consult us before you operate a gear pump with water. For outer metal (outer shaft bearing) pumps, because the shaft bearing is not wetted, it is not a problem. However, consult us in advance, since wear or corrosion may occur depending on the materials of the gear.

### Q4. Is idling of gear pumps possible?

A4. No, because this would cause rapid wear of parts.

### Q5. Can high-temperature fluid be pumped?

A5. We can manufacture gear pumps capable of pumping fluid up to 350 °C by using appropriate materials, structure, or equipment such as a jacket. Also, for gear pumps for which "ambient temperature" is specified for the pumped liquid, liquid of up to approximately 90 °C can be pumped in principle.

However, if possible, preheat the pump before operation, or raise the temperature of the pumped liquid gradually.

### Q6. Can gear pumps substitute valves?

A6. No. Although we strictly manufacture the clearances inside the pumps, it is not possible to stop the pumped liquid completely.

### Q7. Do gear pumps generate pressure?

A7. Gear pumps are not machines that generate pressure. The specified pressure of a pump represents the maximum pressure (lifting height) that the pump can use. If a pressure indicator is installed on the discharge side of the pump, the indicated pressure shows the total resistance value of the piping on the discharge side of the pump; it is not pressure generated by the pump itself.

**Q8.** What are safety valves for?

A8. Safety valves may be built into the pump or independent, which are installed in the piping on the discharge side. In principle, both are emergency devices to protect pumps, which are activated when an operation exceeding the specified pressure occurs to prevent overloading of pumps.  
Please do not use safety valves, especially built-in safety valves, for adjusting the pressure or flow rate.  
Consult us if you want to use a safety valve constantly as an escape valve or a flow control valve, which returns the pumped liquid to the suction side. See "Basic Precautions in Using Gear Pumps" on page 6, and "Safety Valves" on page 13 of the Instruction Manual.

[>> Instruction Manual](#)

**Q9.** Is there a problem if there is pressure from the suction side?

A9. The pressure from the suction side piping plays a significant role in the balance of the gears and the amount of leakage from the seal section.  
Therefore, if such pressure is not considered in the specification, it will cause a problem. Consult us for details.

**Q10.** When installing a pump, what should the flow rate of the suction side piping be?

A10. We recommend that you plan the flow rate in the pipe to be in the range of approximately 0.6-1.3 m/s.

**Q11.** What are the suction capacities?

A11. In general, gear pumps have high suction capacities. The gear pumps of Daito Kogyo have the following suction capacities, for each kind of shaft seal (reference values).

Grand packing	-----	Approximately -5 m
Oil seal	-----	Approximately -5 m
Mechanical seal	-----	Approximately -7 m
Double mechanical seal	-----	Approximately -9.5 m

Seal-less ----- Approximately -9.5 m

(Suction capacities differ depending on the pump type or rotation speed. Consult us for details.)

Since the pumps of Daito Kogyo have high suction capacities, they deliver outstanding performance under demanding suction conditions such as a vacuum suction line.

\* Our sales engineers will select the type. Please feel free to consult us for details.

**Q12.** Could discharge pressure retained in the pump cause liquid to leak during operation?

A12. The gear pumps of Daito Kogyo have a depressurization mechanism that prevents the discharge pressure in operation from becoming internal pressure of the shaft seal section. During operation, discharge pressure will not become internal pressure of the shaft seal section, causing leakage. However, when the pump is stopped, static pressure may cause seal leakage. Consult us for details.

**Q13.** Are products approved for high-pressure facilities available?

A13. The MC seal-less gear pump is suitable. Please consult us for details.

**Q14.** How can water hammer be prevented?

A14. When pumps stop or start, due to the slight time difference from opening/closing of the valves in the piping on the discharge piping, momentary containment operation may occur, causing a local impact pressure or water hammer. This can cause damage to the pressure indicator, liquid leakage from the shaft seal, etc., vibration/noise of the piping, or damage to the pump. To prevent water hammer, set the opening/closing of the electromagnetic valve, etc. so that when the pump stops, the valve closes after the motor stops (note that the motor rotates for several seconds due to inertia after the power is turned off), and when the pump starts, the motor will start rotating after the valve opens.