

Version : 2022 Rev.0

SH Scientific High Vacuum System

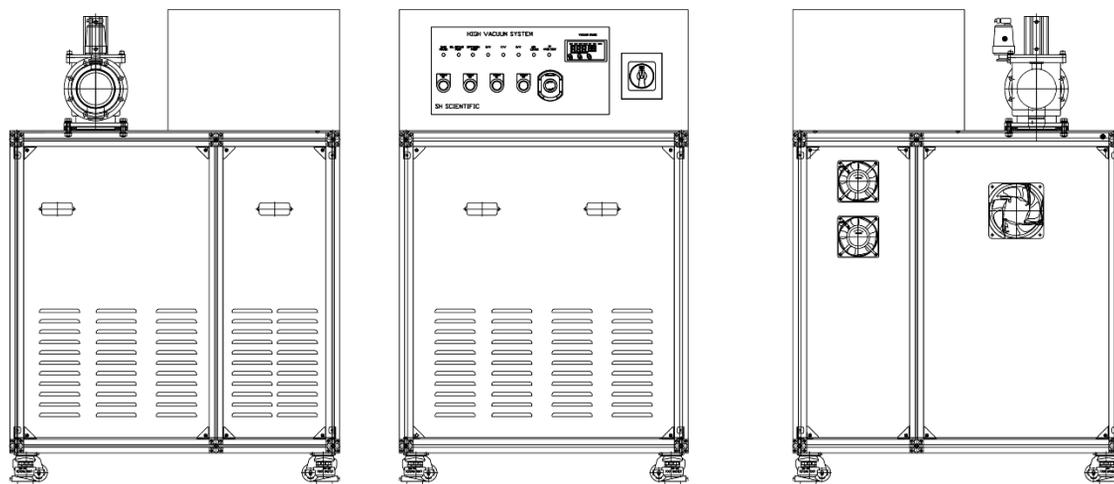


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1. Specification

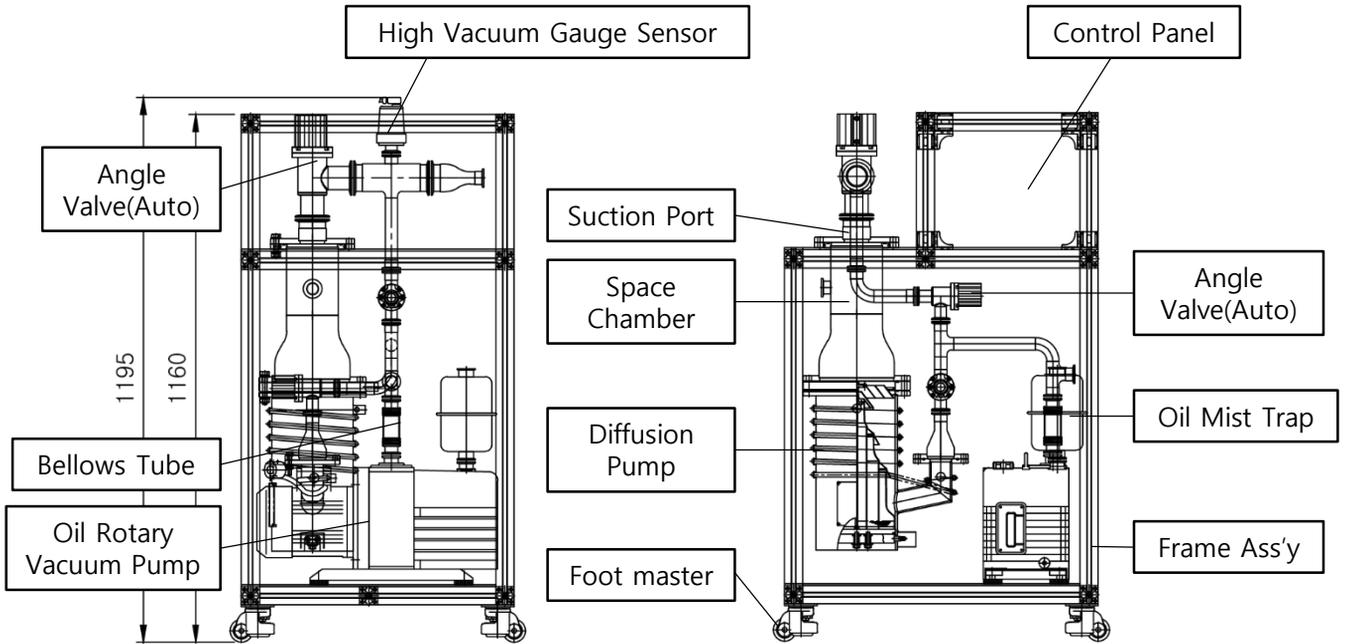
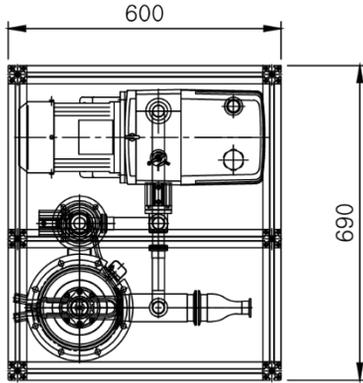
High Vacuum Pump | SH-HV40/40T/100



<SH-HV40T>

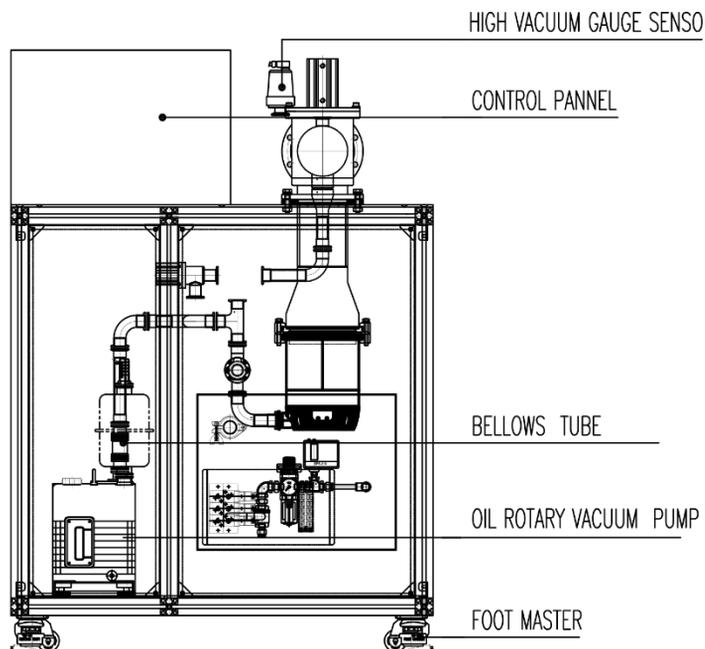
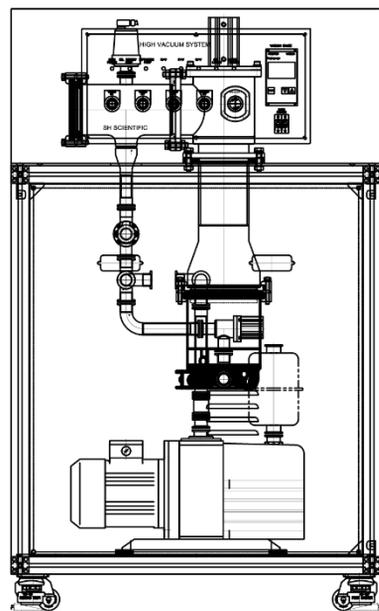
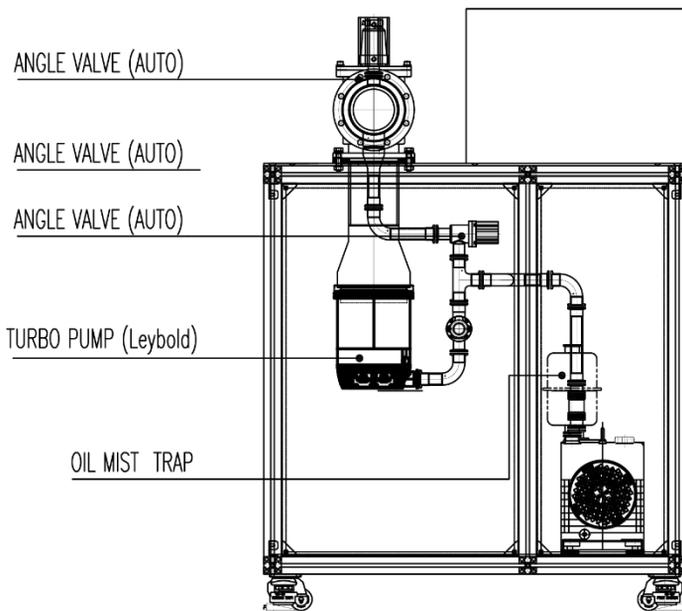
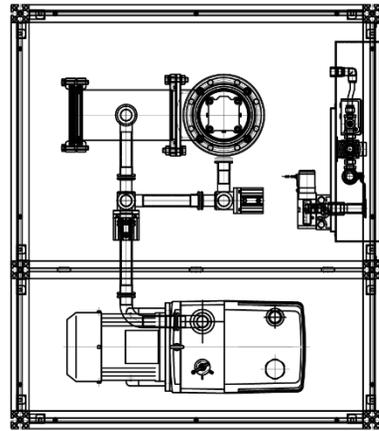
Model	SH- HV40	SH- HV40T	SH-HV100
Type	6" Diffusion & Oil Rotary	6" Turbo & Oil Rotary	8" Diffusion & Oil Rotary
Pumping Speed(50/60Hz)	312L/min		960L/min
Ultimate Total Pressure	2.6x10 ⁻⁴ Pa(2.0 x 10 ⁻⁶ Torr)	4.6 x 10 ⁽⁻⁵⁾ Pa (3.5 x 10 ⁽⁻⁷⁾ Torr)	2.6x10 ⁻⁴ Pa(2.0 x 10 ⁻⁶ Torr)
Power Supply	220V 50/60Hz, Single Phase		220V 50/60Hz, 3 Phase
Power Rating	1.75KW	1.3KW	3.8KW
Vacuum Port & Exhaust	Vacuum : KF25 , KF40 , KF50 / Exhaust : KF25	Vacuum : 4" (ISO 100) / Exhaust Port KF25	Vacuum : 4 inch (ISO 100) / Exhaust : KF40
Air In Port	6 ϕ One Touch Type (Pressure required at least 5kg)		
Water In/out Port	12 ϕ One Touch Type		
Diffusion Oil Capacity	0.34 L	-	0.5 L
Rotary Oil Capacity	0.9 L ~ 1.5 L		3.3 L ~ 4.5 L
Ambient Temperature	5~40°C		
Noise	≤58dB		≤62dB
Dimensions (WxDxH)	600x760x1160mm 23.62x29.92x45.66"	840x960x1372mm 33.07x37.79x54.01"	810x960x1310mm 31.89x37.79x51.57"
Weight	145Kg	249Kg	215Kg

2. The Outward



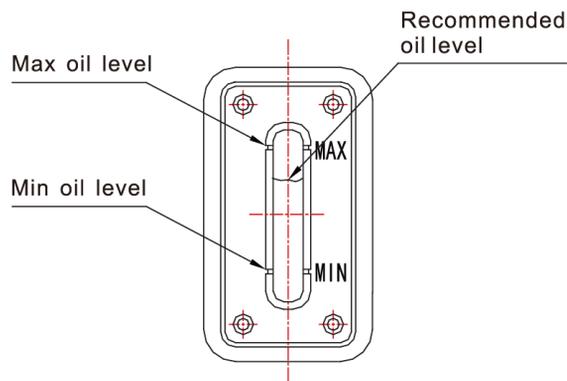
<SH-HV40>

<SH-HV40T/100>



3. Installation

1. Connect cooling fluid supply to a cooling fluid port on left side of the system.
2. Connect air supply to an air port on the left side of the system. ($\geq 0.3\text{MPa}$, $3\text{kg}/\text{cm}^2$)
3. Make sure if oil is filled at the diffusion pump (340cc).

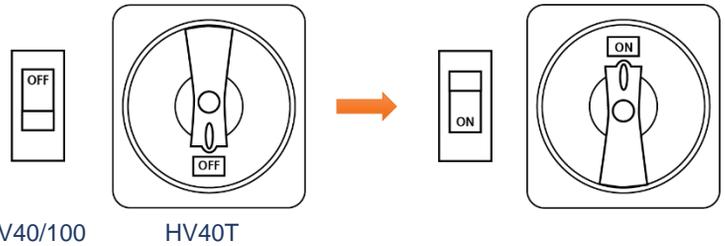


4. Make sure if oil is filled at the oil rotary vane pump as above.

4. Operation

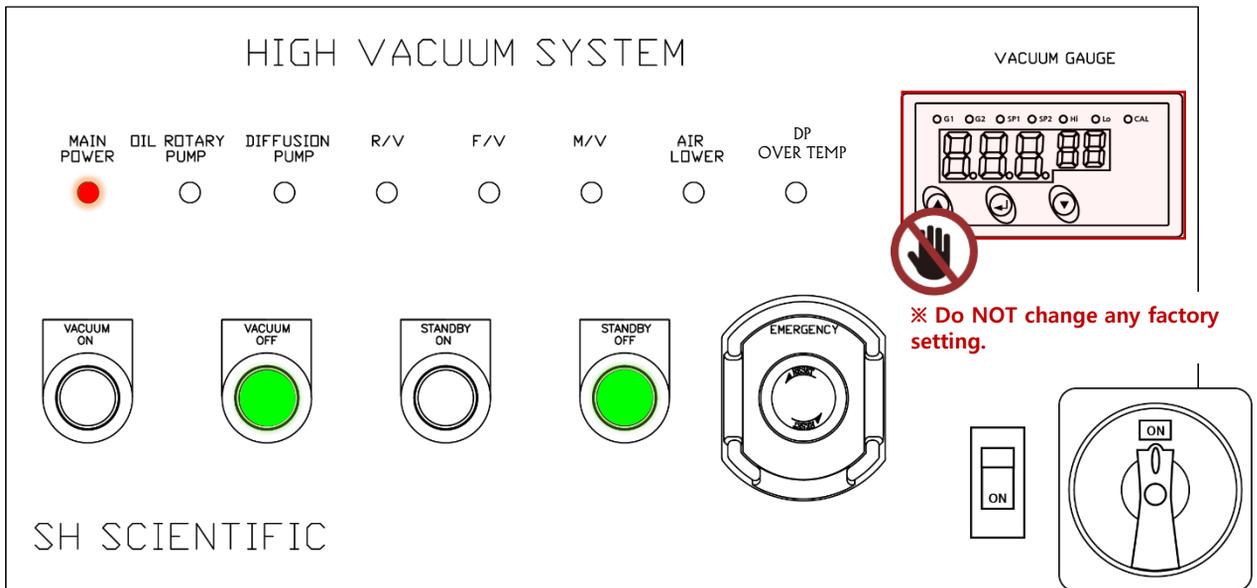
(1) Operation Standby

Turn on Main Power.

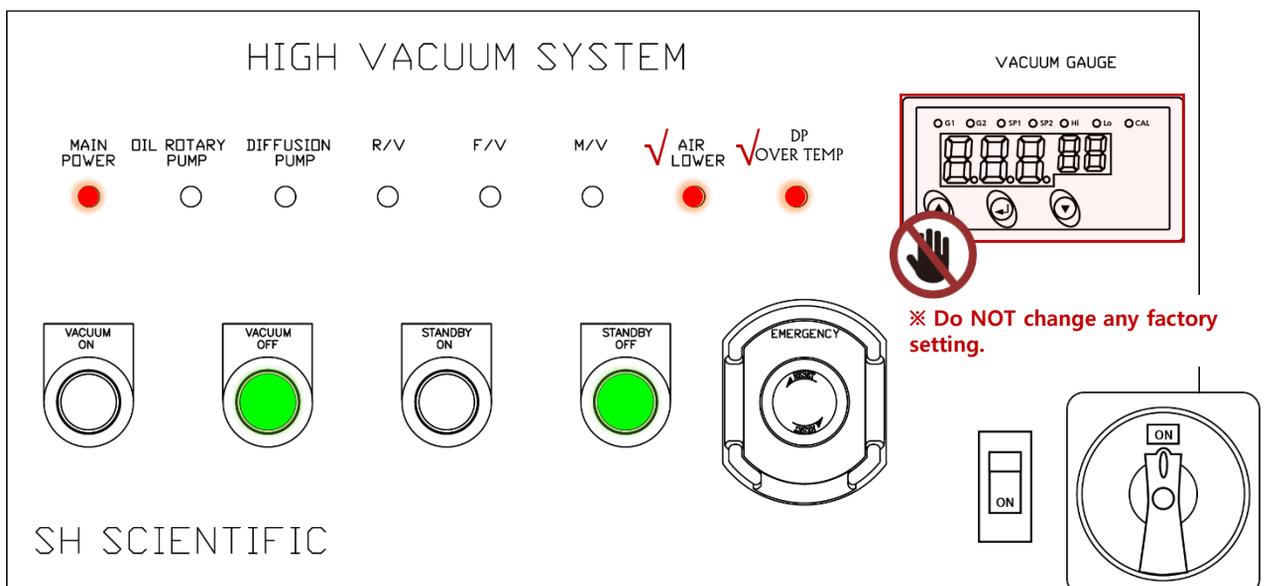


MAIN POWER : HV40/100

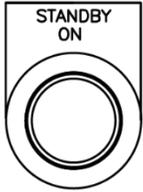
HV40T



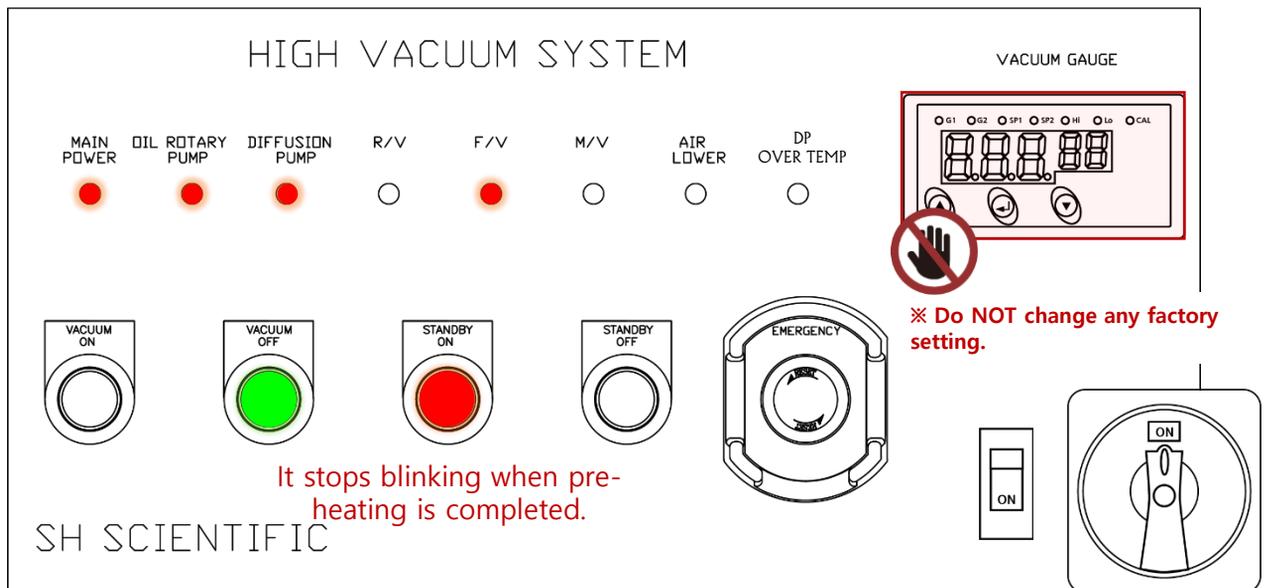
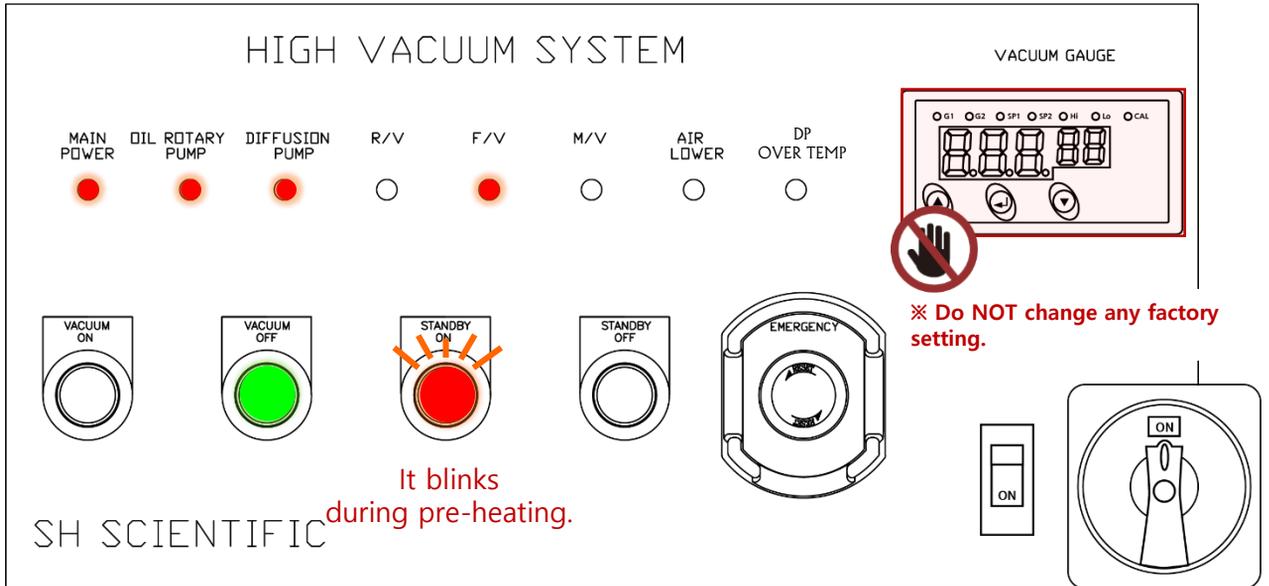
※ System will not work if AIR Lower or DP Over TEMP is ON.
Make sure if the supply is well connected and oil is filled as advised.



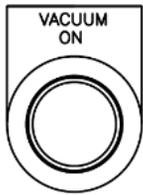
(2) Pre-Heating



Turn on Standby ON and the diffusion pump will be pre-heated for 20 minutes.

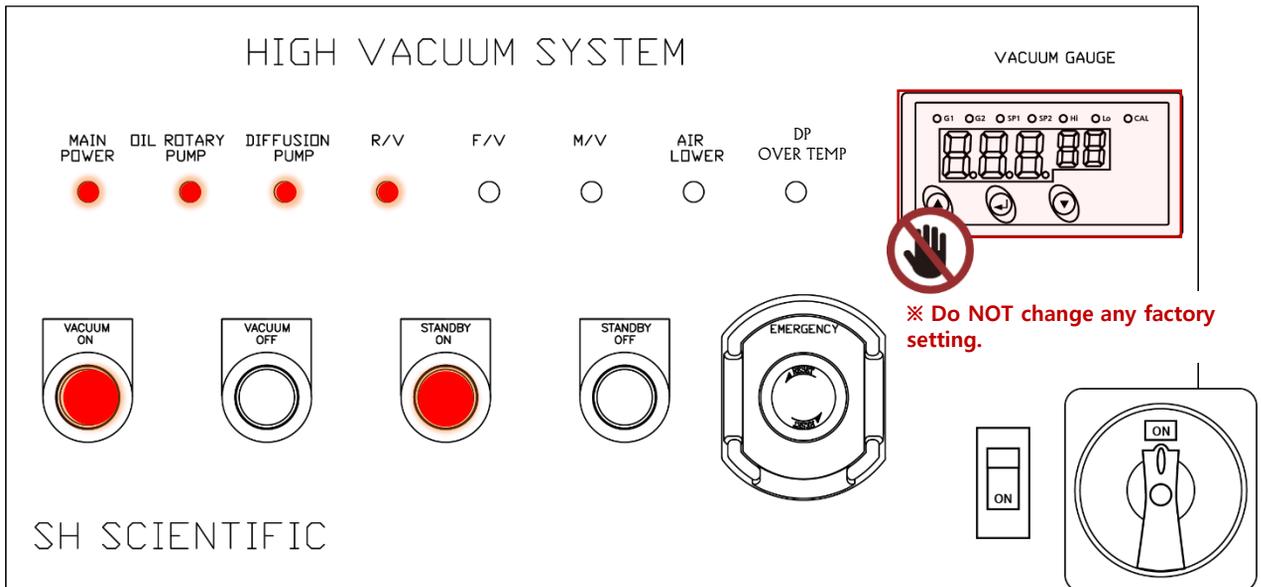


(3) Fine vacuum stage



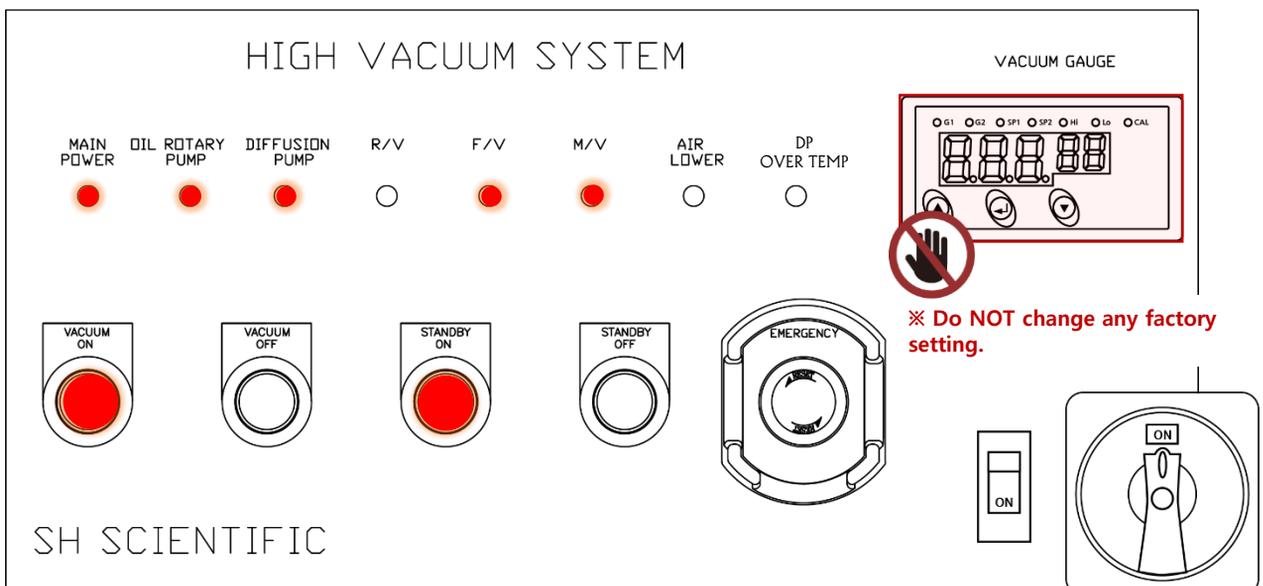
Turn on Vacuum ON and vacuum level will be displayed.

It will reach a fine vacuum stage (10^{-2} torr).

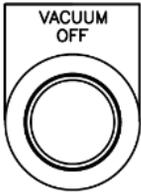


(4) High vacuum stage

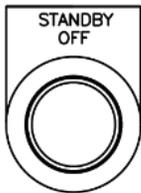
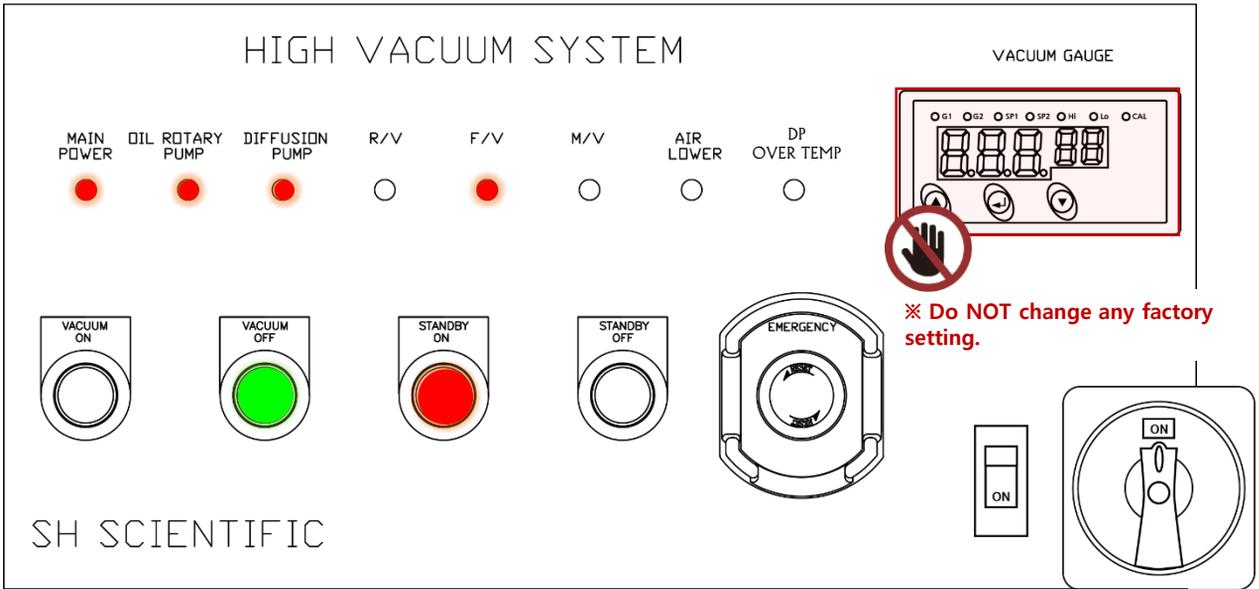
It will enter into high vacuum stage once it reaches a fine vacuum stage (10^{-2} torr).



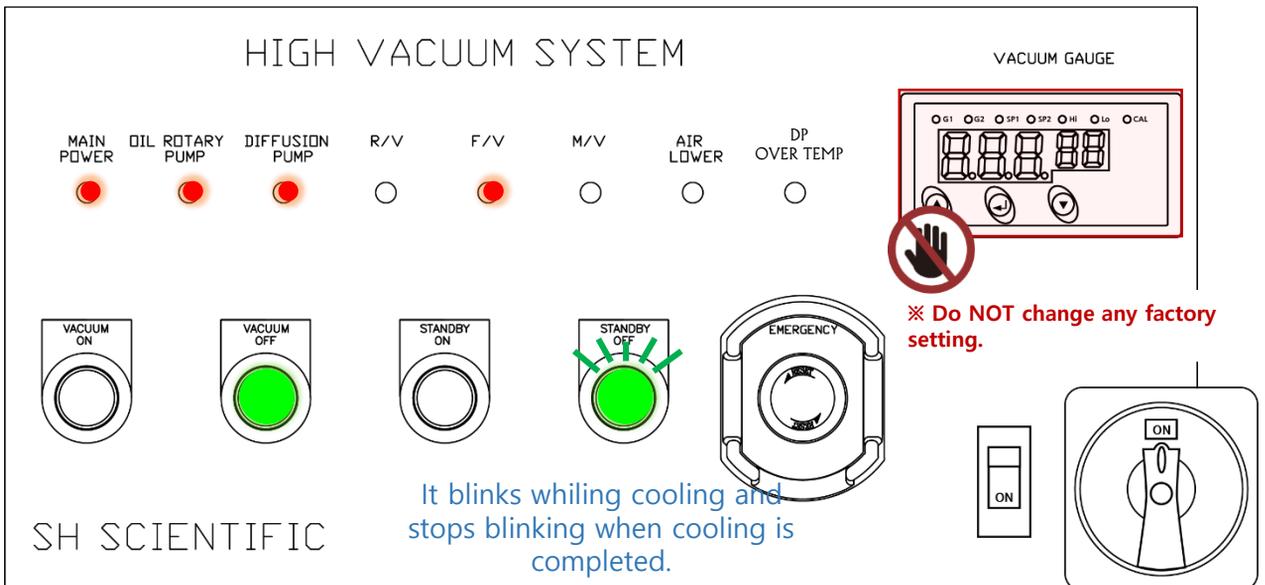
(5) Ending vacuum and cooling



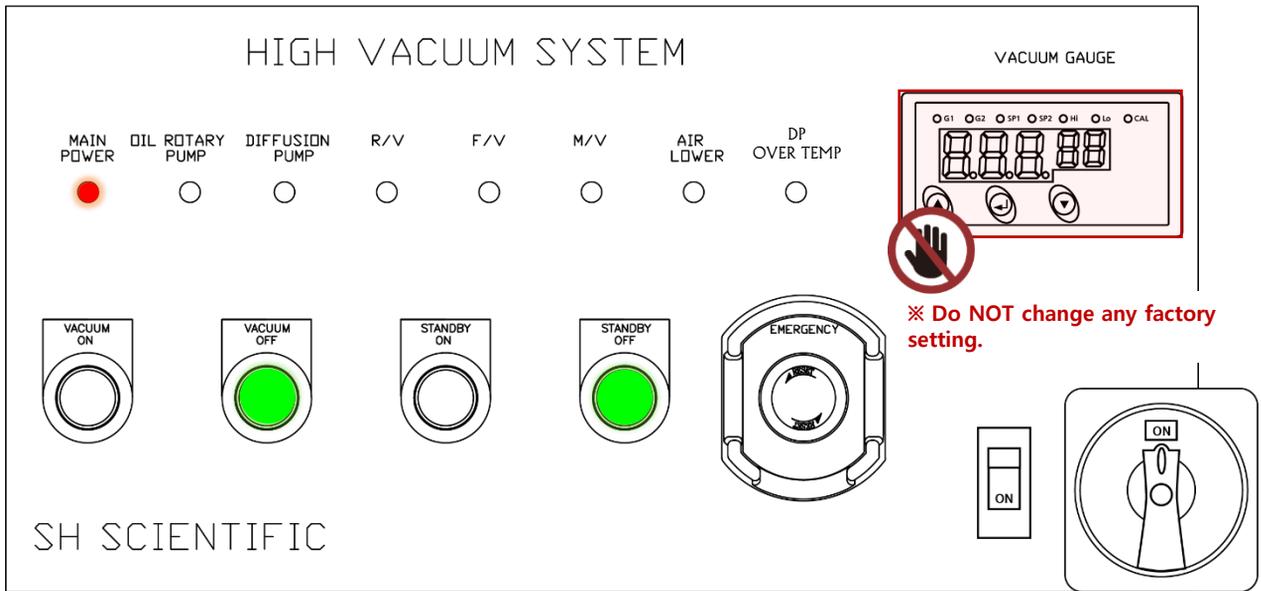
Turn on Vacuum OFF and it will end vacuum operation.



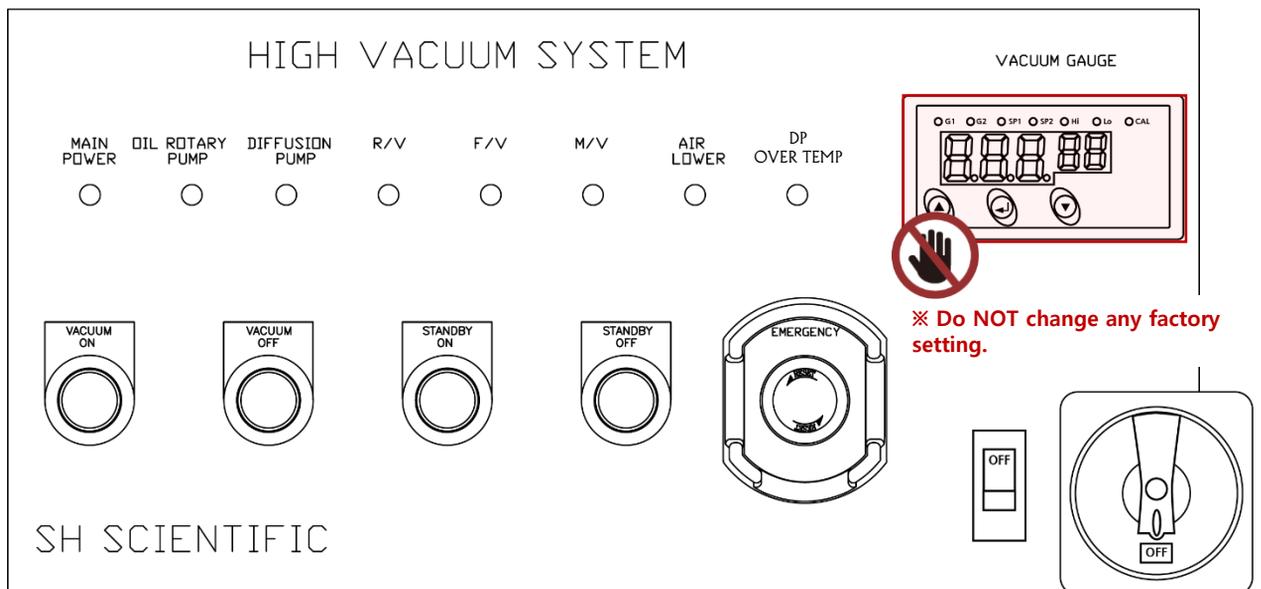
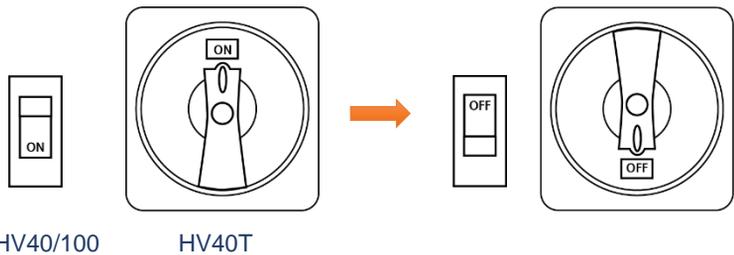
Turn on Standby OFF and cooling will end in 20 minutes.



(6) End system operation



Turn off Main Power.



5. Troubleshooting

Fault	Possible reason	Remedy
System doesn't start	Air and cooling water supply or connection	Check the connection and supply.
Pump cannot start	Wiring is malfunctioning.	Check and repair wiring.
	Operation voltage is abnormal.	Make sure the voltage is within rated voltage's tolerance of $\pm 10\%$.
	Motor is malfunctioning.	Replace the motor.
	Overload protector is active.	Check the ambient temperature.
	Oil temperature is below 10°C.	Increase the ambient temperature.
	Pump is jammed.	Repair the pump.
	Out of operating for long.	Repair the pump.
	Oil is too viscous.	Change the oil.
	Exhaust filter or exhaust line is clogged.	Replace the filter or clean the exhaust line.
	Pump inner parts are damaged.	Repair the pump.
Pump cannot reach ultimate pressure.	Vacuum system configuration is unreasonable.	Choose a suitable pump.
	Vacuum system leak.	Check the system.
	Measuring technique or gauge is unsuitable.	Use correct measuring technique and gauge. Measure the pressure directly at pump's intake port.
	Oil filter is obstructed.	Change the oil filter.
	Oil is unsuitable.	Change the oil.
	Oil channel is obstructed.	Clean the channel.
	Oil is insufficient.	Add the oil to the level as requested.
	Anti-suck back oil valve is malfunctioning.	Repair anti-suck back oil valve.
	Intake line is dirty.	Clean vacuum lines.

Fault	Possible reason	Remedy
Pumping speed is too low.	Intake port line is clogged.	Clean the intake port line.
	Connecting lines are too narrow or too long.	Use adequately wide and short connecting lines.
	Exhaust line is clogged .	Keep exhaust port line unobstructed.
	Oil mist filter is clogged.	Change the oil mist filter.
	Anti-suck back oil valve is malfunctioning.	Repair anti-suck back oil valve.
Noise is abnormal	Operation voltage is abnormal.	Check the power supply, switches and wiring connection. Make sure the voltage is within rated voltage's tolerance of $\pm 10\%$
	Foreign matters entering into the pump.	Repair the pump.
	The oil level of the pump is too low.	Add the oil to the level as requested.
	The pump inner parts are damaged.	Disassembly and replace the parts.
Pump gets hotter than usually observed.	Poor ventilation.	Improve ventilation environment.
	The fan is damaged.	Change the fan.
	Pumped gas temperature is too high.	Add cold trap at intake port.
	The oil filter or exhaust line is clogged.	Replace oil filter or clean the exhaust line.
	Oil is unsuitable.	Change the oil.
	Oil channel is obstructed.	Clean the channel.
	Oil is insufficient.	Add the oil to the level as requested.
	The condenser is dirty.	Clean the condenser.
	Ambient temperature is too high.	Reduce ambient temperature.

Fault	Possible reason	Remedy
Oil in the intake line or in vacuum vessel.	Oil comes from the vacuum system.	Check the vacuum system.
	Anti-suck back valve spring is obstructed	Replace anti-suck back valve spring.
	Anti-suck back valve plate is obstructed.	Replace anti-suck back valve place.
Vacuum pressure in system rises too fast when pump stops.	Oil level is high.	Drain the excess oil.
	Vacuum system leak	Check the system.
	Anti-suck back oil valve is malfunctioning.	Repair anti-suck back oil valve.
Too much oil in the exhaust port.	Too much oil in the pump.	Drain some oil.
	Continuous operation under high pressure in the intake port.	Shorten exhaust time.
	Oil mist filter is obstructed.	Replace oil mist filter.
Sealing surface leak	The seal is damaged.	Replace the seal.
	Seal ring is damaged.	Replace the seal ring.

