



# INTELLIGENT VACUUM PUMP


## INSTRUCTION



**ST-2BM ST-25**  
**ST-4BM ST-45**



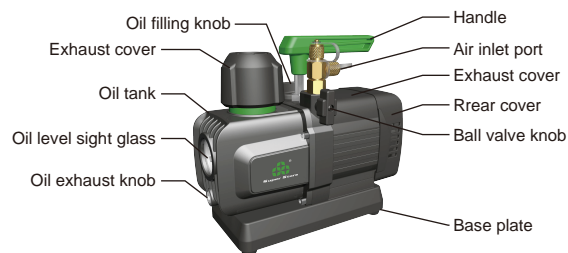
**PREMIUM REFRIGERATION TOOL SERIES**

Thanks for purchasing  products. for safe and correct using, please read this user instruction carefully before using the product.

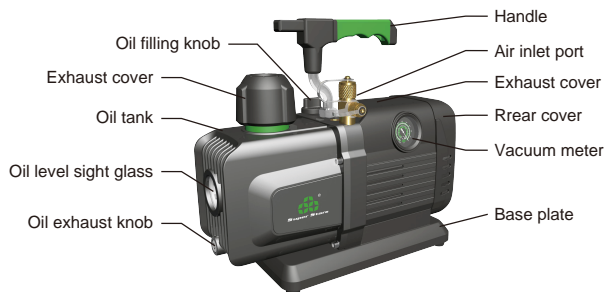
## STRUCTURAL DRAWINGS, TECHNICAL PARAMETER, APPLICATION RANGE, FEATURE

### STRUCTURAL DRAWINGS

To help you recognize the  components of the vacuum pump, we provide visual structural drawings.



ST-2BM, ST-2S Appearance




ST-4BM, ST-4S Appearance

### TECHNICAL PARAMETER

Model No.	ST-2BM	ST-2S	ST-4BM	ST-4S
Power	220V/60HZ			
Flow rate	5.4m³/h		9m³/h	
Ultimate pressure	2Pa	8Pa	2Pa	16Pa
Oil capacity	240ml	300ml	720ml	890ml
Weight	3.5kg	3.0kg	5.3kg	4.7kg
Inlet port	1/4" Flare		1/4" & 3/8" Flare	

### APPLICATION RANGE

 Single, dual stages intelligent vacuum pumps are basic equipment that used for evacuate sealed containers, refrigerant equipment maintenance (refrigerants including CFC, HCFC, HFC, such as R12/1234YF etc), printing machinery, vacuum package, gas analysis, thermoforming industries and also use as backing pump of all kinds of high vacuum equipments.

### FEATURE

1. Integral cylinder block structure, high precision and limit vacuum pump.
2. Forced oil pump lubrication, ensure high reliability.
3. Large oil window design, prevent oil shortage.
4. Sparkless design, more secure.
5. Use brushless DC motor, lighter, smaller, more convenient.

### PREPARATION WORK AND SAFETY WARNING BEFORE USING PUMP

#### THE PREPARATION WORK BEFORE USING THE PUMP

(1) Check oil level before using the pump;


(2) Oil filling :

1. Screw out the oil filling knob, fill oil to the middle of sight glass. **Note:** don't fill too fast and avoid oil spill.

2. Connect the power supply, turn on the start switch, and the pump starts to run. After running for about 1 minute, check the oil level in the oil sight glass. If the oil level is too low, shut down and refuel, and finally screw in the oil knob.

**Note:** when the pump is running, the oil level should be kept at the position shown in the diagram. If the oil level is too low, the performance of the pump will be reduced. If the oil level is too high, the oil mist will be emitted.



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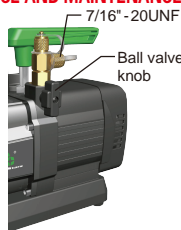
## SAFETY WARNING

- \* In order to avoid personal injury, please read and follow the instructions carefully;
- \* Wear protective goggles when working with refrigerant;
- \* Do not contact the refrigerant directly to prevent personal injury;
- \* Because the pump surface will be hot when working, please do not touch the oil tank or motor housing during operation.

## OPERATION GUIDE, SAFETY WARNING, MAINTENANCE AND MAINTENANCE

### OPERATION GUIDE

1. When using ST-2BM and ST-2S vacuum pumps, first remove the air inlet cap (7/16"-20UNF interface side, as shown in the figure), connect the pumped container (pay attention to check whether the thread at the pipe interface is consistent with the inlet thread), all pipes should be short, and the ball valve knob should be opened (the direction shown in the figure is the open direction, and right turn 90° to close).
2. When using ST-4BM, ST-4S vacuum pumps, first remove the air inlet cap (vacuum pump is a three-way joint, and one of the ports can be connected according to the actual situation), connect the pumping container (pay attention to check whether the thread at the pipe interface is consistent with the thread at the air inlet), and all pipes should be short. After starting the vacuum pump, the solenoid valve opens automatically, and the vacuum pump is connected with the container. When the power switch is turned off, the solenoid valve closes automatically, and the connection between the vacuum pump and the container is disconnected.
3. Then check whether the air inlet connection and all the pipelines are sealed and reliable, and there shall be no leakage.
4. When the pump is finished, close the valve between the pump and the equipment to be pumped.
5. Remove connection pipe.
6. Finally, tighten the air inlet cap and exhaust cap (except the model without exhaust cap) to prevent dirt or floating particles from entering the pump chamber.  
Tips: The pump should be paid attention to the change of oil level in use. When the oil level in the oil sight glass decreases to below the middle line of the oil level line, please fill the vacuum pump oil in time.
7. ST-2BM and ST-2S vacuum pumps have built-in unidirectional cut-off parts, which can prevent the vacuum pump oil from flowing back after the pump stops running.




8. After ST-2BM and ST-2S stop operation, due to the influence of air diffusion movement, the vacuum degree in the pumped container will decrease. It is recommended that the user close the ball valve knob in time after the pump stops operation. When ST-4BM, ST-4S stop running, the internal solenoid valve automatically closes.

## SAFETY WARNING


1. The air inlet and the atmosphere are not allowed to operate for more than 3 minutes;
2. The ambient temperature of this product is 5-40 °C ;
3. Before vacuum pump is connected to A/C-R system, remove refrigerant from the system in a reliable manner; Note that taking out the refrigerant under high pressure will damage the pump body, so it is recommended to use special equipment.

## MAINTENANCE

1. Selection of pump oil:  
The type and state of pump oil is an important factor to determine whether the pump can reach the ultimate vacuum. For optimum pump performance, we recommend that you use our exclusive  Santa Pa vacuum pump oil, which has been specially formulated to maintain maximum viscosity at normal operating temperatures for cold pump start-up.  
Tip: when the pump oil emulsified and contaminated, please replace the vacuum pump oil in time.
2. Oil change process:  
In order to ensure that the pump is in the hot state, the pump needs to run for about 1 minute before oil change;  
Pump operation at the same time open the air inlet, so that the oil in the pump cavity is forced to flow out, close the open and shut down the pump and then open the oil plug, the waste oil into a suitable container, and reasonable treatment;  
When the oil stops flowing, tilt the pump body so as to completely drain the residual waste oil;  
Tighten the oil exhaust knob;  
Open the oil filling knob and add new pump oil (Item 2 of the preparation before using the pump).

## TROUBLESHOOTING AND WARRANTY COVERAGE

### TROUBLESHOOTING

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Problem	Reason	Solution
Low degree of vacuum	1.Spare inlet cap side leakage	Tighten spare inlet cap
	2.Seal ring in spare inlet cap damaged	Replace new seal ring
	3.Oil insufficient	Add oil center line of oil scale
	4.Pump oil emulsified.not clean	Replace with new oil
	5.Oil inlet blocked or oil feeding inadequate	Clean oil inlet and filtering screen
	6.Pump pipeline leak	Check pipeline for leakage and repair
	7.Improper pump chosen	Check the container which be ewacuated choose conect pump
	8.After long time of using parts worn	Repair or replace a new pump
Oil spay	1.Oil seal damaged	Repair with new oil seal
	2.Oil tank joint loosen or damaged	Tighten screws or replace O - typr ring
Oil leakage	1.Too mush oil charged	Discharge oil to base line
	2.Inlet pressure too high for long time	Choose proper model pump
Difficult starting	1.Too low oil temperature	Lead air inlet to atmosphere startmotor interuptedly heat pump oil
	2.Motor or power supply trouble	Check and repair
	3.The foreign matter fell into the pump	Check and clear
	4.Low supply voltage	Check the supply voltage

Remark:

1. This product is a sparkless design, the motor has overload, overcurrent protection, etc., when the protection occurs, please troubleshoot in time;
2. If the above solutions do not solve the problem, please contact the nearest dealer, or send your pump to the professional repair center, we will do our best to serve you.

## WARRANTY SCOPE

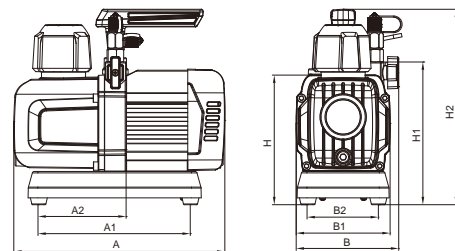
Due to the product quality issue,warranty within 1 year from date of the factory,the scope of warranty is as follows:

1. The qualified testing organization confirmed that there are manufacturing defects of the product.
2. Repaired or disassembled product with permission.
3. Use in the right way - - follow the instructions to operate. All warranty services shall be during the warranty period.

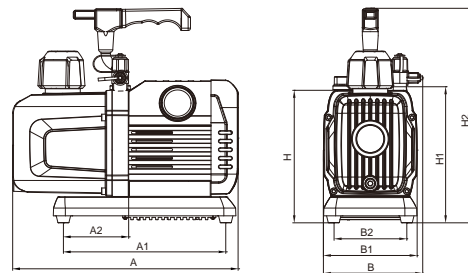
## STATEMENT:

the manufacturer does not bear any additional costs except Product malfunction, including: waste of working hours and refrigerant gas, unapproved transportation or labor after refrigerant is contaminated.

## ELEVANT SHAPE SIZE



ST-2BM、ST-2S



ST-4BM、ST-4S

Item No.	A	A1	A2	B	B1	B2	H	H1	H2
ST-2BM	215.5	155.5	90	105	96	73	132.5	146	200
ST-2S	215.5	155.5	90	105	96	73	132.5	146	200
ST-4BM	290	209	84	128	120.5	94	170.5	176	276
ST-4S	290	209	84	128	120.5	94	170.5	176	276