Eurovacuum

Eurovacuum Installations and Operating manual EVC-xxxxBCW Series Vacuum pumps Models: 0060BCW & 0100BCW

Single Stage Claw Vacuum Pump Belt Driven

Contents

It is mandatory that these operating instructions be read and understood prior to the vacuum pump installation and start-up.

1.0 INSTALLATION

1.1 General description

The EVC claw pump is intended to use for air and other non-aggressive, non-toxic and non-explosive gases. It is designed as a dry and contactless machines, enclosed in acoustic sound shied and designed to have cooling air passed through the sound shied by fan. The warm air is exhausted through the vent. The claw pump is constructed in modular construction consisting of two compartments: pumping and gear chambers separated by using labyrinth seals. In the pump chamber, as two rotary claws rotate in opposite direction, the air sucked in, compressed and discharged under pressure. In the gear chamber (box), two gears for synchronizing of claws rotation will be located with oil lubrication. An anti-suck back valve can be installed in inlet flange and will prevent the air from back flowing into the vacuum chamber after the pump is shutdown. This pump is directly driven through a pulley. The EVC vacuum pump is designed to be cooled by a radiation of heat from the surface of the vacuum pump, process gas, and air flow from the fan.
See below descriptions of the pump.

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1.2 Unpacking and Storage

Inspect the box and pump carefully for any signs of damage incurred in transit. Since all pumps are ordinarily shipped EXW from our factory or regional warehouse, such damage is the normal responsibility of the carrier and should be reported to them.

The vacuum pump is bolted to the skid with studs that are connected through the rubber feet of the pump. Remove the nuts from the underside do the crate and remove the pump. Unscrew the studs from the rubber feet.

The inlet and exhaust of the pump are covered with plastic caps to prevent dirt and other foreign substances from entering the pump. Leave these caps in place until you are ready to pipe the pump to your equipment.

The pump should be stored in dry environment with normal air humidity (RH 0~80%, -10˚C to 60˚C), not for more than 6 months.

1.3 Location

Install the pump in a horizontal position on a level surface so that the pump can be evenly supported on its rubber feet. Leave 20 ~ 25 cm of access around the pump to allow proper cooling. Also, adequate ventilation must be provided for the cooling, exhaust silencer, and motor.
Allow access to the oil sight glass in order to inspect the oil level regularly, and the oil fill and oil drain port for easy service.

1.4 Installation

Use a pipe size that is at least the size of the pump inlet connections. Smaller lines result in a reduced pump capacity.

Pumps operating in parallel on a common main line should have a manual or automatic operated shut-off valve or positive action check valve, installed in the suction line adjacent to the pump suction flange. The built-in anti-suck back valve should not be used as a shut-off valve for the vacuum system. Remove the plastic protective cap from the inlet port prior to connection of pump to the system.

Should process gas contain dust or other foreign particles, a suitable in line (inlet) filter (5 micron or less) should be connected to the inlet port. Consult Eurovacuum for recommendations.
The vacuum piping should be designed to ensure that no liquids such a condensate or liquid carried over from the process can reach the pump. If this possibility exists, a knock-out liquid separator should be installed. Consult Eurovacuum for recommendations.

The following thread sizes are standard on the pumps

Pump Model	Inlet Size	Exhaust Size
EVC-0060BCW,0100BCW	G 1-1/2”	G 1”

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1.6 Oil Filling on Gear Box

The pump is normally shipped with oil in gear box. After level installation and correct rotation has been established, make sure to check the oil level through the oil fill port. Oil level should be over 3/4 position on the oil sight glass as shown on the label.

We recommend Eurovacuum gear oil, as it is a special heavy duty gear oil it is not recommended to use an alternative.

- **Eurovacuum Gear Oil - 1 liter - Art.No.: 100.500**

The following table gives the approximate quantities of oil required for each model.

Pump Model	Capacity (ltr)
EVC-0060BCW	0.75
EVC-0100BCW	0.75

Do not add fill oil with pump running! Do not overfill.

2.0 SAFETY

Please read the following safety notice carefully before operating the pump.

2.1 General Notices

- Understand fully this installation and operating manual before operation.
- The other person except authorized operator should not operate the pump
- When the pump is not properly working, it should be stopped immediately.
- Eurovacuum shall have no liability for any accident and failure arising from no compliance with instructions in this manual.

2.2 Warning labels and its explanation

Following warning labels are shown and attached on EVC series pumps

2.2.1 Read and Understand a manual:

Read and understand operator's manual before using this machine

2.2.2 Burn Hazard:

Hot surface. Do not touch.

2.2.3 Loud noise Hazard

Loud noise hazard. Ear protection must be worn.

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2.3 Location of the labels

The labels of 2.2.1 Read and Understand a manual, 2.2.2 Burn Hazard, and 2.2.3 Loud noise Hazard shall be shown on the top of sound shield of the pump.

3.0 OPERATION

3.1 Start-up

Make sure the rotation of the pump, and check if V belt pulleys are aligned well with proper tension.
Fill the pump with oil as described in paragraph 1.5 - Oil Filling
Start the pump with the inlet closed. Run the pump for a few minutes and then shut down.
Check the oil level again and make sure the oil level is 3/4 position of oil sight glass as shown on the label. Add oil though oil fill port, if necessary.
Pump oil should only be added when the pump is switched off.

3.2 Stopping the pump

To stop the pump, turn off the power. An anti-suck back valve (built-in) for the pump installed in inlet flange will prevent the air from back flowing into the vacuum chamber after the pump is shutdown.
Caution: In applications, where the quantity of water vapor is moderate, it is recommended to run the pump for 10 minutes at least with outside air prior to shut down to prevent the vapor from condensing in the pump.

3.3 Operating Conditions

The EVC-BCW pumps are designed to run the ultimate vacuum levels stated in technical data (6.0) for continuous operation. Operation over maximum vacuum level may result in failure of and severe damage to the machine. Vacuum Regulator installed in inlet flange is set at maximum allowable vacuum at the factory, and a desired vacuum level to below the maximum level can be achieved by rotating the adjustment knob.

The standard version is for use of dry air only, and may not be used in hazardous areas. Handling of humid air or gases containing aggressive chemicals is possible only with specially configures units. Consult Eurovacuum for assistance.

Excessive back pressure on the unit may result in excessive current draw. Do not operate the vacuum pump over 0.15 kg/cm2 back pressure. Also it is recommended for operating personnel who is working near the pump to wear ear protectors. If noise below the designed dBA is required, an external sound enclosure can be added to the system, provided adequate ventilation is provided

The ambient and suction air temperature must be between 5 and 40°C.
Caution: Any non compliance may lead to severe injury to persons and damage to the pump.

4.0 MAINTENANCE

EVC-0060BCW and EVC-0100BCW vacuum pumps require very little maintenance. To ensure optimum performance, the following maintenance steps should be followed:

4.1 Pump Lube Oil

4.1.1 Oil Level

Check the oil level on monthly basis. Under normal circumstances it should not be necessary to add oil between oil changes. A significant drop in oil level means there is an oil leak. Please check the o-rings, drain plug or oil sight glass.

Check the oil level only when the pump is shut off. Replenish oil if it drops below bottom position of the sight glass.

Caution: Do not add oil while the pump is running, since hot oil can escape from the oil fill port.

4.1.2 Oil Type and Quantity

See section 1.5 - Oil Filling - for details on oil type and quantity

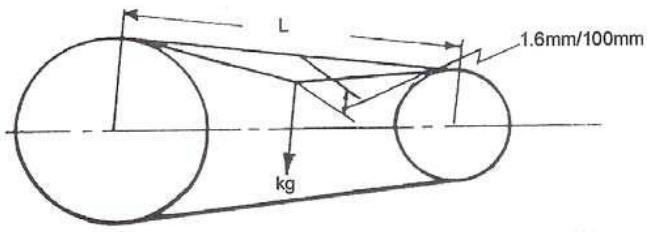
4.1.3 Oil Change

Under normal ambient conditions with proper Gear Oil, it is recommended to change the oil every 5000 operating hours. It is necessary to make the first oil change between 500 ~1000 operating hours.

Caution: If different brand oil is being filled, the old oil must be drained completely from the gear box.

4.2 V-belt Drive

Check the belt condition to replace by new one regular. Tension of the belt and adjustment of pulley should be checked together.



Checking the tension of the belt

1. Hang up the tension meter (or spring scale) at the center of belt span and measure bending degree. The bending degree should be 1.6mm at 100m of the span under the loading condition. If the span is 500mm, the bending shall be 8mm.
2. Adjust tension of the belt for the following minimum and maximum load.

The load of the belt at proper tension of the belt.

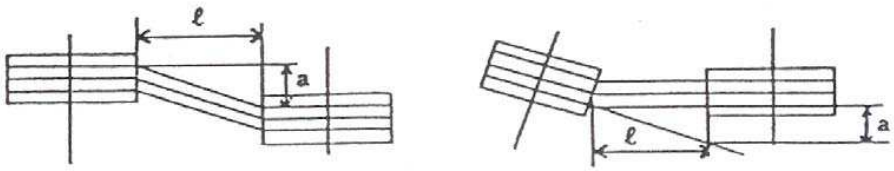
Belt type	Min. load (Kg)	Max. load (Kg)
A	0,68	1,02
B	1,58	2,36
C	2,93	4,75

Note:

1. The life time of the belt and power transmission shall be varied depend on tension of the belt.
2. When you replace the belt or install new belt, please shorten the distance of centre of the pulleys to install and then adjust tension.
3. If you need to replace one more belts, please replace all together.

Adjustment of the pulley

If the pulley adjustment is not done well enough, the life time of belt may be reduced.
Please adjust it within a≤0.0006ℓ as shown on following figure.



4.3 Maintenance Chart

Weekly: Check inline inlet filter element / Mesh. More often if high particulates in inlet stream.
Monthly: Check the oil level. Protective Mesh. Belt & Pulley condition, tension and alignment.
Semi-Annually: Check cooling fan.
Annually: Check Bearings / Shaft Seals,
More frequently if operated at ambient temperature exceeding 20°C.
Every 5000 operating hours: Change the gear oil

5.0 PROBLEM SOLVING

5.1 Problem

Pump does not reach capacity.

5.1.1 Possible Cause

Inlet screen (mesh) clogged with debris.
Remedy : clean screen (mesh) by compressed air or washing and check inlet filter element.

5.1.2 Possible Cause

Pipe work is too long or too small.
Remedy : use a bigger diameter pipe and shorten the lines length if possible.

5.1.3 Possible Cause

Belt tension is too loose and Pump pulley is not running with proper RPM.
Remedy : replace the belt.

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5.2 Problem

Pump runs over set pressure.

5.2.1 Possible Cause

Inlet screen (mesh) in the vacuum regulator clogged with debris.
Remedy : clean screen (mesh) and check inlet filter element.

5.2.2 Possible Cause

Vacuum regulator set over the set point or is out of order.
Remedy : Set the point again or replace it with new one.

5.3 Problem

Pump does not reach the set pressure.

5.3.1 Possible cause

Leak on the pump or the system.
Remedy : find the leaks and close them.

5.3.2 Possible cause

Belt tension is too loose and Pump pulley is not running with proper RPM.
Remedy : replace the belt.

5.4 Problem

Pump runs very noisy.

5.4.1 Possible cause

Contamination of the claws.
Remedy : Clean the pumping chamber and rotary claws.

5.4.2 Possible Cause

Bearing noise
Remedy : replace bearings or call service agent for service or exchange program.

5.4.3 Possible Cause

Vacuum regulator noise
Remedy : replace vacuum regulator.

5.5 Problem

Pump is running too hot.

5.5.1 Possible Cause

Not enough air ventilation to pump
Remedy : Make certain a sufficient amount of fresh air is supplied to the pump.

5.6 Problem

Pump will not operate (seized up).

5.6.1 Possible cause

Rotary Claws, Bearings or Gears stuck.

Remedy : Call service agent for service or exchange program

6.0 TECHNICAL DATA

Technical Data			EVC-0060BCW	EVC-0100BCW
Nominal displacement	2200rpm	m^3/h	65	-
	3000 rpm	m^3/h	-	100
Ultimate vacuum, Maximum		mbar(abs)	80	50
Ultimate vacuum, Continues operation		mbar(abs)	150	150
Pulley			SPA100-1	SPA100-2
Oil capacity (Gear box)		ltr	0,75	0,75
Weight		kg	74	76
Admissible ambient temp.		°C	5 to 40	5 to 40
Inlet/Outlet connections		G(BSP)	1-1/2" / 1"	1-1/2" / 1"
Dimensions LxWxH		Mm	435x383x367	497x409x367