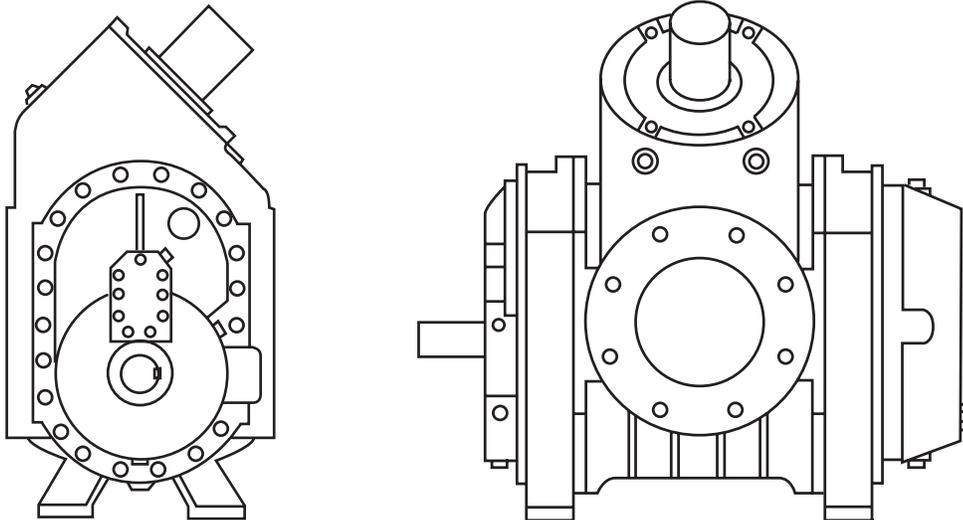




Uni-Vac 600 Series User Manual



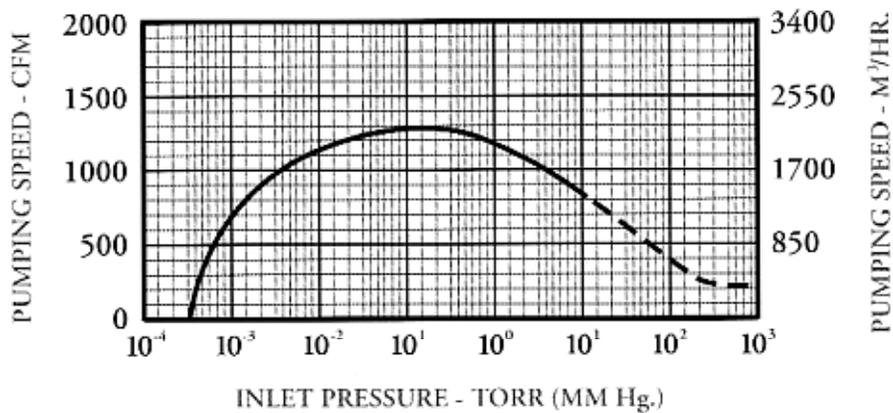
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Uni-Vac 600 Series Specifications



Curve Reflects Speed with 300 CFM Backing Pump

UNI-VAC 600 Series Specifications

Free Air Displacement	1300 CFM @1750 RPM
Motor	7.5 HP 208/230/460v
Inlet	8" ASA
Outlet	8" ASA
Net Weight	615 lbs

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SAFETY PRECAUTIONS

For equipment covered specifically or indirectly in this instruction book, it is important that all personnel observe safety precautions to minimize the chances of injury. Among many considerations, the following should be noted:

1. This Vacuum Blower may become hot enough to cause major skin burns on contact, even under normal operating conditions.
2. Internal and external rotating parts of the booster and driving equipment can produce serious physical injuries. Do not reach into any opening in the booster while it is operating, or while subject to accidental starting. Do not operate without belt guard in place.
3. Disconnect power before performing any work on this unit.
4. Use proper care and good procedure and handling, lifting, installing, operating and maintaining the equipment.
5. Casing pressure must not exceed 25 psi (172 kpa) gauge. Do not pressurize vented cavities from an external source, nor restrict the vents.
6. When adding to or drawing oil from or otherwise servicing a blower which has been pumping toxic, flammable, explosive or other hazardous substances, observe appropriate precautions to avoid serious personal injury

1. DESCRIPTION

1.1 Principal of Operation

Uni-Vac 600 Series Blowers are single stage vacuum boosters. The blower consists of two lobe impellers that are mounted in parallel, and rotate in synchronous mesh in a one piece cylinder. As gas enters the inlet port it fills a cavity exposed by rotation of the impellers (Fig. 1 Pos. 2). Further rotation pushes the trapped volume around the cylinder and out the discharge port (Fig. 1 Pos. 3).

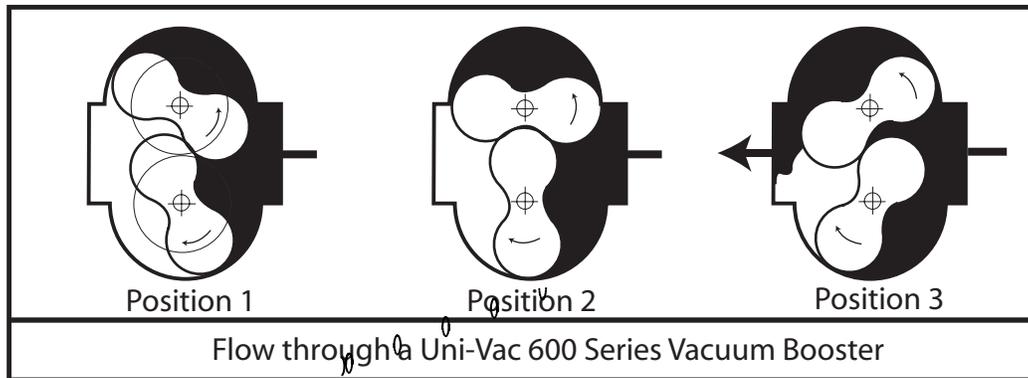


Fig. 1

The high vacuum blowers covered in this manual are intended especially for use as a preceding stage of a vacuum pumping system with a suitable forepump or roughing pump that will allow the blower to operate satisfactorily within its pressure and temperature limits. They are not intended for duty as a positive pressure blowers.

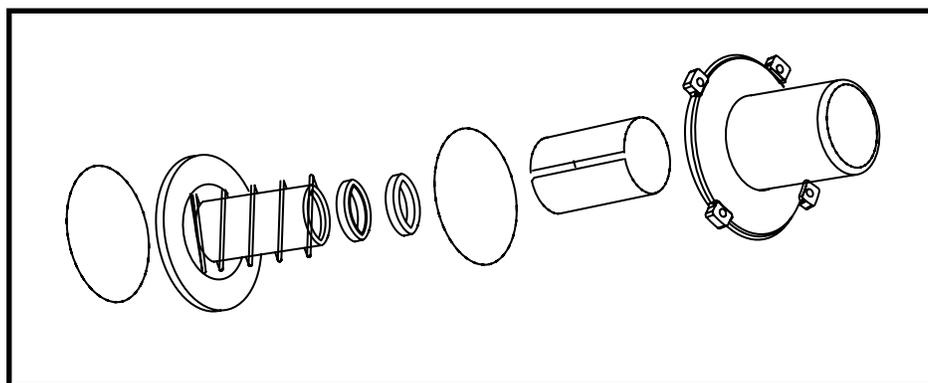


Fig. 2

The bypass blower is intended to minimize pumpdown times and depending on the capacity of the backing pump may not be suitable for continuous operation in the pressure range where the bypass is open. (refer to Fig. 2) Consult the factory for special applications.

1.2 Maximum Allowable Operating Conditions

Note: Maximum pressure rise, temperature rise, and horsepower do not necessarily coincide. Whichever limit is reached first is to be considered the limiting factor.

2. INSTALLATION

2.1 General

On Receipt of the unit, check for any damage that may have occurred during transit. Report any damage or missing parts as soon as possible.

2.1.1 During installation protective coverings should be left in place to reduce the chances of intrusion of foreign material. Protection against chemical or salt water atmosphere is not provided.

2.1.2 Before operating, put the required amount of oil into the three oil reservoirs using the instructions under Lubrication (Sec. 2.5)

2.1.3 The vacuum booster should be mounted on a smooth, flat, level surface. The degree of variation in level should not exceed .001" per horizontal foot (.0254 mm per horizontal 30.48 cm) in any direction.

2.1.4 Before starting, turn drive shaft over manually counter-clockwise only to ensure that no foreign material is present in the impeller cavity.

2.1.5 Rotation may be either clockwise or counter-clockwise depending on desired direction of flow.

2.1.6 Inlet and outlet piping should have a proper flexible coupling in the line to prevent rigid piping from distorting the booster housing.

2.1.7 It is important to maintain all pipes and fittings free of debris. If this requirement is not adhered to, jamming and internal damage to the vacuum booster may occur. A Uni-Vac inlet vacuum filter is recommended to provide protection for the booster. If a permanent filter is not installed, a temporary screen is recommended for the initial startup to protect the blower from debris in the vacuum lines.

2.2 Belt Drive

The sheave should be located as close to the booster or back belt guard and should not overhang the shaft. The motor sheave must be in alignment with the booster sheave and belts tightened according to “V” belt manufacturer instructions.

6” BOOSTER MINIMUM RECOMMENDED SHEAVE (PULLEY) PD

Booster	15 HP and Lower	20 HP and 25 HP	30 HP and 40 HP
615	5.2” PD	S6.3 PD	7” PD

FOR HP LARGER THEN 40 HP CONSULT FACTORY

2.3 Oxygen Service

2.3.1 Vacuum booster intended for oxygen service receive special preparation for shipment.

2.3.2 Oxygen service boosters require special oils. We recommend either fomblin Y25/5 or Krytox 1525

WARNING: Substitutes cannot be used. Use of other oils or contamination with hydrocarbons can result in an explosion.

2.3.3 Clean vacuum piping lines (internally) and flanges so they are completely free of hydrocarbon contamination.

2.4 Cleaning (Standard Vacuum Booster)

A clean rag dampened with loctite safety solvent or equivalent can be used to clean the booster impeller section and flanges if they have accumulated dirt during installation or storage.

2.5 Lubrication

2.5.1 The stokes vacuum booster has three oil reservoirs:

- A. Seal Reservoir
- B. Bearing Housing
- C. Gear Housing Reservoir

2.5.2 (A) The seal oil reservoir is vented to atmospheric pressure. The volume of oil that fills the reservoir between the seals is used to lubricate the seal rubbing surface and prevent leakage of atmospheric air into the vacuum booster.

2.5.3 (B) The bearings in the bearing housing (drive end) reservoir are lubricated by the splash from an oil slinger that dips into the oil reservoir.

2.5.4 (C) In the gear housing reservoir, gears are lubricated by partial immersion in the oil pump. Splashes of oil from the gears lubricates both gears and bearings.

2.5.5 To fill bearing housing (drive end) and gear housing reservoirs, STOP UNIT AND BREAK VACUUM. LUBRICATING OIL MAY NOT BE ADDED WHILE VACUUM BOOSTER IS IN OPERATION. Note that bearing housing (drive end) and gear housing reservoir are under vacuum. The following table shows the normal oil capacities of the oil reservoirs. The oil may be added to the lip seal reservoir during operation.

2.5.6 Lubricating oil is shipped in a separate container unless otherwise stated. Refer to (Sec. 2.7 and 2.8) for proper amount of filling procedure.

Appropriate Oil Capacity in Fluid Ozs. (millimeter)

For other than oxygen service, see Note 2 for recommended oil.

Piping Connection	Qz		(Millimeters)	
	Horizontal	Vertical	Horizontal	Vertical
Seal Reservoir	7.6	7.6	225	225
Drive End Bearing Housing	25.28	45.6	750	1350
Gear Housing	40.48	94.72	1200	2800

2.5.6 Fill the three reservoirs with the recommended lubricant to the midpoint of the sight glass. Wait for a period of three minutes to allow oil level to equalize. Allow oil to stabilize in sight glass to obtain proper reading.

Note: Do not overfill or permit oil level to fall below the bottom of the sight glasses.

When the unit is operating the oil level may fluctuate slightly. All fill and drain plugs should be sealed. If the seal reservoir is over-filled, excess oil may flow from the vent hole in the filler plug when oil is heated. No harm will be done to the booster if this leakage occurs and the leakage will stop as soon as all excess oil has been expelled. If the drive end bearing or gear end reservoirs are overfilled, oil may spill over into the blower body.

Note: For oxygen service booster see section 2.3.2 for special lubricant instructions.

2.6 Lubricating Schedule

2.6.1 For normal operating conditions, during the first week, the oil levels on each end of the vacuum booster should be checked every 24 hours of operation. All areas with oil should be changed every 2000 operating hours. Add oil to maintain proper level as necessary.

2.7 Lubrication Diagram (Horizontal Flow)

Note: Both bearing oil reservoirs are to be filled with oil only when the blower is mounted in its operating location.

2.6.2 Under severe operating conditions such as a contamination within the vacuum system or excessively high operating temperatures within the vacuum booster, more frequent oil changes are recommended.

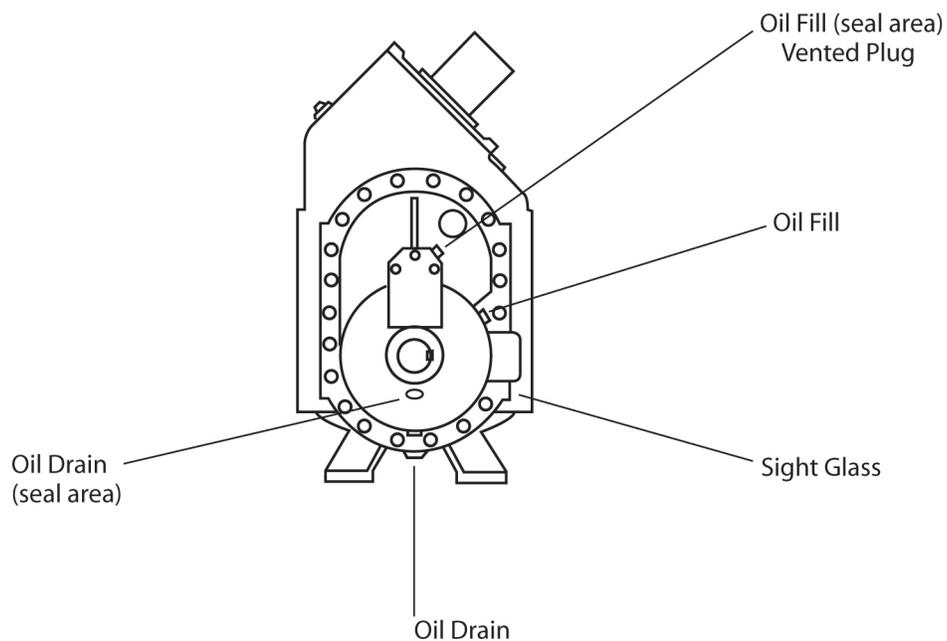


Fig 3.

Note: Oil level must be in center of sight glass. Do not permit oil level to drop below the bottom of sight glass. Do not overfill.

2.8 Lubrication Diagram (Vertical Flow)

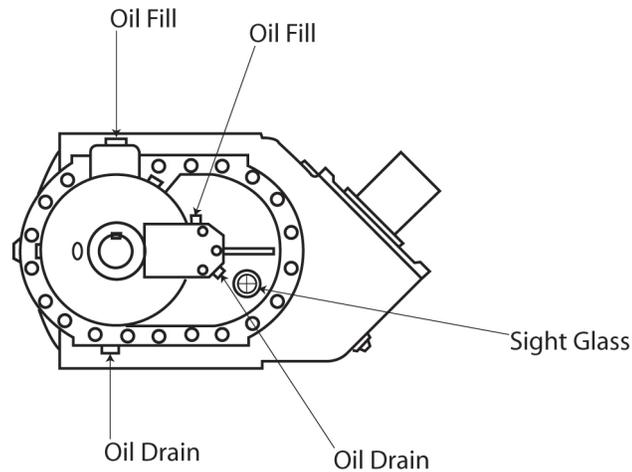


Fig. 4

Note: Oil level must be in center of sight glass. Do not permit oil level to drop below the bottom of sight glass. Do not overfill.

Note: Use Uni-Vac 177 in seal reservoir and bearing housing area and Uni-Vac 405 in Gear Housing.

Note: Coat threaded plugs with Teflon paste sealant.

(2) There are three (3) oil reservoirs and three (3) oil fill plugs.

(3) For oxygen service use fomblin Y-25 oil as lubricant.

2.9 Water Connection- Seal Housing

Uni-Vac high vacuum blowers are now furnished with water cooled seal reservoir, and housing covers to extend seal life. The water flow to the blower should be 5-1 gpm @85 degrees maximum. See the blower in the back for identifying the water inlet discharge ports on the cover plate.

After making all hose connections, bleed air from water lines to ensure proper water flow through all interior cavities. This will insure maximum seal life.

3.0 OPERATION

3.1 Operation

Note: Do not attempt to operate the unit until checked per the installation instructions.

3.1.1 If the unit rotates freely and direction of rotation is correct, the unit may be started. A preliminary run in periods of five minutes, should reveal any inherent problems. If required, corrections should be made immediately.

3.1.2 A one hour run at blank-off should be made to check for loud noises, excessive vibration, or seal leakage in the vacuum booster.

3.1.3 After steps (1) and (2) have been completed a run at normal pressure conditions for about fifteen minutes should be initiated. Observe the behavior of the vacuum booster for noise and vibration.

3.1.4 During initial operation for the first week, observation of oil levels should be on a daily basis to determine if any losses occur. Oil levels should not drop below the bottom of sight glasses.

3.1.5 Periodically check drive belt tension and the booster for unusual noises and increase in vibration.

600 Series Parts List

No.	Qty.	Description	Part No.
1	1	Oil Reservoir Cover	UV-604-285-001
2	1	Oil Reservoir Cover Gasket	UV-424-338-002
3	1	Seal Housing (Horizontal)	UV-424-316-012
3	1	Seal Housing (Vertical)	UV-424-316-011
4	1	Stepped Key	UV-431-240-001
5	1	Shaft Sleeve	UV-430-726-002
6	1	External Retaining Ring	UV-085-027-094
7	1	Oil Slinger	UV-424-336-002
8	3	Shaft Clamp Plate	UV-424-326-001
9	4	Ball Bearing	UV-085-39-745
10	4	Wave Washer	UV-085-37-788
11	4	Rotating Labrynth Seal	UV-425-034-002
12	4	Stationary Labrynth Seal	UV-425-033-001
13	1	Bearing Housing (Horizontal)	UV-424-313-003
13	1	Bearing Housing (Vertical)	UV-424-665-012
14	1	Blower Housing	UV-432-299-002
15	1	"O" Ring (6 1/2 ID)	UV-085-042-116
16	1	Bypass Valve	UV-602-181-003
17	1	Compression Spring	UV-430-288-011
18	1	Metal Spacer	UV-603-369-001-M
19	1	Nylon Spacer	UV-603-369-001-N
20	1	"O" Ring (8 ID)	UV-085-036-358
21	1	Bypass Piston Sleeve	UV-430-726-002
22	1	Bypass Cap	UV-602-182-002
23	1	Drive Lobe	UV-424-311-008

600 Series Parts List

No.	Qty.	Description	Part No.
23	1	Driven Lobe	UV-424-312-002
24	1	Bearing Housing (Horizontal)	UV-424-313-003
24	1	Bearing Housing (Vertical)	UV-424-665-012
25	4	Stationary Labrynth Seal	UV-425-033-001
26	4	Rotating Labrynth Seal	UV-425-034-002
27	4	Ball Bearing	UV-085-39-745
28	2	Bearing Retainer	UV-424-327-002
29	2	Gear Spacer	UV-424-329-002
30	2	Gear Key	UV-424-651-006
31	2	Gears	UV-085-038-256
32	3	Shaft Clamp Plate	UV-424-326-001
33	1	Gear Housing (Horizontal)	UV-424-310-008
33	1	Gear Housing (Vertical)	UV-424-310-007

Items Not Pictured

No.	Qty.	Description	Part No.
34	1	Shaft Sleeve "O" Ring	
35	4	Bearing Housing Dowel Pins	
36	2	Gear Housing Pins	
37	1	Shaft Seals	UV-085-043-469
38	2	Seal Installation Tool	UV-600-505-001
40		Seal Insertion Tool	UV-426-365-002

