

ROOTS BLOWER FEATURES

VOLUME is nearly constant over the range of pressure, having only a slight reduction caused by increase in air slip at higher pressures. At a constant speed, power is approximately proportional to pressure. At a constant pressure, power is directly proportional to speed.

VOLUME CONTROL can be obtained by changing speed, by blow-off or by-pass. Blow-off or by-pass may be accomplished with a manual or automatic valve. By-passed air or gas must usually be cooled before re-admitting it to the inlet.

CONSTRUCTION FEATURES

TIMING GEARS (one on each impeller shaft) control the angular position of each impeller relative to the other, and maintain the minute clearance so vital to the high volumetric efficiency of this type machine. Since there is no internal contact or internal lubrication, a small

amount of air or gas passes through these internal clearances, and this quantity is termed "slip".

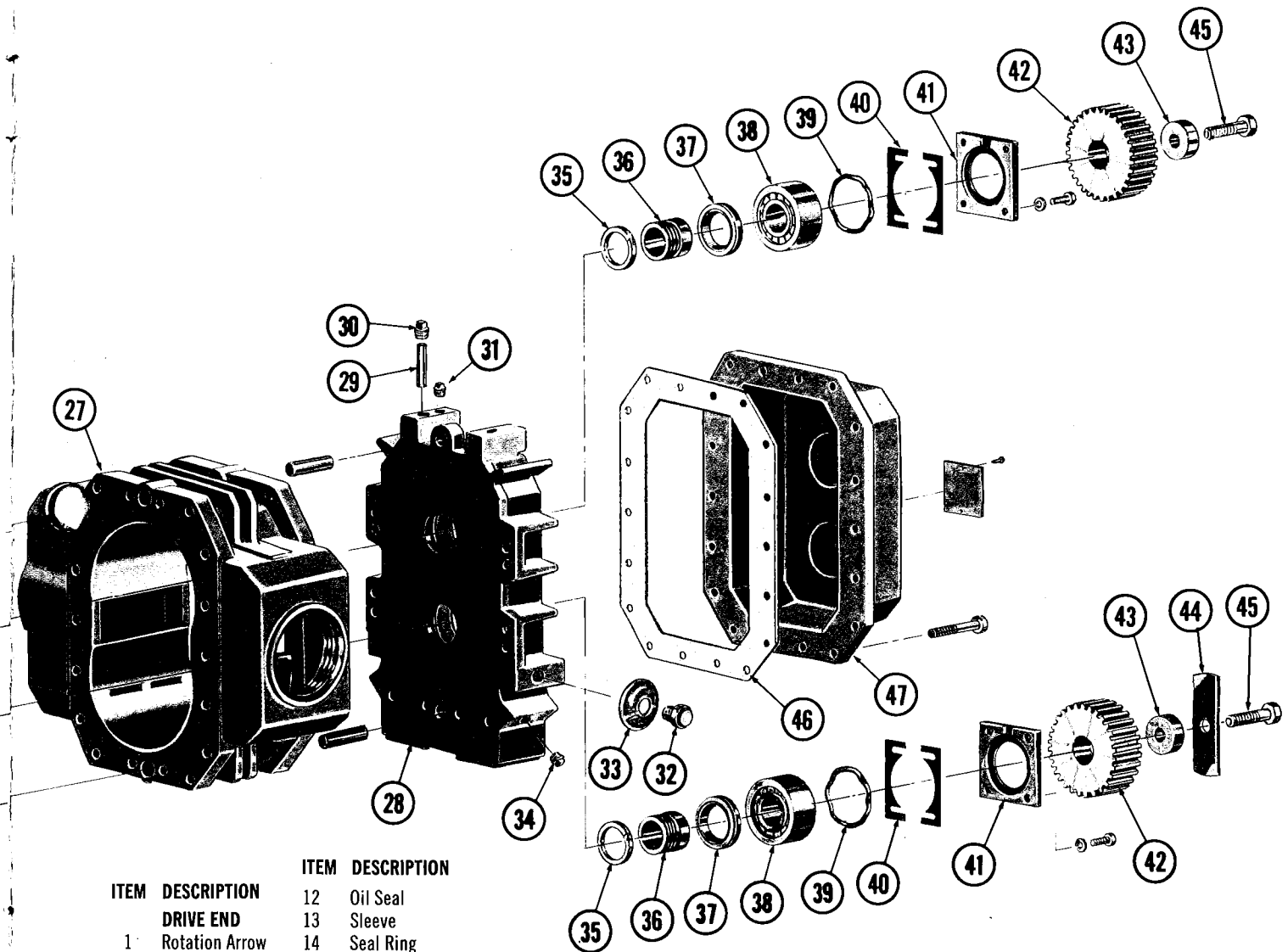
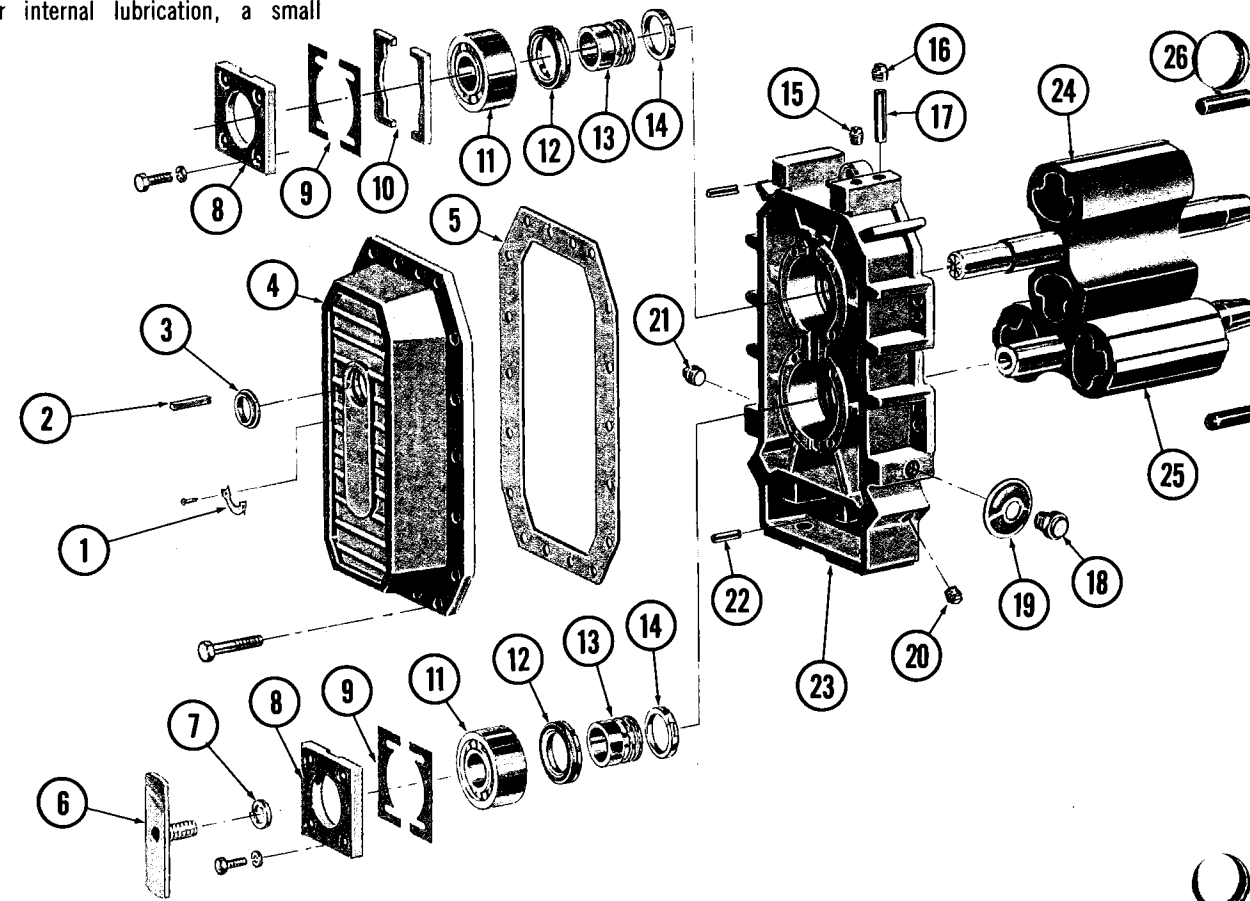
CLEARANCES - A small clearance is required to permit non-lubricated operation of the impellers without having them contact each other, the cylinder, or headplates. The clearance is required to compensate for expansion due to differential pressure across the blower, and growth of the impellers from the heat of compression.

THROTTLING should NOT be used on either the inlet or discharge as a means of volume control. This increases the pressure rise (resulting in an increase in the horsepower required) and the temperature rise, which will eventually cause

seizure of the unit due to expansion of the lobes into each other and the headplates.

LUBRICATION—Shaft bearings at the gear end of Roots blowers (under 8 inch gear diameter) are splash lubricated. The timing gears dip into an oil sump and distribute the oil to the gears, shaft bearings, and seals. On some models the drive end bearings and seals are splash lubricated and grease lubricated on others. Those units utilizing grease lubrication on the drive end are equipped with pressure type grease fittings.

MATERIALS OF CONSTRUCTION—Cylinder cases, headplates, and covers for all models are of cast iron. They utilize alloy steel timing gears.



ITEM	DESCRIPTION	ITEM	DESCRIPTION
DRIVE END			
1	Rotation Arrow	12	Oil Seal
2	Drive Shaft Key	13	Sleeve
3	End Cover Oil Seal	14	Seal Ring
4	End Cover Seal	15	Pipe Plug (Oil Fill)
5	Gasket	16	Pipe Plug (Breather)
6	Oil Slinger	17	Filter
7	Lockwasher	18	Oil Level Gauge
8	Bearing Clamp Plate	19	Lubrication Label
9	Shim	20	Pipe Plug (Oil Drain)
10	Bearing Spacer	21	Pipe Plug
11	Bearing		
		22	Drive-lok Pin
		23	Headplate
		24	Drive Impeller & Shaft
		25	Driven Impeller & Shaft
		26	Dowel Pin
		27	Cylinder*

ITEM	DESCRIPTION	ITEM	DESCRIPTION
GEAR END			
28	Headplate	33	Lubrication Label
29	Filter	34	Pipe Plug (Oil Drain)
30	Pipe Plug (Breather)	35	Seal Ring
31	Pipe Plug (Oil Fill)	36	Sleeve
		37	Oil Seal
		38	Bearing
		39	Wavy-Spring Washer
		40	Gauge
		41	Bearing Clamp Plate
		42	Gear
		43	Gear Mounting Washer
		44	Oil Slinger
		45	Gear Mounting Capscrew
		46	Gasket
		47	Gearbox

*Inlet water nozzle is included for VJ water-sealed Whispair Vacuum Pumps.