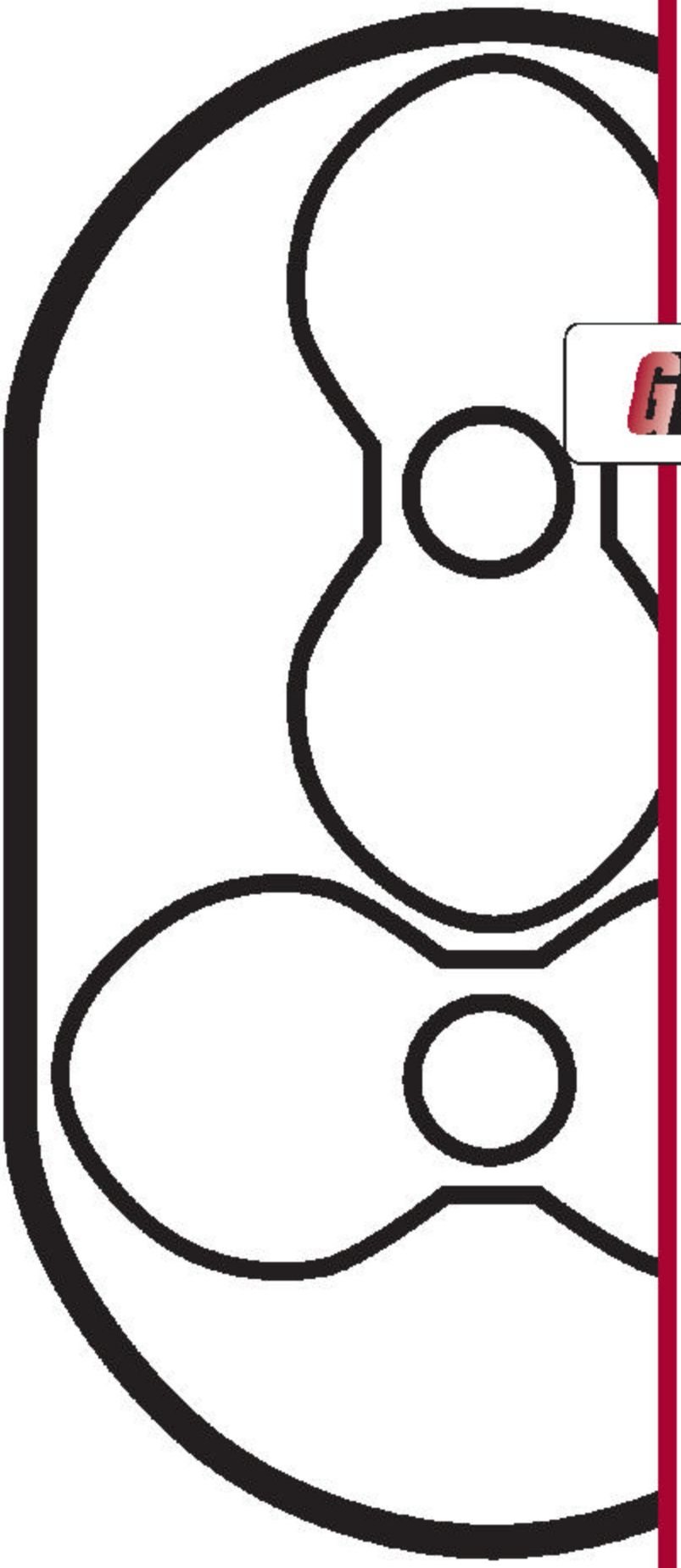

PARTS LIST
OPERATING AND SERVICE MANUAL

GARDNER DENVER
Sutorbilt

4500 SERIES BLOWERS

"A" AND "C" SERIES 6" - 7" - 8" GEAR DIAMETER

Models

GDF_ _A_ – 6"
GDG_ _A_ – 7"
GDH_ _C_ – 8"

SB-7-626
Version 05
February, 2006

MAINTAIN BLOWER RELIABILITY AND PERFORMANCE WITH GENUINE GARDNER DENVER PARTS AND SUPPORT SERVICES

Factory genuine parts, manufactured to design tolerances, are developed for optimum dependability ---specifically for your blower. Design and material innovations are born from years of experience with hundreds of different blower applications. When you specify factory genuine parts you are assured of receiving parts that incorporate the most current design advancements . . . manufactured in our state-of-the-art blower factory under exacting quality standards.

Your **AUTHORIZED DISTRIBUTOR** offers all the backup you require. A worldwide network of authorized distributors provides the finest product support in the blower industry.

Your **AUTHORIZED DISTRIBUTOR** can support your blower investment with these services:

1. Trained parts technical representatives to assist you in selecting the correct replacement parts.
2. Complete inventory of new machines and new, genuine factory parts.
3. A full line of factory tested AEON™ PD blower lubricants specifically formulated for optimum performance in all blowers.
4. Authorized Distributor service technicians are factory-trained and skilled in blower maintenance and repair. They are ready to respond and assist you by providing fast, expert maintenance and repair services.

INSTRUCTIONS FOR DETERMINING BLOWER CONFIGURATION

1. Face the blower drive shaft.
2. In a **VERTICAL** configuration, air flow is horizontal.
3. In a **HORIZONTAL** configuration, air flow is vertical.
4. In a vertical configuration, a **BOTTOM HAND** exists when the drive shaft is below the horizontal center line of the blower. A **TOP HAND** exists when the drive shaft is above the horizontal center line of the blower.
5. In a horizontal configuration, a **RIGHT HAND** exists when the drive shaft is to the right of the vertical center line of the blower. A **LEFT HAND** exists when the drive shaft is to the left of the vertical center line of the blower.

INSTRUCTIONS FOR ORDERING REPAIR PARTS

For pricing and ordering information, contact your nearest AUTHORIZED FACTORY DISTRIBUTOR.

When ordering parts, specify Blower **MODEL** and **SERIAL NUMBER** (see nameplate on unit).

Rely upon the knowledge and experience of your AUTHORIZED DISTRIBUTOR and let them assist you in making the proper parts selection for your blower.

GARDNER DENVER LUBRICANT ORDER INFORMATION

Re-order Part Numbers for Factory-Recommended Lubricants.

AEON PD Synthetic Lubricant or AEON PD-Food Grade Synthetic Lubricant

AEON PD Synthetic Lubricant

Description	Part Number
1 Quart	28G23
Case/12 Quarts	28G24
5 Gallon Pail	28G25
55 Gallon Drum	28G28

AEON PD-Food Grade Synthetic Lubricant

Description	Part Number
1 Quart	28H97
Case/12 Quarts	28H98
5 Gallon Pail	28H99
55 Gallon Drum	28H100

Call your local Sutorbilt Distributor to place your order for Gardner Denver lubricants. Your Authorized Gardner Denver Distributor is:

_____

_____

_____

FOREWORD

Sutorbilt® blowers are the result of advanced engineering and skilled manufacturing. To be assured of receiving maximum service from this machine the owner must exercise care in its operation and maintenance. This book is written to give the operator and maintenance department essential information for day-to-day operation, maintenance and adjustment. Careful adherence to these instructions will result in economical operation and minimum downtime.

⚠ DANGER

Danger is used to indicate the presence of a hazard which will cause severe personal injury, death, or substantial property damage if the warning is ignored.

⚠ WARNING

Warning is used to indicate the presence of a hazard which can cause severe personal injury, death, or substantial property damage if the warning is ignored.

⚠ CAUTION

Caution is used to indicate the presence of a hazard which will or can cause minor personal injury or property damage if the warning is ignored.

NOTICE

Notice is used to notify people of installation, operation or maintenance information which is important but not hazard-related.

SAFETY PRECAUTIONS

Safety is everybody's business and is based on your use of good common sense. All situations or circumstances cannot always be predicted and covered by established rules. Therefore, use your past experience, watch out for safety hazards and be cautious. Some general safety precautions are given below:

⚠ DANGER

Failure to observe these notices could result in injury to or death of personnel.

- **Keep fingers and clothing away from blower inlet and discharge ports, revolving belts, sheaves, drive coupling, etc.**
- **Do not use the air discharge from this unit for breathing – not suitable for human consumption.**
- **Do not loosen or remove the oil filler plug, drain plugs, covers, or break any connections, etc., in the blower air or oil system until the unit is shut down and the air pressure has been relieved.**
- **Electrical shock can and may be fatal.**
- **Blower unit must be grounded in accordance with the National Electrical Code.**
- **Open main disconnect switch, tag and lockout before working on the control.**
- **Disconnect the blower unit from its power source, tag and lockout before working on the unit – the machine may be automatically controlled and may start at any time.**

⚠ WARNING

Failure to observe these notices could result in damage to equipment.

- **Stop the unit if any repairs or adjustments on or around the blower are required.**
- **Disconnect the blower unit from its power source, tag and lockout before working on the unit – the machine may be automatically controlled and may start at any time.**
- **Do not exceed the rated maximum speed shown on the nameplate.**
- **Do not operate unit if safety devices are not operating properly. Check periodically. Never bypass safety devices.**

TABLE OF CONTENTS

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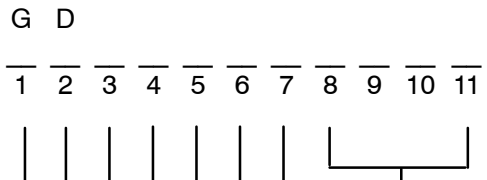
LIST OF ILLUSTRATIONS

MATRIX/MENU
4500 SUTORBILT BLOWERS

NOTICE TO CUSTOMER – To find the construction options for your blower unit, FILL IN THE BALANCE OF LETTERS OR NUMBERS FROM YOUR UNIT NAMEPLATE



FOLLOW THE LINE DOWN AND OVER FROM EACH SPACE THUS FILLED IN TO FIND THE APPROPRIATE CONSTRUCTION OPTION WITH WHICH YOUR MACHINE IS EQUIPPED.

COLUMN 1 – BASIC DESIGNATOR

COLUMN 2 – PRODUCT FAMILY

COLUMN 3 – GEAR DIAMETER

F.	6”	G.	7”	H.	8”

COLUMN 4 – CASE LENGTH

A.	8”	11”	12”
B.	12”	13”	16”
C.	15”	16”	20”
D.	18”	21”	24”

COLUMN 5 – CONFIGURATION

- E. Vertical–Bottom Hand–Right Discharged Timed, CCW
- F. Vertical–Bottom Hand–Left Discharged Timed, CW
- G. Vertical–Top Hand–Right Discharged Timed, CW
- H. Vertical–Top Hand–Left Discharged Timed, CCW
- J. Horizontal–Right Hand–Bottom Discharged Timed, CW
- K. Horizontal–Right Hand–Top Discharged Timed, CCW
- L. Horizontal–Left Hand–Top Discharged Timed, CW
- M. Horizontal–Left Hand–Bottom Discharged Timed, CCW

COLUMN 6 – DESIGN VERSION

- A. 6” & 7” Only
- C. 8” Only

COLUMN 7 – ADDITIONAL DESCRIPTION

- A. Lip Seal–Standard Clearances–Splash Lube
- B. Mechanical Seal–Standard Clearances–Splash Lube

COLUMNS 8 THRU 11 – MODIFICATION NUMBER *

* NOT INCLUDED IN THIS PUBLICATION, CONSULT FACTORY.

INTRODUCTION
YOUR KEY TO TROUBLE FREE SERVICE

Thank you for investing in Sutorbilt quality. The Sutorbilt reputation for rugged dependability has been earned by over 50 years of service in demanding, industrial operations where downtime cannot be tolerated and efficient blower performance is expected.

Your Sutorbilt blower is a precision engineered blower that has been carefully manufactured and thoroughly tested at the state-of-the-art Gardner Denver Blower Factory in Sedalia, Missouri.

As with other precision machinery, there are several relatively simple installation, operation and maintenance procedures that you must observe to assure optimum blower performance. There is no guesswork in the manufacture of your highly advanced Sutorbilt blower and there must be none in preparing the blower to get the job done in the field.

The purpose of this manual is to help you properly install, operate and maintain your Sutorbilt blower. It is essential that you review all sections of this manual in preparation for installing your blower. Follow the instructions carefully and you will be rewarded with trouble-free Sutorbilt service . . . year in and year out.

OPERATING PRINCIPLES - The 4500 Series rotary blowers are the positive displacement type with two figure-eight shaped impellers rotating in opposite directions inside the casing. As each lobe of an impeller passes the blower inlet, it traps a quantity of air equal to exactly one-fourth the displacement of the blower. This trapped air is forced around the case to the blower outlet. Timing gears accurately position the impellers in relation to each other to maintain the minute clearances so vital to the high volumetric efficiency of the rotary positive displacement blower. See FIGURE 1.

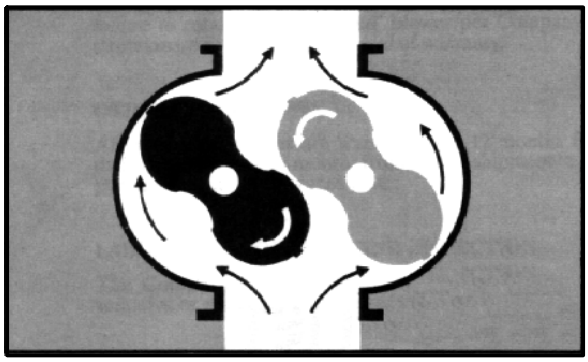


FIGURE 1 - OPERATING PRINCIPLES

SECTION 1
EQUIPMENT CHECK

Before uncrating, check the packing slip carefully to be sure all the parts have been received. All accessories are listed as separate items on the packing slip, and small important accessories such as relief valves can be overlooked or lost. After every item on the packing slip has been checked off, uncrate carefully. Register a claim with the carrier for lost or damaged equipment.

⚠ WARNING

Customers are cautioned to provide adequate protection, warning and safety equipment necessary to protect personnel against hazards involved in installation and operation of this equipment in the system or facility.

STORAGE

Your Sutorbilt Blower was packaged at the factory with adequate protection to permit normal storage for up to six (6) months.

If the unit is to be stored under adverse conditions or for extended periods of time, the following additional measures should be taken to prevent damage.

1. Store the blower in a clean, dry, heated area.
2. Make certain inlet and discharge air ports are tightly covered to prevent foreign material from entering the air box.
3. All exposed, non-painted surfaces should be protected against rust and corrosion.
4. Provide adequate protection to avoid accidental mechanical damage.
5. In high humidity or corrosive environments, additional measures may be required to prevent rusting of the blower internal surfaces.
6. To prevent rusting of gears, bearings, etc., the oil reservoirs may be filled with normal operating oil.

⚠ CAUTION

Before running the blower, drain the oil and replace to the proper operating level with clean, fresh lubricant.

7. Rotate the blower shaft (10 to 25 turns) weekly during storage. Inspect the blower shaft (near the shaft seal area) monthly and spray with rust inhibitor if needed.
8. For long term storage (over six (6) months), contact Sutorbilt Customer Service for recommendations.

REMOVING PROTECTIVE MATERIALS

Blower inlet and outlet are temporarily capped to keep out dirt and other contaminants during shipment. These covers must be removed before start-up.

RUST INHIBITIVE COATING

The internal surface of all Sutorbilt units are mist sprayed with a rust inhibitive to protect the machine during shipment.

⚠ WARNING

Rotating components will cause severe injury in case of personal contact. Keep hands away from blower inlet and discharge ports.

SECTION 2
INSTALLATION

LOCATION

Install the blower in a well lit, clean, dry place with plenty of room for inspection and maintenance.

FOUNDATIONS

For permanent installations we recommend concrete foundations be provided, and the equipment should be grouted to the concrete. It is necessary that a suitable base be used, such as a steel combination base under blower and motor, or a separate sole plate under each. Before grouting, equipment must be leveled, free of all strains, and anchored so no movement will occur during setting of grout. After grout has completely hardened, a recheck is necessary to compensate for shrinkage, etc. If required, add shims under blower feet after final tightening of foundation anchor bolts to remove strain from the blower housing.

Where jack screws or wedges are used during grouting, they must be backed off and wedges removed before final tightening of anchor bolts.

Where a concrete foundation is not feasible, care must be taken to insure that equipment is firmly anchored to adequate structural members.

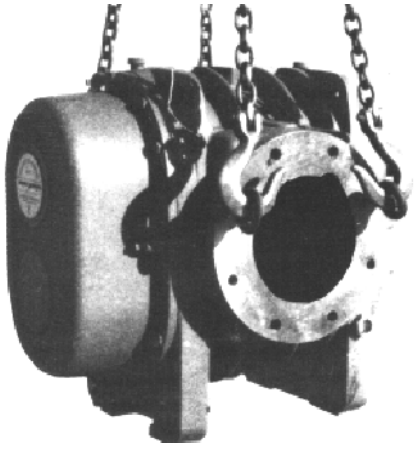


FIGURE 2 - LIFTING THE BLOWER

Refer to grouting instructions.

LIFTING AND HANDLING

Reasonable care should be taken during unloading and moving to insure against undue strain on the blower.

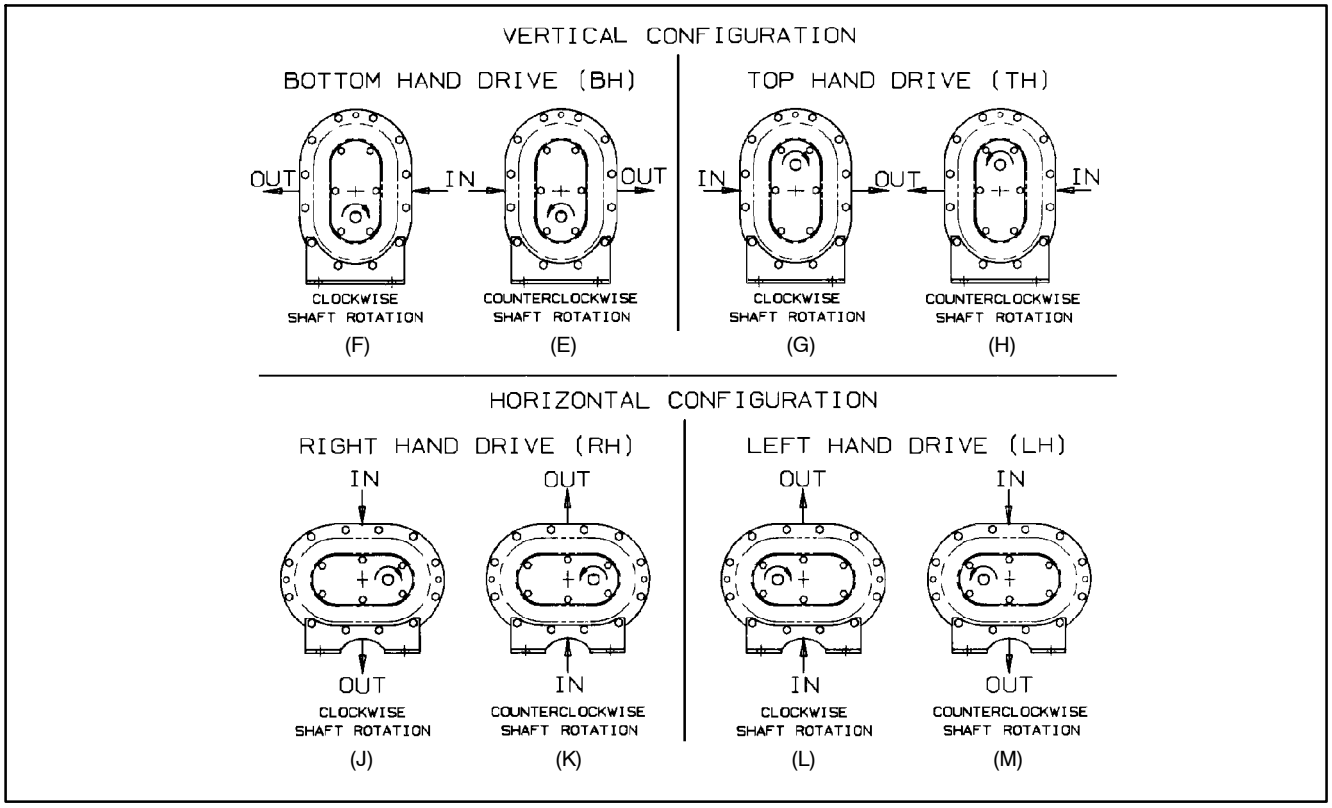


FIGURE 3 - BLOWER MOUNTING CONFIGURATIONS

Eye bolts and lifting lugs are designed to support the weight of the blower only. They are not intended to be used to lift packages or components. See FIGURE 2, page 3.

Protective covers should be left in place until just prior to installation.

DRIVE INSTALLATION

Large blowers are generally driven by a coupling. On the direct connected units, adjustments and lubrication of couplings to the specifications of the coupling manufacturer are very important. When mounted drives are supplied from the factory, proper alignment has been established before shipment. However, during shipping, handling and installation, it is likely that the alignment has been disturbed and final adjustment must be made before startup. To reduce vibration, the coupling must be aligned to 0.003"/0.005" for both parallel and angular alignment.

⚠ WARNING

Overtightening belts leads to heavy bearing loads and premature failure.

Drive design is critical.

When selecting a V-belt drive, check to be sure the shaft overhung load limitation is not exceeded. Refer to FIGURE 4, page 5, for overhung load calculations and limitations.

Belt drives must be carefully aligned. Motor and blower pulleys must be parallel to each other and in the same plane within 1/32 inch. Belt tension should be carefully adjusted to the belt manufacturer's recommendation using a belt tension gauge. Check tension frequently during the first day of operation.

⚠ WARNING

Exceeding overhung load limitations leads to unwarrantable premature bearing failure and shaft breakage.

The location of the sheave on the blower shaft greatly affects the stress in the shaft. The optimum blower sheave positioning is as close as possible to the blower drive cover, not to exceed dimension "C" in Drive Shaft Illustration, FIGURE 4, page 5.

The calculated shaft moment must not exceed the maximum allowable moment listed in Maximum Allowable Moment Chart, FIGURE 4, page 5. If the calculated shaft moment exceeds the maximum allowable moment:

- Increase Sheave Diameters to Reduce Belt Pull
- Use Jackshaft Drive
- Use Direct Coupled or Gearbox Drive

To calculate shaft moment for a given V-Belt Drive Arrangement:

1. Use the formula for Calculation of Belt Pull, FIGURE 4, page 5, to calculate belt pull. Refer to Arc of Contact Factor Chart, FIGURE 4, page 5.

2. Insert the calculated belt pull into the formula for Calculation of Shaft Moment, FIGURE 4, page 5, to arrive at the calculated shaft moment.

PIPING

Inlet and discharge connections on all blowers are large enough to handle maximum volume with minimum friction loss. Reducing the pipe diameter on either inlet or discharge will only create additional line loss and increase the overall pressure differential, causing increased power and temperature rise.

Excessive weight of piping and fittings will cause internal misalignment and premature wear. Never allow the blower to carry the weight of the pipe. If possible, a spool or sleeve-type expansion joint should be installed between the unit and the piping. Where a flexible connection is not practical, the weight of the rigid connection must be separately supported, and provisions must be made for thermal growth.

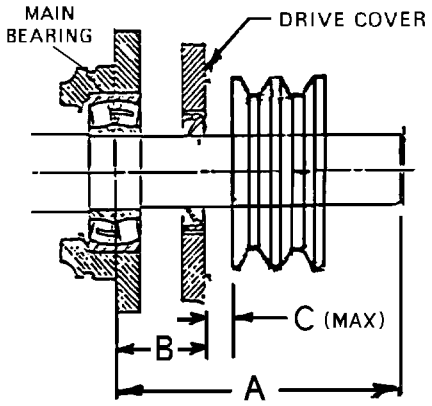
All system piping must be cleaned internally before connecting to the blower.

⚠ WARNING

Sutorbilt blowers are shipped dry from the factory. Do not attempt to operate the blower before following proper lubrication instructions. Permanent damage to the gears, bearings and seals will occur.

Gear Diameter (Inches)	Dimensions (Inches)			Maximum Allowable Moment (LB-IN)
	A	B	C (Max)	
6	6.60	2.10	.25	4123
7	7.88	3.00	.25	4758
8	9.50	2.70	.25	7488

MAXIMUM ALLOWABLE MOMENT



DRIVE SHAFT ILLUSTRATION

Z	Ac	Z	Ac	Z	Ac	Z	Ac	Z	Ac	Z	Ac
0.000	1.000	0.250	0.966	0.500	0.926	0.750	0.879	1.000	0.823	1.250	0.751
0.025	0.997	0.275	0.962	0.525	0.922	0.775	0.874	1.025	0.816	1.275	0.742
0.050	0.994	0.300	0.958	0.550	0.917	0.800	0.869	1.050	0.810	1.300	0.734
0.075	0.990	0.325	0.954	0.575	0.913	0.825	0.864	1.075	0.803	1.325	0.725
0.100	0.987	0.350	0.951	0.600	0.908	0.850	0.858	1.100	0.796	1.350	0.716
0.125	0.983	0.375	0.947	0.625	0.904	0.875	0.852	1.125	0.789	1.375	0.706
0.150	0.980	0.400	0.943	0.650	0.899	0.900	0.847	1.150	0.782	1.400	0.697
0.175	0.977	0.425	0.939	0.675	0.894	0.925	0.841	1.175	0.774	1.425	0.687
0.200	0.973	0.450	0.935	0.700	0.889	0.950	0.835	1.200	0.767		
0.225	0.969	0.475	0.930	0.725	0.884	0.975	0.829	1.225	0.759		

ARC OF CONTACT FACTORS

$$\text{Belt Pull} = \left[\frac{2.5 - Ac}{Ac}\right]\left[\frac{125954 \times Hp \times S.F.}{D \times RPM}\right]$$

Key:
- Ac = Arc of Contact Factor (Refer to Arc of Contact Factors Chart above)
- Hp = Blower Horsepower for Operating Conditions
- S.F. = Actual Drive Service Factor
- D = Blower Sheave Pitch Diameter in Inches
- RPM = Blower Sheave Speed
- Z = $\dfrac{\text{Large Sheave Pitch Diameter (in)} - \text{Small Sheave Pitch Diameter (in)}}{\text{Sheave Center Distance (in)}}$

CALCULATION OF BELT PULL

$$\text{Shaft Moment (LB-IN)} = \text{Belt Pull} \times \left[B + C + \left(\frac{\text{Sheave Width}}{2}\right)\right]$$

CALCULATION OF SHAFT MOMENT

FIGURE 4 - BELT DRIVE OVERHUNG LOAD CALCULATIONS

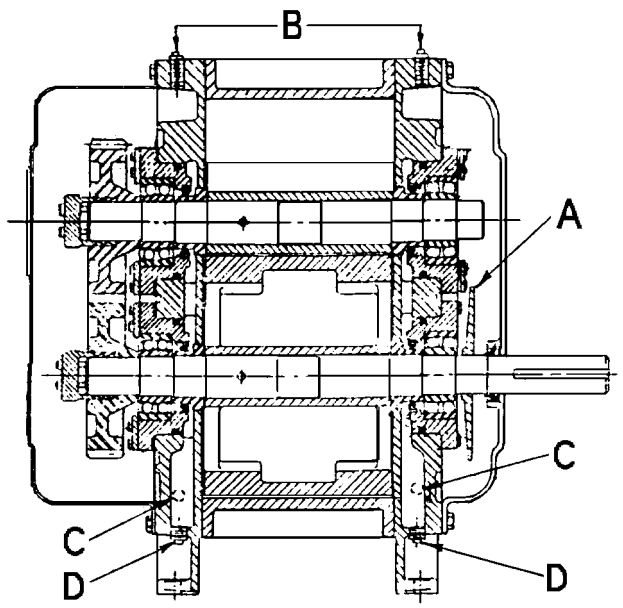


FIGURE 5 - LUBRICATION LOCATION

AEON PD Lubricant

Description	Part Number
1 Quart	28G23
Case/12Quarts	28G24
5 Gallon Pail	28G25
55 Gallon Drum	28G28

AEON PD Food Grade Lubricant

Description	Part Number
1 Quart	28H97
Case/12Quarts	28H98
5 Gallon Pail	28H99
55 Gallon Drum	28H100

FIGURE 6 - AEON PD SYNTHETIC LUBRICANT

LUBRICATION

Timing gears and bearings are kept constantly lubricated by a simple but highly effective splash system. At the drive end, oil is distributed by a heavy-duty oil slinger on the shaft (A in FIGURE 5). At the gear end, gear teeth are lubricated by being partially submerged. The gear teeth serve as oil slingers for the gear-end bearings.

RECOMMENDED LUBRICANT

The factory recommended lubricant is AEON PD Synthetic Lubricant. AEON PD is formulated especially for positive displacement blowers to provide maximum protection at any temperature. One filling of AEON PD will last a minimum of 4 times longer than a premium mineral oil, depending on actual operating conditions. AEON PD contains a special additive package designed for greater rust and corrosion protection.

NOTICE

Machines are shipped without oil in the sump. Do not operate before adding lubricant.

LUBRICATION INSTRUCTIONS

Remove vented breathers (B in FIGURE 5) from the top of the headplates. DO NOT REMOVE ANY OTHER PLUGS FROM THE HEADPLATES. Fill each end until oil reaches the centerline of the sight glasses with unit not running (C in FIGURE 5). Replace the fill plugs.

Check the oil level after the initial operation. **Maintain oil level at the midpoint of the sight glass when the blower is not operating.** Add fresh oil as required to maintain the proper level.

⚠ WARNING

Do not overfill as this will tend to cause excessive heating of the gears and may damage the unit.

To drain, remove drain plugs (D in FIGURE 5, page 6) at the bottom. AEON PD Synthetic Lubricant should be drained after 6000 hours of operation. Re-fill with fresh AEON PD oil. If mineral oil is used, perform the above oil-change maintenance every 1500 hours. Recommended service intervals are for normal blower operating conditions. Severe operating conditions may warrant more frequent oil changes. Laboratory analysis of lubricant should be used to help determine the optimum oil change interval.

For best performance and equipment protection, use AEON PD Synthetic Lubricant, which has been specifically formulated for positive displacement blowers.

If you choose not to use AEON PD Synthetic Blower Lubricant, select an oil with rust and oxidation inhibitors, anti-foam additives, and the viscosities listed in FIGURE 7. Do not use an oil that contains EP additives.

NOTICE

Flush the oil whenever a change is made from one type of oil to another.

You will need to flush the oil whenever a change is made from one type of oil to another. Drain the current lubricant as thoroughly as possible. Refill with the new lubricant. Fill to the normal level of the blower, which is at the middle of the sight glass when the machine is not operating. Run the blower for one hour. Shut off the blower and drain the lubricant completely. Refill the blower again with the new lubricant.

Blower Discharge Temperature	Ambient Temperature			
	Less than10° F *	10° F to 32° F **	32° F to 90° F	Greater than 90° F
Less than 32° F (0° C)	ISO 100 ‡	ISO 100 ‡		
32° F to 100° F (0° C to 38° C)	ISO 100 ‡	ISO 100 ‡	ISO 150 ‡	
100° F to 225° F (38° C to 105° C)	ISO 100 ‡	ISO 100 ‡	ISO 150 ‡	ISO 220 ‡
225° F to 300° F (105° C to 149° C)	ISO 150 ‡	ISO 150 ‡	ISO 220 ‡	ISO 220 ‡
Greater than 300° F (149° C)			*** ‡	*** ‡

* For ambient temperatures less than 10° F, but not less than -20° F, the use of oil sump heaters, heated enclosures or synthetic lubricant is required.

** For ambient temperatures 10° F to 32° F, the use of oil sump heaters, heated enclosures or synthetic lubricant is recommended.

*** The lubricant viscosity must be 70 SUS minimum at the lubricant operating temperature.

The pour point of the lubricant should be at least 5° to 10° F below the minimum expected ambient temperature.

For continuous operation, where the lubricant temperature exceeds 200° F, synthetic lubricant is recommended.

‡ The recommended operating range for AEON PD Synthetic Lubricant.

FIGURE 7 - LUBRICATION RECOMMENDATION

Gear Diameter (in)	Vertical Configuration			Horizontal Configuration		
	Splash Lubrication			Splash Lubrication		
	Drive End	Gear End	Total	Drive End	Gear End	Total
6	1.5 pt.	1 qt.	1.75 qt.	2.5 pt.	5 pt.	3.75 pt.
7	1 qt.	5 pt.	3.5 qt.	5 pt.	7 pt.	6 qt.
8	3 pt.	3 qt.	4.5 qt.	3 qt.	7 qt.	10 qt.

Notes: Oil Capacities shown are in U.S. pints and quarts.
Remove the oil vented plugs on top of the blower and add oil at each plug location.
Blowers have separate oil sumps and oil must be added at each end of the blower.

FIGURE 8 - 4500 BLOWER OIL CAPACITIES

If not using AEON PD synthetic blower lubricant, use oils with rust and oxidation inhibitors, anti-foam additives and the viscosities listed in FIGURE 8.

AIR FILTERS AND FILTER SILENCERS

⚠ WARNING

Servicing the air filters is one of the most important maintenance operations to be performed to insure long blower life.

Servicing frequency of filter elements is not time predictable. A differential pressure indicator, with a continuous gauge reading, should be installed across the inlet filter. It will tell how much of the service life of the filter element has been used. It will also eliminate both premature filter servicing and premature blower failure due to a plugged filter when the filter pressure drop is used to establish maintenance points.

In all cases refer to the filter manufacturer's service instructions. Due to the many types of filters, it is not practical to give specific instructions covering all models.

NOTICE

No matter what type of filter is used, always make sure all seats, gaskets, clamps and hose connections on the filter and inlet line are absolutely air tight. Each time the filter is serviced, inspect interior of the blower for dirt.

SECTION 4
OPERATION

Future operating problems can be avoided if proper precautions are observed when the equipment is first put into service.

Before starting under power, the blower should be turned over by hand to make certain there is no binding, or internal contact.

Each size blower has limits on pressure differential, running speed, and discharge temperature which must not be exceeded. These limits are shown in "Maximum Operating Limitations", FIGURE 9, page 10.

⚠ WARNING

Operating beyond the specified operating limitations will result in damage to the unit.

It is important that the pressures and temperatures are measured directly at the ports of the blower to avoid error that may be caused by intervening pipe runs, fittings, etc.

Relief valves must be used to protect against excessive pressure or vacuum conditions. These valves should be tested at initial startup to be sure they are adjusted to relieve at or below the maximum pressure differential rating of the blower.

NOTICE

Relief valves should be placed as close as possible to the blower inlet or discharge.

In some instances, pressure may be relieved at a lower point than the blower maximum in order to protect the motor or the equipment served by the blower.

LIMITATIONS

For information regarding limitations, refer to "Maximum Operating Limitations," FIGURE 9, page 10.

⚠ WARNING

Do not operate equipment without adequate silencing devices installed since high noise level may cause hearing damage. (Reference OSHA standards.)

After the unit has been started, the load should be applied gradually. A blow-off valve for unloaded starting is recommended.

The first few minutes of operation are the most critical, in so far as potential problems are concerned, so all equipment should be observed closely for excessive heat, noise or vibration during this period. Speeds, pressures, temperatures, vacuums and other operating conditions should be checked to insure that specified limits are not exceeded. See FIGURE 9, page 10.

ROUTINE OPERATION

Since the unit is a positive displacement type, the volume flow is fixed for constant speed so no regulation can be achieved by restricting the pipe or adjusting the valves. Excess air flow may be discharged through a relief valve or blow-off to atmosphere. Volume flow is essentially proportional to the speed and this offers a method of flow adjustment with V-belt driven machines.

Although these units are extremely rugged and are designed with adequate factors of safety, it is possible to cause serious damage by exceeding the manufacturer's limits.

Periodically the gauges, instruments, and safety devices used to monitor the blower should be checked for calibration and functioning.

NOTICE

Full rated pressure is full pressure differential from the inlet flange to the discharge flange.

⚠ CAUTION

Precaution should be taken to insure that the unit cannot be started accidentally and cause injury to personnel or damage to equipment.

SHUT DOWN

The blower should be unloaded before shut down. Consideration should be given to possible backflow and reverse rotation of the equipment as a result of pressure on the discharge side of the unit. A check valve is recommended.

If the unit is to be shut down for extended periods of time, it may be desirable to take some steps to prevent rust forming inside the casing. Condensation, gas vapors, or seal water can close up internal clearances and cause the unit to bind. Injection of oil or other rust retardant will help to prevent this problem.

MAXIMUM OPERATING LIMITATIONS

SIZE	RPM MAX.	RPM MIN.	PRESSURE PSI	VAC IN HG
608	2880	954	15	16 *
612	2880	954	10	16
615	2880	954	8	16
618	2880	954	6	12
711	2440	818	15	16 *
713	2440	818	10	16
716	2440	818	8	16
721	2440	818	6	12

SIZE	RPM MAX.	RPM MIN	PRESSURE PSI	VAC IN HG
812	2100	716	15	16 *
816	2100	716	10	16
820	2100	716	8	16
824	2100	716	6	12

Maximum Discharge Temperature
325° F (162° C)

* Maximum Discharge Temperature for 608, 711 & 812 – 360° F. (182° C)

DO NOT EXCEED THESE LIMITS

NOTICE

Blower speed, line losses, elevation, and increased inlet temperatures will affect the maximum operating limitations.

FIGURE 9 - MAXIMUM OPERATING LIMITATIONS

BLOWER STARTUP CHECKLIST

This startup procedure should be followed during the initial installation and after any shutdown periods or after the blower has been worked on or moved to a new location. It is suggested that the steps be followed in sequence and checked off (✓) in the boxes provided.

☐ 1. Check the unit and all piping for foreign material and clean if required.

☐ 2. Check the flatness of the feet and the alignment of the drive. Feet that are bolted down in a bind can cause case distortion and internal rubbing. Misaligned V-drives can cause the impellers to rub against the headplates and cause a reduction in the volumetric efficiency of the unit. Misaligned couplings can ruin bearings.

☐ 3. If blower is V-belt driven, check the belt tension and alignment. Over-tensioned belts create heavy bearing loads which leads to premature failure.

☐ 4. Be sure adequate drive guards are in place to protect the operator from severe personal injury from incidental contact.

☐ 5. Check the unit for proper lubrication. Proper oil level cannot be overemphasized. Too little oil will ruin bearings and gears. Too much oil will cause overheating and can ruin gears and cause other damage.

☐ 6. With motor electrical power locked out and disconnected, turn the drive shaft by hand to be certain the impellers do not bind.

☐ 7. “Jog” the unit with the motor a few times to check rotation and to be certain it turns freely and smoothly.

☐ 8. The internal surfaces of all Sutorbilt units are mist sprayed with a rust preventive to protect the machine during the shipping and installation period. This film should be removed upon initial start-up.

☐ 9. Start the unit and operate 15 minutes at no load. During this time, check for hot spots and other indications of interference.

☐ 10. Apply the load and observe the operation of the unit for one hour. Check frequently during the first day of operation.

☐ 11. If malfunctions occur, do not continue to operate. Problems such as knocking impellers can cause serious damage if the unit is operated without correction.

SAFETY PRECAUTIONS

1. Do not operate blower with open inlet or outlet port.
2. Do not exceed specified vacuum or pressure limitations.
3. Do not operate above or below recommended blower speed range. See FIGURE 9, page 10.
4. Blower is not to be used where non-sparking equipment is specified.
5. Do not operate without belt guard or coupling shield.

⚠ WARNING

Do not exceed sheave or coupling manufacturers' rim speed limit.

6. The blower and blower discharge piping may be extremely hot and can cause skin burns on contact.

TROUBLE SHOOTING

No matter how well the equipment is designed and manufactured, there may be times when servicing will be required due to normal wear, the need for adjustment, or various external causes. Whenever equipment needs attention, the operator or repairman should be able to locate the cause and correct the trouble quickly. The Trouble Shooting Chart below is provided to assist the mechanic in those respects.

PROBLEM	POSSIBLE CAUSES	SOLUTION
Knocking	1. Unit out of time.	1. Re-time impellers.
	2. Distortion due to improper mounting or pipe strains.	2. Check mounting alignment and relieve pipe strains.
	3. Excessive pressure differential.	3. Reduce to manufacturer's recommended pressure. Examine relief valve, re-set if necessary.
	4. Worn gears.	4. Replace timing gears.
	5. Worn bearings.	5. Replace bearings.
	6. Worn bearing cartridges.	6. Replace cartridges.
Excessive blower temperature.	1. Too much oil in gear case.	1. Reduce oil level.
	2. Too low operating speed.	2. Increase blower speed.
	3. Clogged filter or muffler.	3. Remove cause of obstruction.
	4. Excessive pressure differential.	4. Reduce pressure differential across the blower.
	5. Worn impeller clearances.	5. Replace impeller.
	6. Internal contact.	6. Correct clearances.
Impeller end or tip drag.	1. Insufficient assembled clearances.	1. Correct clearances.
	2. Case or frame distortion.	2. Check mounting and pipe strain.
	3. Excessive operating pressure.	3. Remove cause.
	4. Excessive operating temperature.	4. Remove cause.

TROUBLE SHOOTING (Continued)

PROBLEM	POSSIBLE CAUSES	SOLUTION
Lack of volume.	1. Slipping belts.	1 Tighten belts.
	2. Worn clearances.	2. Re-establish proper clearances.
Excessive bearing or gear wear.	1. Improper lubrication.	1. Correct lubrication level. Replace dirty and/or improper oil.
Loss of oil.	1. Headplate, gear case or drive cover vents plugged.	1. Clean vents.
	2. Worn seal.	2. Replace seals.
Lack of oil pressure.	1. Dirty suction screen.	1. Clean suction screen.
	2. Leak in suction line.	2. Repair leak.
	3. Lubrication pump losing its prime.	3. Reprime, by removing pipe plug and priming.

GEAR INSPECTION

Inspection of the timing gears may be accomplished simply by removing the gear case. Refer to FIGURE 10. Remove the bolts from the gear case and detach it from the head plate. Timing gears and gear end bearings are now exposed. On completion of maintenance work, be certain that the gear case is restored to its original position. Use a paste-type gasket compound on the mating surfaces. Always relubricate before starting.

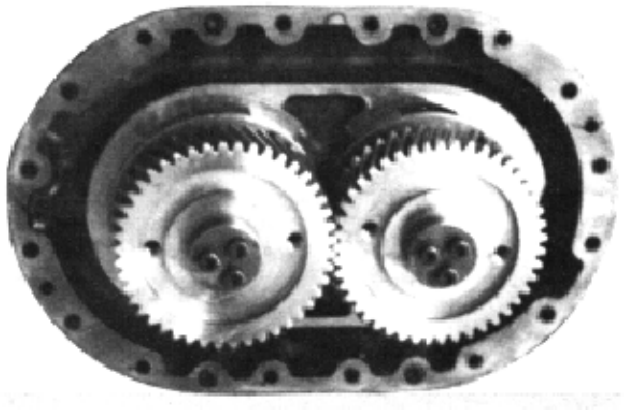


FIGURE 10 - LOCATION OF TIMING GEAR BOLTS

IMPELLER INSPECTION

Series 4500 impellers can be inspected through the inlet or outlet ports. This will reveal such conditions as out of time, excessive or insufficient clearances, abrasion of parts from passing foreign material, etc.

REPAIR

Assembly

⚠ WARNING

When rotation of the impellers is required in the assembly process, insure that all personnel are clear of lobes and gears to guard against serious injury.

Impeller Clearances			
Blower Size	Gear End Min.-Max	Imp. Tip Each Minimum Inlet/Disch	Discharge Timing Minimum Open/Closed
	Inches	Inches	Inches
6	.006-.008	.008/.006	.011/.005
7	.007-.008	.010/.006	.013/.006
8	.007-.008	.011/.006	.014/.006

FIGURE 11 - GEAR END CLEARANCE

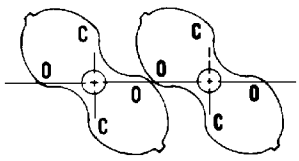
Timing

The impellers of the unit are separated by pre-determined exact clearances built into the machine. The timing of a unit is the setting of one impeller with respect to the other so they do not touch or knock during normal operation. The impellers are held 'in time' by timing gears which are secured to the shaft by grip rings inside the gear hubs. See FIGURE 10. Retiming is necessary to restore proper impeller lobe to lobe clearances after a unit has been jammed and the removal of the strain or foreign material does not stop the knocking or pounding during operation.

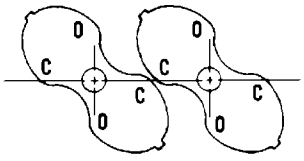
Determining Proper Impeller Clearances - Refer to FIGURE 12, page 15. Impellers are shown viewed from the drive end of the blower. Always face the drive shaft end when determining clearances.

Clearances between impellers are measured at points o-o and c-c when the impellers are positioned at 45° angles as shown. This is done by measuring with a feeler gauge between o-o, then rotating the impellers a quarter turn and gauging between c-c. Adding the measurements obtained will give the total clearance.

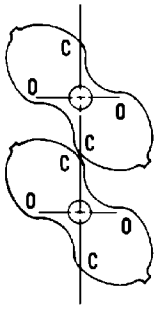
Units are timed for rotation in one direction only, and are marked with a rotational arrow above the drive shaft. In these units, o-o should have 2/3rds of the total



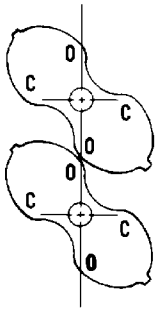
Right Hand – Top Discharge
Left Hand — Bottom Discharge



Right Hand – Bottom Discharge
Left Hand — Top Discharge



Bottom Hand – Right Discharge
Top Hand — Left Discharge



Bottom Hand – Left Discharge
Top Hand — Right Discharge

FIGURE 12 - IMPELLER LOBE CLEARANCES

clearance and c-c should have 1/3, maintaining minimum open and closed per FIGURE 11, page 14.

RESETTING IMPELLER CLEARANCE

Impellers are held in time by timing gears, which are secured in position on the impeller shafts by grip rings inside the gear hubs. To reset impeller clearances (timing) it is necessary to release the grip rings in one of the gears. See FIGURE 13.

Grip rings are paired telescoping rings with conical mating surfaces. These rings are telescoped under clamping pressure so that the outer ring expands against the bore of the gear while the inner ring contracts on the shaft, locking them together.

To release the grip rings in one of the gears, first remove the gear locking clamp which is held to the end of the impeller shaft by one of the following:

6", 7" and 8" Series "A" - 3 Socket Head Cap Screws

8" Series "B" and "C" - 5 Socket Head Cap Screws

Use a gear puller to withdraw the gear about 1/8 inch (3 mm.) , then lightly tap the side of the gear with a mallet. This will release the grip rings inside the gear hub so that the impeller will be free to adjust. Do not remove the gear.

Wedge the two impellers together against the exact amount of shims required to establish proper clearance as determined previously. Push the gear firmly against the bearing race on the shaft. Replace the gear locking clamp and cap screws. Partially tighten the cap screws with the shim stock still wedged between the impellers. Proceed to tighten the cap screws progressively, finishing with a torque wrench to obtain a torque of 45 ft. lb. (6.22 Kg-m). Shock-load the gear locking clamp and then retorque to 45 ft. lb. (6.22 Kg-m). Remove shim stock and turn the impeller a couple of turns, then recheck the clearances.

End Clearance - It is always good policy to check end clearances between the impeller and gear-end headplate BEFORE AND AFTER DISTURBING TIMING GEARS OR GEAR-END BEARINGS. If end clearance is not within tolerance, see "Bearing and Seal Replacement," page 17, for instructions for making correction by re-shimming the bearing cartridge. After completion of the work, replace gear case and relubricate.

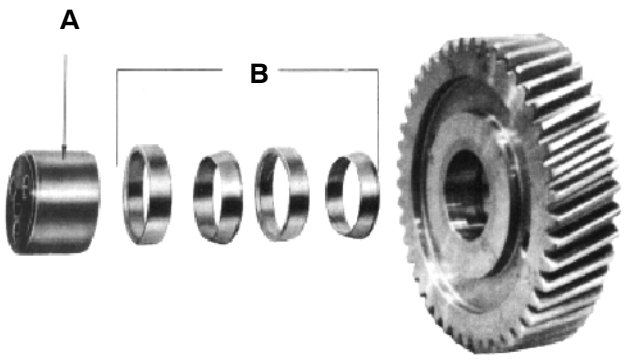


FIGURE 13 - TIMING GEAR ASSEMBLY

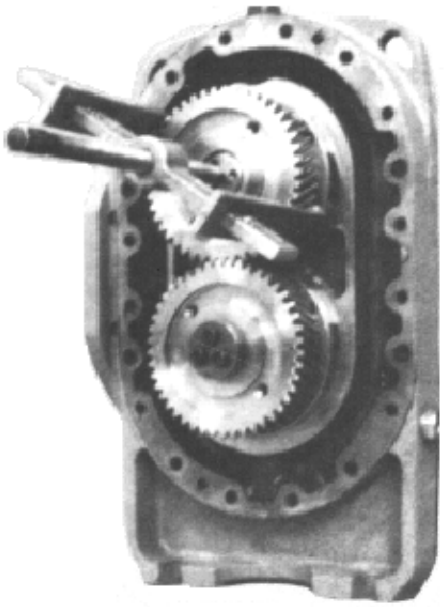


FIGURE 14 - TIMING GEAR REMOVAL

With proper maintenance and lubrication, normal life of bearings, gears and seals can be expected. To maintain the efficiency of your unit, however, these parts must be repaired or replaced when required.

TIMING GEAR REMOVAL

Remove the gear case (see "Gear Inspection," page 14. Match mark the shafts and gears to assure proper repositioning on completion of work.

Refer to FIGURE 13 and FIGURE 14. Remove the cap screws and gear locking clamps (A) from both shafts. Inside the hub of each gear are two pairs of telescoping grip rings (B) which secure the gear to the shaft. These grip rings must be released to remove the gear.

This is done by withdrawing the gear (FIGURE 14) about 1/8 inch (3 mm) with a gear puller, then lightly tapping the side of the gear. This releases the rings and allows the gear to be removed by hand.

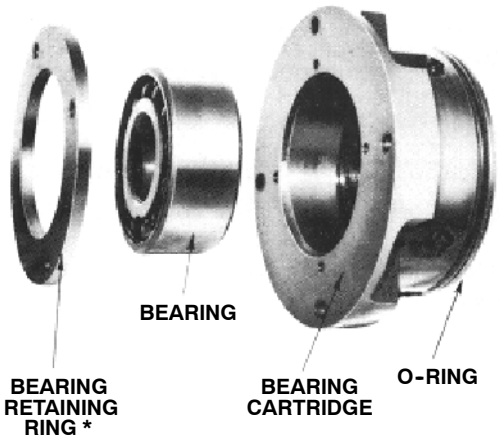
Note carefully the placement of the grip rings before removal, so that you can replace them properly paired and faced in the correct direction.

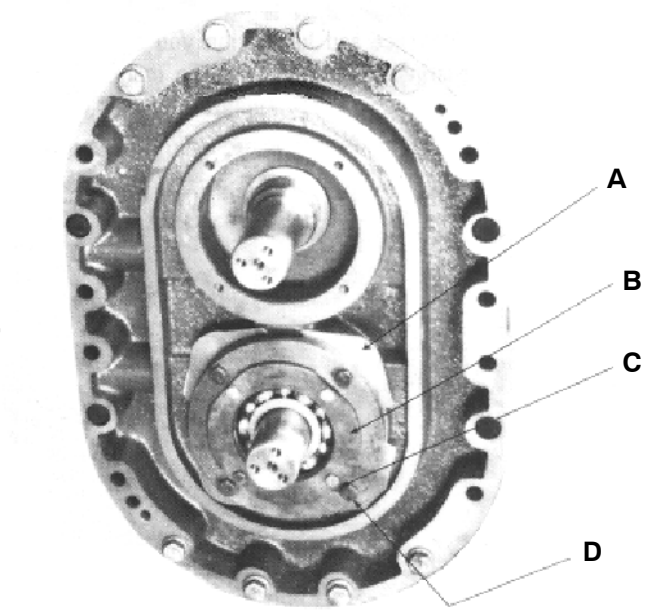
Reassembly

To reassemble, locate each gear firmly against the bearing race on its shaft. Thoroughly clean and dry all components – the grip rings, shafts and gear bores; coat the grip rings with a light oil, then slide the grip rings all the way onto the bores. Be sure the rings are paired and faced identically as originally installed, as shown in FIGURE 13. (Note: do not reuse grip rings which have been disassembled, since they lose concentricity and locking characteristics.)

Replace the gear locking clamps and cap screws. Establish a position for one gear, and progressively tighten the cap screws on that gear only. Using a torque wrench, finish at 45 ft. lb. (6.22 Kg–m). Shock–load the gear locking clamp and then retorque to 45 ft. lb. (6.22 Kg–m). Then follow "Resetting Impeller Clearance," page 15, before tightening the second gear in the same manner.

Note the end clearance between the impeller and gear headplate and correct, if necessary, according to instructions in "End Clearance," page 15. Replace the gear case gasket and lubricate.





* Later models use (4) clips instead of solid ring.

FIGURE 15 - BEARING CARTRIDGE REMOVAL

BEARING AND SEAL REPLACEMENT

Gear End

Remove the gear case (see "Gear Inspection," page 14). Note the end clearance between the impeller and gear headplate. Remove the timing gears as instructed previously.

Refer to FIGURE 15. Shims (A) installed during manufacture will now be exposed behind the bearing cartridge (B). These shims set the end clearance between the impeller and headplate; therefore, it is important that they be returned to their exact positions on reassembly. (NOTE: The number of shims fastened behind each bearing cartridge bolt may vary; be sure each set of shims is identified by position during withdrawal). To remove the shims, remove the bearing cartridge bolts (C). Insert jack screws in tapped holes (D) provided in the cartridge and back out the cartridge until the shims are loose. Remove one attachment bolt at a time, taking out the shims and marking them for accurate repositioning. On removal of all bolts, continue using the jackscrews to complete the cartridge removal. Remove the bearing retainer ring (or clips), from the face of the cartridge.

Blowers have a lip type oil seal behind each bearing. Gas pumps have a mechanical seal.

Lip Type Oil Seal

Whenever a cartridge is removed for repair purposes, always install a new seal and O-ring before reassembly. Install the seal with the lip facing the bearing, using a driving instrument having approximately the same outside diameter as the seal. Use caution not to damage the sealing elements, particularly when they are moved over the shaft.

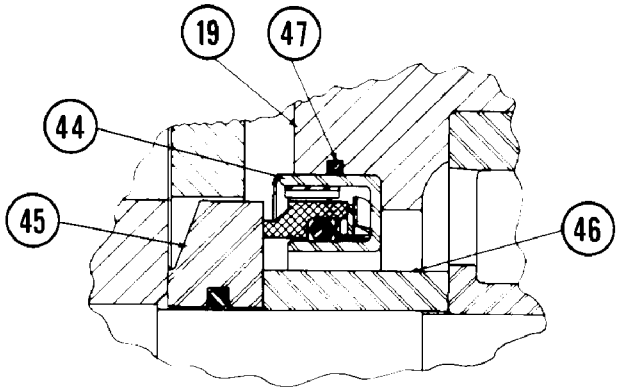


FIGURE 16 - MECHANICAL SEAL

Mechanical Seal

Refer to FIGURE 16. When replacing, remove the oil seal components. Clean the shaft carefully, especially under the O-ring inserted in the groove of the mating ring, item 45. Before sliding item 45 into position, be sure to break the sharp edges at the shaft diameter

changes, and lubricate the shaft surface. Item 45 must fit tight against the impeller end. Sleeve 46 is now installed on the shaft against item 45.

The mechanical seal should be assembled into the bearing cartridge item 19 on the bench. First insert O-ring 47 into the groove. With light oil, lubricate the recess and press in assembly 44. Then carefully install the bearing cartridge with seal, into the headplate.

End Clearance

To check or establish the gear-end clearance, use a sleeve made to substitute for the gear and grip ring assembly (items 5 and 6 on the parts cross section, FIGURE 17, page 31). With the gear locking clamp in place over the shaft end, and against the spacer sleeve, tighten the cap screws to 40 ft. lbs/5.4 kg-m torque. Check the clearance between the impeller ends and gear headplate. Add or remove shims behind the cartridge flange to establish the clearance given in FIGURE 11, page 14. Then remove the spacer sleeve and install gears, grip rings and locking clamps as outlined in "Setting Impeller Clearances," page 15. Note finished torque value.

Drive End

Refer to FIGURE 17. Remove the drive cover. Unbolt and remove the oil slinger from the shaft, noting its relative position for later replacement; spread slightly to avoid scratching the shaft. The bearing cartridges can now be removed following the procedure described

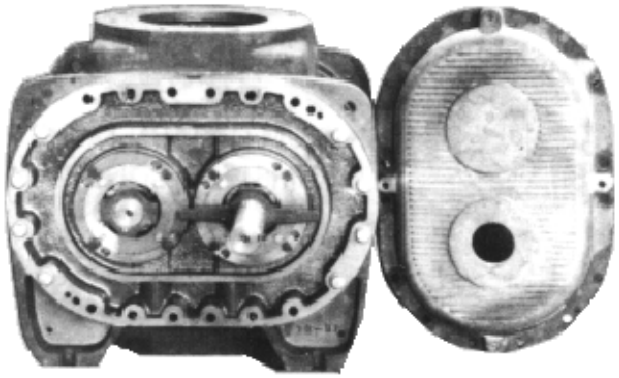


FIGURE 17 - DRIVE END

for the gear end, with the exception that no shims will be found.

Re-install bearing cartridges with new seals and O-rings.

Replace the bearings and slinger. Rotate shafts a couple of turns to be sure there will be no interference of the oil slinger. Remove the old drive seal and install the gasket and drive cover. Use a paste-type gasket compound between cleaned mating surfaces. Replace the drive seal. Take extreme care to avoid damaging the seal when moving it over the shaft keyway. When reassembly is completed, lubricate.

SECTION 7
PARTS LIST
VERTICAL CONSTRUCTION

Order by Part Number and Description. Reference Numbers for your convenience only.

6" VERTICAL
Reference Figure 17, Page 31, for Exploded View

	Ref. No.	DESCRIPTION	No. Req'd	Size 608 GDFA_A	Size 612 GDFB_A	Size 615 GDFC_A	Size 618 GDFD_A
*	1	BEARING (DRIVE END)	2	201GDF174	201GDF174	201GDF174	201GDF174
*	2	BEARING (GEAR END)	2	200GDF174	200GDF174	200GDF174	200GDF174
*	3	SEAL-MAIN (VITON)	4	910751061901	910751061901	910751061901	910751061901
**		SEAL-MECHANICAL	4	910711601401	910711601401	910711601401	910711601401
*	4	SEAL-DRIVE (VITON)	1	60DD678	60DD678	60DD678	60DD678
*	5	ELEMENT-LOCKING	4	22G31	22G31	22G31	22G31
	6	GEAR SET-TIMING	1	910714063200	910714063200	910714063200	910714063200
	7	GROUP-ROTOR	1	GDF82002	GDF82004	GDF82006	GDF82008
**		GROUP-ROTOR	1	GDF82001	GDF82003	GDF82005	GDF82007
**	8	SLEEVE	4	910712065901	910712065901	910712065901	910712065901
++	9	HEADPLATE-VERT	2	910774060801	910774060801	910774060801	910774060801
**		HEADPLATE-VERT	2	910774060802	910774060802	910774060802	910774060802
	10	CASE-IMPELLER	1	910714064701	910714064702	910714064703	910714064704
	11	CASE-GEAR	1	910733062601	910733062601	910733062601	910733062601
	12	COVER-DRIVE	1	910733062701	910733062701	910733062701	910733062701
	13	CARTRIDGE-BEARING	4	910713065201	910713065201	910713065201	910713065201
**		CARTRIDGE-BEARING	4	910713063101	910713063101	910713063101	910713063101
	14	RETAINER-BEARING	10	910741060101	910741060101	910741060101	910741060101
*	15	SHIM SET	1	910712068700	910712068700	910712068700	910712068700
	16	CLAMP-GEAR LOCKING	2	910712063501	910712063501	910712063501	910712063501
	17	SLINGER-OIL	1	910723070602	910723070602	910723070602	910723070602
*	19	O-RING (BEARING CARTRIDGE)	4	25BC419	25BC419	25BC419	25BC419
**	20	O-RING	4	8501623	8501623	8501623	8501623
*	21	O-RING (OIL SLINGER)	1	25BC418	25BC418	25BC418	25BC418
	22	NIPPLE-PIPE (FOR MTG SIGHT GAUGE)	2	63C1	63C1	63C1	63C1
	23	KEY-DRIVE	1	35L63	35L63	35L63	35L63
**	24	PIN-DOWEL	4	62V50	62V50	62V50	62V50
	25	BREATHER	2	5L223	5L223	5L223	5L223
++	26	GLASS-SIGHT (OIL LEVEL)	2	40P47	40P47	40P47	40P47
*	29	GASKET	2	910743060001	910743060001	910743060001	910743060001
	30	PLUG-SQ HD (PRESS TAP CONN. IMPELLER CASE)	2	64AA6	64AA6	64AA6	64AA6
	31	PLUG-SQ HD (HEADPLATE DRAIN)	2	64AA5	64AA5	64AA5	64AA5
	32	PIN-GROOVED (DRIVE COVER TO HEADPLATE)	2	62V48	62V48	62V48	62V48

	Ref. No.	DESCRIPTION	No. Req'd	Size 608 GDFA_A	Size 612 GDFB_A	Size 615 GDFC_A	Size 618 GDFD_A
	33	PIN-DOWEL (HEADPLATE TO IMPELLER CASE)	4	62M50	62M50	62M50	62M50
	34	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	2	95U3	95U3	95U3	95U3
	35	WASHER-PLAIN (GEAR CASE AND DRIVE COVER TO HEADPLATE)	40	95F3	95F3	95F3	95F3
	36	SCREW-SOC HD CAP (HEAD- PLATE TO IMPELLER CASE)	8	75P56	75P56	75P56	75P56
*	37	LOCKWASHER (BEARING CARTRIDGE TO HEADPLATE)	16	95B3	95B3	95B3	95B3
*	38	SCREW-HX HD CAP/NYLOK (BEARING RETAINER TO BEARING CARTRIDGE)	8	75A33N	75A33N	75A33N	75A33N
*	39	SCREW-SOC HD CAP/NYLOK (OIL SLINGER)	1	75P9N	75P9N	75P9N	75P9N
	40	SCREW-HX HD CAP (GEAR CASE TO HEADPLATE)	4	655ED030	655ED030	655ED030	655ED030
	41	SCREW-HX HD CAP (DRIVE COVER TO HEADPLATE)	4	655ED030	655ED030	655ED030	655ED030
	42	SCREW-HX HD CAP (BEARING CARTRIDGE TO HEADPLATE)	16	655ED050	655ED050	655ED050	655ED050
	43	SCREW-SOC HD CAP (GEAR LOCKING CLAMP TO SHAFT)	6	75P57	75P57	75P57	75P57
	44	SCREW-HX HD CAP (GEAR CASE, DRIVE COVER & HEADPLATE TO IMPELLER CASE)	32	655ED120	655ED120	655ED120	655ED120
**	45	PLUG-SQ HD (HEADPLATE AIR VENT)	4	64AA7	64AA7	64AA7	64AA7
	50	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	6	95U3	95U3	95U3	95U3
	*	KIT-OVERHAUL	0	GDF82010	GDF82010	GDF82010	GDF82010
		KIT-OVERHAUL (GAS PUMP)	0	GDF82009	GDF82009	GDF82009	GDF82009
		SHIM-IMPELLER CASE					
		ALUMINUM .010 THICK	‡	910743060003	910743060003	910743060003	910743060003
		ALUMINUM .005 THICK	‡	910743060005	910743060005	910743060005	910743060005
		ALUMINUM .002 THICK	‡	300GDF732	300GDF732	300GDF732	300GDF732
		ALUMINUM .003 THICK	‡	301GDF732	301GDF732	301GDF732	301GDF732
		ALUMINUM .004 THICK	‡	200GDF732	200GDF732	200GDF732	200GDF732

* Included in Overhaul Kit.

** Gas Pump units only.

\+ Not Shown.

++ Units built prior to 1983 utilized a 3/4" NPT Bull's Eye type gauge - part number 8501275. If replacing a headplate, one each of Ref. Nos. 22 & 26 must also be included.

‡ As required.

Order by Part Number and Description. Reference Numbers for your convenience only.

7" VERTICAL
Reference Figure 17, Page 31, for Exploded View

	Ref. No.	DESCRIPTION	No. Req'd	Size 711 GDGA_A	Size 713 GDGB_A	Size 716 GDGC_A	Size 721 GDGD_A
*	1	BEARING (DRIVE END)	2	910721070501	910721070501	910721070501	910721070501
*	2	BEARING (GEAR END)	2	900639080808	900639080808	900639080808	900639080808
*	3	SEAL-MAIN (VITON)	4	910751061902	910751061902	910751061902	910751061902
**		SEAL-MECHANICAL	4	910701071501	910701071501	910701071501	910701071501
*	4	SEAL-DRIVE (VITON)	1	60DD676	60DD676	60DD676	60DD676
*	5	ELEMENT-LOCKING	4	22G32	22G32	22G32	22G32
	6	GEAR SET-TIMING	1	910714073800	910714073800	910714073800	910714073800
	7	GROUP-ROTOR	1	GDG82012	GDG82014	GDG82016	GDG82018
**		GROUP-ROTOR	1	GDG82011	GDG82013	GDG82015	GDG82017
**	8	SLEEVE	4	910692073401	910692073401	910692073401	910692073401
++	9	HEADPLATE-VERT	2	910774070501	910774070501	910774070501	910774070501
**		HEADPLATE-VERT	2	910774070502	910774070502	910774070502	910774070502
	10	CASE-IMPELLER	1	910704076201	910704075801	910704076001	910704076002
	11	CASE-GEAR	1	910733070901	910733070901	910733070901	910733070901
	12	COVER-DRIVE	1	910733071001	910733071001	910733071001	910733071001
	13	CARTRIDGE-BEARING	4	910693072801	910693072801	910693072801	910693072801
**		CARTRIDGE-BEARING	4	910703073501	910703073501	910703073501	910703073501
	14	RETAINER-BEARING	10	910741060101	910741060101	910741060101	910741060101
*	15	SHIM SET	1	910639630008	910639630008	910639630008	910639630008
	16	CLAMP-GEAR LOCKING	2	910692073001	910692073001	910692073001	910692073001
	17	SLINGER-OIL	1	910723070601	910723070601	910723070601	910723070601
*	19	O-RING (BEARING CARTRIDGE)	4	8502140	8502140	8502140	8502140
**	20	O-RING	4	25BC417	25BC417	25BC417	25BC417
*	21	O-RING (OIL SLINGER)	1	25BC389	25BC389	25BC389	25BC389
	22	NIPPLE-PIPE (FOR MTG SIGHT GAUGE)	2	63C1	63C1	63C1	63C1
	23	KEY-DRIVE	1	35L64	35L64	35L64	35L64
**	24	PIN-DOWEL	4	62M13	62M13	62M13	62M13
	25	BREATHER	2	5L223	5L223	5L223	5L223
++	26	GLASS-SIGHT (OIL LEVEL)	2	40P47	40P47	40P47	40P47
*	29	GASKET	2	910743060002	910743060002	910743060002	910743060002
	30	PLUG-SQ HD (PRESS TAP CONN. IMPELLER CASE)	2	64AA6	64AA6	64AA6	64AA6
	31	PLUG-SQ HD (HEADPLATE DRAIN)	2	64AA5	64AA5	64AA5	64AA5
	32	PIN-GROOVED (DRIVE COVER TO HEADPLATE)	2	62V48	62V48	62V48	62V48
	33	PIN-DOWEL (HEADPLATE TO IMPELLER CASE)	4	62M50	62M50	62M50	62M50
	34	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	2	95U3	95U3	95U3	95U3
	35	WASHER-PLAIN (GEAR CASE AND DRIVE COVER TO HEADPLATE)	40	95F5	95F5	95F5	95F5
	36	SCREW-SOC HD CAP (HEAD-PLATE TO IMPELLER CASE)	8	75P2	75P2	75P2	75P2

7" VERTICAL (Continued)

	Ref. No.	DESCRIPTION	No. Req'd	Size 711 GDGA_A	Size 713 GDGB_A	Size 716 GDGC_A	Size 721 GDGD_A
*	37	LOCKWASHER (BEARING CARTRIDGE TO HEADPLATE)	16	95B3	95B3	95B3	95B3
*	38	SCREW-HX HD CAP/NYLOK (BEARING RETAINER TO BEARING CARTRIDGE)	8	655EC03N	655EC03N	655EC03N	655EC03N
*	39	SCREW-SOC HD CAP/NYLOK (OIL SLINGER)	1	75P9N	75P9N	75P9N	75P9N
	40	SCREW-HX HD CAP (GEAR CASE TO HEADPLATE)	4	655EE040	655EE040	655EE040	655EE040
	41	SCREW-HX HD CAP (DRIVE COVER TO HEADPLATE)	4	655EE040	655EE040	655EE040	655EE040
	42	SCREW-HX HD CAP (BEARING CARTRIDGE TO HEADPLATE)	16	655ED060	655ED060	655ED060	655ED060
	43	SCREW-SOC HD CAP (GEAR LOCKING CLAMP TO SHAFT)	6	75P58	75P58	75P58	75P58
	44	SCREW-HX HD CAP (GEAR CASE, DRIVE COVER & HEADPLATE TO IMPELLER CASE)	32	655EE130	655EE130	655EE130	655EE130
**	45	PLUG-SQ HD (HEADPLATE AIR VENT)	4	64AA7	64AA7	64AA7	64AA7
	50	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	6	95U3	95U3	95U3	95U3
	*	KIT-OVERHAUL	0	GDG82019	GDG82019	GDG82019	GDG82019
		KIT-OVERHAUL (GAS PUMP)	0	GDG82020	GDG82020	GDG82020	GDG82020
		SHIM-IMPELLER CASE					
		ALUMINUM .010 THICK	‡	910743060004	910743060004	910743060004	910743060004
		ALUMINUM .005 THICK	‡	910743060006	910743060006	910743060006	910743060006
		ALUMINUM .002 THICK	‡	300GDG732	300GDG732	300GDG732	300GDG732
		ALUMINUM .003 THICK	‡	301GDG732	301GDG732	301GDG732	301GDG732
		ALUMINUM .004 THICK	‡	200GDG732	200GDG732	200GDG732	200GDG732

* Included in Overhaul Kit.

** Gas Pump units only.

\+ Not Shown.

++ Units built prior to 1983 utilized a 3/4" NPT Bull's Eye type gauge - part number 8501275. If replacing a headplate, one each of Ref. Nos. 22 & 26 must also be included.

‡ As required.

Order by Part Number and Description. Reference Numbers for your convenience only.

8" VERTICAL
Reference Figure 17, Page 31, for Exploded View

	Ref. No.	DESCRIPTION	No. Req'd	Size 812 GDHA_C	Size 816 GDHB_C	Size 820 GDHC_C	Size 824 GDHD_C
*	1	BEARING (DRIVE END)	2	903639090110	903639090110	903639090110	903639090110
*	2	BEARING (GEAR END)	2	200GDH174	200GDH174	200GDH174	200GDH174
*	3	SEAL-MAIN (VITON)	4	918761104902	918761104902	918761104902	918761104902
**		SEAL-MECHANICAL	4	910711087201	910711087201	910711087201	910711087201
*	4	SEAL-DRIVE (VITON)	1	60DD657	60DD657	60DD657	60DD657
*	5	ELEMENT-LOCKING	6	22G30	22G30	22G30	22G30
Ø	6	KIT-GEAR	1	200GDH6008	200GDH6008	200GDH6008	200GDH6008
Ø	7	GROUP-ROTOR	1	201GDH4028	202GDH4028	203GDH4028	204GDH4028
**		GROUP-ROTOR	1	205GDH4028	206GDH4028	207GDH4028	208GDH4028
**	8	SLEEVE	4	910711084501	910711084501	910711084501	910711084501
++	9	HEADPLATE-VERT	2	910774081501	910774081501	910774081501	910774081501
**		HEADPLATE-VERT	2	910774081502	910774081502	910774081502	910774081502
	10	CASE-IMPELLER	1	910704085801	910704085802	910704085803	910704085804
	11	CASE-GEAR	1	910743080301	910743080301	910743080301	910743080301
	12	COVER-DRIVE	1	910743080401	910743080401	910743080401	910743080401
	13	CARTRIDGE-BEARING	4	910703086101	910703086101	910703086101	910703086101
**		CARTRIDGE-BEARING	4	910703086601	910703086601	910703086601	910703086601
	14	RETAINER-BEARING	10	910741081201	910741081201	910741081201	910741081201
*	15	SHIM SET	1	910639630008	910639630008	910639630008	910639630008
	16	CLAMP	2	200GDH654	200GDH654	200GDH654	200GDH654
	17	SLINGER-OIL	1	910723070603	910723070603	910723070603	910723070603
*	19	O-RING (BEARING CARTRIDGE)	4	25BC398	25BC398	25BC398	25BC398
**	20	O-RING	4	8500957	8500957	8500957	8500957
*	21	O-RING (OIL SLINGER)	1	25BC420	25BC420	25BC420	25BC420
	22	NIPPLE-PIPE (FOR MTG SIGHT GAUGE)	2	63C1	63C1	63C1	63C1
	23	KEY-DRIVE	1	35L65	35L65	35L65	35L65
**	24	PIN-DOWEL	4	62V50	62V50	62V50	62V50
	25	BREATHER	2	5L223	5L223	5L223	5L223
++	26	GLASS-SIGHT (OIL LEVEL)	2	40P47	40P47	40P47	40P47
*	29	GASKET	2	910743080001	910743080001	910743080001	910743080001
	30	PLUG-SQ HD (PRESS TAP CONN. IMPELLER CASE)	2	64AA6	64AA6	64AA6	64AA6
	31	PLUG-SQ HD (HEADPLATE DRAIN)	2	64AA3	64AA3	64AA3	64AA3
	32	PIN-GROOVED (DRIVE COVER TO HEADPLATE)	2	62V48	62V48	62V48	62V48
	33	PIN-DOWEL (HEADPLATE TO IMPELLER CASE)	4	62M50	62M50	62M50	62M50
	34	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	2	95U3	95U3	95U3	95U3
	35	WASHER-PLAIN (GEAR CASE AND DRIVE COVER TO HEADPLATE)	44	95F5	95F5	95F5	95F5
	36	SCREW-HEX HD CAP (HEAD-PLATE TO IMPELLER CASE)	8	655EE070	655EE070	655EE070	655EE070

8" VERTICAL (Continued)

	Ref. No.	DESCRIPTION	No. Req'd	Size 812 GDHA_C	Size 816 GDHB_C	Size 820 GDHC_C	Size 824 GDHD_C
*	37	LOCKWASHER (BEARING CARTRIDGE TO HEADPLATE)	16	95B3	95B3	95B3	95B3
*	38	SCREW-HX HD CAP/NYLOK (BEARING RETAINER TO BEARING CARTRIDGE)	8	75A33N	75A33N	75A33N	75A33N
*	39	SCREW-SOC HD CAP/NYLOK (OIL SLINGER)	1	75P9N	75P9N	75P9N	75P9N
	40	SCREW-HX HD CAP (GEAR CASE TO HEADPLATE)	4	655EE040	655EE040	655EE040	655EE040
	41	SCREW-HX HD CAP (DRIVE COVER TO HEADPLATE)	4	655EE040	655EE040	655EE040	655EE040
	42	SCREW-HX HD CAP (BEARING CARTRIDGE TO HEADPLATE)	16	655ED070	655ED070	655ED070	655ED070
	43	SCREW-SOC HD CAP (GEAR LOCKING CLAMP TO SHAFT)	10	75P58	75P58	75P58	75P58
	44	SCREW-HX HD CAP (GEAR CASE,DRIVE COVER & HEADPLATE TO IMPELLER CASE)	36	655EE180	655EE180	655EE180	655EE180
**	45	PLUG-SQ HD (HEADPLATE AIR VENT)	4	64AA7	64AA7	64AA7	64AA7+
	46	SPACER-GEAR	2	910612728908	910612728908	910612728908	910612728908
	50	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	6	95U3	95U3	95U3	95U3
	*	KIT-OVERHAUL	0	200GDH6010	200GDH6010	200GDH6010	200GDH6010
		KIT-OVERHAUL (GAS PUMP)	0	201GDH6010	201GDH6010	201GDH6010	201GDH6010
		SHIM-IMPELLER CASE					
		ALUMINUM .010 THICK	‡	910743080002	910743080002	910743080002	910743080002
		ALUMINUM .005 THICK	‡	910743080003	910743080003	910743080003	910743080003
		ALUMINUM .002 THICK	‡	300GDH732	300GDH732	300GDH732	300GDH732
		ALUMINUM .003 THICK	‡	301GDH732	301GDH732	301GDH732	301GDH732
		ALUMINUM .004 THICK	‡	200GDH732	200GDH732	200GDH732	200GDH732

* Included in Overhaul Kit.

** Gas Pump units only.

\+ Not Shown.

++ Units built prior to 1983 utilized a 1" NPT Bull's Eye type gauge - part number 40L15. If replacing a headplate, one each of Ref. Nos. 22 & 26 must also be included.

Ø Refer to Section D when replacing gears or rotors in an "A" or "B" version unit.

‡ As required.

SECTION 8
PARTS LIST
HORIZONTAL CONSTRUCTION

Order by Part Number and Description. Reference Numbers for your convenience only.

6" HORIZONTAL
Reference Figure 18, Page 32, for Exploded View

	Ref. No.	DESCRIPTION	No. Req'd	Size 608 GDFA_A	Size 612 GDFB_A	Size 615 GDFC_A	Size 618 GDFD_A
*	1	BEARING (DRIVE END)	2	201GDF174	201GDF174	201GDF174	201GDF174
*	2	BEARING (GEAR END)	2	200GDF174	200GDF174	200GDF174	200GDF174
*	3	SEAL-MAIN (VITON)	4	910751061901	910751061901	910751061901	910751061901
**		SEAL-MECHANICAL	4	910711601401	910711601401	910711601401	910711601401
*	4	SEAL-DRIVE (VITON)	1	60DD678	60DD678	60DD678	60DD678
*	5	ELEMENT-LOCKING	4	22G31	22G31	22G31	22G31
	6	GEAR SET-TIMING	1	910714063200	910714063200	910714063200	910714063200
	7	GROUP-ROTOR	1	GDF82002	GDF82004	GDF82006	GDF82008
**		GROUP-ROTOR	1	GDF82001	GDF82003	GDF82005	GDF82007
**	8	SLEEVE	4	910712065901	910712065901	910712065901	910712065901
++	9	HEADPLATE-HORIZONTAL	2	910774060901	910774060901	910774060901	910774060901
**		HEADPLATE-HORIZONTAL	2	910774060902	910774060902	910774060902	910774060902
	10	CASE-IMPELLER	1	910714064701	910714064702	910714064703	910714064704
	11	CASE-GEAR	1	910733062601	910733062601	910733062601	910733062601
	12	COVER-DRIVE	1	910733062701	910733062701	910733062701	910733062701
	13	CARTRIDGE-BEARING	4	910713065201	910713065201	910713065201	910713065201
**		CARTRIDGE-BEARING	4	910713063101	910713063101	910713063101	910713063101
	14	RETAINER-BEARING	10	910741060101	910741060101	910741060101	910741060101
*	15	SHIM SET	1	910712068700	910712068700	910712068700	910712068700
	16	CLAMP-GEAR LOCKING	2	910712063501	910712063501	910712063501	910712063501
	17	SLINGER-OIL	1	910723070602	910723070602	910723070602	910723070602
*	19	O-RING (BEARING CARTRIDGE)	4	25BC419	25BC419	25BC419	25BC419
**	20	O-RING	4	8501623	8501623	8501623	8501623
*	21	O-RING (OIL SLINGER)	1	25BC418	25BC418	25BC418	25BC418
	22	NIPPLE-PIPE (FOR MTG SIGHT GAUGE)	2	63C1	63C1	63C1	63C1
	23	KEY-DRIVE	1	65L63	65L63	65L63	65L63
**	24	PIN-DOWEL	4	62V50	62V50	62V50	62V50
	25	BREATHER	2	5L223	5L223	5L223	5L223
++	26	GLASS-SIGHT (OIL LEVEL)	2	40P47	40P47	40P47	40P47
	27	OIL BAFFLE(HEADPLATE)	2	63AJ8X07	63AJ8X07	63AJ8X07	63AJ8X07
	28	BUSHING-PIPE (FOR SIGHT GLASS)	2	64E23	64E23	64E23	64E23
*	29	GASKET	2	910743060001	910743060001	910743060001	910743060001
	30	PLUG-SQ HD (PRESS TAP CONN. IMPELLER CASE)	2	64AA6	64AA6	64AA6	64AA6
	31	PLUG-SQ HD (HEADPLATE DRAIN)	2	64AA5	64AA5	64AA5	64AA5
	32	PIN-GROOVED (DRIVE COVER TO HEADPLATE)	2	62V48	62V48	62V48	62V48

6" HORIZONTAL (Continued)

	Ref. No.	DESCRIPTION	No. Req'd	Size 608 GDFA_A	Size 612 GDFB_A	Size 615 GDFC_A	Size 618 GDFD_A
	33	PIN-DOWEL (HEADPLATE TO IMPELLER CASE)	4	62M50	62M50	62M50	62M50
	34	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	2	95U3	95U3	95U3	95U3
	35	WASHER-PLAIN (GEAR CASE AND DRIVE COVER TO HEADPLATE)	40	95F3	95F3	95F3	95F3
	36	SCREW-SOC HD CAP (HEAD-PLATE TO IMPELLER CASE)	8	75P56	75P56	75P56	75P56
*	37	LOCKWASHER (BEARING CARTRIDGE TO HEADPLATE)	16	95B3	95B3	95B3	95B3
*	38	SCREW-HX HD CAP/NYLOK (BEARING RETAINER TO BEARING CARTRIDGE)	8	75A33N	75A33N	75A33N	75A33N
*	39	SCREW-SOC HD CAP/NYLOK (OIL SLINGER	1	75P9N	75P9N	75P9N	75P9N
	40	SCREW-HX HD CAP (GEAR CASE TO HEADPLATE)	4	655ED030	655ED030	655ED030	655ED030
	41	SCREW-HX HD CAP (DRIVE COVER TO HEADPLATE)	4	655ED030	655ED030	655ED030	655ED030
	42	SCREW-HX HD CAP (BEARING CARTRIDGE TO HEADPLATE)	16	655ED050	655ED050	655ED050	655ED050
	43	SCREW-SOC HD CAP (GEAR LOCKING CLAMP TO SHAFT)	6	75P57	75P57	75P57	75P57
	44	SCREW-HX HD CAP (GEAR CASE, DRIVE COVER & HEADPLATE TO IMPELLER CASE)	32	655ED120	655ED120	655ED120	655ED120
**	45	PLUG-SQ HD (HEADPLATE AIR VENT)	4	64AA7	64AA7	64AA7	64AA7+
	50	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	6	95U3	95U3	95U3	95U3
	*	KIT-OVERHAUL	0	GDF82010	GDF82010	GDF82010	GDF82010
		KIT-OVERHAUL (GAS PUMP)	0	GDF82009	GDF82009	GDF82009	GDF82009
		SHIM-IMPELLER CASE					
		ALUMINUM .010 THICK	‡	910743060003	910743060003	910743060003	910743060003
		ALUMINUM .005 THICK	‡	910743060005	910743060005	910743060005	910743060005
		ALUMINUM .002 THICK	‡	300GDF732	300GDF732	300GDF732	300GDF732
		ALUMINUM .003 THICK	‡	301GDF732	301GDF732	301GDF732	301GDF732
		ALUMINUM .004 THICK	‡	200GDF732	200GDF732	200GDF732	200GDF732

* Included in Overhaul Kit.

** Gas Pump units only.

\+ Not Shown.

++ Refer to Section D.

‡ As required.

Order by Part Number and Description. Reference Numbers for your convenience only.

7" HORIZONTAL
Reference Figure 18, Page 32, for Exploded View

	Ref. No.	DESCRIPTION	No. Req'd	Size 711 GDGA_A	Size 713 GDGB_A	Size 716 GDGC_A	Size 721 GDGD_A
*	1	BEARING (DRIVE END)	2	910721070501	910721070501	910721070501	910721070501
*	2	BEARING (GEAR END)	2	900639080808	900639080808	900639080808	900639080808
*	3	SEAL-MAIN (VITON)	4	910751061902	910751061902	910751061902	910751061902
**		SEAL-MECHANICAL	4	910701071501	910701071501	910701071501	910701071501
*	4	SEAL-DRIVE (VITON)	1	60DD676	60DD676	60DD676	60DD676
*	5	ELEMENT-LOCKING	4	22G32	22G32	22G32	22G32
	6	GEAR SET-TIMING	1	910714073800	910714073800	910714073800	910714073800
	7	GROUP-ROTOR	1	GDG82012	GDG82014	GDG82016	GDG82018
**		GROUP-ROTOR	1	GDG82011	GDG82013	GDG82015	GDG82017
**	8	SLEEVE	4	910692073401	910692073401	910692073401	910692073401
++	9	HEADPLATE-HORIZONTAL	2	910774070401	910774070401	910774070401	910774070401
**		HEADPLATE-HORIZONTAL	2	910774070402	910774070402	910774070402	910774070402
	10	CASE-IMPELLER	1	910704076201	910704075801	910704076001	910704076002
	11	CASE-GEAR	1	910733070901	910733070901	910733070901	910733070901
	12	COVER-DRIVE	1	910733071001	910733071001	910733071001	910733071001
	13	CARTRIDGE-BEARING	4	910693072801	910693072801	910693072801	910693072801
**		CARTRIDGE-BEARING	4	910703073501	910703073501	910703073501	910703073501
	14	RETAINER-BEARING	10	910741060101	910741060101	910741060101	910741060101
*	15	SHIM SET	1	910639630008	910639630008	910639630008	910639630008
	16	CLAMP-GEAR LOCKING	2	910692073001	910692073001	910692073001	910692073001
	17	SLINGER-OIL	1	910723070601	910723070601	910723070601	910723070601
*	19	O-RING (BEARING CARTRIDGE)	4	8502140	8502140	8502140	8502140
**	20	O-RING	4	25BC417	25BC417	25BC417	25BC417
*	21	O-RING (OIL SLINGER)	1	25BC389	25BC389	25BC389	25BC389
	22	NIPPLE-PIPE (FOR MTG SIGHT GAUGE)	2	63C1	63C1	63C1	63C1
	23	KEY-DRIVE	1	35L64	35L64	35L64	35L64
**	24	PIN-DOWEL	4	62M13	62M13	62M13	62M13
	25	BREATHER	2	5L223	5L223	5L223	5L223
++	26	GLASS-SIGHT (OIL LEVEL)	2	40P47	40P47	40P47	40P47
	27	OIL BAFFLE (HEADPLATE)	2	63F21	63F21	63F21	63F21
*	29	GASKET	2	910743060002	910743060002	910743060002	910743060002
	30	PLUG-SQ HD (PRESS TAP CONN. IMPELLER CASE)	2	64AA6	64AA6	64AA6	64AA6
	31	PLUG-SQ HD (HEADPLATE DRAIN)	2	64AA5	64AA5	64AA5	64AA5
	32	PIN-GROOVED (DRIVE COVER TO HEADPLATE)	2	62V48	62V48	62V48	62V48
	33	PIN-DOWEL (HEADPLATE TO IMPELLER CASE)	4	62M50	62M50	62M50	62M50
	34	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	2	95U3	95U3	95U3	95U3
	35	WASHER-PLAIN (GEAR CASE AND DRIVE COVER TO HEADPLATE)	40	95F5	95F5	95F5	95F5

7" HORIZONTAL (Continued)

	Ref. No.	DESCRIPTION	No. Req'd	Size 711 GDGA_A	Size 713 GDGB_A	Size 716 GDGC_A	Size 721 GDGD_A
	36	SCREW-SOC HD CAP (HEAD-PLATE TO IMPELLER CASE)	8	75P2	75P2	75P2	75P2
*	37	LOCKWASHER (BEARING CARTRIDGE TO HEADPLATE)	16	95B3	95B3	95B3	95B3
*	38	SCREW-HX HD CAP/NYLOK (BEARING RETAINER TO BEARING CARTRIDGE)	8	655EC03N	655EC03N	655EC03N	655EC03N
*	39	SCREW-SOC HD CAP/NYLOK (OIL SLINGER)	1	75P9N	75P9N	75P9N	75P9N
	40	SCREW-HX HD CAP (GEAR CASE TO HEADPLATE)	4	655EE040	655EE040	655EE040	655EE040
	41	SCREW-HX HD CAP (DRIVE COVER TO HEADPLATE)	4	655EE040	655EE040	655EE040	655EE040
	42	SCREW-HX HD CAP (BEARING CARTRIDGE TO HEADPLATE)	16	655ED060	655ED060	655ED060	655ED060
	43	SCREW-SOC HD CAP (GEAR LOCKING CLAMP TO SHAFT)	6	75P58	75P58	75P58	75P58
	44	SCREW-HX HD CAP (GEAR CASE, DRIVE COVER & HEADPLATE TO IMPELLER CASE)	32	655EE130	655EE130	655EE130	655EE130
**	45	PLUG-SQ HD (HEADPLATE AIR VENT)	4	64AA7	64AA7	64AA7	64AA7+
	*	KIT-OVERHAUL	0	GDG82019	GDG82019	GDG82019	GDG82019
		KIT-OVERHAUL (GAS PUMP)	0	GDG82020	GDG82020	GDG82020	GDG82020
	50	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	6	95U3	95U3	95U3	95U3
		SHIM-IMPELLER CASE					
		ALUMINUM .010 THICK	‡	910743060004	910743060004	910743060004	910743060004
		ALUMINUM .005 THICK	‡	910743060006	910743060006	910743060006	910743060006
		ALUMINUM .002 THICK	‡	300GDG732	300GDG732	300GDG732	300GDG732
		ALUMINUM .003 THICK	‡	301GDG732	301GDG732	301GDG732	301GDG732
		ALUMINUM .004 THICK	‡	200GDG732	200GDG732	200GDG732	200GDG732

* Included in Overhaul Kit.

** Gas Pump units only.

\+ Not Shown.

++ Refer to Section D.

‡ As required.

Order by Part Number and Description. Reference Numbers for your convenience only.

8" HORIZONTAL
Reference Figure 18, Page 32, for Exploded View

	Ref. No.	DESCRIPTION	No. Req'd	Size 812 GDHA_C	Size 816 GDHB_C	Size 820 GDHC_C	Size 824 GDHD_C
*	1	BEARING (DRIVE END)	2	903639090110	903639090110	903639090110	903639090110
*	2	BEARING (GEAR END)	2	200GDH174	200GDH174	200GDH174	200GDH174
*	3	SEAL-MAIN (VITON)	4	918761104902	918761104902	918761104902	918761104902
**		SEAL-MECHANICAL	4	910711087201	910711087201	910711087201	910711087201
*	4	SEAL-DRIVE (VITON)	1	60DD657	60DD657	60DD657	60DD657
*	5	ELEMENT-LOCKING	6	22G30	22G30	22G30	22G30
Ø	6	KIT-GEAR	1	200GDH6008	200GDH6008	200GDH6008	200GDH6008
Ø	7	GROUP-ROTOR	1	201GDH4028	202GDH4028	203GDH4028	204GDH4028
**		GROUP-ROTOR	1	205GDH4028	206GDH4028	207GDH4028	208GDH4028
**	8	SLEEVE	4	910711084501	910711084501	910711084501	910711084501
++	9	HEADPLATE-HORIZONTAL	2	910774081601	910774081601	910774081601	910774081601
**		HEADPLATE-HORIZONTAL	2	910774081602	910774081602	910774081602	910774081602
	10	CASE-IMPELLER	1	910704085801	910704085802	910704085803	910704085804
	11	CASE-GEAR	1	910743080301	910743080301	910743080301	910743080301
	12	COVER-DRIVE	1	910743080401	910743080401	910743080401	910743080401
	13	CARTRIDGE-BEARING	4	910703086101	910703086101	910703086101	910703086101
**		CARTRIDGE-BEARING	4	910703086601	910703086601	910703086601	910703086601
	14	RETAINER-BEARING	10	910741081201	910741081201	910741081201	910741081201
*	15	SHIM SET	1	910639630008	910639630008	910639630008	910639630008
	16	CLAMP	2	200GDH654	200GDH654	200GDH654	200GDH654
	17	SLINGER-OIL	1	910723070603	910723070603	910723070603	910723070603
*	19	O-RING (BEARING CARTRIDGE)	4	25BC398	25BC398	25BC398	25BC398
**	20	O-RING	4	8500957	8500957	8500957	8500957
*	21	O-RING (OIL SLINGER)	1	25BC420	25BC420	25BC420	25BC420
	22	NIPPLE-PIPE (FOR MTG SIGHT GAUGE)	2	63C1	63C1	63C1	63C1
	23	KEY-DRIVE	1	35L65	35L65	35L65	35L65
**	24	PIN-DOWEL	4	62V50	62V50	62V50	62V50
	25	BREATHER	2	5L223	5L223	5L223	5L223
++	26	GLASS-SIGHT (OIL LEVEL)	2	40P47	40P47	40P47	40P47
	27	OIL BAFFLE (HEADPLATE)	2	63F4	63F4	63F4	63F4
*	29	GASKET	2	910743080001	910743080001	910743080001	910743080001
	30	PLUG-SQ HD (PRESS TAP CONN. IMPELLER CASE)	2	64AA6	64AA6	64AA6	64AA6
	31	PLUG-SQ HD (HEADPLATE DRAIN)	2	64AA3	64AA3	64AA3	64AA3
	32	PIN-GROOVED (DRIVE COVER TO HEADPLATE)	2	62V48	62V48	62V48	62V48
	33	PIN-DOWEL (HEADPLATE TO IMPELLER CASE)	4	62M50	62M50	62M50	62M50
	34	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	2	95U3	95U3	95U3	95U3
	35	WASHER-PLAIN (GEAR CASE AND DRIVE COVER TO HEADPLATE)	44	95F5	95F5	95F5	95F5
	36	SCREW-HEX HD CAP (HEAD-PLATE TO IMPELLER CASE)	8	655EE070	655EE070	655EE070	655EE070

8" HORIZONTAL (Continued)

	Ref. No.	DESCRIPTION	No. Req'd	Size 812 GDHA_C	Size 816 GDHB_C	Size 820 GDHC_C	Size 824 GDHD_C
*	37	LOCKWASHER (BEARING CARTRIDGE TO HEADPLATE)	16	95B3	95B3	95B3	95B3
*	38	SCREW-HX HD CAP/NYLOK (BEARING RETAINER TO BEARING CARTRIDGE)	8	75A33N	75A33N	75A33N	75A33N
*	39	SCREW-SOC HD CAP/NYLOK (OIL SLINGER)	1	75P9N	75P9N	75P9N	75P9N
	40	SCREW-HX HD CAP (GEAR CASE TO HEADPLATE)	4	655EE040	655EE040	655EE040	655EE040
	41	SCREW-HX HD CAP (DRIVE COVER TO HEADPLATE)	4	655EE040	655EE040	655EE040	655EE040
	42	SCREW-HX HD CAP (BEARING CARTRIDGE TO HEADPLATE)	16	655ED070	655ED070	655ED070	655ED070
	43	SCREW-SOC HD CAP (GEAR LOCKING CLAMP TO SHAFT)	10	75P58	75P58	75P58	75P58
	44	SCREW-HX HD CAP (GEAR CASE,DRIVE COVER & HEADPLATE TO IMPELLER CASE)	36	655EE180	655EE180	655EE180	655EE180
**	45	PLUG-SQ HD (HEADPLATE AIR VENT)	4	64AA7	64AA7	64AA7	64AA7+
	46	SPACER-GEAR	2	910612728908	910612728908	910612728908	910612728908
	*	KIT-OVERHAUL	0	200GDH6010	200GDH6010	200GDH6010	200GDH6010
		KIT-OVERHAUL (GAS PUMP)	0	201GDH6010	201GDH6010	201GDH6010	201GDH6010
	50	WASHER-PLAIN (BEARING CARTRIDGE TO HEADPLATE)	6	95U3	95U3	95U3	95U3
		SHIM-IMPELLER CASE					
		ALUMINUM .010 THICK	‡	910743080002	910743080002	910743080002	910743080002
		ALUMINUM .005 THICK	‡	910743080003	910743080003	910743080003	910743080003
		ALUMINUM .002 THICK	‡	300GDH732	300GDH732	300GDH732	300GDH732
		ALUMINUM .003 THICK	‡	301GDH732	301GDH732	301GDH732	301GDH732
		ALUMINUM .004 THICK	‡	200GDH732	200GDH732	200GDH732	200GDH732

* Included in Overhaul Kit.

** Gas Pump units only.

\+ Not Shown.

++ Units built prior to 1983 utilized a 1" NPT Bull's Eye type gauge - part number 40L15. If replacing a headplate, one each of Ref. Nos. 22 & 26 must also be included.

Ø Refer to Section D when replacing gears or rotors in an "A" or "B" version unit.

‡ As required.

SECTION 9
EXPLODED VIEW

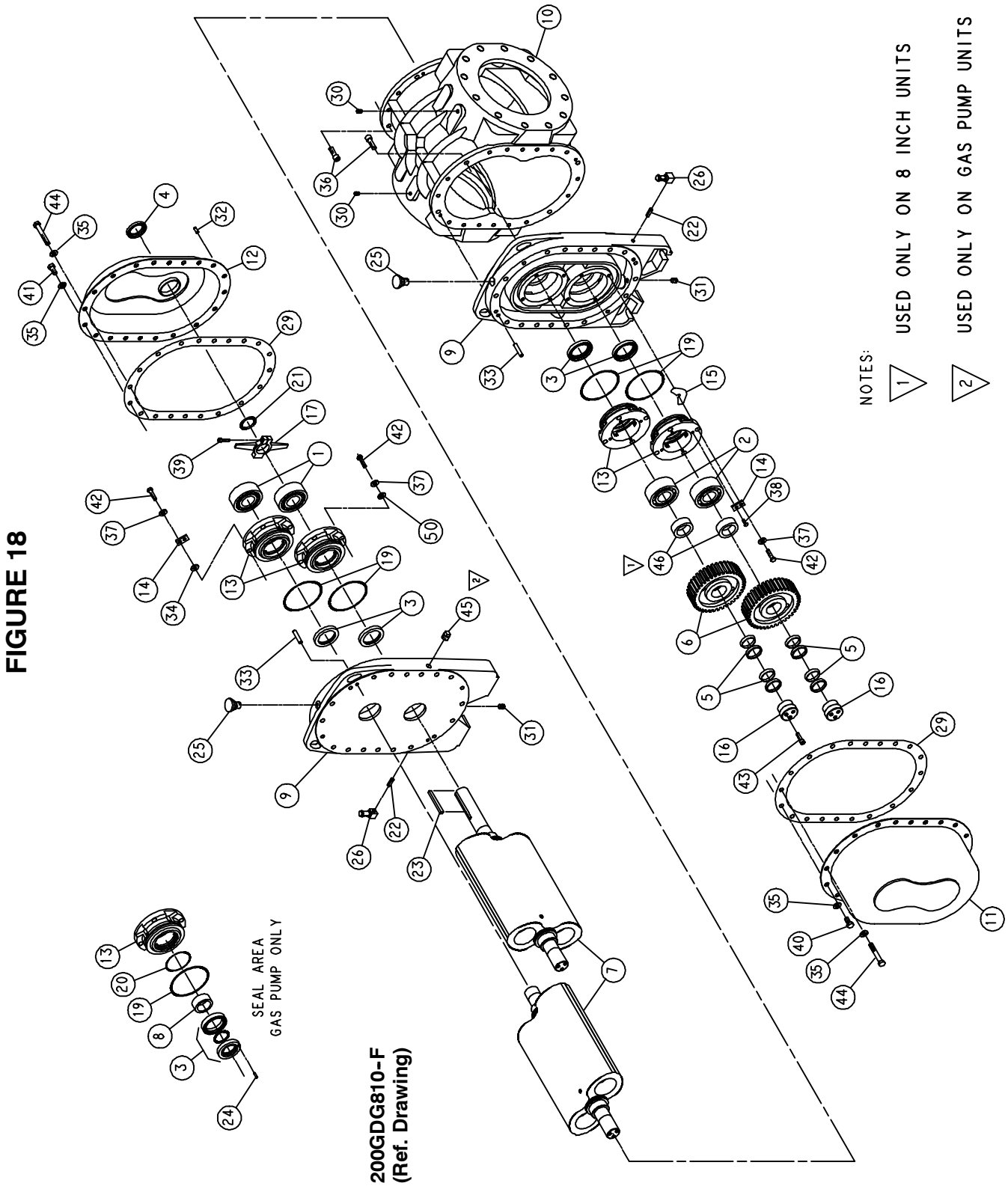


FIGURE 18

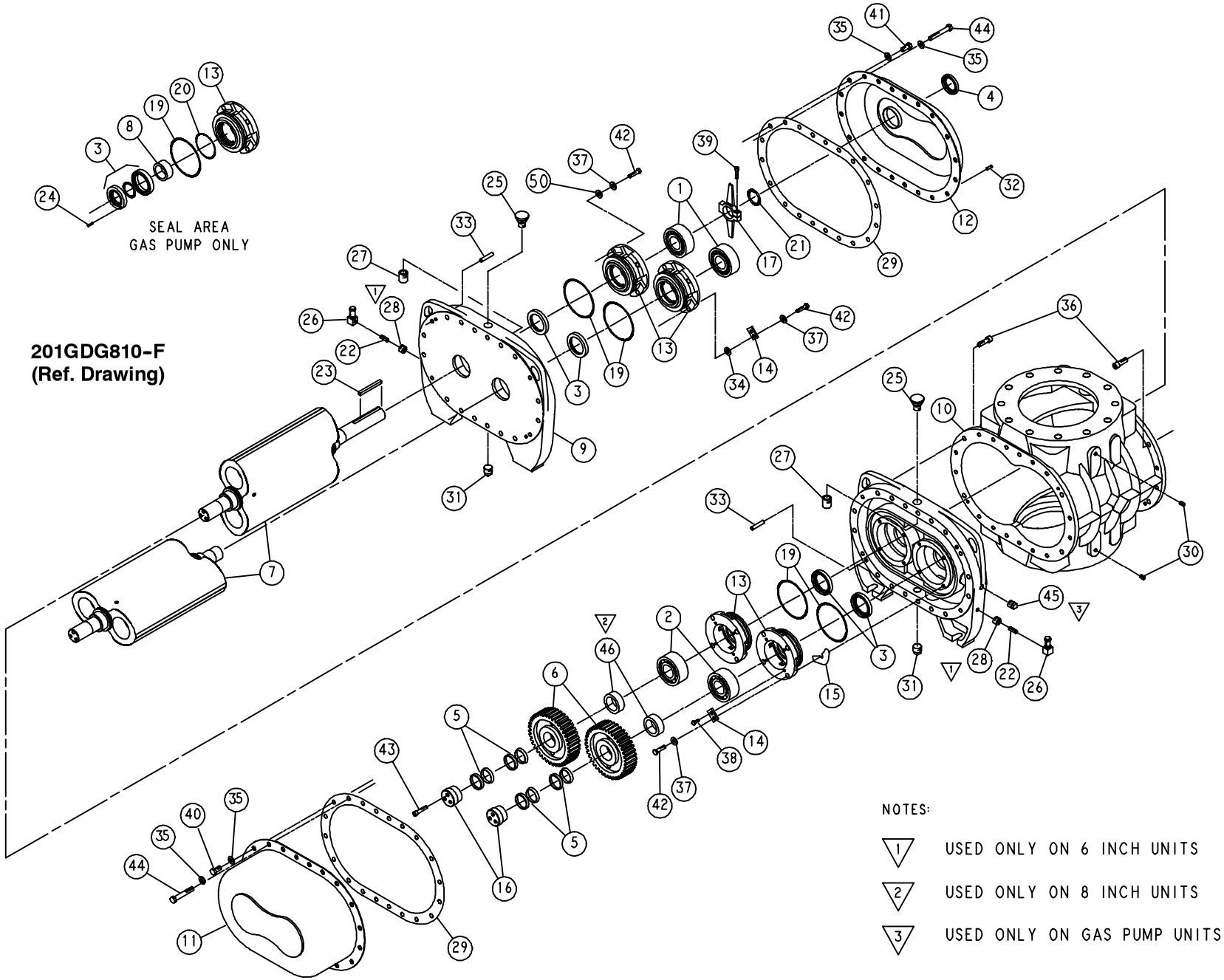
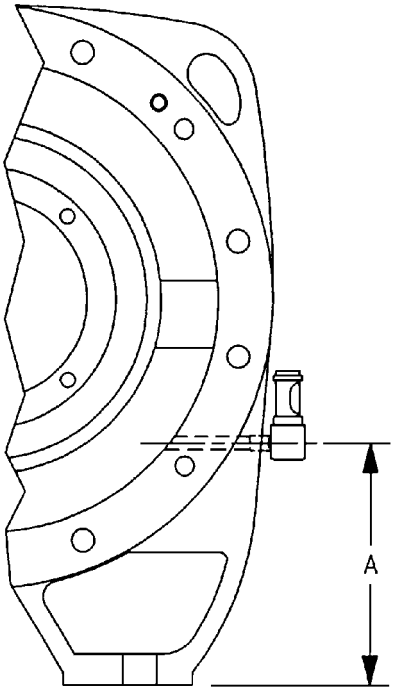
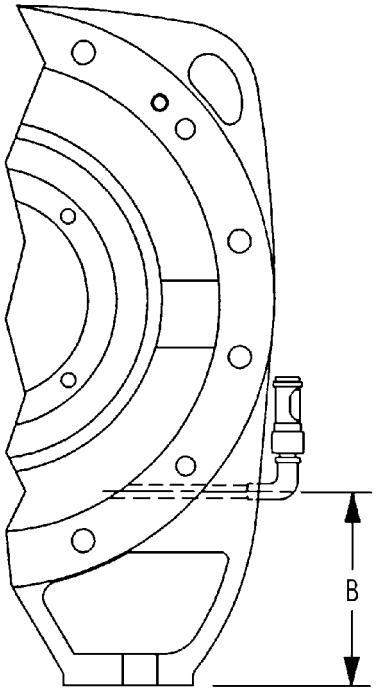

SEAL AREA
GAS PUMP ONLY
201GDG810-F
(Ref. Drawing)
NOTES:
1 USED ONLY ON 6 INCH UNITS
2 USED ONLY ON 8 INCH UNITS
3 USED ONLY ON GAS PUMP UNITS

FIGURE 19

6" & 7" HORIZONTAL UNITS
OIL LEVEL GAUGE REPLACEMENT



1986 TO PRESENT



1983 THRU 1985

	6" UNIT	7" UNIT	ADAPTOR PART NO.	GAUGE PART NO.
"A"	5.50	6.25	63C1	40P47
"B"	4.69	5.00	64D1	40P48

NOTE: Units built prior to 1983 utilized a 3/4" NPT Bull's Eye type gauge – part number 8501275. If replacing a headplate, #63C1 & 40P47 must also be included.

8" UNIT GEAR AND/OR ROTOR REPLACEMENT

Design Version	Description	No. Req.	Size 812 GDHA	Size 816 GDHB	Size 820 GDHC	Size 824 GDHD
	GEAR REPLACEMENT					
A	KIT-CONVERSION	1	209GDH6005	209GDH6005	209GDH6005	209GDH6005
B	KIT-CONVERSION	1	210GDH6005	210GDH6005	210GDH6005	210GDH6005
	ROTOR REPLACEMENT					
A	KIT-CONVERSION	1	200GDH6005	201GDH6005	202GDH6005	203GDH6005
	KIT-CONVERSION (Gas Pump)		204GDH6005	205GDH6005	206GDH6005	207GDH6005
B	GROUP-ROTOR	1	201GDH4028	202GDH4028	203GDH4028	204GDH4028
	GROUP-ROTOR (Gas Pump)		205GDH4028	206GDH4028	207GDH4028	208GDH4028
	GEAR AND ROTOR REPLACEMENT					
A	GROUP-ROTOR	1	201GDH4028	202GDH4028	203GDH4028	204GDH4028
	GROUP-ROTOR (Gas Pump)		205GDH4028	206GDH4028	207GDH4028	208GDH4028
	KIT-CONVERSION	1	210GDH6005	210GDH6005	210GDH6005	210GDH6005
B	GROUP-ROTOR	1	201GDH4028	202GDH4028	203GDH4028	204GDH4028
	GROUP-ROTOR (Gas Pump)		205GDH4028	206GDH4028	207GDH4028	208GDH4028
	KIT-CONVERSION	1	210GDH6005	210GDH6005	210GDH6005	210GDH6005

GEAR REPLACEMENT

Replacing the Gears in an "A" Version unit requires a Conversion Kit (209GDH6005) which includes the new Gear Kit (200GDH6008) plus (2) Clamps (201GDH654), (2) Locking Elements (22G30) and (6) screws (75P58).

Replacing the Gears in a "B" Version unit requires a Conversion Kit (210GDH6005) which includes the new Gear Kit (200GDH6008) plus (2) Clamps (200GDH654), (2) Locking Elements (22G30) and (10) screws (75P58).

Current "C" version units have (3) Locking Elements per shaft. "A" & "B" version units only used a quantity of (2) Locking Elements per shaft. After conversion order the "C" version Gear Kit (200GDH6008).

ROTOR REPLACEMENT

Replacing the Rotors in an "A" Version unit requires a Conversion Kit which includes a new Rotor Group plus (2) Clamps (202GDH654) and (10) screws (75P58). Current "C" version units have (5) holes tapped in the gear end of the rotor shaft. "A" version units only had a quantity of (3) holes.

After conversion order the appropriate "C" version Rotor Group.

NOTE: "B" Version units use the same rotor groups as "C" Version units.

GEAR AND ROTOR REPLACEMENT

Replacing the Gears and Rotor Group in an "A or B" Version unit requires ordering the appropriate new "C" version Rotor Group and Conversion Kit (210GDH6005) which includes the new Gear Kit (200GDH6008), (2) Clamps (200GDH654), (2) Locking Elements (22G30) and (10) screws (75P58). Current "C" version units have (3) Locking Elements per shaft and (5) holes tapped in the gear end of the rotor shaft. "

"A & B" version units only used a quantity of (2) Locking Elements per shaft and "A" version units only had a quantity of (3) holes tapped in the gear end of the rotor shaft.

After conversion order the appropriate "C" version Rotor Group and Gear Kit (200GDH6008).

Gardner Denver

WARRANTY

SUTORBILT BLOWERS
4500 SERIES
8000 SERIES

GENERAL PROVISIONS AND LIMITATIONS

Gardner Denver (the "Company") warrants to each original retail purchaser ("Purchaser") of its products from the Company or its authorized distributor that such products are, at the time of delivery to the Purchaser, made with good material and workmanship. No warranty is made with respect to:

1. Any product which has been repaired or altered in such a way, in the Company's judgment, as to affect the product adversely.
2. Any product which has, in the Company's judgment, been subject to negligence, accident, improper storage, or improper installation or application.
3. Any product which has not been operated or maintained in accordance with the recommendations of the Company.
4. Components or accessories manufactured, warranted and serviced by others.

Claims for items described in (4) above should be submitted directly to the manufacturer.

WARRANTY PERIOD

The Company's obligation under this warranty is limited to repairing or, at its option, replacing, during normal business hours at an authorized service facility of the Company, any part which in its judgment proved not to be as warranted within the applicable Warranty Period as follows.

BARE BLOWERS

Basic bare blowers, consisting of all parts within, are warranted for 12 months from date of initial use or 18 months from date of shipment to the first purchaser, whichever occurs first.

Any disassembly or partial disassembly of the blower, or failure to return the "unopened" blower per Company instructions, will be cause for denial of warranty.

OTHER COMPONENTS

All other components are warranted for 12 months from date of initial use or 18 months from date of shipment to first purchaser, whichever comes first.

The Company reserves the right to withdraw the Warranty where evidence indicates application outside the stated performance area, or where there is evidence of abuse

LABOR TRANSPORTATION AND INSPECTION

The Company will provide labor, by Company representative or authorized service personnel, for repair or replacement of any product or part thereof which in the Company's judgment is proved not to be as warranted. Labor shall be limited to the amount specified in the Company's labor rate schedule.

Labor costs in excess of the Company rate schedules caused by, but not limited to, location or inaccessibility of equipment, or labor provided by unauthorized service personnel is not provided by this warranty.

All costs of transportation of product, labor or parts claimed not to be as warranted and, of repaired or replacement parts to or from such service facilities shall be borne by the Purchaser. The Company may require the return of any part claimed not to be as warranted to one of its facilities as designated by the Company, transportation prepaid by Purchaser, to establish a claim under this warranty.

Replacement parts provided under the terms of the warranty are warranted for the remainder of the Warranty Period of the product upon which installed to the same extent as if such parts were original components.

DISCLAIMER

THE FOREGOING WARRANTY IS EXCLUSIVE AND IT IS EXPRESSLY AGREED THAT, EXCEPT AS TO TITLE, THE COMPANY MAKES NO OTHER WARRANTIES, EXPRESSED, IMPLIED OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY.

THE REMEDY PROVIDED UNDER THIS WARRANTY SHALL BE THE SOLE, EXCLUSIVE AND ONLY REMEDY AVAILABLE TO THE PURCHASER AND IN NO CASE SHALL THE COMPANY BE SUBJECT TO ANY OTHER OBLIGATIONS OR LIABILITIES. UNDER NO CIRCUMSTANCES SHALL THE COMPANY BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EXPENSES, LOSSES OR DELAYS HOWSOEVER CAUSED.

No statement, representation, agreement, or understanding, oral or written, made by any agent, distributor, representative, or employee of the Company which is not contained in this Warranty will be binding upon the Company unless made in writing and executed by an officer of the Company.

This warranty shall not be effective as to any claim which is not presented within 30 days after the date upon which the product is claimed not to have been as warranted. Any action for breach of this warranty must be commenced within one year after the date upon which the cause of action occurred.

Any adjustment made pursuant to this warranty shall not be construed as an admission by the Company that any product was not as warranted.

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