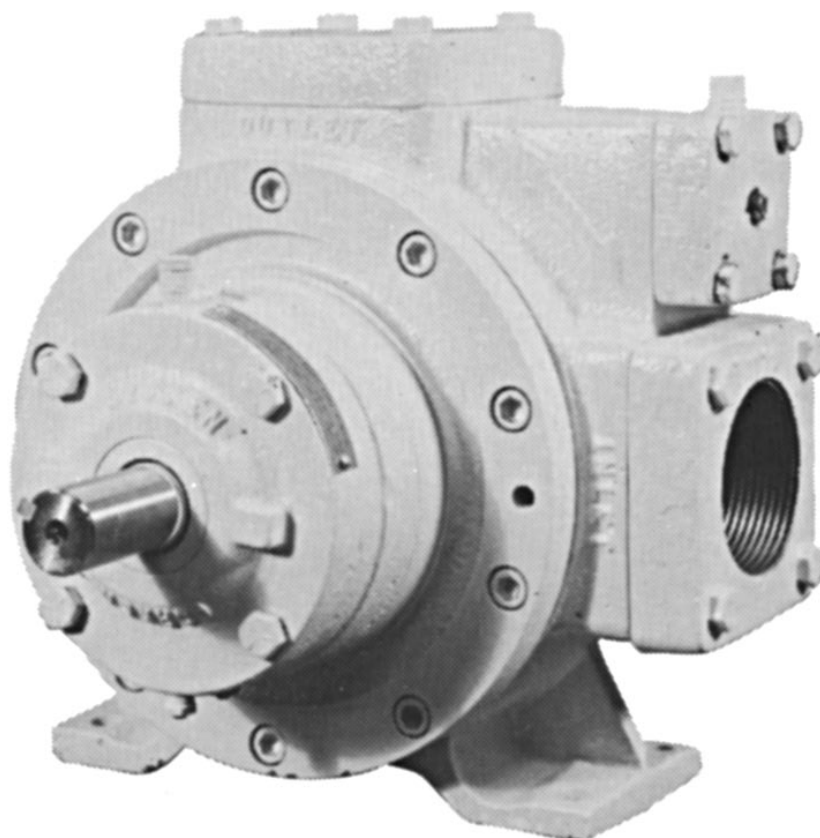


IMPORTANT INSTRUCTIONS

CORO-VANE TRUCK PUMPS MODELS 522 & 1022



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IDEX

Warning: (1) Periodic inspection and maintenance of Corken products is essential. (2) Inspection, maintenance and installation of Corken products must be made only by experienced, trained and qualified personnel. (3) Maintenance, use and installation of Corken products must comply with Corken instructions, applicable laws and safety standards (such as NFPA Pamphlet 58 for LP-Gas and ANSI K61. 1-1972 for Anhydrous Ammonia). (4) Transfer of toxic, dangerous, flammable or explosive substances using Corken products is at user's risk and equipment should be operated only by qualified personnel according to applicable laws and safety standards.

The Model and Serial Numbers are shown on the nameplate of the unit. Record this information for future reference.

Model No. _____

Serial No. _____

Date Purchased _____

Date Installed _____

Purchased From _____

Installed By _____

WARNING

Install, use and maintain this equipment according to Corken's instructions and all applicable federal, state, local laws and codes (such as NFPA Pamphlet 58 for LP-Gas or ANSI K61.1-1972 for Anhydrous Ammonia). Periodic inspection and maintenance is essential.

INITIAL START UP INSTRUCTIONS

The most critical time in the life of a truck or transport pump is the initial installation and start up. It is important to make sure sufficient liquid is in the tank so the liquid level is well above the excess flow or internal valve inlet ports. Remember that in a new tank, much of the liquid will vaporize to fill the vapor volume. For example, 200 gallons of propane pumped into an empty 2,600 gallon tank will result in about 80 gallons of the propane vaporizing. This will mean only five or six inches of propane would be in the bottom of the tank, which is not sufficient for pump startup or testing. Five or six hundred gallons should be considered the very minimum. It also is important to be sure the pump is actually full of liquid before starting. With an excess flow-type internal valve (such as the Fisher internal valve) it is necessary to allow the pressure to equalize before the valve actually opens. This is true even though the handle may be turned to the open position. On an automatic type of internal valve (such as the Rego Flomatic) it is necessary to be certain the bleed opening is fully open and sufficient time is allowed for the pump and discharge system to be completely full of liquid before starting. Either type valve may require 15 or 20 minutes to completely fill the system. See the valve manufacturer's instructions for details of valve construction and operation. These precautions may seem lengthy, but the importance cannot be over-emphasized. If the pump is allowed to run dry there is the likelihood of internal pump damage, specifically to the mechanical seals and/or sideplates. These precautions also should be taken any time the pump or discharge system is bled down for repairs or inspection.

CORKEN ONE YEAR LIMITED WARRANTY

Corken, INC. warrants that its products will be free from defects in material and workmanship for a period of 12 months following date of purchase from Corken. Corken products which fail within the warranty period due to defects in material or workmanship will be repaired or replaced at Corken's option, when returned, freight prepaid to: CORKEN, INC., 3805 N.W. 36th Street, Oklahoma City, Oklahoma 73112. Parts subject to wear or abuse, such as mechanical seals, blades, piston rings, and packing, and other parts showing signs of abuse are not covered by this limited warranty. Also, equipment, parts and accessories not manufactured by Corken but furnished with Corken products are not covered by this limited warranty and purchaser must look to the original manufacturer's warranty, if any. This limited warranty is void if the Corken product has been altered or repaired without the consent of Corken. All implied warranties, including any implied warranty of merchantability or expressed warranty period. CORKEN DISCLAIMS ANY LIABILITY FOR CONSEQUENTIAL DAMAGES DUE TO BREACH OF ANY WRITTEN OR IMPLIED WARRANTY ON CORKEN PRODUCTS. Transfer of toxic, dangerous, flammable or explosive substances using Corken products is at the user's risk. Such substances should be handled by experienced, trained personnel in compliance with governmental and industrial safety standards.

CONTACTING THE FACTORY

Before you contact the factory, note the Model Number and Serial Number of your pump. The Serial Number directs us to a file containing all information on material specifications and test data applying to your specific pump. When ordering parts, the Corken Service Manual should be consulted for the proper Part Numbers. ALWAYS INCLUDE THE MODEL NUMBER AND SERIAL NUMBER WHEN ORDERING PARTS.

PRINCIPLE OF THE CORKEN CORO-VANE TRUCK PUMP

The CORKEN Coro-Vane Truck Pump is a special type of rotary positive displacement pump, known as a Sliding Vane Pump. Gear Pumps are rotary positive displacement pumps also, and are successful because of their ability to handle volatile liquids, but they have metal to metal contact, and consequently wear quite rapidly. As soon as a small amount of "wear" occurs, the performance falls off until the pump fails to deliver satisfactorily. In addition, the metal to metal contact of the gear teeth necessarily produces noise. The repair of a gear pump is either rather costly or impossible.

The Sliding Vane Pump has the positive displacement advantages of the gear pump, plus the ability to compensate for wear, and operate with a minimum noise level. The Sliding Vane Pump consists of one rotor turning in a liner (called a cam) machined eccentrically in relation to the rotor, thereby displacing the liquid trapped between the rotor, cam and blades or vanes. The CORKEN Coro-Vane Pump is made with vanes produced from engineered plastics which exhibit extremely low coefficients of friction, and the vanes are self-adjusting for wear which gives the pump a very long life.

INSTALLATION

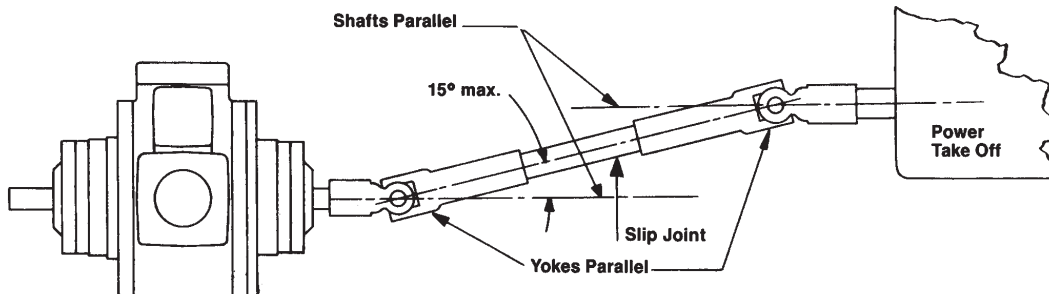
THE MECHANICAL INSTALLATION of the Truck Pump is a simple matter, but the principles discussed here must be followed EXACTLY in order for the Pump to give the best possible performance—no compromise must be made.

THE PTO SELECTION is important. The Model 522 Pump, when used with a 1 1/4" meter requires a PTO with an average output speed of 500 to 700 rpm when the truck engine is operating at the proper speed to maintain oil pressure and water circulation. When operating with a 1 1/2" meter, the Model 522 Pump requires a PTO with an average output speed of 700 to 1000 rpm. The Model 1022 requires a speed of 300 to 500 rpm for delivery trucks, and 700 or more rpm for transports.

NO PUMP CAN DISCHARGE MORE LIQUID than it receives, so the Pump location and the inlet piping must be given careful attention. Locate the Pump on either side of your truck, to suit your own preference, but mount it as far below the tank bottom outlet as road clearance will permit, and as near the tank outlet as you can.

THE DRIVESHAFT connecting the Pump to the PTO should be of the "splined" variety. This type driveshaft permits the shaft to adjust for PTO movement and twisting of the truck frame. A stiff driveshaft throws these forces directly into the Pump and PTO, and will shorten the life of both considerably. The yokes of the driveshaft Universal Joints must be positioned as shown. Improper location of the U-joints will soon "whip" them out, along with the bearings in the Pump and PTO.

A ROTATION ARROW is located on the side of the Pump, so after you have selected the location of the Pump, check the PTO to determine its direction of rotation. The Coro-Vane Pump will match either PTO rotation, so connect the drive shaft to the Pump shaft that turns the Pump in the direction of the Arrow cast into the case.

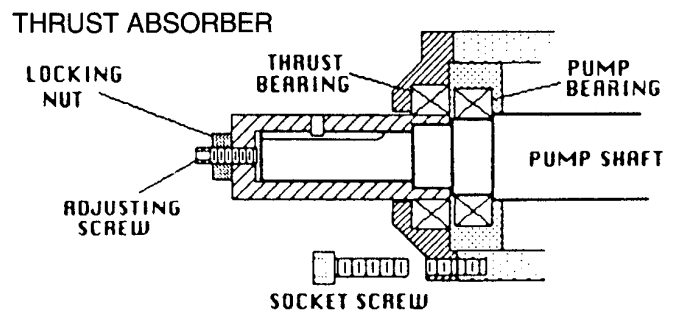


INSTRUCTIONS FOR CHANGING ROTATION

Your new Coro-Vane Pump is equipped with an advanced thrust absorber to help resist the thrust forces which can act on a pump when PTO drive assemblies are not perfectly installed. This thrust absorber is installed on the pump shaft opposite the PTO drive end of the pump. Corken mounts these at the factory for normal left-hand rotation (facing the pump shaft). Should your system require a right-hand pump, the thrust absorber can easily be moved to the other end of the double-extended shaft.

THRUST ABSORBER ADJUSTMENT
Turn adjustment screw clockwise until pump shaft can no longer be turned by hand. Next, turn adjustment screw counter-clockwise about one-eighth turn (45°) until pump shaft can turn easily. Holding adjustment screw with wrench, tighten lock nut securely against the thrust absorber body.

1. Loosen the adjustment screw lock nut and turn the adjustment screw several turns counter-clockwise.
2. Remove the 4 socket head cap screws which mount the thrust absorber on the pump.
3. Remove the bearing cap and the drive key from the drive end of the pump.
4. The thrust absorber can then be moved to this shaft and the bearing cap and drive key installed on the new drive end.



THE INLET PIPING SHOULD INCLUDE THE FOLLOWING:

1. The tank excess flow valve should have a flow rate at least 1 1/2 times the capacity of the Pump. Do not use an excess flow valve without knowing its flow capacity, and pressure loss at this flow. The Model 522 Pump requires an excess flow valve with a rate of 60 gpm for use with a 1 1/4" meter, and a rate of 100 gpm for a 1 1/2" meter. The Model 1022 Pump requires an excess flow valve with a minimum rate of 150 gpm.
2. The tank shutoff valve should be an angle valve or a free flow type—not a standard globe valve.
3. A Strainer of the "Y" type, with 40 to 30 mesh screen, must be used on the inlet line near the Pump. (Mesh size indicates the number of openings per lineal inch). It is strongly recommended that the strainer be one size larger than the rest of the inlet piping.
4. A flexible connection should be used near the Pump to care for the severe piping strains that can occur on a truck mounted pump.
5. The Minimum Inlet Piping Sizes must be as follows:
 - For a 1 1/4" meter — 2" pipe size
(up to 30 gpm flow)
 - For a 1 1/2" meter — 2 1/2" pipe size
(up to 50 gpm flow)
 - For transports — 3" pipe size
(up to 100 gpm flow)

THE OUTLET PIPING SHOULD INCLUDE THE FOLLOWING:

1. A pressure gauge should be installed in the Pump outlet

nozzle, or near it. If you do not have a pressure gauge you have no way to determine the efficiency of your pumping system.

2. A hydrostatic relief valve is required by most State Laws and for your own safety.
3. If a meter with a vapor eliminator is installed, pipe the eliminator into the Pump inlet piping, or into the liquid part of the system at any point.
4. The meter back-pressure valve may be piped into the tank top or into the pump inlet piping.
5. The discharge piping should be at least the same size as the meter. 1 1/2" piping is minimum for the Model 1022 Pump.
6. The size and length of the Delivery Hose determines in large measure the flow capacity of your truck. See Charts I through VII to determine the minimum hose size and length you should use.

THE BY-PASS SYSTEM SHOULD INCLUDE THE FOLOWING:

1. The Coro-Vane Truck Pump has an inetrnal Safety Relief Valve, but it is intended as a safety device and not as an operational valve. It should be considered an emergency valve.
2. An external By-Pass Relief Valve (such as the CORKEN T166 Valve) should be installed in the Pump discharge system, between the Pump and the meter. The By-Pass Valve may discharge into the tank at any convenient opening, either liquid or vapor, but it should not connect into the Pump inlet piping system.

OPERATION

The following steps should be performed for the initial pumping operation:

1. Open the truck tank bottom shutoff valve.
2. Open the truck tank shutoff valve on the by-pass system.
3. Start the Pump and circulate liquid through the by-pass system.
4. If your system has a CORKEN T166 By-Pass Valve, adjust the valve by turning the adjusting screw counter-clockwise until the Pump pressure gauge shows nearly the same pressure it did before you started the Pump. Screw the adjusting screw clock-wise until the gauge indicates about 100 psi above the tank pressure.
5. If a by-pass valve of another make is used, follow the same general procedure in adjusting the valve.

HOW TO TRANSFER FROM THE TRUCK TANK AT FULL CAPACITY

To move volatile liquids rapidly from a truck tank requires that a condition be maintained within the truck tank that keeps the liquid, and the vapors above the liquid in equilibrium—to prevent violent boiling of the liquid. As liquid is removed from the tank some of the liquid boils to form vapor to fill the space created as the liquid leaves. If this action becomes too violent, the Pump will begin to make excessive noise, and the capacity will be reduced.

Truck pumps can lower the truck tank pressure from 5 psi to 30 psi

if there is no means provided for equalizing—and then the trouble starts! The colder the weather, the worse this condition will become. You can detect this "pull down" in pressure by observing your truck tank pressure gauge as the pump is operating.

To prevent this violent liquid boiling, pressure in some form must be introduced into the truck tank. The simple way to accomplish this is to "equalize" between the truck tank and the receiving tank. Equalizing takes the higher pressure vapors from the receiving tank and returns them to the truck tank, and in this way aids in filling the void left by the receding liquid. This in turn lessens the need for the liquid to boil excessively. The equalizing principle is necessary for volatile liquids, but equally is so when cold water is removed from a closed tank—the flow would cease soon because of the vacuum formed above the water. Another way to consider this principle is to remember that it takes two holes in an oil can before oil can be poured—one for the oil, and the other for air to enter.

The equalizing system must be adequate to return vapors in relation to the quantity of liquid being transferred. Reference to Charts I and II indicates that a pumping system with a 3/4" equalizing hose will deliver substantially more liquid than will a system with a 1/2" hose.

FILLING NEW CYLINDERS AND TANKS

All new containers are full of air and since air will not liquify under reasonable filling pressures, it must be purged. Purging air from new containers is very important, in fact essential, to

assure relatively easy filling, and a proper gas supply to burners and carburetors.

This air content when the tank is filled would compress to approximately 10 to 15% of its initial volume; therefore, if the container is not purged of this air, the pressure required just to compress the air will be over 100 psi—which would be added to the pressure necessary to force the liquid into the container. This extra pressure will overload the pump and motor needlessly.

Some cylinders are difficult to fill because they are equipped with a fill tube that extends down into the liquid portion of the container. If possible, these cylinders should be refitted, so the incoming liquid enters the vapor section of the cylinder. If refitting is impossible or impractical, rock the cylinder as it is being filled so that liquid will splash up into the vapor section—this will help keep the cylinder filling pressure down to a reasonable limit. Don't blame your pump for not filling a small container! A properly fitted cylinder and filling manifold or connection will permit filling with not more than 50 to 60 psi differential pressure.

CARE OF YOUR PUMP SYSTEM

The only maintenance necessary on this Coro-Vane Pump is to lubricate the bearings about once every three months. There are

two bearings on the pump, one at each end. Special relief fittings have been provided to prevent overgreasing the bearings—excess grease may drip out for several hours after relubrication. Use only Ball Bearing Grease. And above all, clean the grease openings thoroughly before greasing—dirt entering the bearings can ruin them in a matter of hours.

Grease the "U" joints and the spline of the driveshaft when greasing the Pump.

Every three months blow down the strainer in the pump inlet piping. It was placed there to stop dirt before it enters the pump, so it probably will have dirt in it. The meter strainer should be cleaned at the same time.

Inspect your hose occasionally to see that it has not been "kinked" and thus causing excess pump discharge pressure.

Disengage the Clutch before shifting the PTO into gear. Shifting the PTO into gear without disengaging the Clutch places unnecessary load on the PTO, driveshaft, Pump and Meter.

Repair service to this Pump is usually limited to replacing a Seal Cartridge, the Vanes or reversing the Sideplates. The other parts of this Pump are low wear if reasonable attention has been given to the care of the Pump. Clear instructions are furnished with the replacement parts for their installation.

EXCLUSIVE FEATURES OF YOUR CORO-VANE PUMP

The pumping of volatile liquids is one of the most difficult of all pumping jobs, and pumping from a delivery truck or transport makes it even more difficult, so more attention must be given to the design and manufacture of the Pump, and to its installation and operation than for other pumping operations.

In addition to being especially suited for handling volatile liquids, your Coro-Vane Pump has a number of Features to help make it more easily operated and maintained.

The Coro-Vane Truck Pump is manufactured in two sizes: the Model 522 and the Model 1022. Both models are listed by UNDERWRITERS' LABORATORIES, INC. for use in the handling of LP-Gas and Ammonia. The nameplate on the Pump shows the UL Label.

DUCTILE IRON is used in the manufacture of this Pump for parts under pressure from the liquid.

THE SLIDING VANES are manufactured of engineered plastic to provide unexcelled life, and whisper-quiet operation. After long service, the vanes are simply replaced.

THE MECHANICAL SEAL may be inspected or replaced without disturbing the piping or the Pump. No special tools are needed. The same seal is used in the Coro-Vane Pump Models 500 and 1000.

THE SIDEPLATES may be reversed on some models after wear to give double life. In reversing, the sideplates are turned around and located on the opposite side of the Pump.

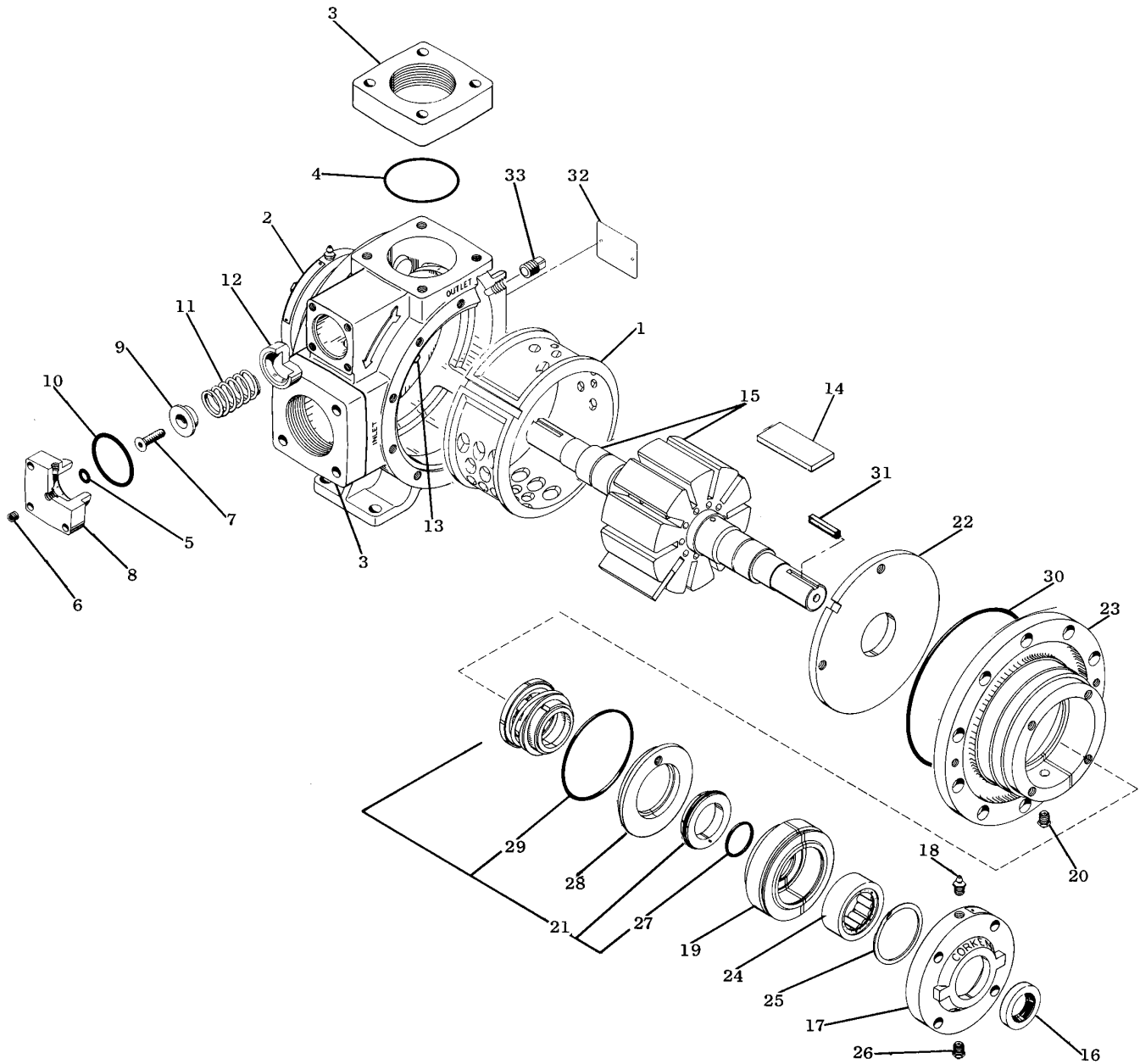
THE PUMP SHAFT projects from both ends of the Pump, which permits the Pump to be mounted for either PTO Rotation without making any changes within the Pump. It is not necessary to know your PTO rotation before ordering your Pump.

PRESSURE GAGE connections 1/4" pipe thread, are located on both Pump Nozzles.

THE PUMP NOZLES are equipped with flanges to simplify piping. It is not necessary to provide unions in the piping system near the Pump because the flanges serve this purpose. The Model 522 is standard equipped with 2" pipe size flanges, with 2 1/2" pipe size optional. The Model 1022 is standard equipped with 3" pipe size flanges, with 4" pipe size optional.

A SAFETY RELIEF VALVE is built-in as a part of the Pump. This valve is adjustable under pressure, but is set at the Factory for 150 psi unless otherwise specified. The Valve is adjusted by removing the Plug (#6) and turning Adjusting Screw (#7). Turning the Adjusting Screw counter-clockwise will raise the pressure setting of the valve.

MODELS 522 & 1022



Ref.
No. Description

- 1 Cam
- 2 Case
- 3 Flange
- 4 Flange 'O' Ring
- 5 Adjusting Screw 'O' Ring
- 6 1/8 NPT Hex Socket Plug
- 7 Relief Valve Adjusting Screw Hex Socket
- 8 Valve Cap
- 9 Relief Valve Spring Guide
- 10 Valve Cap 'O' Ring
- 11 Relief Valve Spring
- 12 Relief Valve
- 13 Cam Key
- 14 Blades
- 15 Shaft and Rotor Assembly
- 16 Grease Seal

- 17 Bearing Cap
- 18 1/8 NPT Grease Zerk
- 19 Bearing Housing
- 20 1/8 NPT Seal Vent Fitting
- 21 Seal Assembly
- 22 Sideplate
- 23 Head
- 24 Bearing
- 25 Retainer Ring
- 26 Grease Relief Fitting
- 27 Seal Vent 'O' Ring
- 28 Seat Adapter Plate
- 29 Adapter Plate 'O' Ring
- 30 Case 'O' Ring
- 31 Key
- 32 Nameplate
- 33 Plug

TRUCK PUMP DISCHARGE SYSTEM ANALYSIS

The Charts shown here consider the Discharge System only. It is assumed that the Inlet System and Pump are adequate to produce the capacities and pressures shown. Poor inlet conditions obviously reduce the capacities shown in these Charts.

The Discharge System assumes reasonable piping between the Pump and the meter, a properly functioning meter and back-pressure valve, a discharge hose with a shutoff valve and an equalizing hose with a shutoff valve. All hoses, valves and fittings are considered to be in new condition.

CHART I

Meter capacity		30 gpm		
Equalizing hose size		3/4" (Note A)		
Filler valve size		1 1/4"		
1		2		3
Delivery Hose		System Capacity, GPM, at 35-40 psi	Psi needed to deliver 30 gpm	Model 522 rpm to deliver 30 gpm
Size	Length			
1	50	30	35-40	400 to 500
1	100	26	45-50	450 to 550
3/4	50	23	55-60	500 to 600
3/4	100	18	85-90	550 to 650
1/2	50	12	Too high	
1/2	100	11	Too high	

CHART II

Meter capacity		30 gpm		
Equalizing hose size		3/4" (Note A)		
Filler valve size		3/4"		
1		2		3
Delivery Hose		System Capacity, GPM, at 35-40 psi	Psi needed to deliver 30 gpm	Model 522 rpm to deliver 30 gpm
Size	Length			
1	50	16	110-115	600 to 650
1	100	15	115-120	650 to 700
3/4	50	15	125-130	700 to 750
3/4	100	14	Too high	
1/2	50	10	Too high	
1/2	100	9	Too high	

CHART III

Meter capacity		30 gpm		
Equalizing hose size		none used		
Filler valve size		Cylinder valve		
1		2		
Delivery Hose		System Capacity, GPM, at 35-40 psi		
Size	Length			
3/4	50	11		
3/4	100	10		
1/2	50	8		
1/2	100	6		

CHART IV

Meter capacity		60 gpm		
Equalizing hose size		1"		
Filler valve size		2"		
1		2		3
Delivery Hose		System Capacity, GPM, at 40-45 psi	Psi needed to deliver 60 gpm	Model 522 rpm to deliver 60 gpm (Note B)
Size	Length			
1 1/4	50	60	40-45	750 to 800
1 1/4	100	50	50-55	800 to 850
1	50	44	60-65	850 to 900
1	100	38	85-90	900 to 950

CHART V

Meter capacity		60 gpm		
Equalizing hose size		1"		
Filler valve size		1 1/4"		
1		2		3
Delivery Hose		System Capacity, GPM, at 40-45 psi	Psi needed to deliver 60 gpm	Model 522 rpm to deliver 60 gpm (Note B)
Size	Length			
1 1/4	50	50	50-55	800 to 850
1 1/4	100	41	70-75	850 to 900
1	50	39	80-85	900 to 950
1	100	34	105-110	1000 to 1050

CHART VI

Meter capacity		No meter		
Equalizing hose size		1"		
Filler valve size		2"		
1		2		3
Delivery Hose		System Capacity, GPM, at 30-35 psi	Psi needed to deliver 100 gpm	Model 1022 rpm to deliver 100 gpm
Size	Length			
1 1/2	25	100	30-35	550 to 600
1 1/2	50	90	35-40	600 to 650
2	25	115	25-30	500 to 550
2	50	110	25-30	500 to 550

CHART VII

Meter capacity		No meter		
Equalizing hose size		1"		
Filler valve size		3"		
1		2		3
Delivery Hose		System Capacity, GPM, at 15-20 psi	Psi needed to deliver 150 gpm	Model 1022 rpm to deliver 150 gpm
Size	Length			
2	25	150	15-20	700 to 800
2	50	135	20-25	700 to 800

Notes:

Column 1 The hose sizes shown are the inside diameter of the hose, with couplings attached of the same i.d. The hose is considered to be completely unreeled.

Column 2 The capacities shown are completely independent of the make of pump on the truck. These capacities are all you can expect to flow through the system at the pressures shown.

Column 3 The differential pressures shown are those necessary to flow the capacity shown. The NBFU limits the differential pressure of a truck pump to 125 psi.

Note A A 1/2" equalizing hose will reduce the capacities shown under Column 2 by as much as 15%, and increase the pressure under Column 3 as much as 20%.

Note B If a Model 1022 Pump is used, the operating speed will be approximately one-half the rpm shown.

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