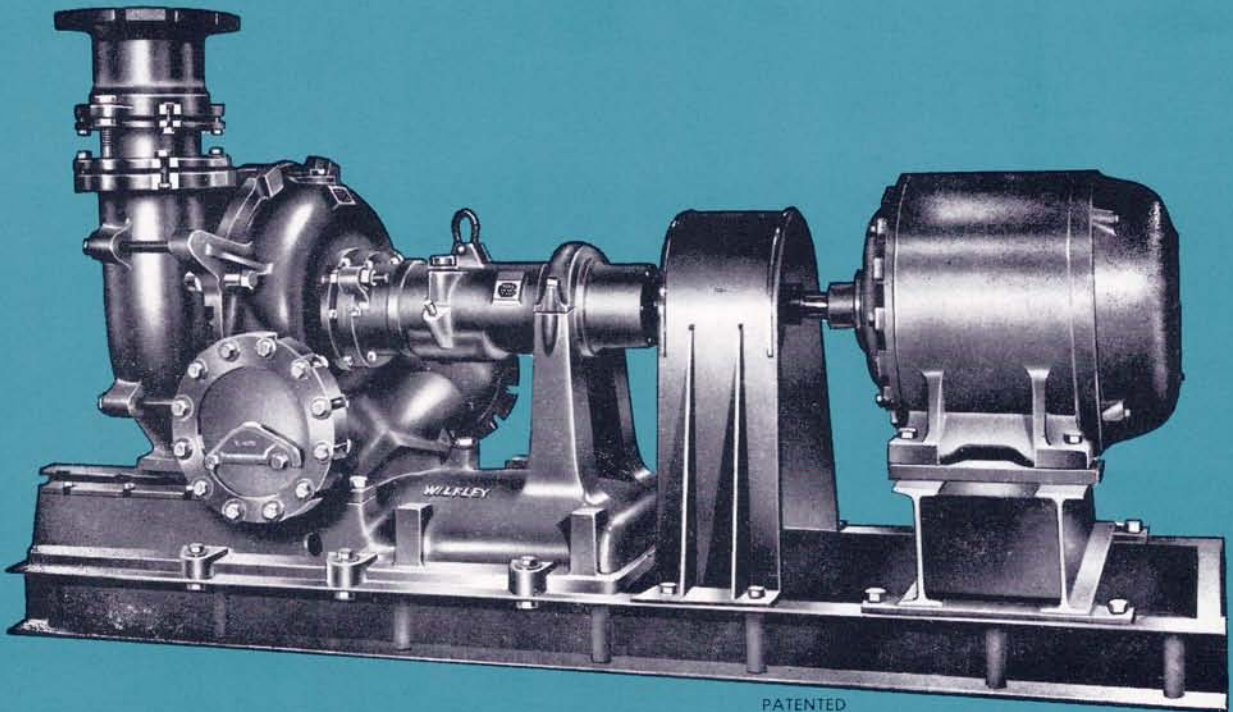


# WILFLEY®

## centrifugal SAND PUMPS



PATENTED

### "MODEL L"

### OPERATING INSTRUCTIONS

*and*

### PARTS LIST

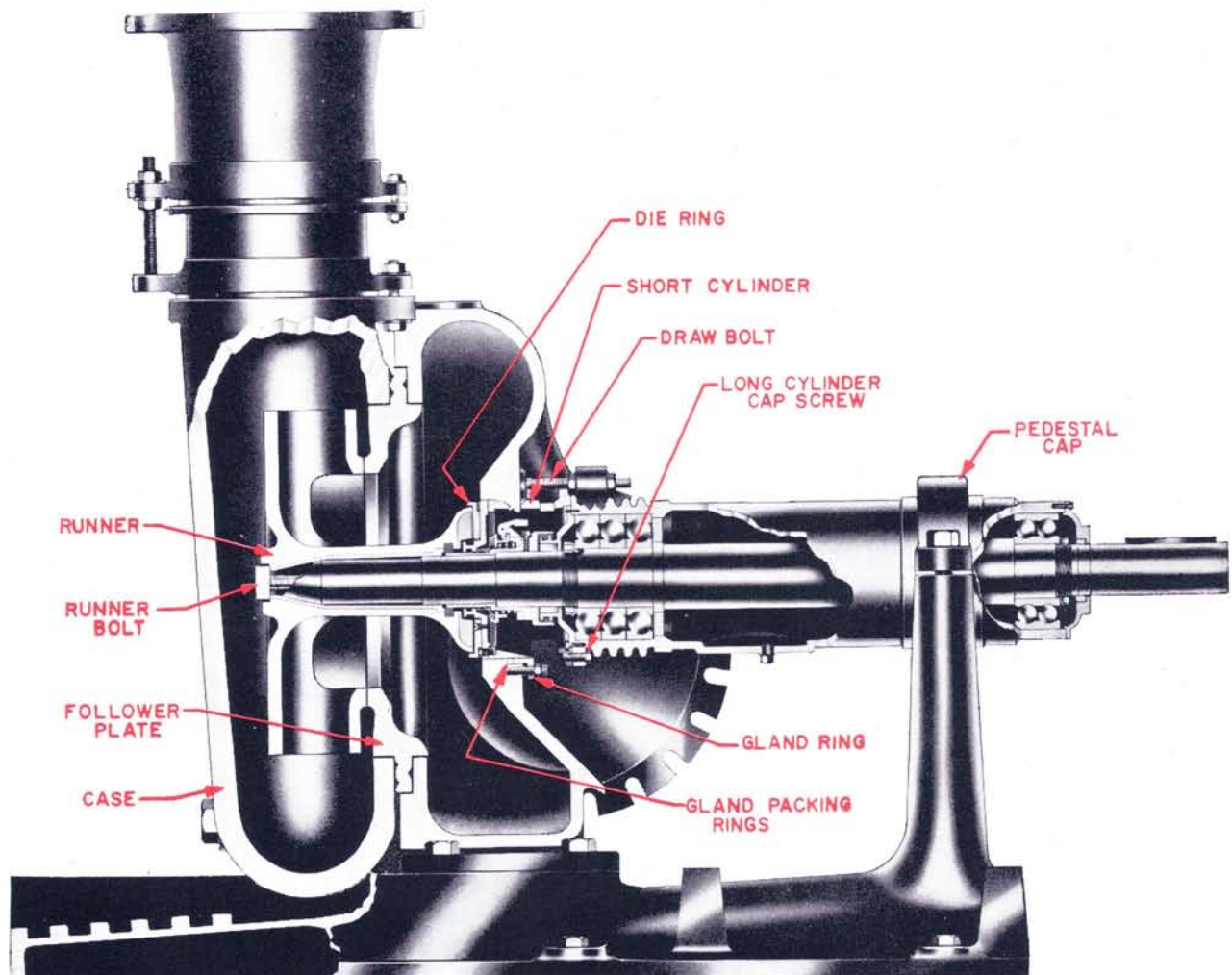
## CENTRIFUGAL SEAL

A centrifugal seal has been perfected that replaces the usual stuffing box and gland water for sealing around the pump shaft.

This remarkable **WILFLEY SEAL** eliminates stuffing box troubles.

The centrifugal seal consists of a revolving member, which we have named **Expeller**, having wings or paddles radiating from a recess in its center to its periphery and a stationary member that has a projecting groove. The revolving member is set close to the stationary member which acts as a side wearing plate. In action, the material being pumped is prevented from leaking out by the centrifugal action of the wings of the expeller, similar to that of an open runner, and any slippage is caught by the projecting groove and delivered to the wings. An automatic check-valve seals around the shaft while the pump is not in operation.

The seal operates in the intake chamber against the intake head only, and therefore is subject to very little wear and requires practically no attention. The seal is unquestionably one of the greatest improvements in centrifugal pump construction.



SECTIONAL VIEW WILFLEY MODEL "L" SAND PUMP



# **WILFLEY**<sup>®</sup>

## **centrifugal**

### **SAND PUMPS**

## *MODEL "L"*

### *OPERATING INSTRUCTIONS*

*and*

### *PARTS LIST*

**A. R. WILFLEY AND SONS, INC.**

P. O. Box 2330

DENVER, COLORADO 80201 U.S.A.

Area Code 303 Phone: 861-8451

PROTECTED BY U.S. AND FOREIGN PATENTS

## INDEX

Sump Sizes  
Installation Instructions  
Pages 4 and 5

Bearing Unit—Lubrication  
Pumping Parts  
Slippage Seal Adjustment  
Pages 6 and 7

Discharge Keeper  
Page 9

Ordering Instructions  
Useful Hints  
Pages 10 and 11

Check Valve  
Page 12

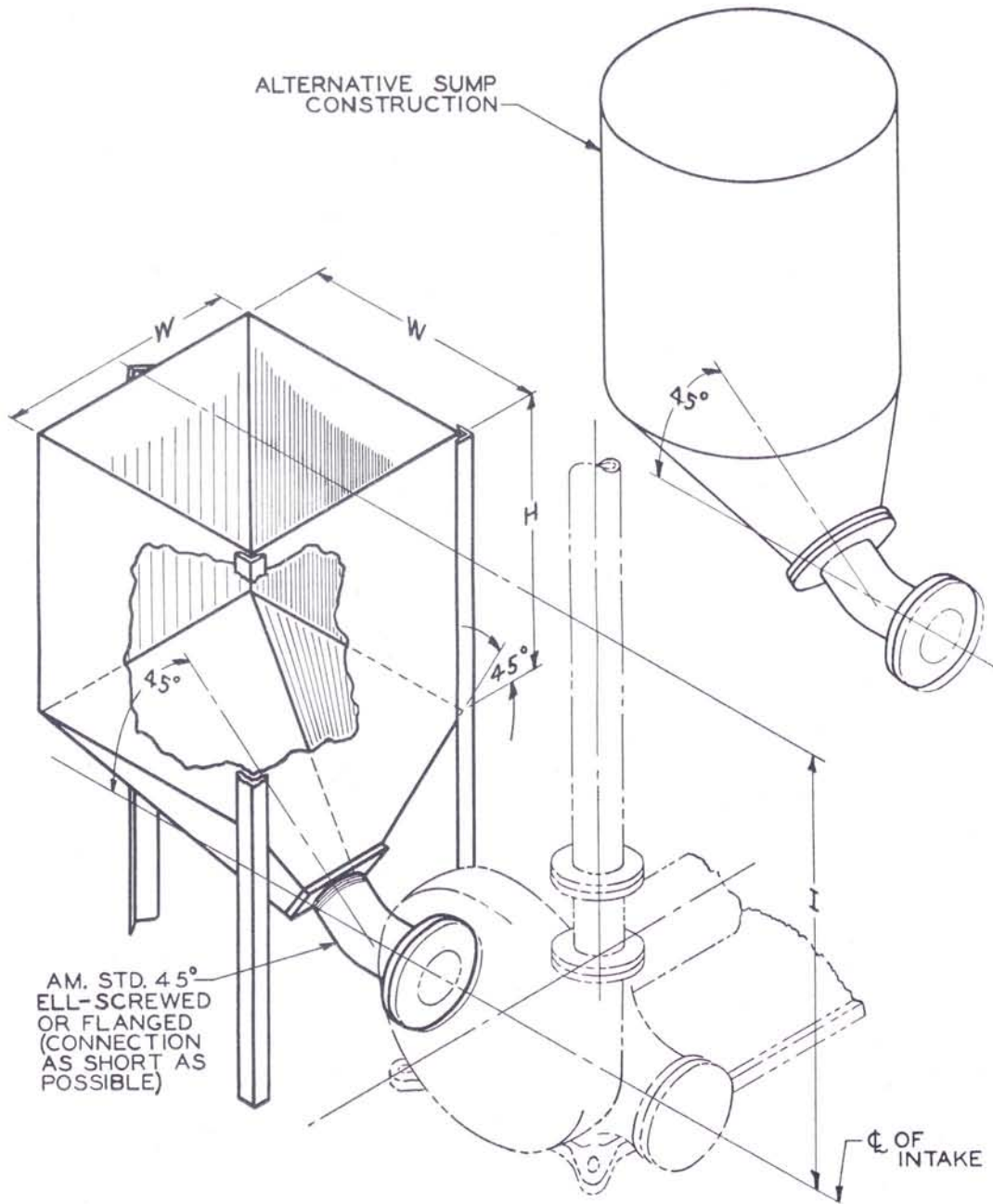
Parts List  
Discharge Keeper Assembly  
Pumping Parts

Parts List  
Check Valve Assembly

Parts List  
Bearing Unit Assembly

Parts List  
Pump Assembly

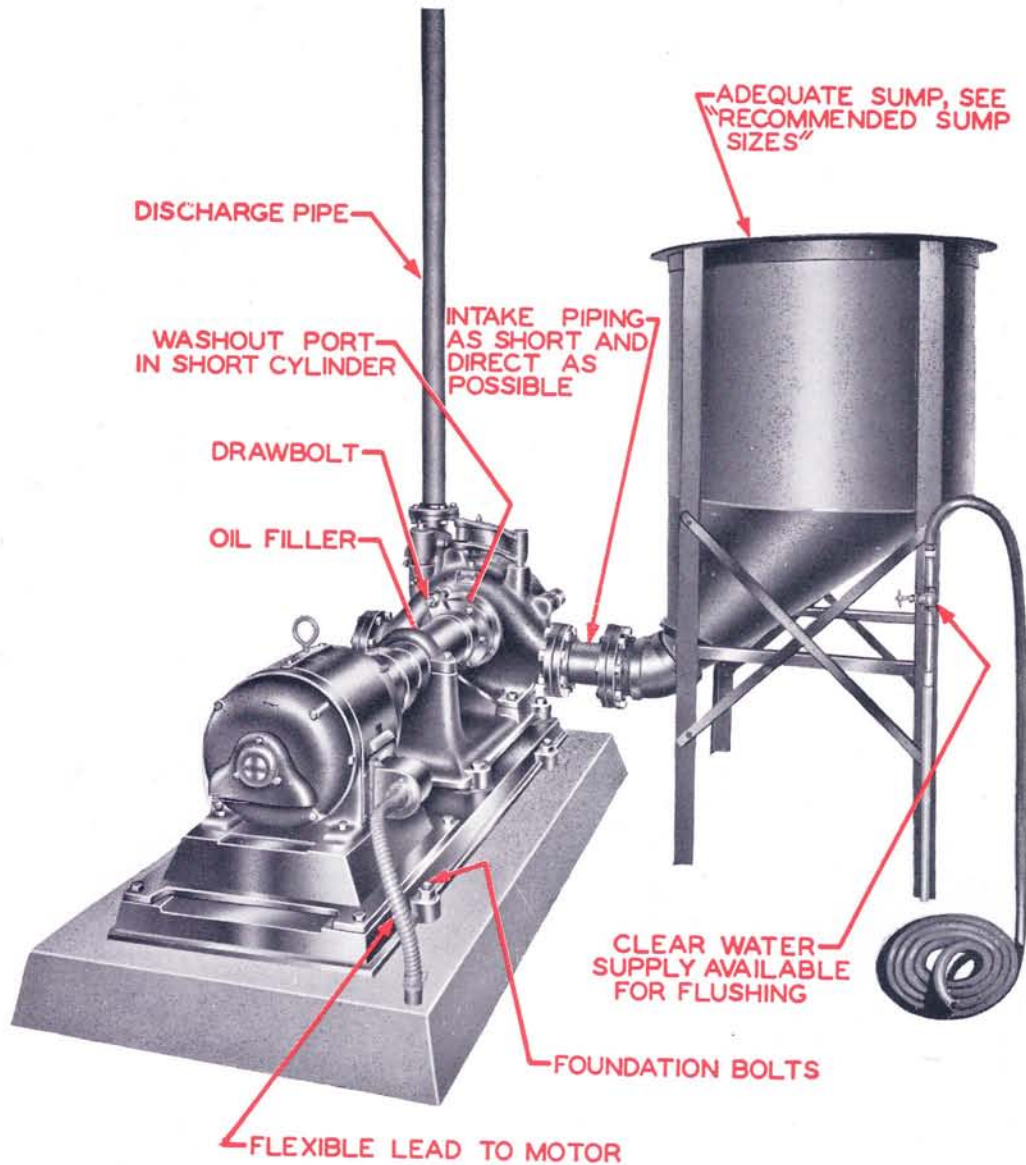
**RECOMMENDED SUMP SIZES**  
 FOR MAXIMUM CAPACITIES  
**WILFLEY SAND PUMPS**



SUMP DIMENSIONS			
PUMP SIZE $\frac{1}{2}$ "	10"	12"	14"
W—Inches	84 75 Min.	132 120 Min.	150
H—Inches	84 75 Min.	84 75 Min.	96
I—Inches	166 150 Min.	166 150 Min.	192

**NOTE: For partial capacity sizes may be reduced proportionately.**

## WIIFLEY SAND PUMPS INSTALLATION INSTRUCTIONS



The pump has no suction and therefore must be set below the supply so that the material to be pumped will flow into it by gravity. A hopper bottom intake sump or tank should be provided. (See sump size sheet.) Intake pipe from sump should slope and be as short as possible. Do not pump from one pump directly into a second pump but provide an intake sump for each pump.

The pump should be securely bolted down and the shaft should be level. Bolting down cannot distort the bearing alignment. Allow ample room for changing of pumping parts as these parts are very heavy.

All flanges are 125# American Standard.

Intake pipe may be connected to either or both sides of the pump and need not be disturbed

to change the pumping parts or the bearing unit.

Provide valves, close to pump, in both intake and discharge lines when intake of pump is connected directly to a high tank and in all cement and clay slurry installations.

Direction of rotation is counter-clockwise when looking at the case end of pump as indicated by arrow on the case. Refer to our Engineering Department for correct pump speeds. It is a matter of sufficient speed for the centrifugal seal (Expeller) and check-valve to function.

No gland water is required.

A hose should be available for flushing check valve.

All threads are right-hand.



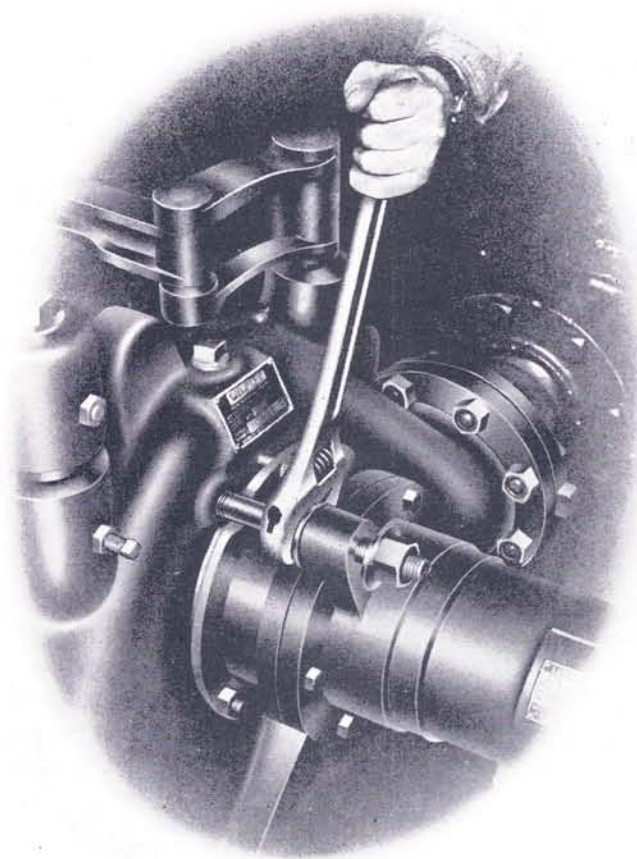
## BEARING UNIT

**To Remove:**—Remove pumping parts; remove pedestal cap; remove outer draw bolt nuts; loosen gland ring; lift bearing unit out of frame. The bearing unit may be removed without short cylinder by removing long cylinder cap screws instead of loosening gland ring.

## FLUSHING

A removable cap is provided in top of short cylinder to allow occasional flushing of the check-valve and flushing should be done while pump is running.

This is extremely important for such as milk of lime, cement slurry, clay, and concentrates.



## LUBRICATION

Use 300 second viscosity turbine oil or S-A-E No. 20.

Keep oil level to line on dipstick. (*On 10K and early 10L Pumps without dipstick keep oil level one-quarter inch above bottom of filler elbow.*)

After one weeks running drain and fill with new clean oil. This precaution should be taken to remove all chips and foreign matter from manufacture.

Inspect and change oil at regular intervals.

Should oil appear contaminated flush out with clean S-A-E No. 10 oil and refill.

**Caution:**—*Do not use graphite, mica or any other solid lubricant in the ball bearings. In event the pump should become totally submerged, do not run until the bearings are thoroughly cleaned.*

## SLIPPAGE SEAL ADJUSTMENT

This adjustment controls the clearance between the runner and follower plate and takes care of any drop in efficiency or capacity caused by wear on the sides of these parts.

**To Make This Adjustment:** — Loosen pedestal cap; loosen outer draw bolt nuts; move bearing unit and runner as a unit to rear of pump by turning inner draw bolt nuts until the runner is felt to touch the follower plate; then ease off and lock in this position. Rubber parts should be backed off 1/3 to 1/2 turn of draw bolt nut. **Do not move in wrong direction.** This adjustment is best made while turning pump over by hand. However, with iron parts it can be made while pump is running if care is exercised.

### RUBBER PARTS MUST NEVER BE ADJUSTED WITH PUMP RUNNING

Do not make this adjustment carelessly and run the risk of bending the shaft. Adjust only when needed and not too often.

## PUMPING PARTS

Case      Follower Plate      Runner      Die Ring

A die ring is furnished with each runner and should be replaced at same time as runner.

**To Remove:**—Remove case bolt nuts and case discharge bolts. Raise discharge sleeve about a quarter of an inch using discharge sleeve draw bolts. The case feet are babbitted for easy sliding; also to support and position case on shim bars. The case can be pushed free and slid out on shim bars and removed. Hold shaft stationary, unscrew runner and remove. The follower plate is held in position by two screws. The die ring is fastened to short cylinder head by four screws.

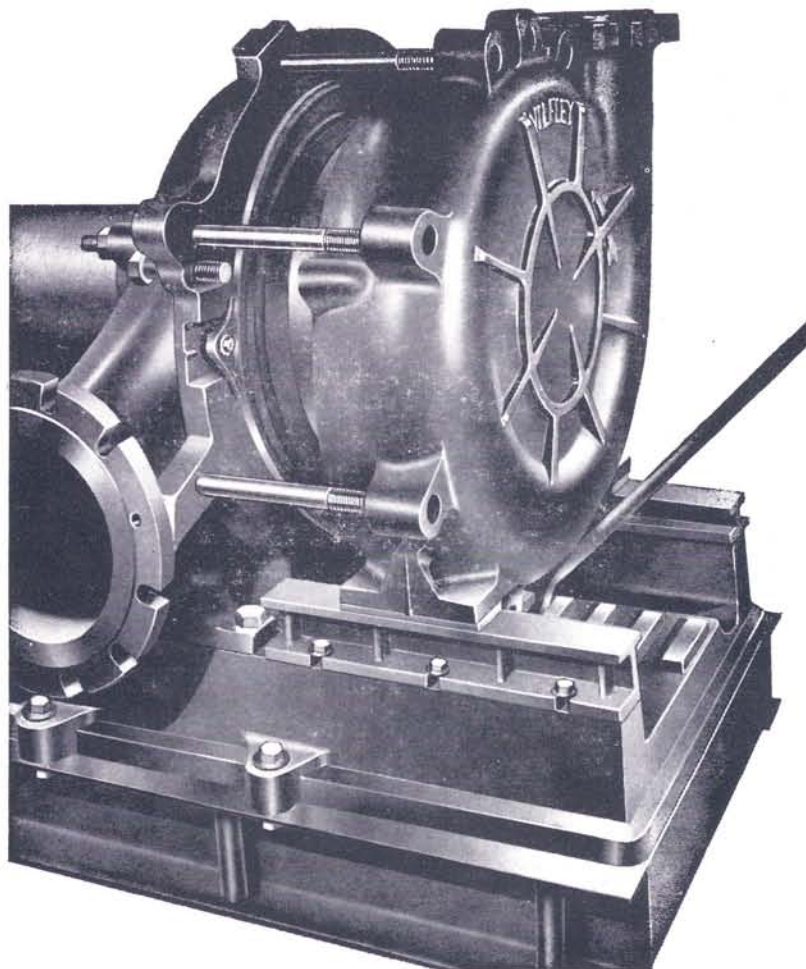
**To Install:**—Fasten on die ring, (die ring should lie flat on the short cylinder head); place follower plate and fasten with bolts; grease the

shaft, place runner on shaft and screw runner bolt into end of shaft until the head fits in recess in hub of runner, head of runner bolt must fit properly in recess before tightening runner. Hold shaft stationary and tighten runner onto shaft, making sure that runner is not binding on follower plate; set case on shim bars and push into place using pry bar on cleats on the base. Install case bolt nuts; lower discharge sleeve and bolt discharge sleeve to case.

After installing parts adjust the slippage seal. (See Page 6.)

Turn the shaft frequently while installing pumping parts to make sure the runner does not bind against the case, follower plate or die ring. Clean all faces before installing.

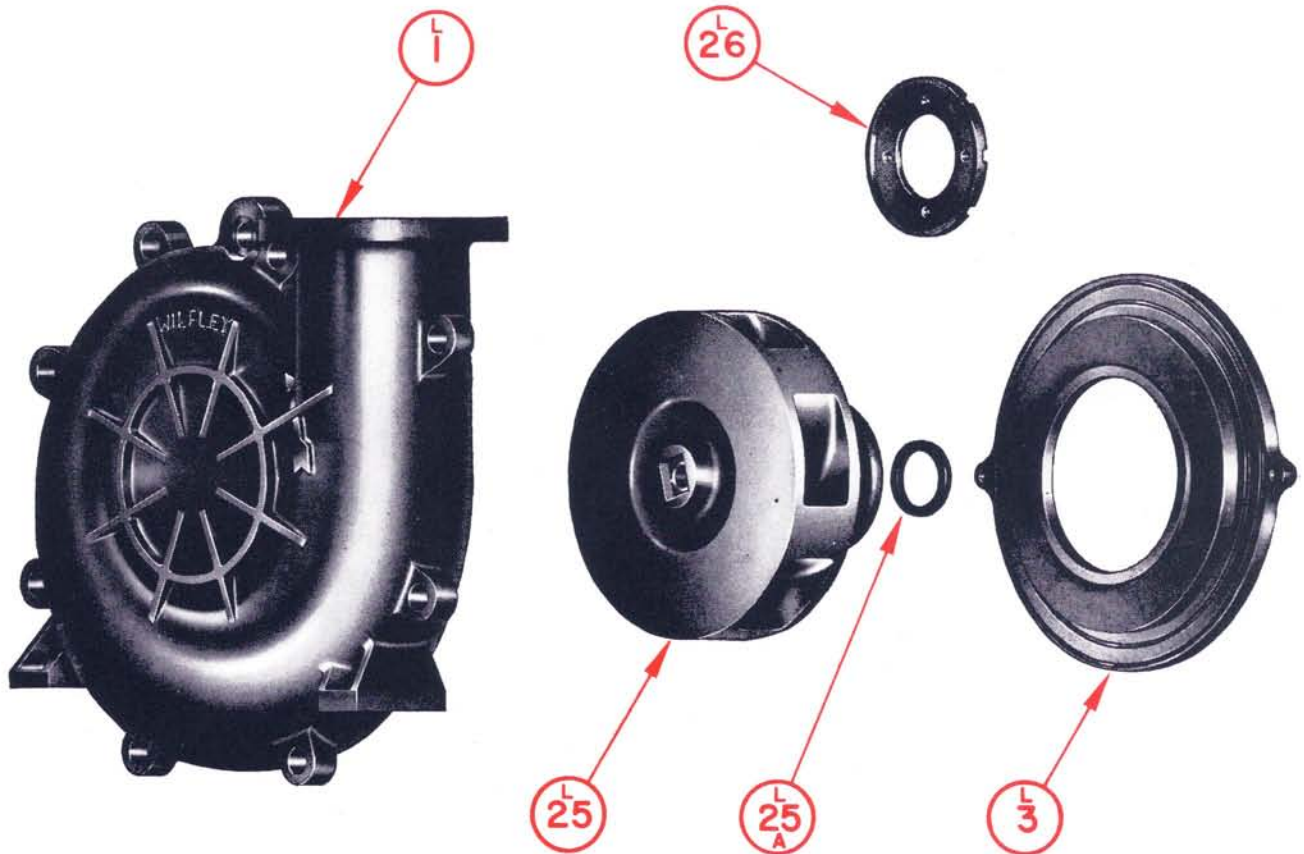
FOR PARTS LISTS SEE PAGE 8



MODEL "L" CASE INSTALLATION



**PUMPING PARTS**

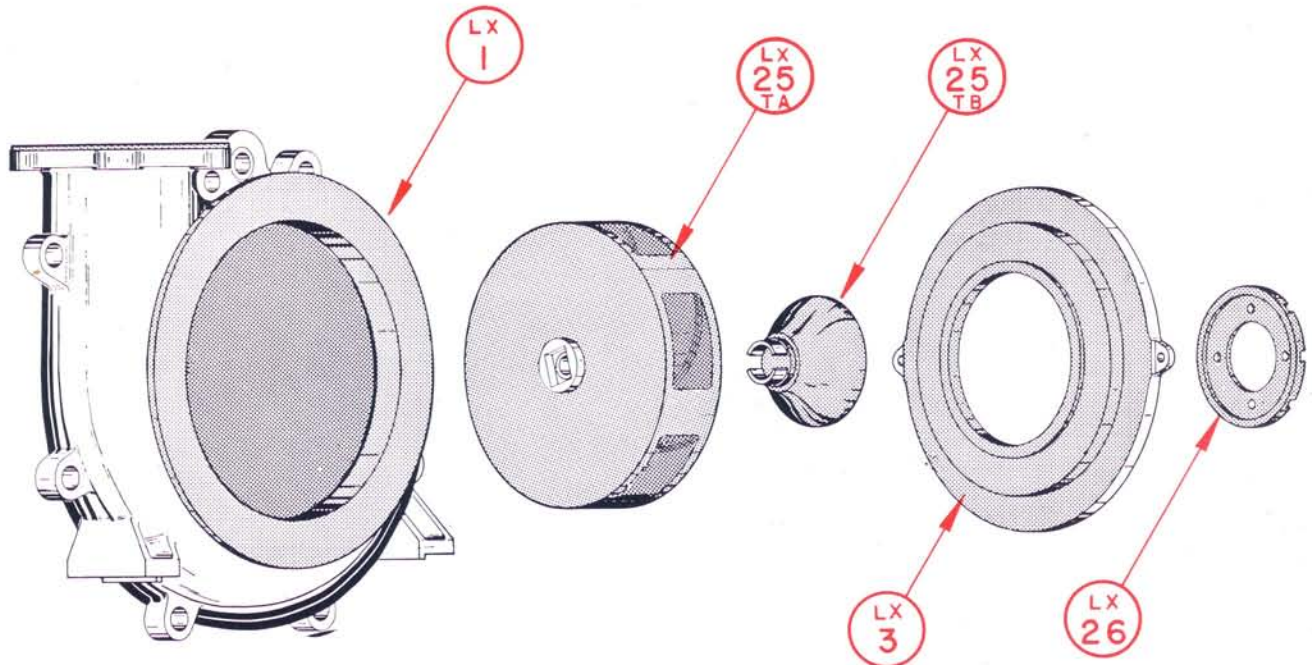


Part No. L1  
Name of Part Case  
Part No. L3  
Name of Part Follower Plate

Part No. L25  
Name of Part Runner  
Part No. L25A  
Name of Part Runner Gasket

Part No. L26  
Name of Part Die Ring

**RUBBER COVERED**

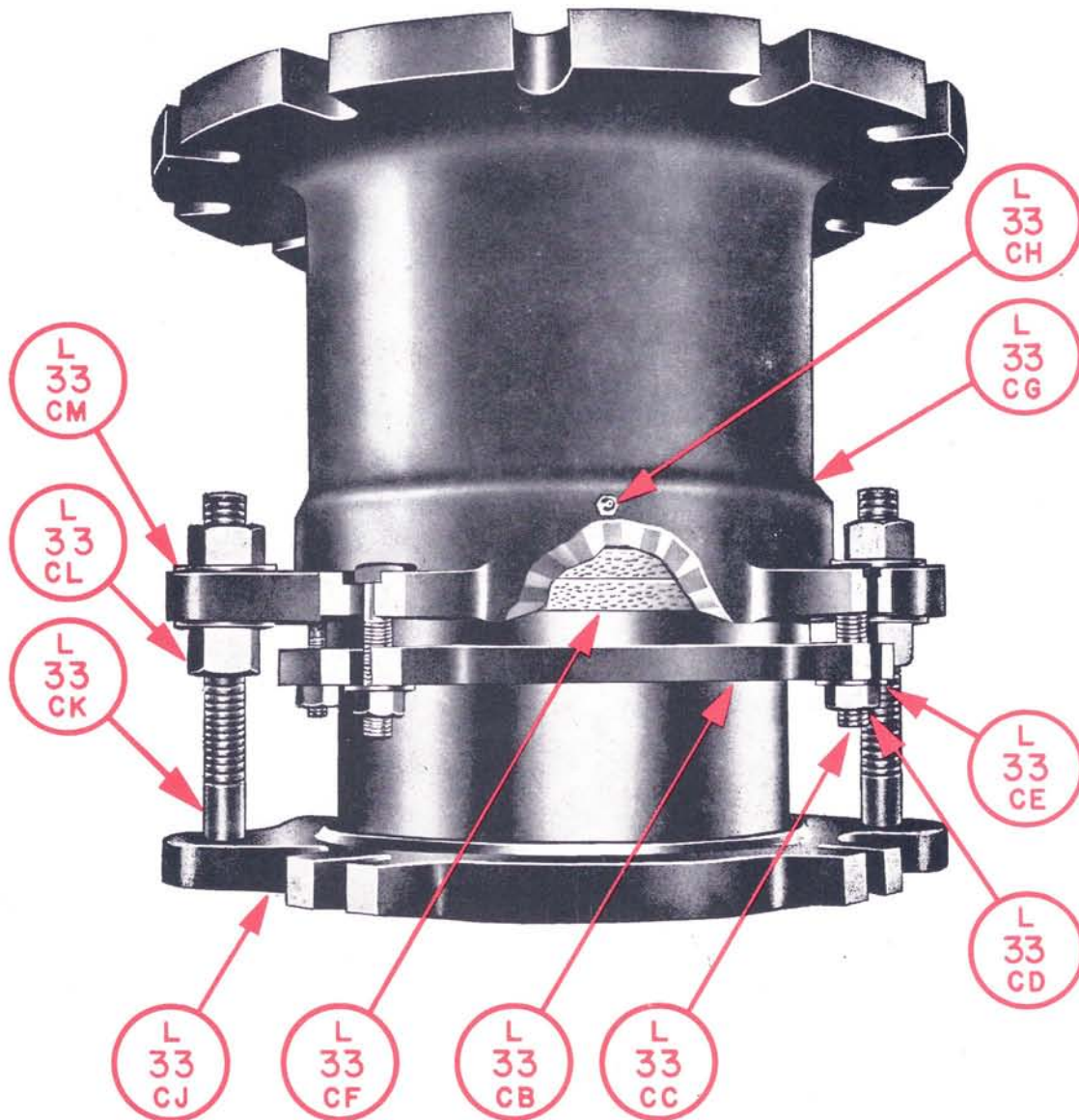


Part No. LX1  
Name of Part Case  
Part No. LX3  
Name of Part Follower Plate

Part No. LX25TA  
Name of Part Runner  
Part No. LX25TB  
Name of Part Expeller

Part No. LX26  
Name of Part Die Ring



**DISCHARGE KEEPER****ASSEMBLY (L33CA)**

Part No.	Name of Part
L33CB	Gland Ring for Slip Joint
L33CC	Gland Ring Bolt
L33CD	Gland Ring Bolt Nut
L33CE	Gland Ring Bolt Washer
L33CF	Slip Joint Gland Packing Ring
L33CG	Packing Sleeve
L33CH	Packing Sleeve Grease Fitting
L33CJ	Discharge Sleeve
L33CK	Slip Joint Draw Bolt
L33CL	Slip Joint Draw Bolt Nut
L33CM	Slip Joint Draw Bolt Washer

## USEFUL HINTS

**Part Capacity:**—Intake head too low or too much intake-pipe resistance; speed too slow; obstructions; examine slippage-seal adjustment.

**Drop in Capacity:**—Slippage-seal adjustment necessary; obstructions; runner or follower plate worn out.

**Vibration:**—Runner clogged, worn out of balance, or loose on the shaft or binding against gasket and not bolted squarely on taper of shaft; gland too loose; poor foundation; bent shaft.

**Fluctuation:**—Fluctuation is usually due to over-speeding and should be corrected by reducing

the speed or by using a smaller diameter runner.

**Leak at Bottom of Short Cylinder When Pump is Running:**—Gland too loose; Intake head too high for pump speed (Expeller must have sufficient speed to withstand intake head); Expeller worn out; Die ring worn out.

**Leak at Bottom of Short Cylinder When Pump is Stopped:** — Gland too loose; Check-valve not working properly or packing diaphragm worn out.

## ALL THREADS ARE RIGHT HAND

**When Using Valves in Intake and Discharge Lines:**—Close intake valve first and then close the discharge valve before stopping pump. After starting pump open the discharge valve first, then open intake valve the desired amount.



## **GENERAL INSTRUCTIONS FOR ORDERING PARTS**

In order for us to furnish the proper parts all orders should contain the following information:

1. Serial Number of both Pump and Bearing Unit.
2. Size and Model of Pump.
3. Part Number.
4. Diameter of Runner.
5. Specify any special parts and/or materials used.

A die ring is furnished with every runner unless otherwise specified.

A pump maintenance data sheet is enclosed for your convenience in keeping a record of your parts. Additional sheets will be furnished on request.

**IMPORTANT!** Always give **both** Pump and Bearing Unit Serial Numbers when ordering.

## CHECK VALVE

The check valve packing diaphragm may be replaced without removing check valve from the pump. The diaphragm is a tight fit on sleeve and is held in the diaphragm plate by a taper. To remove pry out of taper and slide off of sleeve. When installing make sure slots in diaphragm match up with lugs on plate.

The check valve may be assembled outside pump and installed as a unit. The bearing unit may be detached from short cylinder without removing check valve.

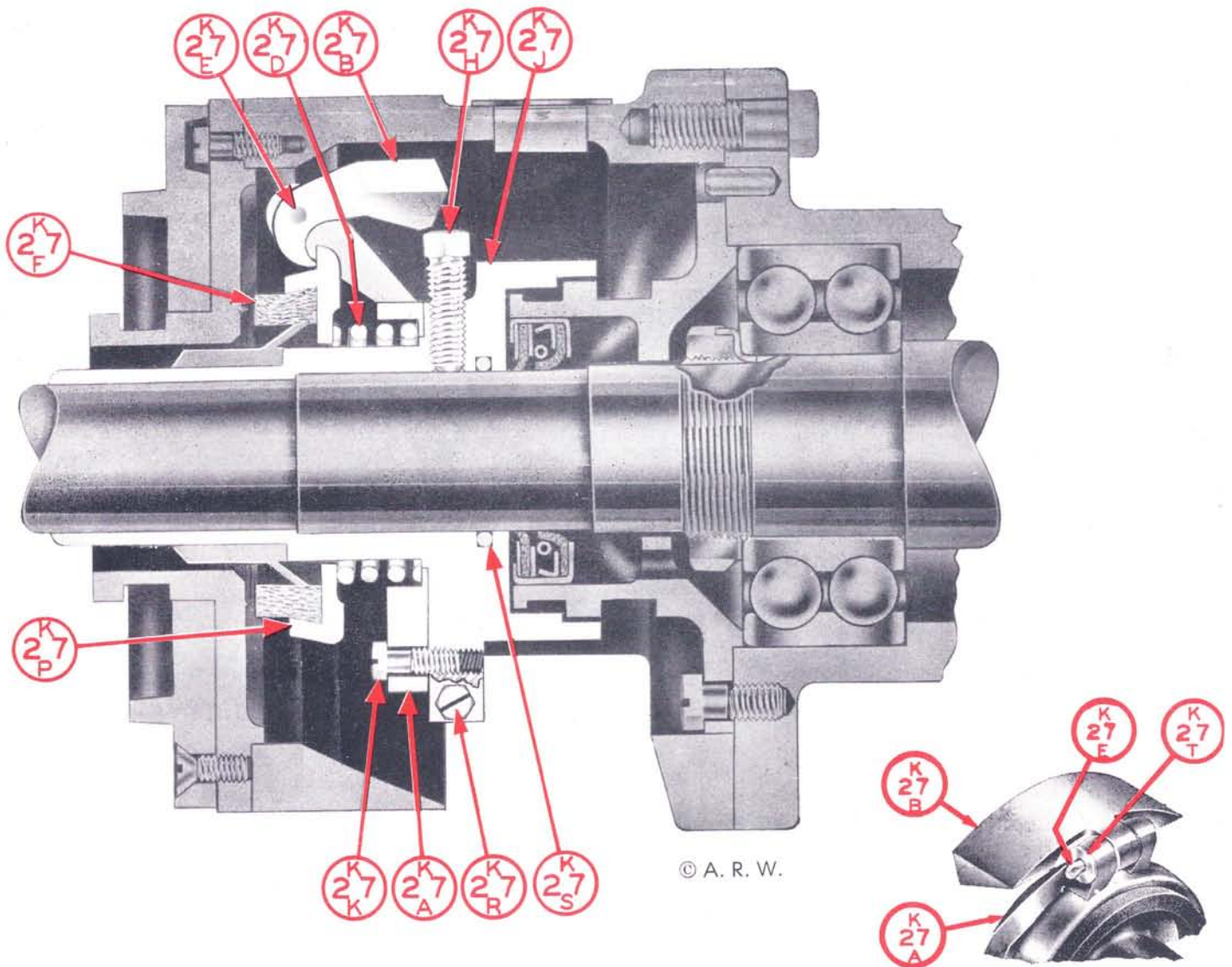
The 10 inch Model "K" and some 10 inch Model "L" pumps are equipped with Style 9A check valves. All 12 and 14 inch Model "L" and later 10 inch Model "L" pumps are equipped with Style 10 check valves. Pumps so equipped are identified by having the Bearing Unit Serial Number ending in the letter "B". These check valves can be further distinguished by the number of weights, the Style 9A having only 2 while the Style 10 has 3 weights.

These check valves are completely interchangeable as a unit while the parts are not, with the exception of the Packing Diaphragms parts nos. K27F and L27FF.



# 10K CHECK VALVE ASSEMBLY

## STYLE 9A

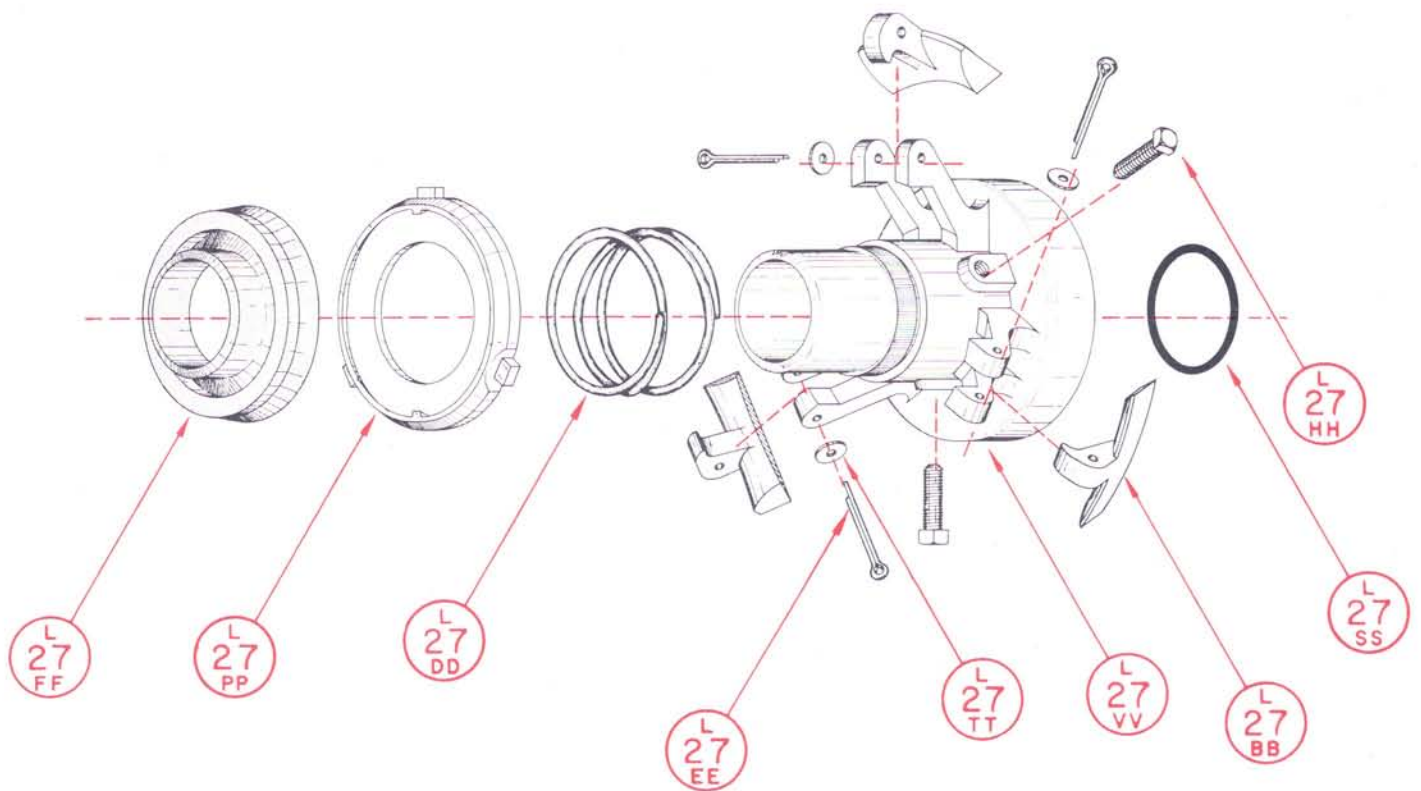


Part No.	Name of Part
K27AA	Check Valve Spider Assembly
K27A	Check Valve Spider
K27B	Check Valve Weight
K27D	Check Valve Spring
K27E	Check Valve Cotter Pin
K27P	Check Valve Packing Diaphragm Plate
K27T	Check Valve Cotter Pin Washer
K27F	Check Valve Packing Diaphragm
K27H	Check Valve Sleeve Set Screw
K27J	Check Valve Sleeve
K27K	Check Valve Spider Bolt
K27R	Check Valve Sleeve Bolt
K27S	Check Valve Sleeve O-Ring

# WILFLEY MODEL "L" CHECK VALVE ASSEMBLY

## STYLE 10 PART NO. L27

**NOTICE** — All Bearing Units with serial numbers ending in "B" are equipped with Style 10 Check Valves. When ordering Check Valve parts for these Units use this Parts List only.



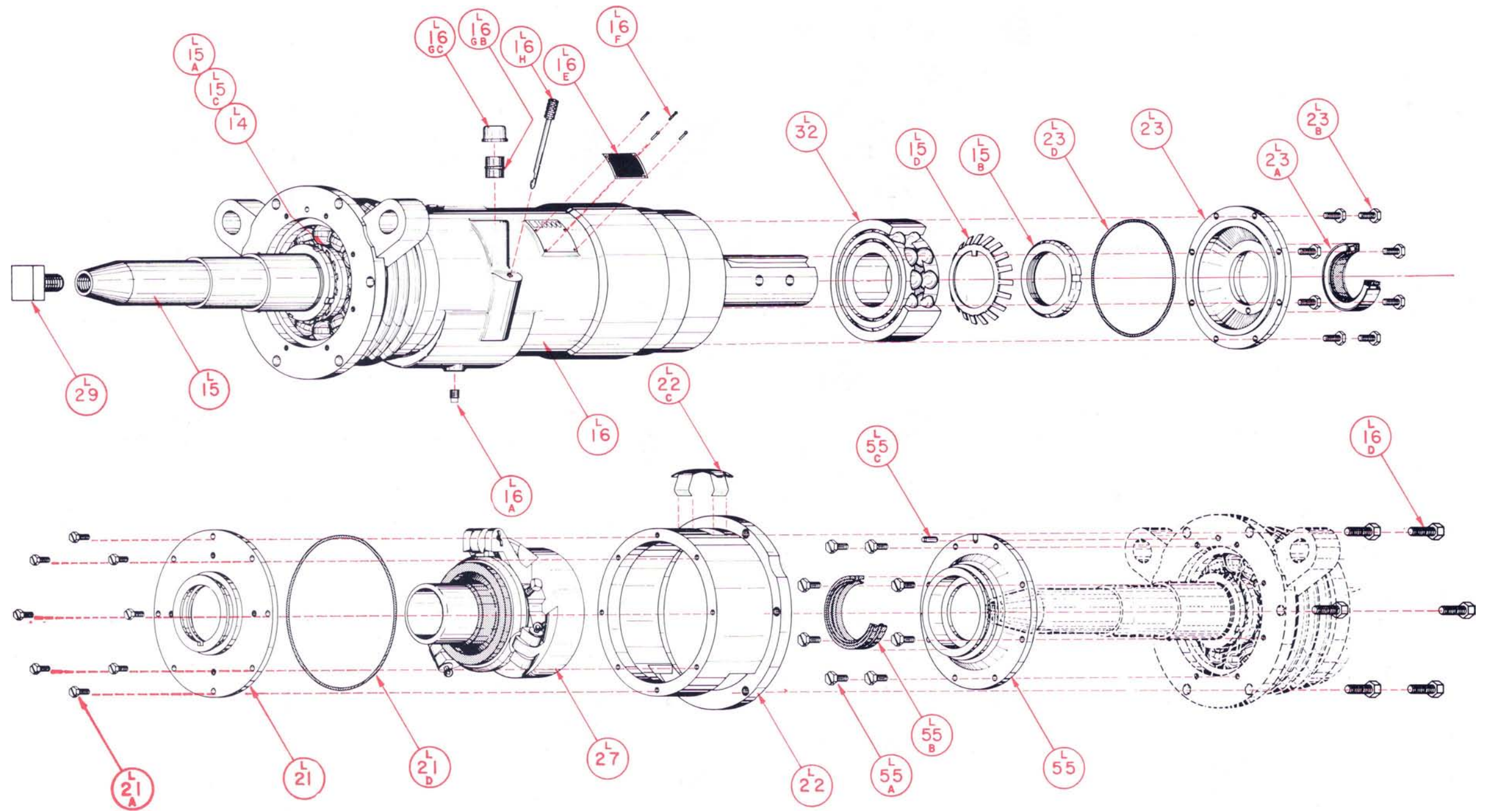
Part No.	Name of Part
L27BB	Check Valve Weight--3 req.
L27DD	Check Valve Spring
L27EE	Check Valve Cotter Pin--3 req.
L27FF	Check Valve Packing Diaphragm
L27HH	Check Valve Hub Set Screw--2 req.

Part No.	Name of Part
L27PP	Check Valve Packing Diaphragm Plate
L27SS	Check Valve Hub O-Ring
L27TT	Check Valve Cotter Pin Washer--3 req.
L27VV	Check Valve Hub



## BEARING UNIT ASSEMBLY – PART NO. 13

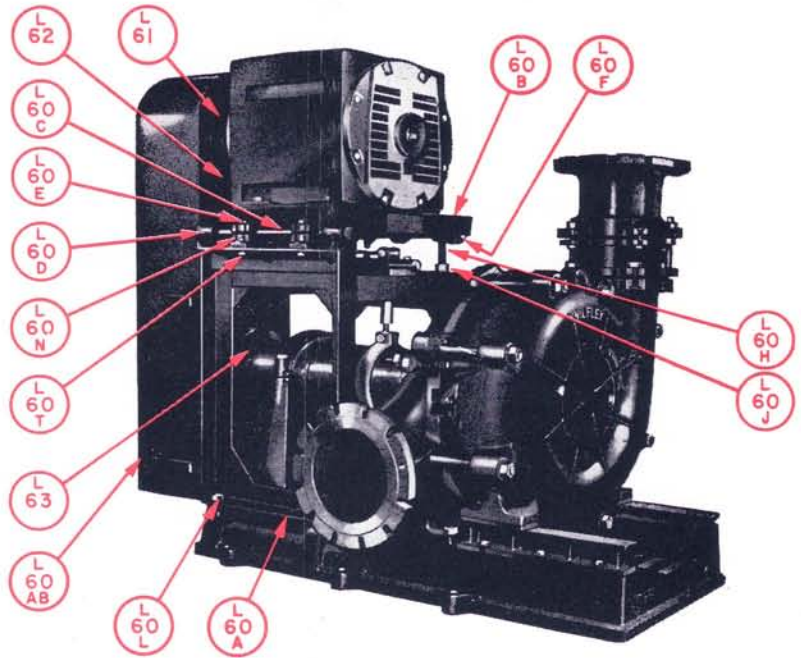
Part No.	Name of Part
L14	Thrust Bearing
L15	Shaft
L15A	Shaft Thrust Bearing Nut
L15B	Shaft Radial Bearing Nut
L15C	Shaft Thrust Bearing Lock Washer
L15D	Shaft Radial Bearing Lock Washer
L16	Long Cylinder
L16A	Long Cylinder Drain Plug
L16D	Long Cylinder Cap Screw
L16E	Long Cylinder Lubrication Plate
L16F	Long Cylinder Lubrication Plate Screws
L16H	Long Cylinder Oil Gauging Rod
L16GB	Long Cylinder Oil Filler Nipple
L16GC	Long Cylinder Oil Filler Cap
L21	Short Cylinder Head
L21A	Short Cylinder Head Bolt
L21D	Short Cylinder Head O-Ring (Only used on 12, 14L)
L22	Short Cylinder
L22C	Short Cylinder Cover
L23	End Cap
L23A	End Cap Oil Seal
L23B	End Cap Cap Screw
L23D	End Cap O-Ring (Only used on 12, 14L)
L27	Check Valve Assembly
L29	Runner Bolt
L32	Radial Bearing
L55	Front Bearing Cap
L55A	Front Bearing Cap Bolt
L55B	Front Bearing Cap Oil Seal
L55C	Front Bearing Cap Indexing Pin





**Additional Parts For  
Overhead V-Belt Driven Pump**

Part No.	Name of Part
L60A	Overhead Fixture Frame
L60B	Overhead Fixture Motor Platform
L60C	Overhead Fixture Fulcrum Bar
L60D	Overhead Fixture Motor Platform Set Screw
L60E	Overhead Fixture Pillow Block Clamping Screw
L60E	Overhead Fixture Pillow Block Clamping Screw Lock Washer
L60F	Overhead Fixture Eyebolt Bar
L60G	Overhead Fixture Eyebolt Bar Cotter Pin
L60H	Overhead Fixture Eyebolt
L60J	Overhead Fixture Eyebolt Nut
L60K	Overhead Fixture Eyebolt Washer
L60L	Overhead Fixture Mounting Capscrew
L60M	Overhead Fixture Mounting Capscrew Washer
L60N	Overhead Fixture Pillow Block
L60Q	Overhead Fixture Pillow Block Bolt
L60R	Overhead Fixture Pillow Block Bolt Nut
L60S	Overhead Fixture Pillow Block Bolt Lock Washer
L60T	Overhead Fixture Pillow Block Capscrew
L60TA	Overhead Fixture Pillow Block Capscrew Lock Washer
L60U	Overhead Fixture Tie Bar Capscrew
L60V	Overhead Fixture Tie Bar Capscrew Nut
L60W	Overhead Fixture Tie Bar Capscrew Washer
L60AB	Overhead V-Belt Guard
L60AC	Overhead V-Belt Guard Bolt Hook
L60AD	Overhead V-Belt Guard Bolt Hook Nut
L60AE	Overhead V-Belt Guard Bolt Hook Washer
L60AK	Overhead V-Belt Guard Bolt Hook Block
L60AL	Overhead V-Belt Guard Bolt Hook Block Mounting Bolt
L60AM	Overhead V-Belt Guard Bolt Hook Block Mounting Bolt Nut
L60AMA	Overhead V-Belt Guard Bolt Hook Block Mounting Bolt Washer
L60AN	Overhead V-Belt Guard Latch Bolt
L60AO	Overhead V-Belt Guard Latch Bolt Nut
L60AP	Overhead V-Belt Guard Latch Bolt Washer
L60AQ	Overhead V-Belt Guard Latch Bolt Pin
L60AR	Overhead V-Belt Guard Latch Bolt Pin Cotter Pin
L60AW	Overhead V-Belt Guard Latch Block



**Additional Parts For  
Overhead V-Belt Driven Pump**

Part No.	Name of Part
L60AX	Overhead V-Belt Guard Latch Block Mounting Bolt
L60AY	Overhead V-Belt Guard Latch Block Mounting Bolt Nut
L60AZ	Overhead V-Belt Guard Latch Block Mounting Bolt Washer
L61	Overhead Fixture Motor Sheave
L62	Overhead Fixture V-Belt
L63	Overhead Fixture Pump Sheave



## MODEL "L" PARTS LIST

### Standard Belt-Driven Pump

Part No.	Name of Part
L1	Case
L1A	Case Gasket
L1B	Case Discharge Flange Bolt
L3	Follower Plate
L3A	Follower Plate Gasket Assembly
L3E	Follower Plate Pin
L3F	Follower Plate Cap Screw
L6SA	Intake Chamber
L6SB	Frame Base
L6SK	Case Support Bars (Right & Left)
L6SL	Case Support Bar Cap Screw
L6SM	Case Support Bar Cap Screw Washer
L6E	Intake Chamber Cap Screw
L7	Gland Ring
L11	Draw Bolt
L11A	Draw Bolt Nut
L11B	Draw Bolt Washer
L13	Bearing Unit Assembly
L14	Thrust Bearing
L25	Runner
L26	Die Ring
L26A	Die Ring Screw
L27	Check Valve Assembly
L28	Pedestal Cap
L28E	Pedestal Cap Cap Screw
L29	Runner Bolt
L32	Radial Bearing
L33	Discharge Keeper Assembly
L36	Blind Intake Flange
L36A	Blind Intake Flange Cap Screw
L36B	Blind Intake Flange Cover
L36C	Blind Intake Flange Cap Screw Nut
L36D	Blind Intake Flange Cap Screw Washer
L36BA	Blind Intake Flange Cover Cap Screw
L36BB	Blind Intake Flange Cover Cap Screw Washer

### Standard Belt-Driven Pump

Part No.	Name of Part
L36BC	Blind Intake Flange Cover Gasket
L39	Case Stud Bolt
L39A	Case Stud Bolt Nut
L39B	Case Stud Bolt Washer
L40	Gland Stud Bolt
L40A	Gland Stud Bolt Nut
L41	Gland Packing Ring
L43B	Blind Intake Flange Gasket

### Additional Parts For

#### Direct Driven Pump

Part No.	Name of Part
L44	Flexible Coupling Assembly
L50	Sub-Base
L50A	Sub-Base Pump Frame Cap Screw
L50B	Sub-Base Motor Pedestal Cap Screw
L50AA	Sub-Base Pump Frame Cap Screw Nut
L50AB	Sub-Base Pump Frame Cap Screw Washer
L50BA	Sub-Base Motor Pedestal Cap Screw Nut
L50BB	Sub-Base Motor Pedestal Cap Screw Washer
L51	Motor Pedestal
L52	Coupling Guard
L52A	Coupling Guard Cap Screw
L52AA	Coupling Guard Cap Screw Nut
L52AB	Coupling Guard Cap Screw Washer



