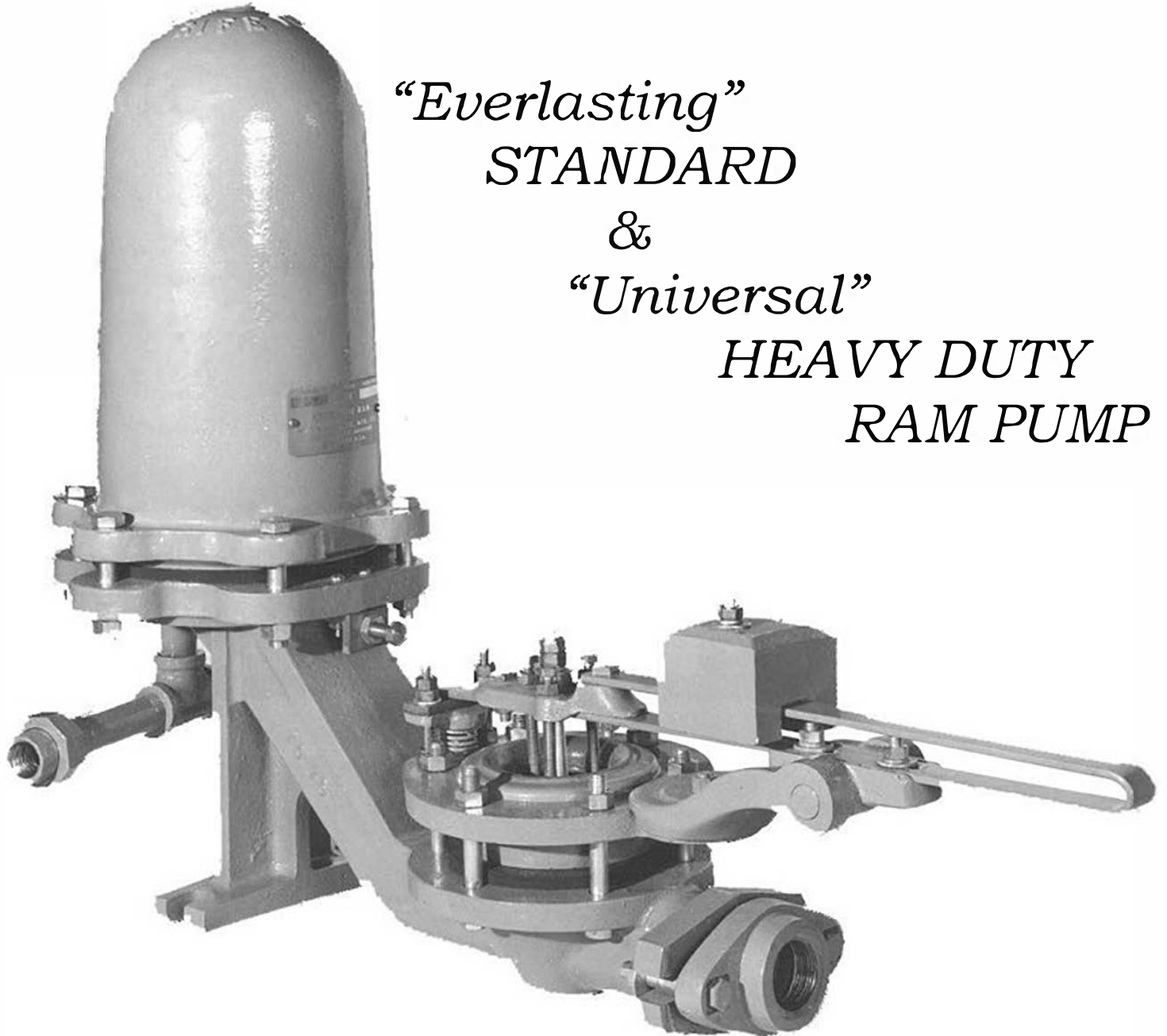


# OWNER'S GUIDE

INSTALLATION • OPERATION • MAINTENANCE • SERVICE



*“Everlasting”*  
**STANDARD**

&

*“Universal”*

**HEAVY DUTY**

**RAM PUMP**

RIFE HYDRAULIC ENGINE MFG. CO. INC.

1 LINE STREET, PO BOX #95

NANTICOKE, PA 18634

[sales@riferam.com](mailto:sales@riferam.com) [www.riferam.com](http://www.riferam.com)

**STARTING AND ADJUSTING  
YOUR "Everlasting" STANDARD & "Universal" HEAVY DUTY  
RAM.**

**STARTING THE RAM**

First make sure both intake and discharge lines are watertight. If there are Plug or Gate Valves at intake and discharge ends, open valve at intake and close valve at discharge end. Then with pipe filled and water flowing out through the Outside or Waste Valve, close that valve by holding it up for several minutes, allowing all air to find its way out of the Drive Pipe. Then push the Outside Valve down every few seconds until sufficient pressure is built up in the Air Chamber and the Valve begins to rise and fall by itself. Then open the Gate or Plug Valve at discharge end. If the Outside Valve should fail to rise, or be too slow in rising, the Lever Rest needs to be raised by screwing upwards the nuts on the two Stud Bolts that hold it in positions. This will reduce the drop or opening of the Outside Valve and will speed up the number of strokes. Moving the Weight on the Lever Arm toward the Air Chamber will also slow up the stroke and moving it away from the Air Chamber will increase the stroke.

**USING MORE OR LESS WATER**

Each Ram can be regulated to use between a minimum and a maximum amount of water, which provides for variation in the flow of supply water in drought and wet season. Regulation to vary the amount of water used by the Ram is accomplished by raising and lowering the Lever Rest by turning up or down the nuts on the Stud Bolts that hold the Rest down against the Lever Rest Spring. The lower the Lever Rest the more water the Ram uses, the more water it pumps and the slower the stroke. The higher the Lever Rest the less water the Ram uses, the less water it pumps and the faster the stroke. As suggested above, moving the Weight along the Lever has a similar effect.

**NUMBER OF STROKES**

For smaller sizes of Rams to operate at maximum capacity, the Outside Valve should work at about 30-40 strokes per minutes and larger Rams at as little as 20-25 strokes per minute. For smaller Rams to operate at minimum capacity, the Outside Valve should work at about 80-140 strokes per minutes: larger Rams about 50-70 strokes. The specifications for the for "Everlasting" Standard and "Universal" Heavy Duty Rams list for each size Ram the maximum and minimum intake capacities. These capacities cover the entire operating ranges of the Rams, which increase with the vertical fall from source of supply to the Ram.

**REGULATING AIR SUPPLY**

The Air Feed Valve should be so adjusted that a small jet of water escapes at each stroke of the Ram. Between these spurts, air is drawn in to keep the Air Chamber supplied with air, thus preventing waterlogging, so common with older style Rams. If the Air Feed Valve becomes clogged, or is not open wide enough, exhaustion of air in the Air Chamber will result, causing a pulsating flow of water at the point of discharge (timed with the stroke of the Ram) and producing a metallic sound in the piping. The Air Feed Pin should then be opened further, allowing more water to escape and increasing the supply of air drawn in. Should the Ram be taking in and discharging too much air, the Air Feed Pin should be screwed in a little. Exhaustion of air in the Air Chamber can cause breakage of bolts or other parts of the Ram, if allowed to continue. Taking in too much air will usually cause the Ram to deliver more water, but can also put air in to the delivery line- an inconvenience in water systems using pressure tanks.

**SETTING THE OUTSIDE OR WASTE VALVE**

When drawn up lightly against the inside surface of the Valve Chamber, the Outside Rubber Valve should close evenly all around its circumference. Inserting a fine wire between Valve and Valve Chamber at four points around the Valve can test this. The wire will hold against a pull, if that quarter of the Valve meets the Valve Chamber. If the Valve is not closed at all points, its setting can be adjusted by means of the three Adjusting Pins on late model Rams (be sure to lock each pin in position with its locknut), or by readjusting the 3-Piece Swivel on older models. The Outside Valves of new Rams and Outside Valve Assemblies are correctly set at the factory before shipment.

**ADJUSTING THE INSIDE VALVE**

The Inside Rubber Valve needs to be locked in position by the Inside Valve Washer and two nuts on the Inside Valve bolt, but only tightly enough so that it is just possible to turn the Valve around the bolt with the fingers. This assures that the Valve rests flat on the Gridiron, sealing the entry into the Air Chamber. If pressed too hard against the Gridiron by the bolt, the Rubber Valve can lift around its edge, stopping the delivery of water and allowing the water in the delivery line to flow back through the Air Chamber, Inside Valve and Outside Valve, thereby exhausting the stored supply and eventually causing the Ram to stop.

**OBTAINING INCREASED DELIVERY FROM YOUR RAM**

If your Ram is an older model and the available supply is more than the Ram is using, it is possible that by installing a few improved parts to bring it up to the latest design, the delivery by the Ram may be substantially increased. Recent research also shows that frequently a larger diameter Drive Pipe will result in increased delivery. We have had excellent results from the new Outside Valve Assembly (shown on the drawing), which was introduced on all new "Everlasting" Standard and "Universal" Heavy Duty Rams manufactured after 1959, since this device makes possible and increased opening of the Outside Valve, allowing the Ram to use more water, if available, and it also makes the Outside Valve Assembly more rigid. If you have an excess of available water and will send up the details of your present installation, we will be glad to give you our suggestions about increasing the amount of water your Ram can deliver.

**GENERAL**

If your Rife "Everlasting" Standard or "Universal" Heavy Duty Ram is of the older design, it is the most efficient and most adjustable between reduced and normal intake supply of any Ram of which we have knowledge. If it is of our new design, manufactured after 1959, or has already had the new design parts added, then it has the largest intake (all the water the Drive Pipe can supply) and discharge capacities of any Ram of its size ever produced and it is designed to give the longest service possible with the least upkeep expense.

If you are installing a Ram, new or old, be sure to check over the installation once or twice a week for the first several months to make certain the Ram is adjusted properly, that no bolts require further tightening and that there are no leaks in the piping.

## HOW TO TROUBLESHOOT YOUR MODEL S, SU, HD and HDU RIFE RAM

### **Problem: RAM STOPPING WITH OUTSIDE VALVE UP**

This indicates that pressure and water are leaking back through the Inside Valve.

#### **Solution:**

Take off Air Chamber, remove Inside Valve Assembly, clean off Valve Seat and remove any obstructions under the Valve. If Valve is worn, replace it with a new Valve. Be sure to adjust the new Valve as given below:

The Inside Rubber Valve (Part 607) should be locked in position by the Inside Valve Washer (609) and two nuts on the Inside Valve Bolt (608), but only tightly enough so that it is just possible to turn the valve around the bolt with the fingers. This assures that the valve rests flat on the Gridiron (605), sealing the entry into the Air Chamber. If pressed too hard against the Gridiron by the bolt, the rubber valve can lift around its edge, stopping the delivery of water and allowing the water in the delivery line to flow back through the Air Chamber, Inside Valve, and Outside Valve, thereby exhausting the stored supply and eventually causing the Ram to stop.

### **Problem: RAM STOPPING WITH OUTSIDE VALVE DOWN**

This indicates that there is an obstruction, or air, in the Drive Pipe, a leak in the Drive Pipe or Intake Gate or Plug Valve, or lack of back pressure in the Delivery line, resulting from Delivery end trouble as previously described. For efficient Ram operation, the Drive Pipe and Intake Valve must be watertight. The Ram requires, for continuous operation, the backpressure from a column of water in the Delivery line of at least twice the vertical height of the column in the Drive Pipe (from level of source of supply down to the Ram). This backpressure can also be produced by an almost Valve between the Ram and Discharge line. A small pressure gauge for the Delivery line (0-100 psi) is very useful in checking out and operating Ram installation.

#### **Solution:**

Remove the obstruction or eliminate the leaks. If there is no obstruction or leak, then raise the valve up against the seat and hold or wedge it there for 15 or 20 minutes to fill the Drive Pipe with water and force the air out. Then push down on Valve to start Ram working. Make sure there is backpressure in the Delivery line. (Work the Outside Rubber valve up and down a few times if necessary.)

### **Problem: UNEVEN STROKES OR FLUTTERING SOUND**

This indicates air in the Drive Pipe, leak in Drive Pipe or Gate Valve, or Intake too close to surface of water.

#### **Solution:**

The Drive Pipe must be laid in a straight or sagging line, with all joints tight, and with Intake Strainer not less than ten inches under surface of the water. Use only Gate Valve in watertight condition or Plug Valve that is not normally subject to leakage.

### **Problem: RAM RUNNING BUT DELIVERING NO WATER**

This indicates water leaking back through the Inside Valve, a leak in the Delivery Pipe or air trapped at a high point, stopping the flow through the Delivery line.

#### **Solution:**

Remove Air Chamber and Inside Valve Assembly and clean as instructed above. If this does not remedy the trouble, then test Delivery Pipe by closing the end at Ram and filling the Pipe from Discharge end. If the Pipe stays full, the Pipe is watertight. If the water sinks away, there is a leak or break that must be found and repaired. If there are any high points in the Delivery line where air can collect, these must be vented occasionally through a Valve or Pin Hole, as in the case of any Delivery pump line.

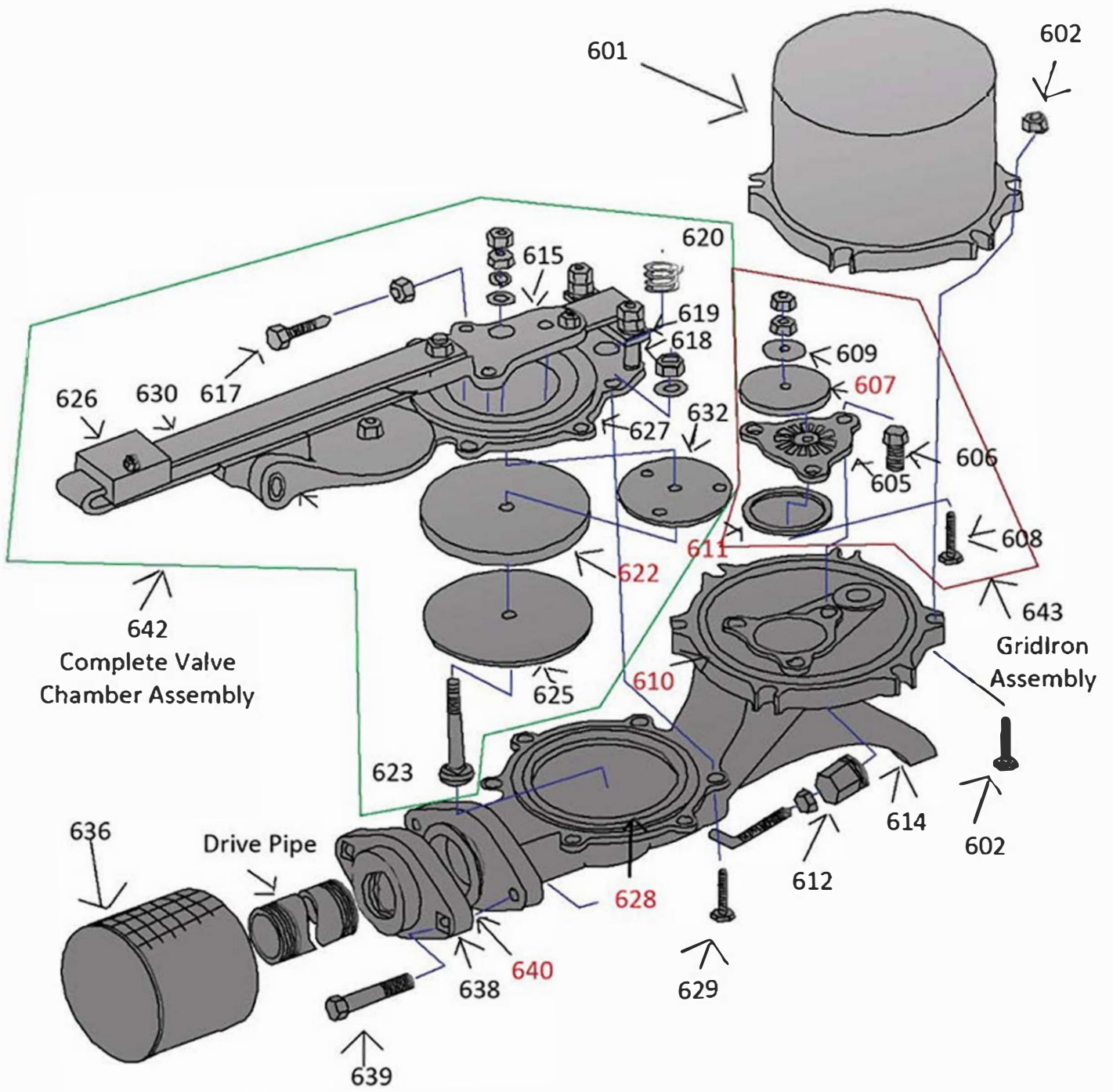
### **Problem: AIR CHAMBER FILLING UP WITH WATER**

This indicates Air Feed Valve is out of adjustment.

#### **Solution:**

Make sure Air Feed Valve is open and working. For adjustment see next paragraph. Remove Pin and run wire through opening.

The Air Feed Valve (612) should be adjusted that a small jet of water escapes at each stroke of the Ram. Between these spurts, air is drawn in to keep the Air Chamber supplied with air, thus preventing water logging so common with older-style Rams. If the Air Feed Valve becomes clogged, or is not open wide enough, exhaustion of air in the air chamber will result, causing a pulsating flow of water at the point of discharge (timed with the stroke of the Ram) and producing a metallic sound in the piping. The Air Feed Pin should then be opened further, allowing more water to escape and increasing the supply of air drawn in. Should the Ram be taking in and discharging too much air, the Air Feed Pin should be screwed in a little. Exhaustion of air in the Air Chamber can cause breakage of bolts or other parts of the Ram, if allowed to continue. Taking into much air will usually cause the Ram to deliver more water.



# Parts List For Ram Models SU & HDU

PART #	NAME OF PART	#10	#15	#20	#25	#30	#40
601	AIR CHAMBER	528.19	528.19	559.27	624.19	675.30	859.30
602	AIR CHAMBER BOLTS (6)	17.20	17.20	30.10	35.30	35.30	44.14
605	GRIDIRON	37.63	38.87	42.38	56.68	68.75	124.10
606	GRIDIRON BOLTS (3)	8.54	8.54	8.54	9.54	9.54	12.04
607	INSIDE RUBBER VALVE	21.04	22.48	23.28	39.31	48.83	76.26
608	INSIDE VALVE BOLT w/NUTS (2)	6.52	6.52	6.52	6.52	6.52	7.28
609	INSIDE VALVE WASHER	2.99	2.99	2.99	5.39	5.39	9.02
610	AIR CHAMBER GASKET	22.48	22.48	26.36	33.75	33.75	39.13
611	GRIDIRON GASKET	6.85	6.85	7.99	12.72	12.72	15.63
612	AIR FEED ASSEMBLY	45.16	45.16	45.16	45.16	45.16	45.16
613	BASE	675.45	729.76	830.50	985.18	1,248.80	2,129.29
615	PIN PIECE & BOLTS (2)	28.36	32.10	37.15	41.90	48.65	53.16
617	ADJUSTING PIN (3)	16.05	16.05	17.56	19.56	24.59	33.06
618	LEVER REST STUDS (2) w/NUTS	9.99	9.99	13.30	13.30	13.30	18.05
619	LEVER REST AND CUSHION	21.56	21.56	23.08	27.08	27.08	29.56
620	LEVER REST SPRING	8.54	8.54	11.04	11.04	11.04	13.30
622	OUTSIDE RUBBER VALVE	29.36	29.36	32.28	44.28	59.71	107.62
623	OUTSIDE VALVE CENTER BOLT	7.02	7.02	8.28	9.28	10.79	15.82
625	LOWER WASHER	9.79	9.79	12.30	15.32	24.59	26.27
626	LEVER WEIGHT & BOLT	28.36	28.36	29.96	42.16	42.16	57.72
627	VALVE CHAMBER	185.55	195.60	250.84	305.12	358.68	782.47
628	VALVE CHAMBER GASKET	11.24	11.24	12.72	15.63	18.56	27.36
629	VALVE CHAMBER BOLTS (6)	15.82	15.82	18.32	20.56	20.56	44.16
630	LEVER & BOLTS (2)	105.59	105.59	112.10	120.10	129.14	165.77
632	UPPER WASHER	12.24	12.24	13.32	15.54	18.05	25.08
635	ROCKERSHAFT ASSEMBLY	175.77	175.77	175.77	195.14	195.14	279.38
636	INTAKE STRAINERS	See Suction Strainers For Replacements					
638	DRIVE PIPE COUPLING	35.10	40.14	46.17	59.20	74.74	119.88
639	DRIVE PIPE COUPLING BOLTS (2)	8.02	8.02	10.25	14.54	14.54	19.56
640	DRIVE PIPE COUPLING GASKET	6.85	6.85	8.32	11.24	11.24	14.17
642	VALVE CHAMBER ASSEMBLY	645.98	645.98	758.89	930.48	994.73	1,821.98
643	GRIDIRON ASSEMBLY COMPLETE	114.13	114.13	129.18	189.38	189.38	307.26
644	REPAIR KIT-RUBBER PARTS (# 607 610 611 622 628 640)	85.67	88.01	99.91	139.83	165.92	250.24
645	BOLT KIT (INCLUDES ALL BOLTS, WASH- ERS AND, NUTS)	92.52	94.72	118.61	122.60	129.14	185.06
646	OUTSIDE VALVE ASSEMBLY (PARTS #622, 632, 623, 625)	49.37	49.37	55.36	69.73	93.23	145.41
647	LEVER ASSEMBLY (PARTS #630, 626, 617, 615)	147.42	149.79	165.15	180.15	199.09	252.74

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