



INDEX

WATEROUS 5-1/4 IN. PACER FIRE HYDRANT

	PAGE
INTRODUCTION AND HISTORY	2B-2
ORDERING	
Dimensions:	
<i>Overall Hydrant</i>	2B-3
<i>Optional Bottoms (Bases)</i>	2B-4
Operating Nut Sizes	2B-5
Weights	2B-6
Friction Loss	2B-7
Submittal Sheet	2B-8
INSTALLATION AND TESTING	
Installation	2B-9, 2B-10
Testing	2B-11
OPERATION AND MAINTENANCE	
Operation	2B-12
Maintenance	2B-13
Troubleshooting Guide	2B-14
REPAIRS	
Identifying Pacer Variations	2B-15
Ordering Repair Parts	2B-15
Parts List:	
<i>250 p.s.i.g. Rated Ductile Iron Pacer</i>	2B-16, 2B-17
<i>150 p.s.i.g. Rated Gray Iron Pacer</i>	2B-18, 2B-19
Repair Instructions	2B-20 thru 2B-24
Traffic Damage Repair	2B-25 thru 2B-29
Nozzle Replacement:	2B-30
<i>Mechanically Attached Nozzles</i>	2B-31, 2B-32
<i>Caulked (Leaded-In) Nozzles</i>	2B-33, 2B-34
EXTENDING	
Traffic Models	2B-35 thru 2B-38
Non-Traffic Models	2B-39 thru 2B-42



WATEROUS 5-1/4 IN. PACER FIRE HYDRANT

The [Waterous Pacer](#)'s sleek and stylish design blends perfectly with today's modern architecture. The [Pacer](#) is rated for 250 p.s.i.g. and exceeds all of the requirements of AWWA C-502. Ductile iron construction assures strength and durability.

Introduced in 1967, the [Pacer](#) fire hydrant provides real solutions to today's system demands. With many cities experiencing increased pressure to stretch their dollars, it is important to note that the [Pacer](#) hydrant can be maintained by just one person. The removal of four nuts and bolts allows access to all working parts.

The [Pacer](#) hydrant has all the features you expect from a high quality fire hydrant. The all bronze seat and bronze seat insert assure that the [Pacer](#) hydrant remains easy to repair. The [Pacer](#) has been manufactured for more than thirty years while still maintaining complete parts interchangeability.



PACER – DIMENSIONS

Traffic Model WB67-250

Non-Traffic Model W67-250

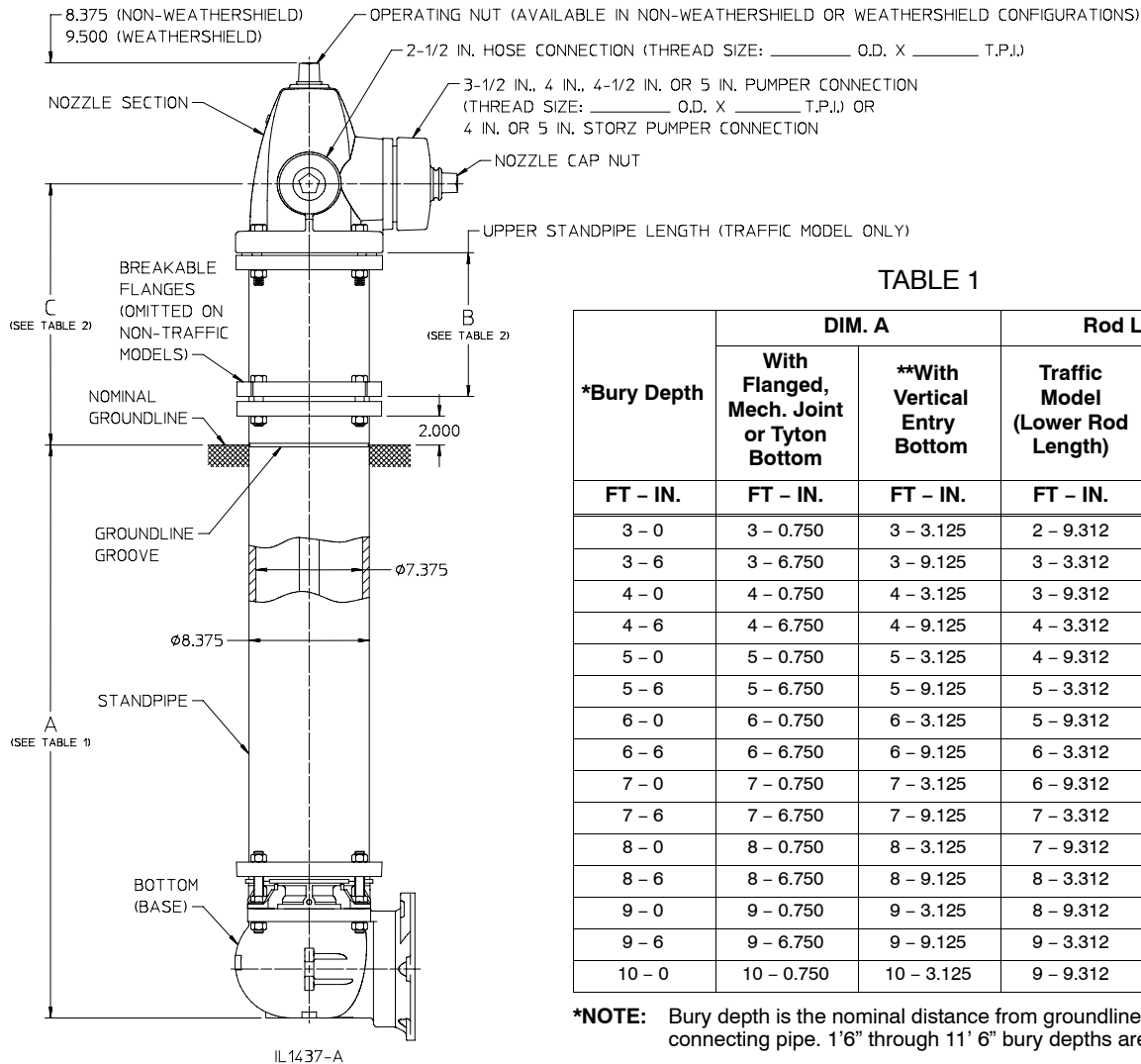


TABLE 1

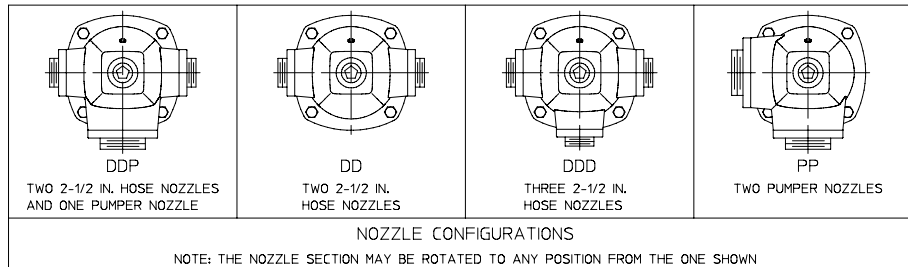
*Bury Depth	DIM. A		Rod Length	
	With Flanged, Mech. Joint or Tyton Bottom	**With Vertical Entry Bottom	Traffic Model (Lower Rod Length)	Non-Traffic Model
	FT - IN.	FT - IN.	FT - IN.	FT - IN.
3 - 0	3 - 0.750	3 - 3.125	2 - 9.312	4 - 6.062
3 - 6	3 - 6.750	3 - 9.125	3 - 3.312	5 - 0.062
4 - 0	4 - 0.750	4 - 3.125	3 - 9.312	5 - 6.062
4 - 6	4 - 6.750	4 - 9.125	4 - 3.312	6 - 0.062
5 - 0	5 - 0.750	5 - 3.125	4 - 9.312	6 - 6.062
5 - 6	5 - 6.750	5 - 9.125	5 - 3.312	7 - 0.062
6 - 0	6 - 0.750	6 - 3.125	5 - 9.312	7 - 6.062
6 - 6	6 - 6.750	6 - 9.125	6 - 3.312	8 - 0.062
7 - 0	7 - 0.750	7 - 3.125	6 - 9.312	8 - 6.062
7 - 6	7 - 6.750	7 - 9.125	7 - 3.312	9 - 0.062
8 - 0	8 - 0.750	8 - 3.125	7 - 9.312	9 - 6.062
8 - 6	8 - 6.750	8 - 9.125	8 - 3.312	10 - 0.062
9 - 0	9 - 0.750	9 - 3.125	8 - 9.312	10 - 6.062
9 - 6	9 - 6.750	9 - 9.125	9 - 3.312	11 - 0.062
10 - 0	10 - 0.750	10 - 3.125	9 - 9.312	11 - 6.062

***NOTE:** Bury depth is the nominal distance from groundline to bottom of connecting pipe. 1'6" through 11' 6" bury depths are available.

****NOTE:** For vertical entry bottoms, bury depth is measured to the face of the inlet flange. See detail on next page.

TABLE 2

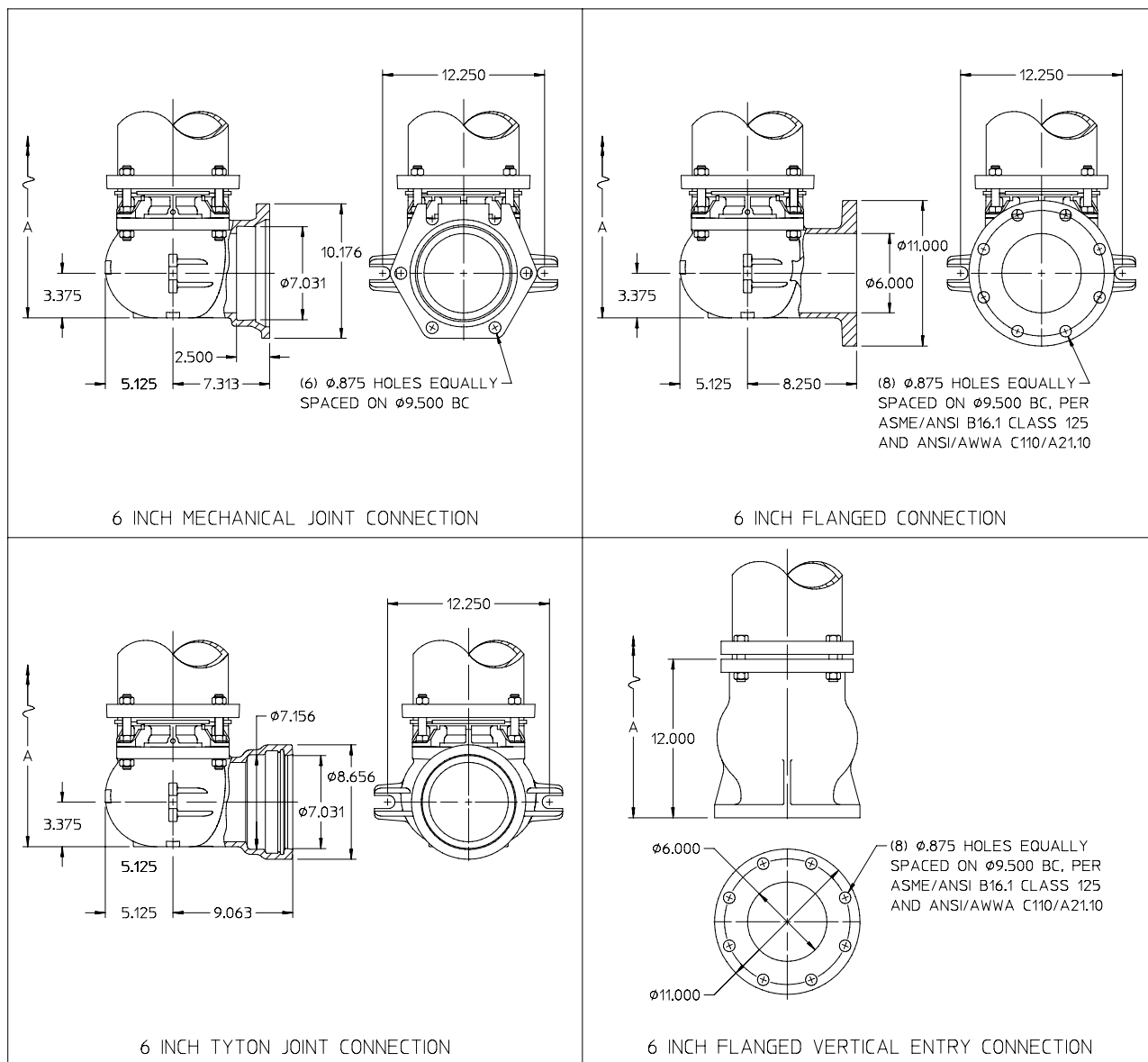
DIM. B Upper Standpipe Length (Traffic Models Only)	DIM. C Nozzle Elevation Above Groundline	
	Traffic Model (WB67-250)	Non-Traffic Model (W67-250)
10 IN.	18 IN.	18 IN.
16 IN.	24 IN.	
22 IN.	30 IN.	
28 IN.	36 IN.	
34 IN.	42 IN.	



- NOTES:**
- 250 p.s.i.g. rated working pressure.
 - Meets or exceeds all requirements of AWWA C502.
 - May be ordered in configurations which are UL Listed and FM Approved.



PACER – DIMENSIONS, OPTIONAL BOTTOMS (BASES)

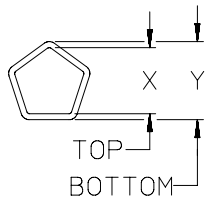


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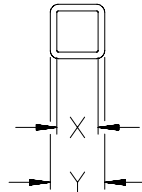
NOTE: See Table 1 on Page 2B-3 for Dimension A



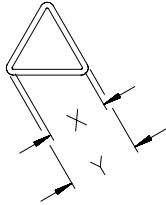
PACER – OPERATING NUT SIZES



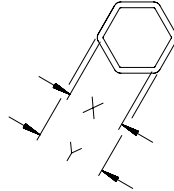
PENTAGON
POINT TO FLAT



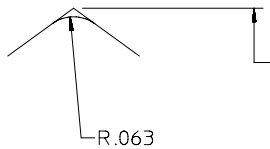
SQUARE
FLAT TO FLAT



TRIANGLE
POINT TO FLAT

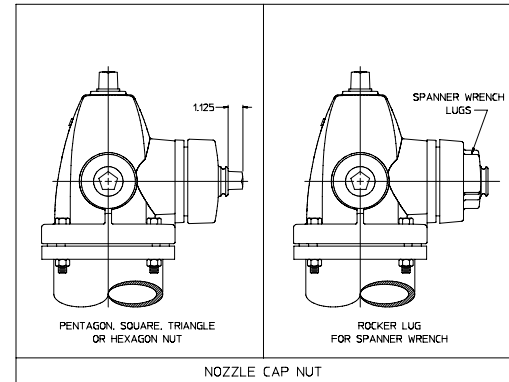
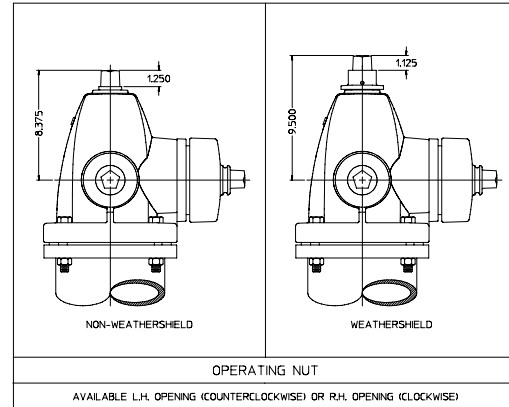


HEXAGON
FLAT TO FLAT



PENTAGON AND TRIANGLE
NUT DIMENSIONS ARE
TO THIS POINT

IL1071



IL1071-1

Nut Shape	Waterous Nut No.	Nominal Nut Size	X (Top)	Y (Bottom)
Pentagon	1	15/16	.866 / .835	.962 / .931
	2	1-1/8	1.059 / 1.028	1.155 / 1.124
	3	1-7/32	1.155 / 1.124	1.251 / 1.220
	3A	1-9/32	1.202 / 1.171	1.299 / 1.268
	4	1-5/16	1.251 / 1.220	1.348 / 1.317
	4A	1-3/8	1.309 / 1.278	1.406 / 1.375
	5	1-1/2	1.443 / 1.412	1.540 / 1.509
Square	6	7/8	.750 / .719	.875 / .844
	7	1	.875 / .844	1.000 / .969
Triangle	8	1-1/2	1.520 / 1.480	1.582 / 1.542
Pentagon	9	1-19/32	1.540 / 1.509	1.637 / 1.606
	*10	1-11/16	1.637 / 1.606	1.732 / 1.701
	*11	1-25/32	1.732 / 1.701	1.827 / 1.796
	*12	1-7/8	1.827 / 1.796	1.923 / 1.892
Square	13	1-1/8	1.000 / .969	1.125 / 1.094
	14	1-1/4	1.187 / 1.156	1.250 / 1.219
	*15	2	1.875 / 1.844	2.000 / 1.969
Hexagon	17	1-5/16	1.320 / 1.280	1.395 / 1.355
	17A	1-1/4	1.190	1.280
Square	19	15/16	.812 / .781	.937 / .906
Triangle	20	1-3/8	1.375 / 1.344	1.437 / 1.406
Square	*21	1-3/8	1.312 / 1.281	1.375 / 1.344
Hexagon	22	1-1/2	1.437 / 1.406	1.531 / 1.500
	22A	1-7/16	1.406 / 1.375	1.500 / 1.469
Square	*23	1-3/4	1.718 / 1.687	1.781 / 1.750
Rocker Lug	41	Rocker lug for spanner wrench (caps only)		

*NOTE: Operating nuts in these sizes are available only as weathershield type.



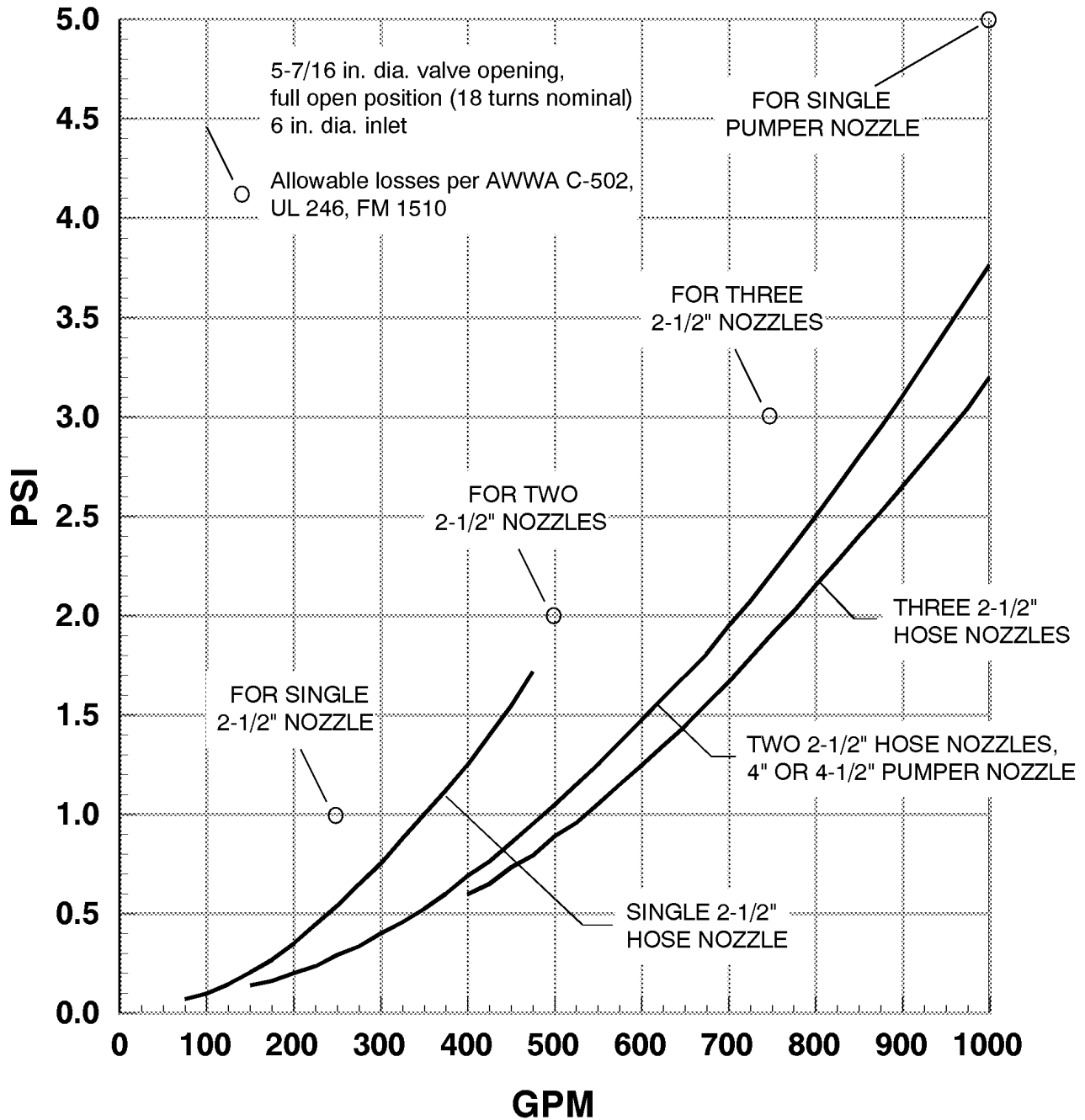
PACER – WEIGHTS

With 6 in. Mechanical Joint Bottom (Less Accessories)

BURY DEPTH	WEIGHT (LBS)	
	NON-TRAFFIC MODEL W67-250	TRAFFIC MODEL WB67-250
	DDP	DDP
FT - IN.		
3-0	338	357
3-6	358	377
4-0	379	398
4-6	399	418
5-0	420	439
5-6	440	458
6-0	461	480
6-6	481	500
7-0	502	521
7-6	522	541
8-0	543	562
8-6	563	582
9-0	584	603
9-6	604	623
10-0	625	644

- NOTES:
1. Deduct 11 lbs for DD (2 hose)
 2. 16" Breakoff Section – Use weight for 6" longer hydrant
 3. 22" Breakoff Section – Use weight for 12" longer hydrant
 4. Add 17 lbs for 6" Mechanical Joint accessories

PACER – FRICTION LOSS CURVE



IL1073



SUBMITTAL SHEET

NOTES:

- American Flow Control®**
American-Darling Valve & Waterous
A Division of American Cast Iron Pipe Company

2B-8

Pacer – Installation



The ideal location for a hydrant to be installed is one that is well drained and provides a firm support for the hydrant. In regions where freezing occurs, the hydrant bottom should always be below the frost line. If the hydrant is installed properly it will not freeze, break or heave. A typical installation is shown on the next page.

Where there is a high ground water level or other conditions which prevent the use of hydrants with drains, “no-drain” hydrants must be used. These hydrants are available in two versions:

- (a) No drain valve: Drain holes in valve seat insert are open.
- (b) Plugged drains: With drain valve, but drain holes in valve seat insert are plugged with brass pipe plugs.

Both version (a) and version (b) hydrants are identified with an aluminum tag which is marked “No-drain” “Pump after use.”

Version (a) can be converted to a self-draining hydrant after installation by replacing the valve seat (31) and adding a drain plunger (7). The “No-drain” tag should also be removed. Refer to the “*Repair Instructions*” section of this manual for details for the removal and installation of internal components.

Version (b) can easily be converted to a self-draining hydrant before installation by removing the brass pipe plugs. The “No-drain” tag should also be removed.

NOTE: “No-drain” hydrants should be identified and pumped after each use regardless of weather conditions and must be pumped if temperatures below freezing are likely. A “no-drain” hydrant should be checked often to make sure the barrel stays dry.

To convert a standard hydrant to a no-drain hydrant after installation, a “no-drain” valve seat is available. Refer to “Repair Instructions” section of this manual for details for the removal and installation of internal components. Valve seat (31) would be changed and drain plunger (7) would be eliminated.

While the details of hydrant installation vary with the terrain in which a hydrant is to be installed, the following general instructions will usually apply.

1. Make sure the hydrant inlet and main lateral pipe are clean and free of all foreign matter. Remove all contaminants that may affect water system purity before connecting the joint.
2. The installation of an auxiliary (hydrant shut-off) valve in the hydrant lateral pipe is recommended (see the Valve Installation Guide in Section 3).

NOTE: On hydrants with epoxy coated flanged inlets, use rubber “ring” type gaskets, 1/16, 3/32 or 1/8 inch thick. DO NOT USE flat composition and/or full face gaskets.

WARNING

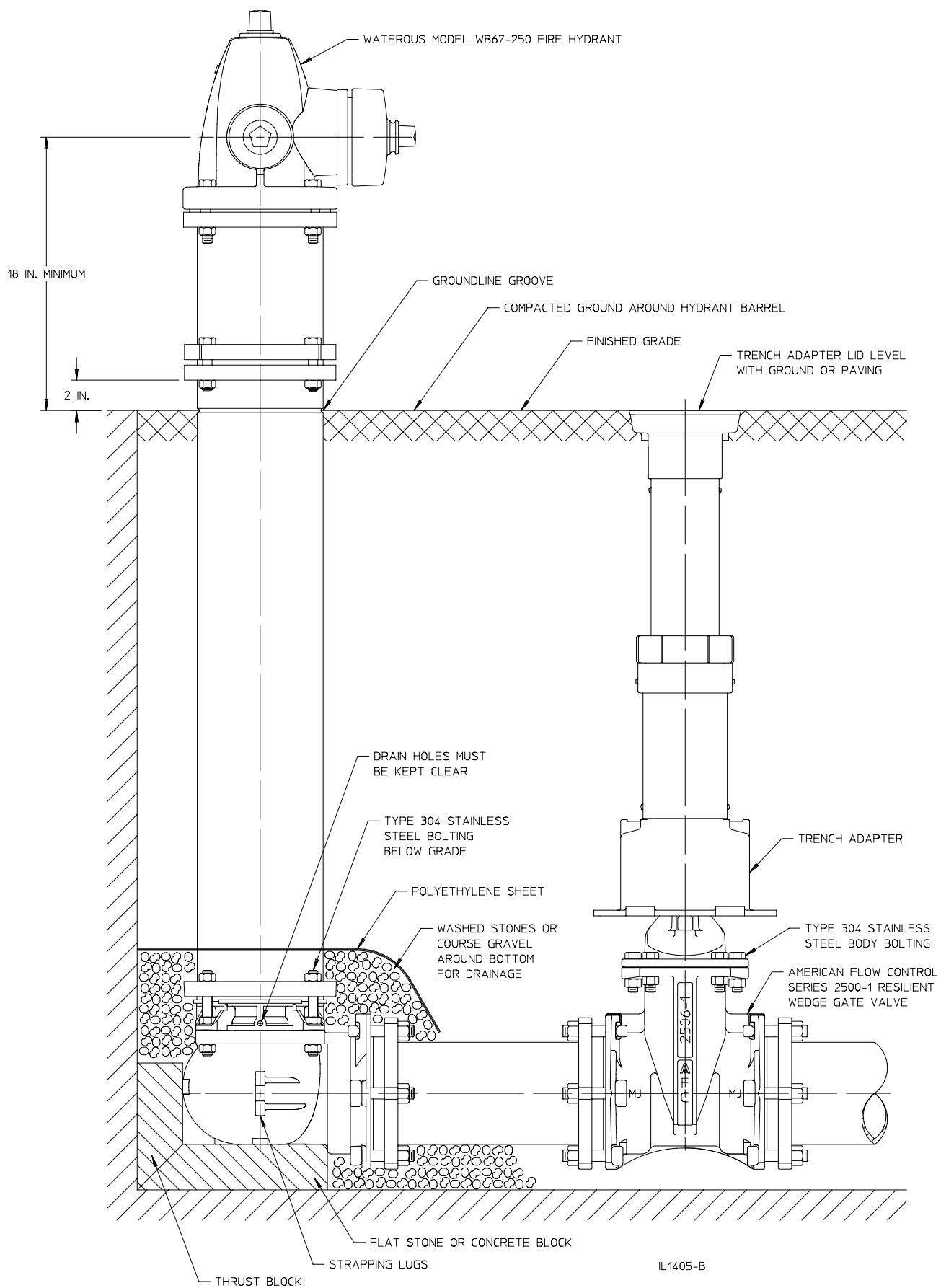
Water hammer and high pressure can cause personal injury, major damage to the hydrant, water main, hose or attached equipment.

Only screw type gate valves, requiring a minimum of eight full turns to open or close, should be used on fire hydrants. Rapid opening or closing of hydrant valves can cause water hammer and high pressure. AFC series 2500 ductile iron resilient wedge valves are recommended.

3. Support hydrant on a flat stone or cement block. Check hydrant to make sure it is plumb. Use standpipe for vertical alignment.
4. Restrain hydrant movement with appropriate thrust blocking or approved mechanical retention or strapping method to prevent pipe joint separation.
5. Check drain holes in valve seat insert to make sure they are clear.
6. Provide a drain area around the hydrant inlet to a level several inches above the drain holes using clean, washed stones or coarse gravel. Material should not be smaller than the drain hole diameter or larger than egg size.
7. Cover drainage stones with polyethylene or a similar waterproof material to prevent dirt from clogging the drainage area.
8. Backfill over pipe only. Leave the complete hydrant exposed to check for leaks at the inlet joint during testing.
9. Turn on water main valve, open hydrant valve wide, and let water run full force for several minutes until it becomes clear. If hydrant is not flushed thoroughly after installation, sand or other foreign matter left in water main or hydrant during installation may become imbedded in main valve and eventually cause leakage.



PACER – INSTALLATION



PACER – TESTING



AWWA C502 permits dry-barrel hydrants with unplugged drain outlets to have an allowable leakage of 5 fluid oz/min (0.25 mL/s) through the drain valve. Therefore the main valve should not be opened at the same time that the water main is tested. The auxiliary valve should be closed during water-main tests (see AWWA C600). However, it is possible to temporarily plug the drain outlets by installing a no-drain seat, then the hydrant and main may be tested at the same time.

After the hydrant is installed and, when possible, before backfilling (and after pressure testing the water main), the hydrant should be tested as follows:

Pressure Test at Main Pressure

1. Remove the highest outlet–nozzle cap and open the hydrant valve a few turns. Allow water to reach the bottom of the outlet nozzle.
2. Replace the outlet–nozzle cap and leave it loose to permit all air to escape.
3. After all air has escaped, tighten the outlet–nozzle cap or close the tapped–plug air vent.
4. Open the hydrant completely. (Opening the hydrant fully before all the air has escaped will compress the air and cause a safety hazard.)
5. Check for leakage at flanges, outlet nozzles and the O–rings around the stem.
6. If leakage is noted, repair or replace the faulty components or the entire hydrant.
7. Repeat the test until results are satisfactory.

Pressure Test at Pressures Above Main Pressure

1. Connect a pressure–test pump to one of the hydrant’s outlet–nozzles.
2. Open the highest outlet–nozzle cap. Open the hydrant valve a few turns. Allow the hydrant to fill until water is at the bottom of the outlet– nozzle.
3. After all air has escaped, tighten the outlet–nozzle cap.
4. Open the hydrant completely.
5. Close the auxiliary valve.
6. Pump up to test pressure (usually 150 p.s.i.g. [1034 kPa]).
7. Check for leakage at flanges, outlet nozzles and the O–rings around the stem.
8. Repair or replace hydrant, if necessary.
9. Repeat the test until results are satisfactory.
10. Open the auxiliary valve.

Drainage Test for Dry–Barrel Hydrants

1. Following the pressure test, close the hydrant main valve.
2. Remove one outlet–nozzle cap and place the palm of one hand over the outlet–nozzle opening.
3. Drainage should be sufficiently rapid to create a noticeable suction.
4. If the hydrant fails the drainage test, partially open the hydrant with the outlet–nozzle caps on to create a pressure that will clear the drain valve. If this fails, then the drain valve assembly should be removed and inspected. If the drain valve is clear, then the problem may be that the drain outlet is plugged from outside the hydrant. Repair will require digging down around the outside of the hydrant and clearing the drain outlet.

The following steps are recommended for placing hydrant in service:

1. After testing and backfilling, the hydrant should be flushed and tested to be sure that it is bacteriologically safe before it is put into service.
2. Tighten the outlet–nozzle caps. Back them off slightly so they will not be excessively tight, but tight enough to prevent their removal by hand.
3. Clean the hydrant exterior to remove dirt accumulated during installation. Touch–up any areas where factory coating was damaged during handling or installation. Use an appropriate oil–base top coating or contact factory for touch–up coatings.



PACER – OPERATION

Always open a hydrant completely, never just part way. Unless the hydrant is open far enough, the drain valve will be partially open, and water flushing through the drain ports may wash away the soil around the hydrant bottom. Also, a partially closed hydrant may trap small stones and other debris between the hydrant's main valve rubber and seat.

WARNING

Hydrant cap hazard. Can result in serious injury.

Make sure the hydrant is not charged when removing caps. If the hydrant is charged, the cap will blow off.

If hydrant does not shut off completely, do not attempt to force it. Stones or other foreign matter between the main valve rubber (35) and the valve seat (31) may prevent the valve from closing. Partially opening and closing valve several times may dislodge obstruction between valve rubber and seat.

If this does not work, remove operating rod assembly as described in the "Repair Instructions" section of this manual. Also remove the obstruction, replacing the main valve rubber if it has been damaged.

Since a Waterous hydrant will open and close easily if maintained properly, extra long operating wrenches should not be used.

Each time hydrant is shut off, turn the operating nut one-quarter to one-half turn in opening direction to relieve tension on operating rod. Since water pressure will hold valve up against its seat, turning operating nut tightly closed is not necessary if valve rubber and seat are in good condition.

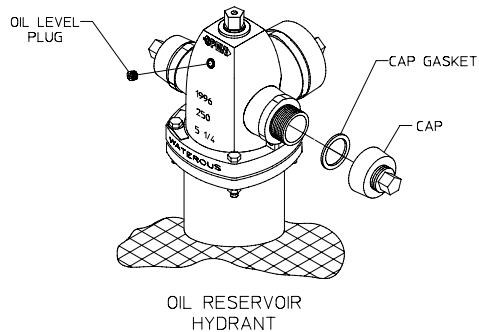
NOTE: If the main valve rubber or seat have been damaged, it may be necessary to apply extra torque to achieve shut-off. If this condition exists, the hydrant should be repaired as soon as possible.

PACER – MAINTENANCE

The ease of operation and the frequency of repairs depends on the condition of the water system and the maintenance given. Dirt, gravel and other foreign material in the water system may prevent the hydrant from closing or draining properly, or may damage the main valve. Under most operating conditions, the following recommended semi-annual lubrication and inspection is the only maintenance required.

Inspection

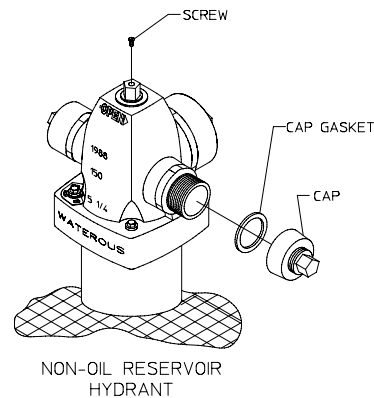
1. Every spring and fall, open hydrant completely and let water run for several minutes. Open and close valve to make sure it works properly, and check for leaks.
2. After the valve is closed, the water in the hydrant should drain rapidly. If it does not, the drain ports may be clogged. To clear drain ports, install nozzle cap, and tighten until water tight, then open hydrant two or three turns for several minutes. This will leave drain port partially open and permit water pressure to wash out the obstruction. If this method is unsuccessful, remove the operating rod assembly and clean the drain mechanism. If neither of above methods permits water to drain, it indicates that the drainage area around the hydrant base should be rebuilt.



IL1438-1

Lubrication

1. **Oil Reservoir Hydrants:**
Remove oil level plug and check oil level. Add oil to the level of the plug if necessary.
2. **Non-Oil Reservoir Hydrants:**
Remove screw from operating nut, and add approximately one tablespoon of oil through opening. Replace screw.
3. Remove all nozzle caps, clean rust or corrosion from threads of nozzles and caps, and replace cap gaskets if necessary. Apply a light coat of grease to nozzle threads before replacing cap.



Lubricants

The recommended lubricants for the Pacer hydrant are as follows:

Oil

Where oil is specified in these instructions, use white mineral oil USP (Mobil Whiterex 425 or equal).

Grease

Where grease is specified, use Mystik® FG-2 Food Machinery Grease.





PACER – TROUBLESHOOTING GUIDE

PROBLEM

1. Operating nut turns freely but hydrant does not open.
2. Hydrant will not shut off.
3. Operating nut is extremely hard to turn.
4. Water is leaking around nozzles.
5. Hydrant will not drain properly.

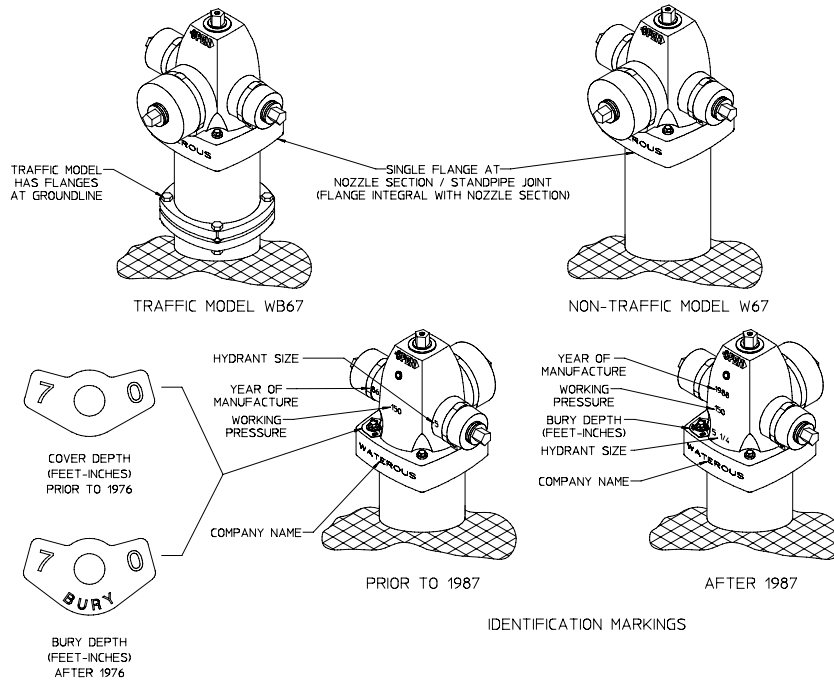
SOLUTION

1. Check rod coupling and replace if broken.
2. Check to make sure hydrant is either fully open or fully closed. When the hydrant is partially open, flow through the drain will occur. If hydrant has not been left partially open, use a listening device to determine if water is passing through the main valve. If water is passing through the main valve, try the following:
 - a. Remove nozzle cap and fully open valve to flush foreign objects from the hydrant barrel.
 - b. After flushing for several minutes, close hydrant. Watch for several minutes to see if flow stops. Place hand over open hose nozzle; suction should be felt indicating hydrant is no longer leaking and drains are working properly.
 - c. If flow continues or the hydrant does not drain, an object is trapped in or has damaged the main valve rubber. Follow the seat removal instructions to replace the valve.
3. For hydrants with an oil reservoir, remove oil level plug and add oil, if necessary. For hydrants with no oil reservoir, remove flat head screw on operating nut and add mineral oil or similar lubricant. If hydrant remains hard to operate, check for damaged thrust bushings. If problem persists, remove valve seat and flush hydrant thoroughly.
4. Remove nozzle cap and replace nozzle gasket. Tighten cap and check for leaks. If leaking continues, the nozzle seal may need repair or replacement. Hydrants with casting dates prior to 1982 used leaded-in nozzles. Hydrants with casting dates of 1982 or later use leaded-in or mechanically attached nozzles. On mechanically attached nozzles, remove the nozzle retainer and replace the O-ring behind the retainer. Leaded-in nozzles do not use retainers and must be recaulked if leaking.
5. Check plate identifying hydrant as a "NO DRAIN" model requiring it to be pumped after use. If the hydrant has drains, flush hydrant to be sure nothing is trapped in drains. To do this, open hydrant slowly, two or three turns with caps firmly in place, then close slowly. Repeat several times. If this does not solve the problem remove hydrant seat assembly and check bronze drain plunger for damage. If no problems are found, excavate hydrant to see if concrete or other materials have blocked the drain.

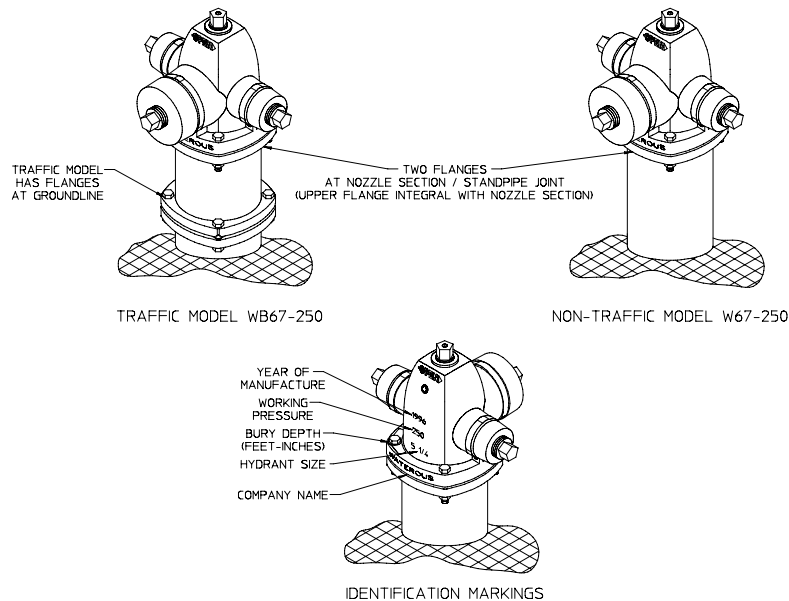


Pacer – Identifying Variations / Repair Parts

150 P.S.I.G. Working Pressure Gray Iron Pacer (Models W67 and WB67 built from 1967 to 1998)



250 P.S.I.G. Working Pressure Ductile Iron Pacer (Models W67-250 and WB67-250 built from 1996 to present)



IL1438

Repair Parts

To assure prompt delivery and shipment of the correct parts, furnish the following information with each repair parts order.

1. Date of manufacture or purchase of hydrant.
2. Working pressure of hydrant, 150 or 250 p.s.i.g.
3. Depth of bury (hydrants dated 1976 and later); or depth of cover (hydrants dated prior to 1976).

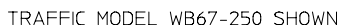
NOTE: Depth is shown on bury depth plate. Bury depth plates are embossed with the depth and the word "BURY"; cover depth plates show only the depth.

4. Hydrant opening direction.

5. Check original order to see if any special parts are required. For replacement nozzles, caps, and operating nuts, be sure to furnish thread data and size and shape of nut.
6. Whether hydrant is traffic model or non-traffic model.
7. For each part ordered, give reference number and description as found on the following parts lists.

NOTE: Kits are available for making most repairs or extending the hydrant.

Traffic Model WB67-250 and Non-Traffic Model W67-250



Parts List – 250 P.S.I.G. Rated Ductile Iron Pacer

Traffic Model WB67–250 and Non–Traffic Model W67–250

REF NO.	DESCRIPTION	MATERIAL
3	O–ring (Lower valve seat), 5–5/8 x 5–7/8	Buna–N
5	Lower standpipe gasket	Neoprene
6A	Hex hd bolt, 5/8–11 x 3–3/4 in.	Zinc plated steel
6B	Hex hd bolt, 5/8–11 x 3 in.	Zinc plated steel
6C	Hex nut, 5/8–11	Zinc plated steel
7	Drain plunger	Red brass
8	Cotter pin, 1/4 x 1–1/2 in.	Stainless steel
9A, 9B	Nozzle cap chain, single or double	Zinc–plated steel
10	Nozzle cap, hose or pumper	Ductile iron
11	Cap gasket, hose or pumper	Neoprene
12	Nozzle, hose or pumper	Brass
16	Flat hd screw, 1/4–20 x 1/2 in.	Stainless steel
17	Operating nut (one–piece)	Bronze
17A	Lower operating nut	Bronze
17B	Upper operating nut	Ductile iron**
25	Rod bushing	Red brass
28	Rod (non–Traffic model)	Steel rod
29	Lower standpipe (Traffic model)	Centrifugally cast ductile iron pipe*
29	Standpipe (non–Traffic model)	Centrifugally cast ductile iron pipe*
30	Crossarm	Bronze
31	Valve seat	Bronze
34	Upper valve washer	Ductile iron
35	Main valve rubber	Urethane
36	Lower valve washer	Ductile iron
37	Hydrant bottom	Ductile iron
40	Upper standpipe (Traffic model)	Centrifugally cast ductile iron pipe*
54	Drain bushing	Brass
56	Support wheel	Ductile iron
57	O–ring (Operating nut), 1–1/2 x 1–3/4	Buna–N
59	O–ring (Support wheel), 1–1/8 x 1–3/8	Buna–N
60	Nozzle section	Ductile iron
61	Bury depth plate	Aluminum
61	Bury depth plate washer	Zinc plated steel
62B	Upper standpipe flange	Ductile iron
63	Standpipe flange	Ductile iron
64	Flange lock ring	Stainless steel
67	Coupling sleeve (2 halves)	Gray iron
71	Upper rod (Traffic model)	Steel rod
72	Lower rod (Traffic model)	Steel rod
77	O–ring (Upper valve seat), 5–7/8 x 6–1/8	Buna–N
81	Groove pin, 3/32 x 7/16 in.	Beryllium copper
82	O–ring (Upper tube seal), 2–3/8 x 2–5/8	Buna–N
83	O–ring (Lower tube seal), 1–7/8 x 2–1/8	Buna–N
84	Support wheel gasket	Buna–N
85	Support tube	Ductile iron
86	Stop nut, 1"– 8	Zinc plated steel
87	Coupling nut, 1/2–20	Brass
88	Coupling stud, 1/2–20 x 2–9/16 in.	Stainless steel
89	Nozzle section bushing	Brass
90	Thrust ring	Teflon
92	Upper standpipe gasket	Neoprene
97	Valve seat insert	Bronze
99	Pipe plug, 1/4 NPT	Brass
101	Weathershield nut	Ductile iron
102	Spirol pin, hvy, 1/4 x 2–1/4 in.	Stainless steel
113	Breakable flange	Ductile iron
116	O–ring (pumper nozzle), 5–1/4 x 5–3/4	Buna–N
117	Pumper nozzle retainer	Ductile iron
118	O–ring (hose nozzle), 3–1/4 x 3–5/8	Buna–N
119	Hoze nozzle retainer	Ductile iron
162	Weathershield nut gasket	Nitrile
163	Nozzle, pumper, Storz (with cap and gasket)	Bronze and Aluminum
164	Nozzle cap, pumper, Storz	Aluminum
165	Cap gasket, pumper, Storz	Buna–N
173	Valve seat insert	Bronze
174	Valve seat insert gasket	Nitrile
176	Stud, 5/8–11 x 5.650	Stainless steel

*AWWA Standard C151 (ANSI A21.51)

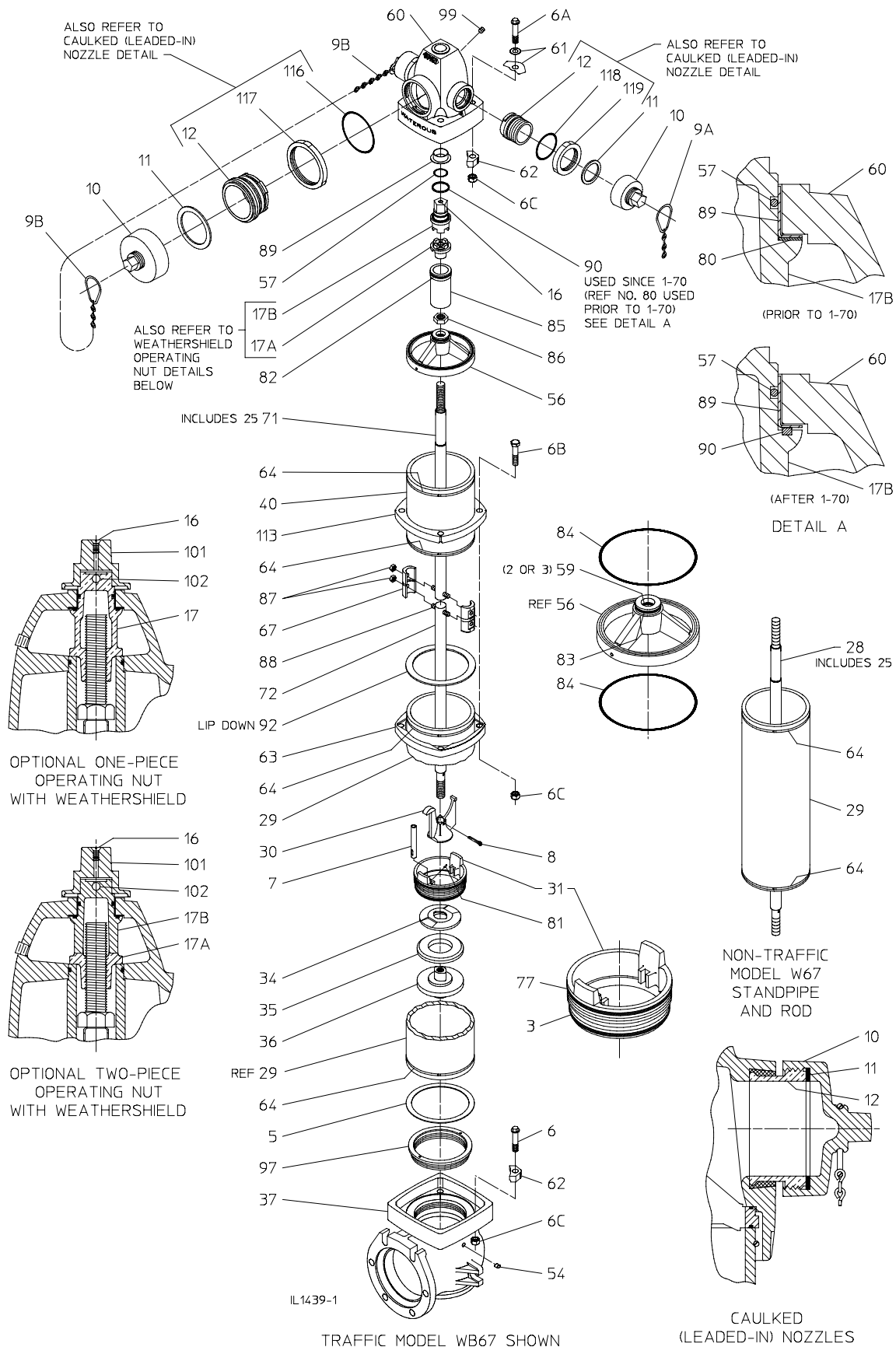
**Bronze is optional on some nut sizes.





Parts List – 150 P.S.I.G. Rated Gray Iron Pacer

Traffic Model WB67 and Non-Traffic Model W67



Parts List – 150 P.S.I.G. Rated Gray Iron Pacer

Traffic Model WB67 and Non-Traffic Model W67



REF NO.	DESCRIPTION	MATERIAL
3	O-ring (Lower valve seat), 5-5/8 x 5-7/8	Buna-N
5	Lower standpipe gasket	Neoprene
6	Hex hd bolt, 5/8-11 x 3 in.	Zinc plated steel
6A	Hex hd bolt, 5/8-11 x 3-3/4 in.	Zinc plated steel
6B	Hex hd bolt, 5/8-11 x 3 in.	Zinc plated steel
6C	Hex nut, 5/8-11	Zinc plated steel
7	Drain plunger	Red brass
8	Cotter pin, 1/4 x 1-1/2 in.	Stainless steel
9A, 9B	Nozzle cap chain, single or double	Zinc-plated steel
10	Nozzle cap, hose or pumper***	Gray iron, Class 30
11	Cap gasket, hose or pumper	Neoprene
12	Nozzle, hose or pumper	Brass
16	Flat hd screw, 1/4-20 x 1/2 in.	Stainless steel
17	Operating nut (one-piece)	Bronze
17A	Lower operating nut	Bronze
17B	Upper operating nut***	Gray iron, Class 30**
25	Rod bushing	Red brass
28	Rod (non-Traffic model)	Steel rod
29	Lower standpipe (Traffic model)	Centrifugally cast ductile iron pipe*
29	Standpipe (non-Traffic model)	Centrifugally cast ductile iron pipe*
30	Crossarm	Ductile iron
31	Valve seat	Bronze
34	Upper valve washer***	Gray iron, Class 30
35	Main valve rubber	Nitrile
36	Lower valve washer***	Gray iron, Class 30
37	Hydrant bottom***	Gray iron, Class 30
40	Upper standpipe (Traffic model)	Centrifugally cast ductile iron pipe*
54	Drain bushing	Brass
56	Support wheel***	Gray iron, Class 30
57	O-ring (Operating nut), 1-1/2 x 1-3/4	Buna-N
59	O-ring (Support wheel), 1-1/8 x 1-3/8	Buna-N
60	Nozzle section***	Gray iron, Class 30
61	Bury depth plate	Aluminum
61	Bury depth plate washer	Zinc plated steel
62	Lock ring clamp	Malleable iron
63	Standpipe flange	Ductile iron
64	Flange lock ring	Stainless steel
67	Coupling sleeve (2 halves)	Gray iron
71	Upper rod (Traffic model)	Steel rod
72	Lower rod (Traffic model)	Steel rod
77	O-ring (Upper valve seat), 5-7/8 x 6-1/8	Buna-N
80	Thrust washer (Used until Jan., 1970)	Teflon
81	Groove pin, 3/32 x 7/16 in.	Beryllium copper
82	O-ring (Upper tube seal), 2-3/8 x 2-5/8	Buna-N
83	O-ring (Lower tube seal), 1-7/8 x 2-1/8	Buna-N
84	Support wheel gasket	Buna-N
85	Support tube***	Gray iron
86	Stop nut, 1"- 8	Zinc plated steel
87	Coupling nut, 1/2-20	Brass
88	Coupling stud, 1/2-20 x 2-9/16 in.	Stainless steel
89	Nozzle section bushing	Brass
90	Thrust ring (Used starting Jan., 1970)	Teflon
92	Upper standpipe gasket	Neoprene
97	Valve seat insert	Bronze
99	Pipe plug, 1/4 NPT	Brass
101	Weathershield nut	Ductile iron
102	Groove pin, 1/4 x 2 in.	Stainless steel
113	Breakable flange	Ductile iron
116	O-ring (Pumper nozzle), 5-1/4 x 5-3/4	Buna-N
117	Pumper nozzle retainer	Ductile iron
118	O-ring, (Hose nozzle), 3-1/4 x 3-5/8	Buna-N
119	Hose Nozzle Retainer	Ductile iron

*AWWA Standard C151 (ANSI 21.51)

**Bronze or ductile iron optional on some nut sizes.

***Ductile Iron components will be furnished in place of gray iron components when these items are ordered for repairs.



PACER – REPAIR INSTRUCTIONS

Disassembling the Hydrant

1. Close valve in water main, remove a nozzle cap, and open hydrant to make sure that water is turned off.

250 P.S.I.G. Rated Pacers (See Figure 1, Page 2B–22)

- 2a. At the nozzle section, remove bolts (6A), nuts (6C), and allow flange (62B) to slide down the upper standpipe. Depth plate and washer (61) will come off with bolts.

150 P.S.I.G. Rated Pacers (See Figure 2, Page 2B–22)

- 2b. At the nozzle section, remove bolts (6A), nuts (6C) and clamps (62) from underneath flange of the nozzle section (60). Depth plate and plain washer (61) will come off with bolts.

NOTE: If clamps (62) should stick underneath the flange of the nozzle section (60), it may be necessary to drive them out.

3. Turn upper operating nut (17B) or weather-shield nut (101) in the opening direction to separate the nozzle section (60) and the support (56). Remove the nozzle section. **Use proper handling techniques to avoid injury.**
4. Remove operating nut (17B or 17) from the nozzle section (60). (On hydrants with weathershield, it is necessary to drive out pin (102) and remove weathershield (101) before upper operating nut can be removed.)

NOTE: Bushing (89) is cemented in nozzle section (60). Removing it is not necessary unless it is damaged. To replace the bushing, follow instructions on page 2B–24.

5. Unscrew lower operating nut (17A – two-piece nuts, 17 – one-piece nut), and remove support tube (85).
6. Unscrew hex stop nut (86) from operating rod (28 or 71), and remove support (56).
7. Carefully lower disassembly wrench into standpipe over operating rod, and engage lugs of valve seat (31). See Figure 3 on Page 2B–23.

CAUTION

Do not drop disassembly wrench into hydrant; it may damage valve seat and related parts.

8. Insert a three or four foot heavy steel bar (approximately 1 in. diameter) through eye of wrench, and turn in a counterclockwise direction to remove complete operating rod and valve assembly.
9. When valve seat (31) is clear of threads in hydrant bottom (37), remove disassembly wrench and lift out operating rod assembly.
10. To disassemble lower portion of operating rod, remove cotter pin (8). Hold rod (28 or 72) with a pipe wrench or in a vise, and unscrew lower washer (36) with a 1–9/16 end wrench or suitable adjustable wrench. (Main valve (35), upper washer (34), valve seat (31), and cross arm (30) will come off with lower washer.) Slide drain plunger (7) from valve seat. Remove O-rings (3 and 77). Do not remove groove pin (81), which guides drain plunger, unless it is damaged. See Figure 4 on Page 2B–23.

Traffic Models Only

11. Disassemble breakable coupling, unscrew nuts (87), and remove rod coupling halves (67) which join upper rod (71) to lower rod (72). Do not remove studs (88) unless they are damaged. (Breakable coupling disassembly is usually not necessary unless coupling parts are damaged.)

NOTE: When a supply of gaskets and O-rings are available, always install new ones when reassembling the hydrant. Clean dirt from O-ring grooves.

PACER – REPAIR INSTRUCTIONS

Reassembling the Hydrant

Note: Where grease is specified, use Mystik® FG-2 Food Machinery Grease.

1. **Traffic Models Only:** Assemble breakable coupling. Slide rod coupling halves (67) onto the studs (88) in the upper and lower rods (71, 72) and install coupling nuts (87).
2. If necessary, install new groove pin (81) in valve seat (31). Slide drain plunger (7) into seat with oblong hole at lower end. Grease O-ring grooves in valve seat and install O-rings (3 and 77). Be sure to remove any twists.
3. Slide crossarm (30) and valve seat (31) on operating rod (28 or 72). Position main valve (35) and upper washer (34) on lower washer (36). Screw lower washer onto rod, engaging diamond boss on lower washer in matching recess in crossarm. Position valve seal against valve seat (35) and tighten lower washer with a pull of about 50 lbs on a 12 inch wrench. Tighten enough to permit installation of the cotter pin (8).
4. Coat threads of valve seat (31) with grease. Carefully lower assembled operating rod into standpipe until valve seat rests on threads in hydrant bottom. Grasping rod (28 or 71) firmly with both hands, slowly turn in a counterclockwise direction until threads engage, then turn clockwise until it is hand-tight.
5. Slowly lower disassembly wrench over operating rod (28 or 71) in standpipe, and engage it with valve seat (31). Insert a 3 or 4 foot heavy steel bar through eye of wrench and tighten valve seat securely in hydrant bottom. Remove wrench.
9. Install hex stop nut (86), turning it down to end of thread. Snug up with a torque of 30 lb-ft (30 lb at end of 12 in. wrench).
10. Grease groove in upper end of support tube (85), and install upper tube seal (82). Slide tube down over operating rod (28 or 71) until it is seated on support (56).
11. Grease threads of operating rod (28 or 71) and lower bearing surface of operating nut (17A or 17). Screw lower operating nut onto rod while centering support (56) on the standpipe. Tighten operating nut (17A or 17) to securely clamp support (56) against upper standpipe (40). Be sure support (56) is centered on upper standpipe (40).
12. Grease and install Teflon thrust ring (90) and O-ring (57) in operating nut (17B or 17). If hydrant has a two-piece operating nut, set upper operating nut (17B) on lower operating nut (17A) and engage lugs in slots.

CAUTION

Do not exceed 200 lb-ft torque (50 lb pull on the end of a 4 ft bar). One person using a bar 3 to 4 feet long can easily exert enough force to tighten valve seat. Further tightening may make future seat removal more difficult.

6. Pull rod up as far as it will go (main valve will now be closed). Hold in this position while an assistant slowly turns on the water.

WARNING

To prevent serious personal injury, do not stand over rod when assistant turns on the water.

7. Visually check for possible leaks before proceeding with the next step.
8. Grease O-ring and gasket grooves in support (56), and install O-rings (59), gaskets (84) and lower tube seal (83). Tape threads of operating rod (28 or 71) to protect O-rings, and install support. Remove tape from threads.
14. Back off operating nut slightly to release tension on operating rod. Since water pressure will hold valve up against seat, it is not necessary to turn operating nut to a dead stop if the valve and seat are in good condition.
15. Lubricate hydrant per "Lubrication" portion of the "Maintenance" section.





PACER – REPAIR INSTRUCTIONS

Figure 1. Repair Diagram – 250 P.S.I.G. Rated Pacers

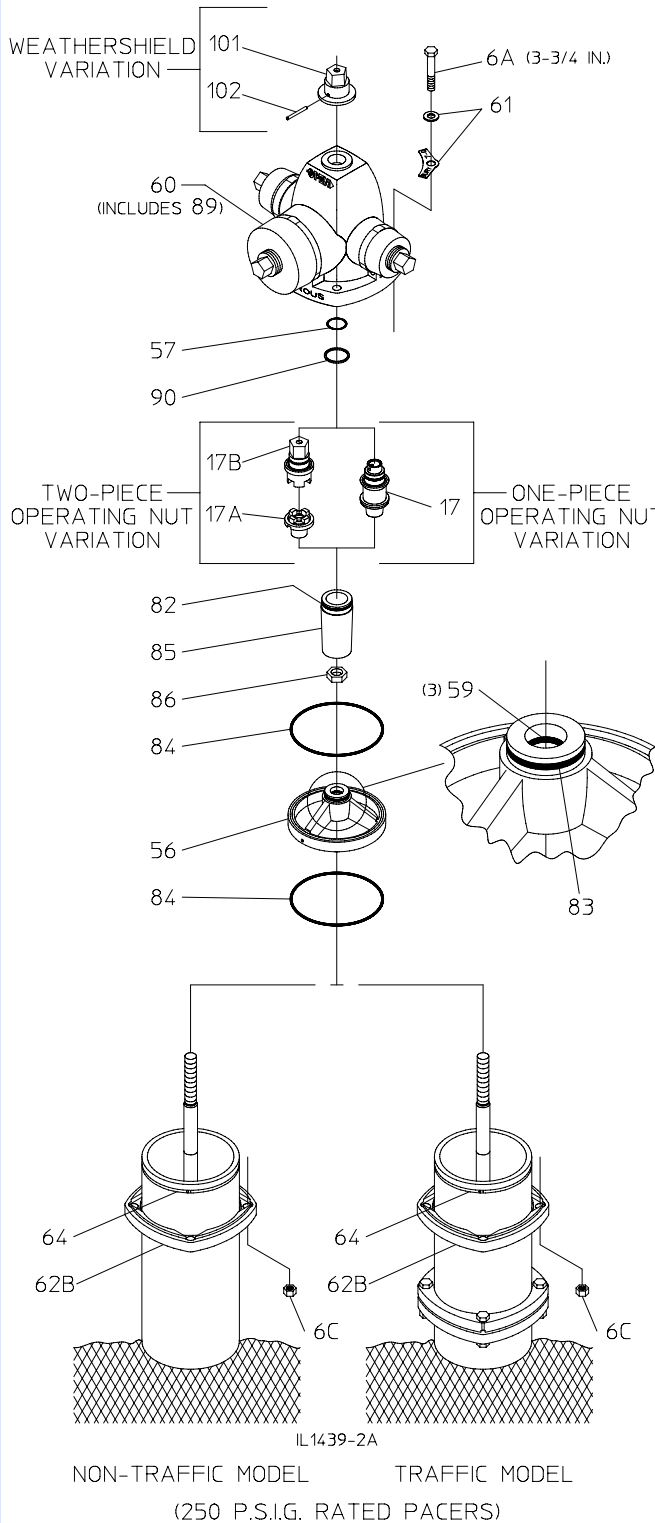
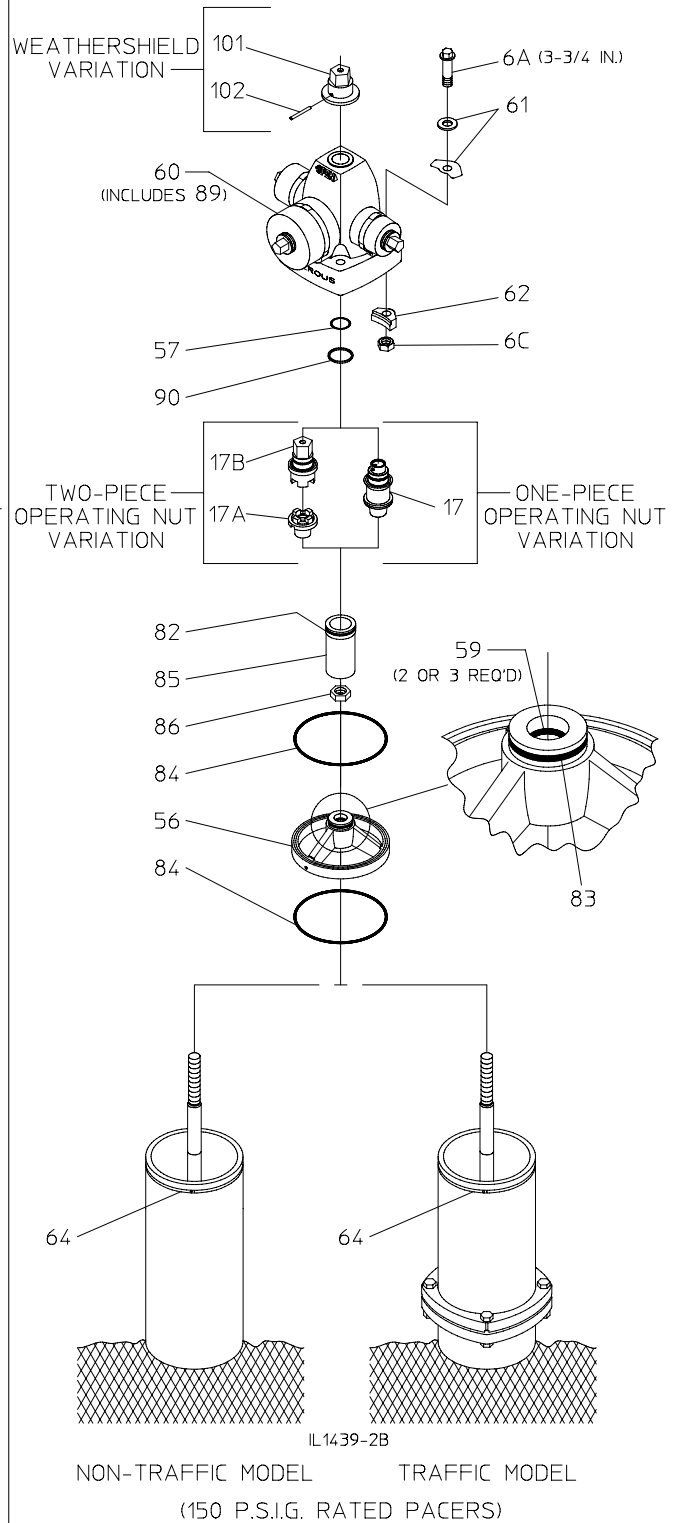


Figure 2. Repair Diagram – 150 P.S.I.G. Rated Pacers



PACER – REPAIR INSTRUCTIONS



Figure 3. Rod Removal

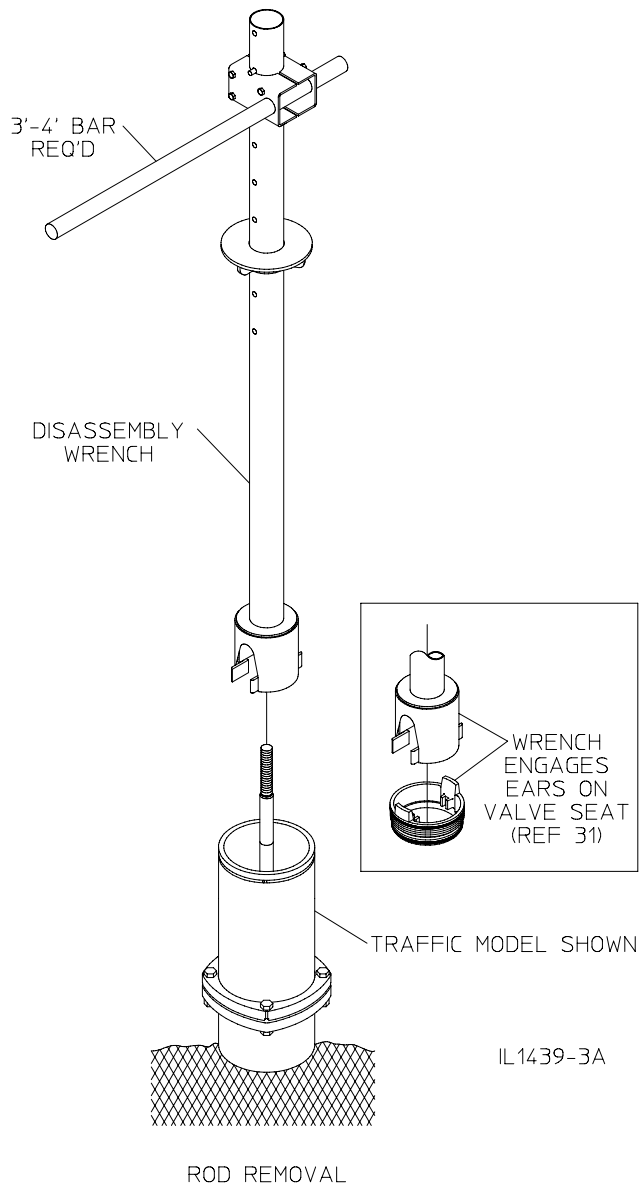
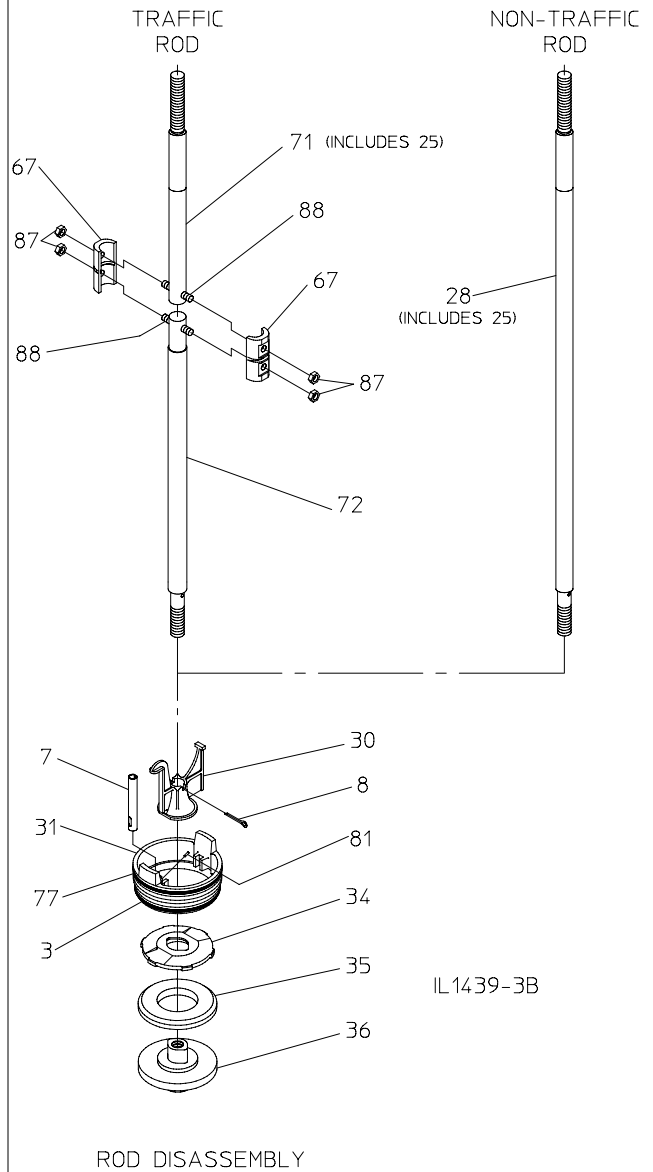


Figure 4. Rod Disassembly





PACER – REPAIR INSTRUCTIONS

Nozzle Section Bushing Replacement

1. **Remove the old bushing.** Prior to mid-1988, a nylon bushing was used. Starting mid-1988, a brass bushing was used.

Nylon Bushing: Peel out with a sharp knife blade.

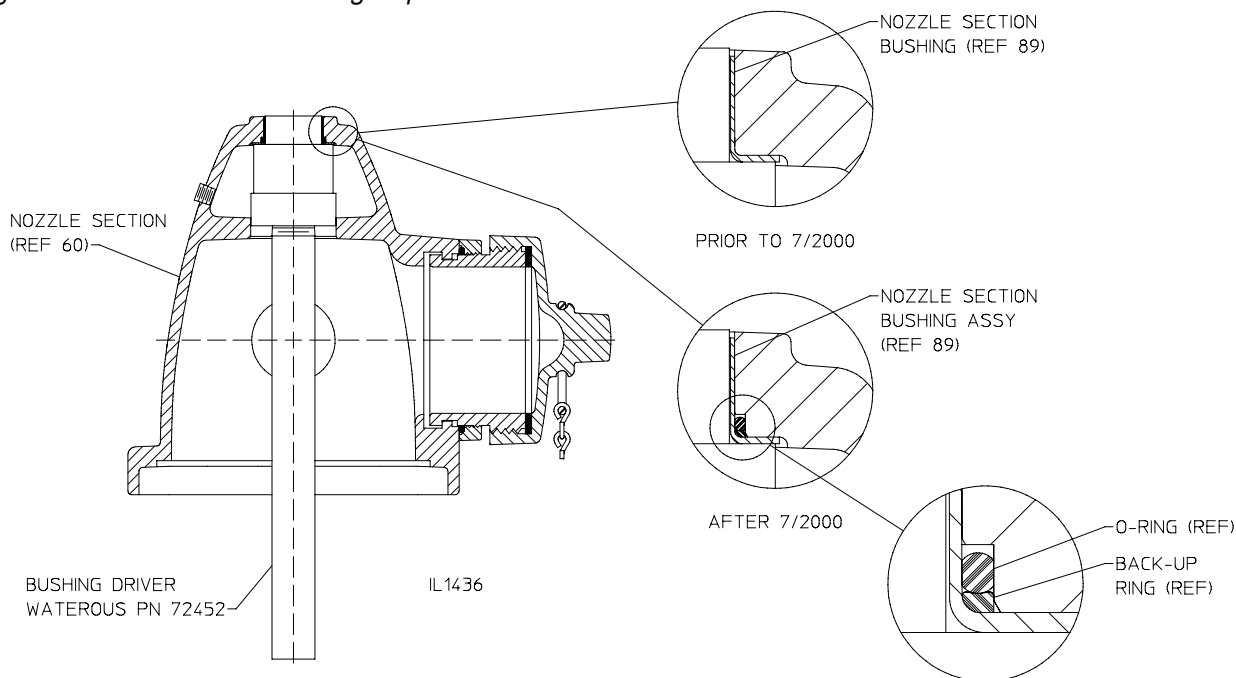
Brass Bushing: Peel out with a sharp chisel.

2. **Clean any rust or paint build-up from the inside of the bore.** An abrasive sanding drum, turned with a battery-operated drill works well. An alternative method is to remove any rust or paint using a large half-round file. After cleaning, bare metal should be visible in the bore. To check whether the bore has been cleaned to the proper size, partially insert the bushing into the bore from the top of the nozzle section with only slight force from your hand. About one half of the length of the bushing should fit into the bore before it becomes tight.
3. **Apply 1099 Scotch-Grip Adhesive/Sealant (Waterous Part No. V 3405):** If the hydrant was manufactured after mid-2000, install the back-up ring and O-ring onto the replacement bushing as shown in the detail drawing. If the hydrant was manufactured before mid-2000, remove the back-up ring and O-ring from the replacement bushing and discard. Place the bushing onto the bushing driver and apply a thin, even

coating of adhesive/sealant on the outside diameter of the bushing. Apply a thin coating of adhesive/sealant to the inside surface of the bore in the nozzle section and let both parts dry for several minutes. The layers of adhesive should be mostly dry to the touch, with a slightly "tacky" surface.

4. **Drive in the Bushing:** Using the Bushing Driver (Waterous Part No. 72452) and a hammer, drive the bushing into the bore from the inside of the nozzle section. Be sure to drive the bushing until the flange is seated against the counter bore in the nozzle section. The bushing driver should withdraw from the inside of the installed bushing without resistance. If resistance is felt, the rust or paint was not adequately cleaned from the nozzle section bore.
5. **Prepare the Operating Nut:** Remove the old O-ring seal (57) and the Thrust Ring (90) or Thrust Washer (80) from the operating nut (17 or 17B). Inspect the surfaces of the operating nut where the seal and thrust ring or washer were located and remove any paint or rust from the surface using a file or abrasive emery cloth. With the O-ring removed, insert the operating nut into the bore from the top of the nozzle section to test the fit of the operating nut in the newly installed bushing. The nut should turn freely. If not, carefully sand or file the inside diameter of the bushing until the nut will turn freely in the bore. Install the new O-ring seal (57) and the Thrust Ring (90) or Thrust Washer (80) onto the operating nut (17 or 17B).

Figure 5. Nozzle Section Bushing Replacement



PACER – TRAFFIC DAMAGE REPAIR



Introduction

This instruction covers the repair of Pacer Traffic models. The Pacer Traffic models are furnished in two main variations:

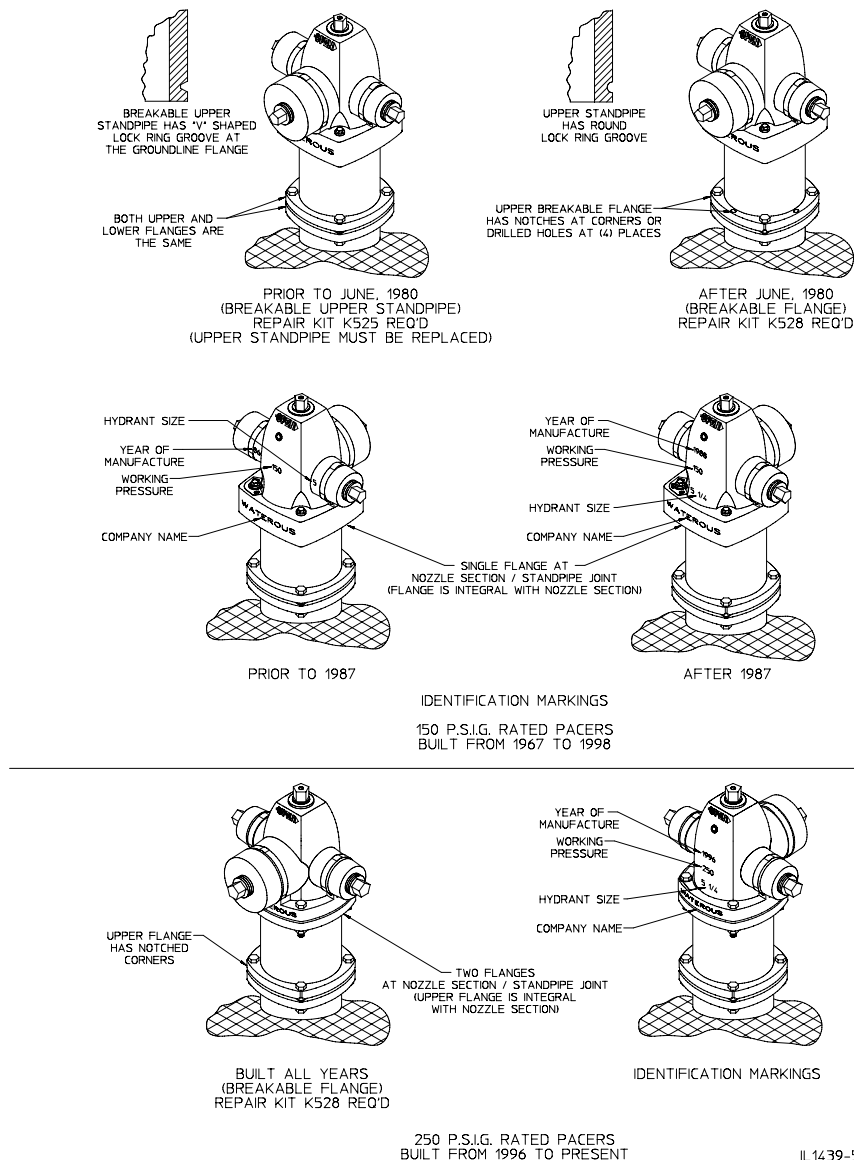
- 150 p.s.i.g. rated working pressure models WB67
- 250 p.s.i.g. rated working pressure models WB67–250

The disassembly and reassembly procedure varies slightly for each. Also, the 150 p.s.i.g. rated model was furnished with two types of breakable parts as follows:

- Prior to June, 1980 – The upper standpipe was designed to fracture at the lower lock ring groove. The flanges remained intact.
- After June, 1980 – A flange which is designed to fracture is used and the upper standpipe remains intact (this design also is used on all 250 p.s.i.g. rated Pacers).

The repair kits and repair procedure vary slightly for each type. Refer to Figure 1 below to identify which variation of Pacer hydrant and type of breakable parts you have.

Figure 1. Identification Diagram





Pacer – Traffic Damage Repair

150 P.S.I.G. Rated Working Pressure Pacer Using Repair Kits K525 or K528

Note: Where grease is specified, use Mystik® FG-2 Food Machinery Grease.

150 P.S.I.G. Rated Pacers (See Figure 2, Page 2B-27)

1. At the ground line, remove bolts (6B) and nuts (6C) which attach the upper and lower flanges. Discard the gasket, nuts and bolts.

Note: If top of the hydrant is completely broken away from the lower portion of the hydrant, step 1 may not be necessary.

2. At the nozzle section, remove bolts (6A), nuts (6C) and clamps (62) from underneath the flange of the nozzle section (60). Depth plate and plain washer (61) will come off with bolts.

Note: If clamps (62) should stick underneath the flange of the nozzle section (60), it may be necessary to drive them out.

3. If the breakable upper standpipe is fractured (hydrants built prior to June, 1980), discard upper standpipe (40) and the lower flange. A new upper standpipe with a breakable flange are furnished in kit K525.
4. Turn upper operating nut (17B) or weather-shield nut (101) in the opening direction to separate the nozzle section (60) and the support (56). Remove the nozzle section, lifting upwards. **Use proper handling techniques to avoid injury.**

5. Remove operating nut (17B or 17) from the nozzle section (60). (On hydrants with weathershield, it is necessary to drive out pin (102) and remove weathershield (101) before upper operating nut can be removed.)

Note: Bushing (89) is cemented in nozzle section (60). Removing it is not necessary unless it is damaged. If replacement is necessary, see Page 2B-24.

6. Unscrew lower operating nut (17A – two-piece nuts, 17 – one-piece nut), and remove support tube (85).
7. Unscrew hex stop nut (86) from operating rod (71), and remove support (56).
8. Remove nuts (87) and rod coupling halves (67) from upper and lower rods (71 & 72). Carefully check upper rod (71) to make sure it is not bent more than 1/8 in. out of straightness. Straighten or replace if necessary. Also check studs (88) for thread damage or bending which will prevent the installation of new coupling halves. Replace studs if necessary.

9. Position upper rod (71) over lower rod (72) and install new coupling halves (67). Install nuts (87) and tighten securely.

Hydrants built prior to June, 1980 (K525)

- 10a. Slide breakable flange (113) over lower end of the new upper standpipe (40). (The lower end has the lock ring groove 3/8 in. from the end.) Install lock rings (64) in grooves on the upper standpipe. (Be sure flange is orientated so that the larger ID of the flange engages the lock ring properly.) See Figure 3 on Page 2B-27.

Hydrants built after to June, 1980 (K528)

- 10b. Remove lock rings (64) from the bottom of the upper standpipe (40). Remove old breakable flange (113) from the upper standpipe if it is still attached (in most cases, it will fracture and disengage itself from the upper standpipe). Slide new breakable flange (113) over the upper standpipe (40) (orient flange so that the larger ID of the flange will point down and properly engage the lock ring). See Figure 3. Install lock ring (64) in the bottom groove of the upper standpipe (40). Slide flange (113) down and over the lock ring (64).
11. Place new gasket (92) on the lower standpipe with the lip pointing down. Position the upper standpipe (40) on the lower standpipe and install bolts (6B) thru flanges (113) and (63). Install nuts (6C) and tighten the four bolts evenly. Tighten to 60–70 lb–ft of torque.

Note: Be sure to install the upper standpipe correctly. The groove at the top must be 3/4 in. from the end. The groove at the bottom must be 3/8 in. from the end. Also, the breakable flange (113) must be at the bottom (groundline) end. See Figure 3 on Page 2B-27.

12. Grease O-ring and gasket grooves in support (56), and grease O-rings (59), gaskets (84) and lower tube seal (83). Tape threads of operating rod (71) to protect O-rings. Install support (56) onto operating rod (71), being careful not to damage O-rings on operating rod threads. Remove tape from threads.
13. Install hex stop nut (86), threading it down to end of thread. Snug up with a torque of 30 lb–ft (30 lb at end of 12 in. wrench).
14. Grease O-ring in upper end of support tube (85). Slide tube down over operating rod (71) until it is seated on support (56).
15. Grease threads of operating rod (71) and lower bearing surface of operating nut (17A or 17). Screw lower operating nut onto rod while centering support (56) on the standpipe. Tighten operating nut (17A or 17) to securely clamp support (56) against upper standpipe (40). Be sure support (56) is centered on upper standpipe (40).

Pacer – Traffic Damage Repair

150 P.S.I.G. Rated Working Pressure Pacer Using Repair Kits K525 or K528

16. Grease and install Teflon thrust ring (90) and O-ring (57) in upper operating nut (17B or 17). If hydrant has a two-piece operating nut, set upper operating nut (17B) on lower operating nut (17A) and engage lugs in slots.
17. Make sure lock ring (64) is properly installed in the upper standpipe (40). Carefully lower nozzle section (60) over upper operating nut (17B or 17) until it seats on support (56). Rotate nozzle section (60) to desired position. Install clamps (62), bolts (6A) and nuts (6C) in flange of nozzle section and tighten finger tight. Be sure to install depth plate and washers (61) in proper position. Make sure all clamps are seated properly up under nozzle section flange and tighten all bolts and nuts evenly. Tighten to 60–70 lb–ft of torque.
18. Back off operating nut slightly to release tension on operating rod. Since water pressure will hold valve up against seat, it is not necessary to turn operating nut to a dead stop if the valve and seat are in good condition.
19. Lubricate hydrant as shown in Figure 4.

Note: When a supply of gaskets and O-rings are available, always install new ones when reassembling the hydrant. Clean dirt from O-ring grooves.

Figure 2. 150 P.S.I.G. Traffic Repair

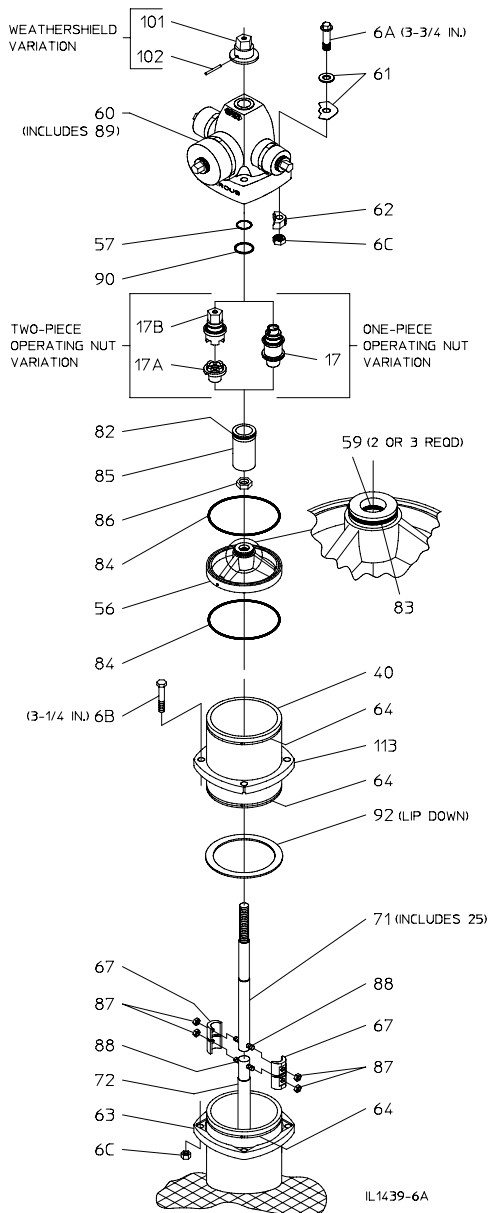


Figure 3. Upper Standpipe/Breakable Flange Orientation

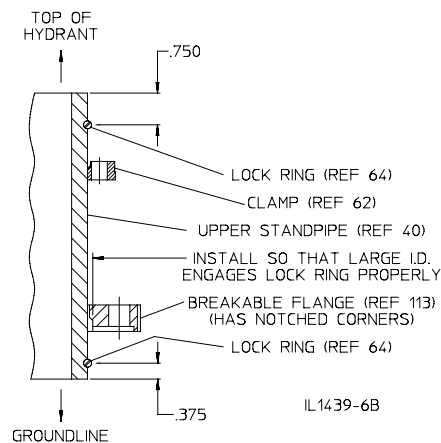
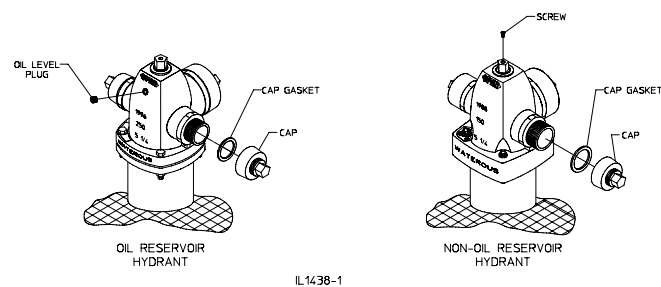


Figure 4. Lubrication Detail



1. Oil Reservoir Hydrants: Removal oil level plug. Add oil to the level of the plug. Use white mineral oil USP Mobil Whiterex 425 or equal.

Non-Oil Reservoir Hydrants: Remove screw from operating nut and add approximately one tablespoon of oil through opening. Replace screw. Use white mineral oil USP Mobil Whiterex 425 or equal.
2. Remove all nozzle caps, clean rust or corrosion from threads of nozzles and caps. Replace cap gaskets if necessary. Apply a light coat of grease to nozzle threads before replacing cap. Use Mystik® FG-2 Food Machinery Grease.



Pacer – Traffic Damage Repair

250 P.S.I.G. Rated Working Pressure Pacer Using Repair Kit K528

Note: Where grease is specified, use Mystik® FG-2 Food Machinery Grease.

250 P.S.I.G. Rated Pacers (See Figure 5, Page 2B–29)

1. At the groundline, remove bolts (6B) and nuts (6C) which attach the upper and lower flanges. Discard the gasket, nuts and bolts.

Note: If top of the hydrant is completely broken away from the lower portion of the hydrant, step 1 may not be necessary.

2. At the nozzle section, remove bolts (6A), nuts (6C) and allow flange (62B) to slide down the upper standpipe. Depth plate and plain washer (61) will come off with bolts.
3. Turn upper operating nut (17B) or weather-shield nut (101) in the opening direction separate the nozzle section (60) and the support (56). Remove the nozzle section. **Use proper handling techniques to avoid injury.**
4. Remove operating nut (17B or 17) from the nozzle section (60). (On hydrants with weathershield, it is necessary to drive out pin (102) and remove weathershield (101) before upper operating nut can be removed.)

Note: Bushing (89) is cemented in nozzle section (60). Removing it is not necessary unless it is damaged. If replacement is necessary, see Page 2B–24.

5. Unscrew lower operating nut (17A – two-piece nuts, 17 – one-piece nut), and remove support tube (85).
6. Unscrew hex stop nut (86) from operating rod (71), and remove support (56).
7. Remove coupling nuts (87) and sleeves (67) from upper and lower rods (71 & 72). Carefully check upper rod (71) to make sure it is not bent more than 1/8 in. out of straightness. Straighten or replace if necessary. Also check studs (88) for thread damage or bending which will prevent the installation of a new coupling. Replace studs if necessary.
8. Position upper rod (71) over lower rod (72) and install new coupling halves (67). Install nuts (87) and tighten securely.

9. Remove lock ring (64) from the bottom of the upper standpipe (40). Remove old breakable flange (113) from the upper standpipe if it is still attached (in most cases, it will fracture and disengage itself from the upper standpipe). Slide new breakable flange (113) over the upper standpipe (40). Orient flange so that the larger ID of the flange will point down and properly engage the lock ring. Install lock ring (64) in the bottom groove of the upper standpipe (40). Slide flange (113) down and over the lock ring (64). See Figure 6, on Page 2B–29.
10. Place new gasket (92) on the lower standpipe with the lip pointing down. Position the upper standpipe (40) on the lower standpipe and install bolts (6B) thru flanges (113) and (63). Install nuts (6C) and tighten the four bolts evenly. Tighten to 60–70 lb–ft of torque.
11. Grease O–ring and gasket grooves in support (56), and grease O–rings (59), gaskets (84) and lower tube seal (83). Tape threads of operating rod (71) to protect O–rings. Install support (56) onto operating rod (71), being careful not to damage O–rings on operating rod threads. Remove tape from threads. See Figure 6, on Page 2B–29.
12. Install hex stop nut (86), threading it down to end of thread. Snug up with a torque of 30 lb–ft (30 lb at end of 12 in. wrench).
13. Grease O–ring in upper end of support tube (85). Slide tube down over operating rod (71) until it is seated on support (56).
14. Grease threads of operating rod (71) and lower bearing surface of operating nut (17A or 17). Screw lower operating nut onto rod while centering support (56) on the standpipe. Tighten operating nut (17A or 17) to securely clamp support (56) against upper standpipe (40). Be sure support (56) is centered on upper standpipe (40).
15. Grease and install Teflon thrust ring (90) and O–ring (57) in upper operating nut (17B or 17). If hydrant has a two–piece operating nut, set upper operating nut (17B) on lower operating nut (17A) and engage lugs in slots.

Note: Be sure to install the upper standpipe correctly. The groove at the top must be 3/4 in. from the end. The groove at the bottom must be 3/8 in. from the end. Also, the breakable flange (113) must be at the bottom (groundline) end of the upper standpipe. See Figure 6, on Page 2B–29.

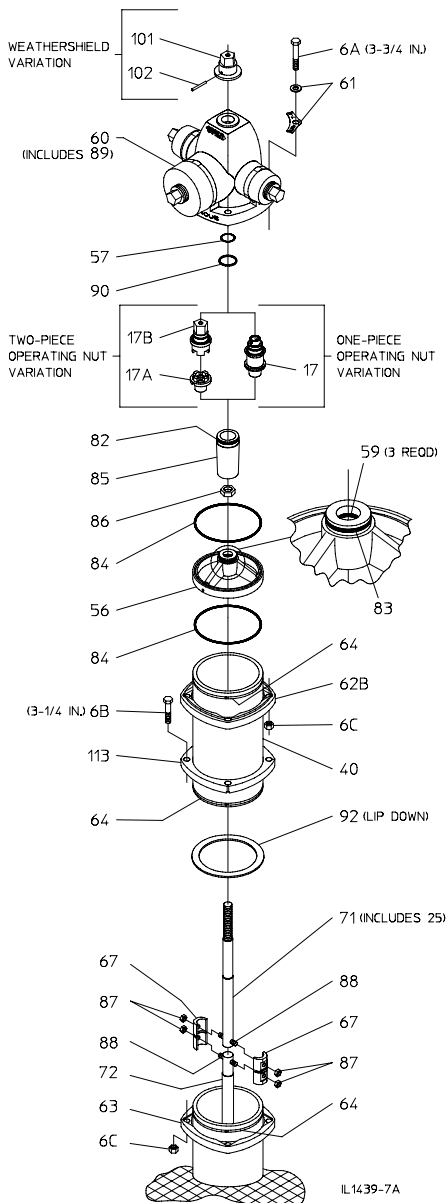


Pacer – Traffic Damage Repair

250 P.S.I.G. Rated Working Pressure Pacer Using Repair Kit K528

16. Carefully lower nozzle section (60) over upper operating nut (17B or 17) until it seats on support (56). Rotate nozzle section (60) to desired position. Install bolts (6A) and nuts (6C) through flange of nozzle section and flange (62B) and tighten finger tight. Be sure to install depth plate and washers (61) in proper position. Make sure flange (62B) is seated properly with flange lock ring (64) and tighten all bolts and nuts evenly. Tighten to 60–70 lb–ft of torque.
17. Back off operating nut slightly to release tension on operating rod. Since water pressure will hold valve up against seat, it is not necessary to turn operating nut to a dead stop if the valve and seat are in good condition.

Figure 5. 250 P.S.I.G. Traffic Repair



18. Lubricate hydrant as shown in Figure 7.

Note: When a supply of gaskets and O-rings are available, always install new ones when reassembling the hydrant. Clean dirt from O-ring grooves.

Figure 6. Upper Standpipe (Breakable Flange Orientation)

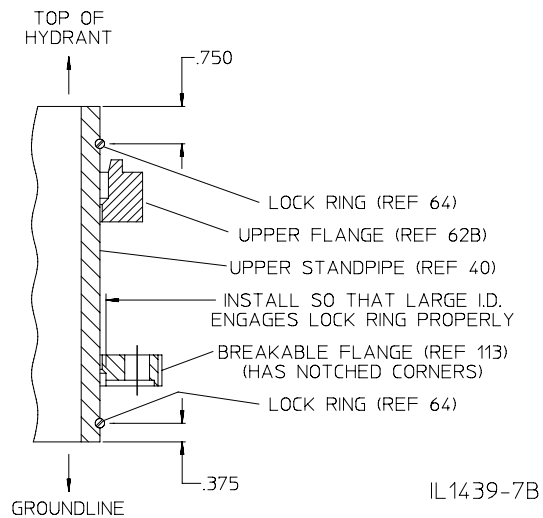
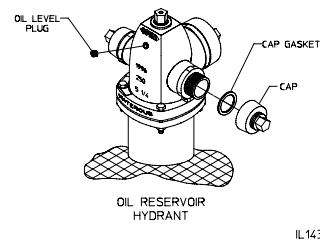


Figure 7. Lubrication Detail



1. Remove oil level plug and add oil to the level of the plug. Use white mineral oil USP (Mobil Whiterex 425 or equal).
2. Remove all nozzle caps, clean rust or corrosion from threads of nozzles and caps. Replace cap gaskets if necessary. Apply a light coat of grease to nozzle threads before replacing cap. Use Mystik® FG-2 Food Machinery Grease.



PACER – NOZZLE REPLACEMENT

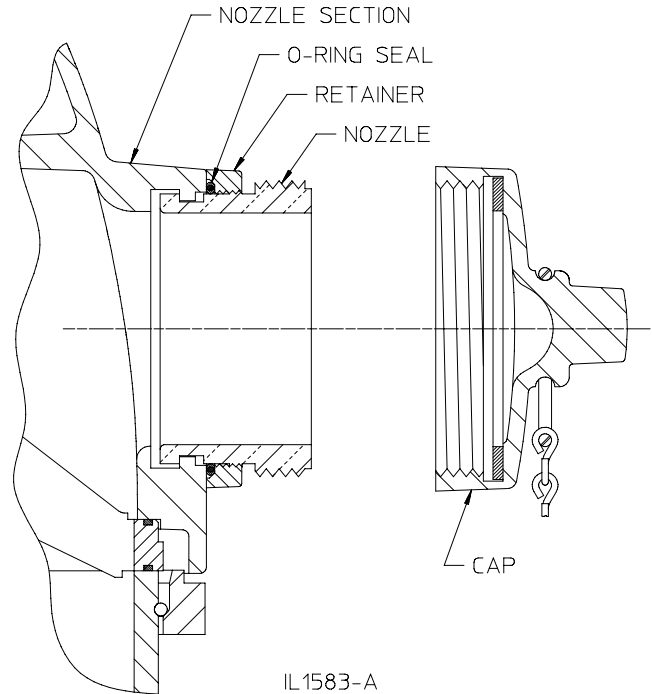
Mechanically Attached Nozzles

Mechanically Attached method (see Figure 1) – A retainer is threaded onto the nozzle, trapping an O-ring against the nozzle section and providing a water tight seal. This method is used on all newer versions of Waterous Pacer hydrants.

Waterous has wrenches available for removing and installing retainers as follows.

- For Pumper Nozzles: Part No. 81420
- For 5" Storz Pumper Nozzles: Part No. 82766
- For Hose Nozzles: Part No. 72094

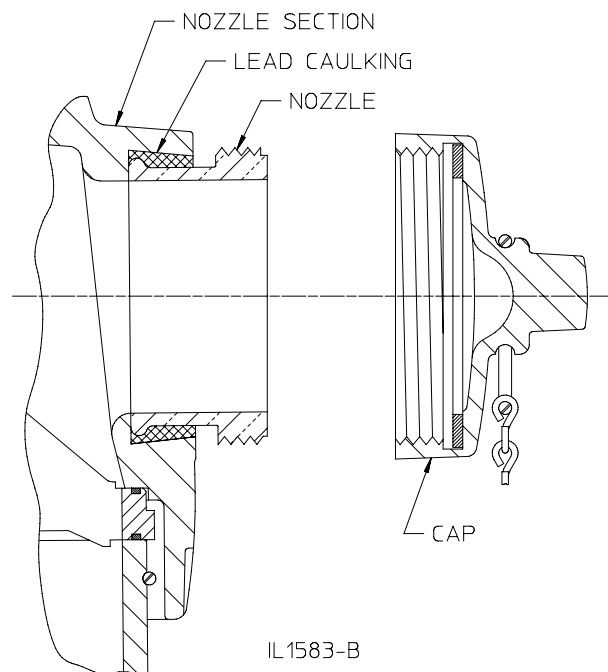
Figure 1. Mechanically Attached Nozzles



Caulked (Leaded-In) Nozzles

Caulked (Leaded-In) method (see Figure 2) – Molten lead is poured into the void area between the nozzle and nozzle section which solidifies and creates a water tight seal. This method was used on older versions of Waterous Pacer hydrants.

Figure 2. Caulked (Leaded-In) Nozzles



Pacer – Nozzle Replacement

Mechanically Attached Pumper Nozzle

Removal

1. Remove cap.
2. Place wrench on the retainer so it engages the rounded protrusions and unthread from nozzle.
3. Rotate nozzle counter-clockwise until the four lugs on the nozzle disengage the recesses in the nozzle section socket which will allow the nozzle to be removed.

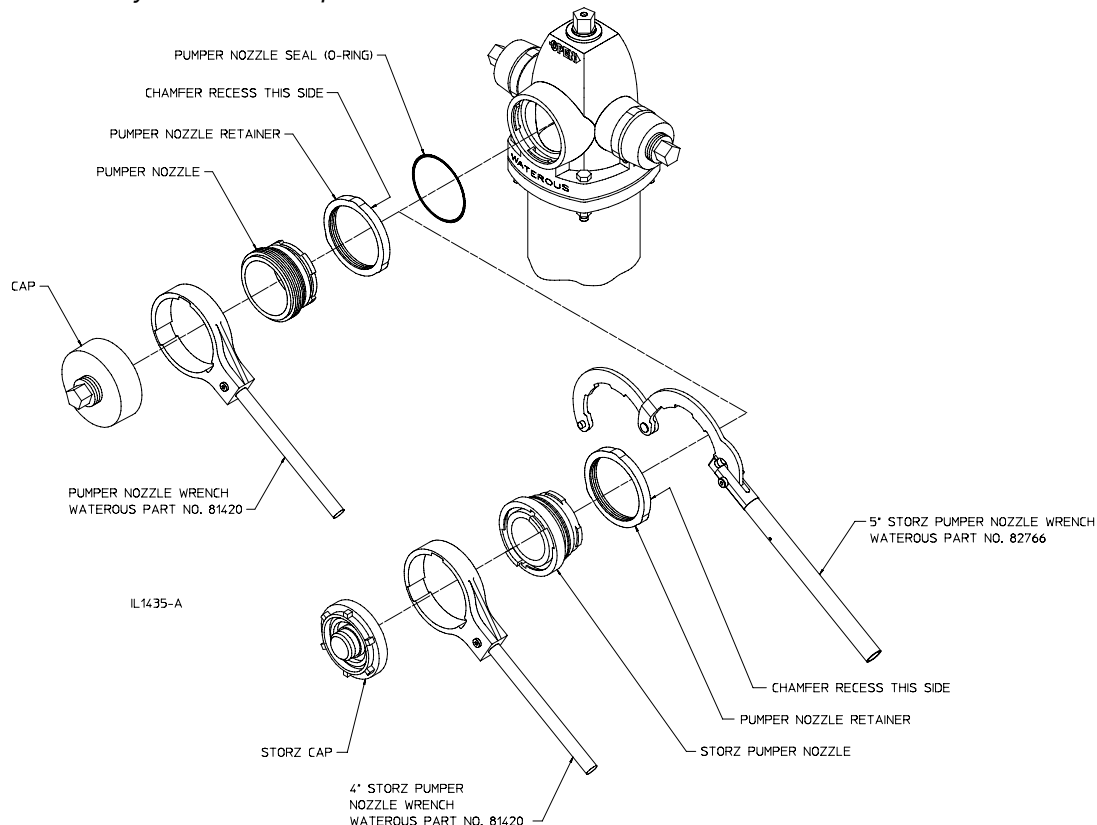
Removal of the 5-inch Storz hydrant nozzle requires the use of the hinged pumper–nozzle retainer wrench (Waterous Part No. 82766).

Installation

1. Thread retainer onto the retainer threads of the pumper nozzle.
2. Grease O-ring and place it over nozzle starting from the end with the four lugs and into the chamfer recess in the retainer.
3. Insert the nozzle/retainer/O-ring subassembly into the socket in the nozzle section. Rotate the subassembly clockwise until it stops with the four lugs on the nozzle fully engaged in the anti-rotation recesses in the socket. If it cannot be rotated, turn the retainer in a direction to allow the nozzle to be inserted further into the socket so the subassembly rotates clockwise against the stops.
4. Hand tighten the retainer to press O-ring against the face of the socket.
5. Place wrench on the retainer so it engages the rounded protrusions, tighten firmly.
6. Clean rust or corrosion from cap threads and replace cap gasket if necessary. Apply a light coat of grease to the nozzle threads and install the cap.
7. Cap all nozzles and open the hydrant valve, check the area around the repaired nozzle for leaks.

NOTE: Where grease is specified, use-Mystik® FG-2 Food Machinery Grease.

Figure 3. Mechanically Attached Pumper Nozzle





Pacer – Nozzle Replacement

Mechanically Attached 2-1/2" Hose Nozzle

Removal

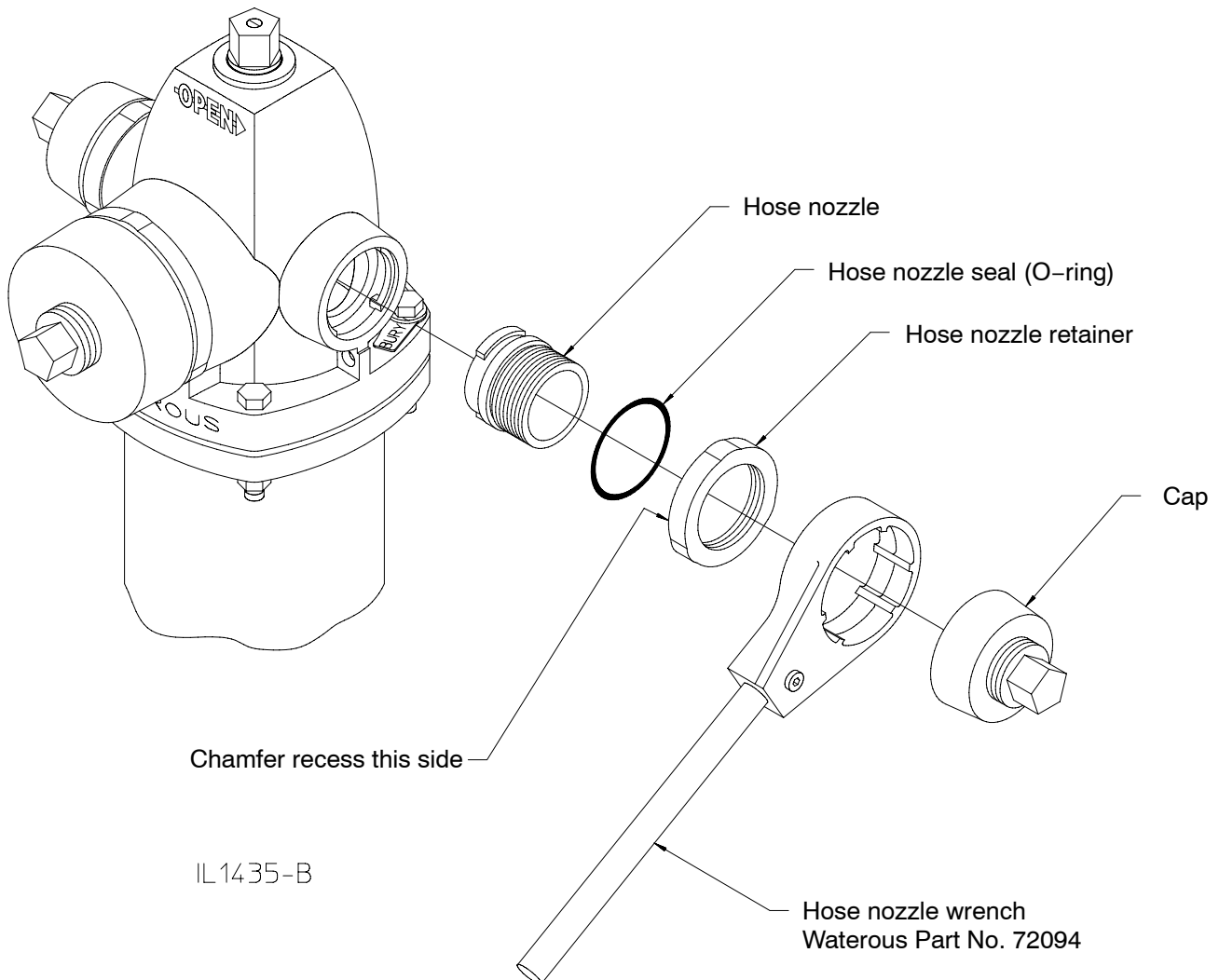
1. Remove cap.
2. Place wrench on the retainer so it engages the rounded protrusions and unthread from nozzle.
3. Rotate nozzle counter-clockwise until the two lugs on the nozzle disengage the recesses in the nozzle section socket which will allow the nozzle to be removed.

Installation

1. Insert hose nozzle into the socket of the nozzle section, turn clockwise until it stops with the two lugs on the nozzle fully engaged in the anti-rotation recesses in the socket.
2. Grease O-ring and place it over the nozzle and against the face of the socket.
3. Thread retainer onto the hose nozzle and hand tighten to press the O-ring against the face of the socket.
4. Place wrench on retainer so it engages the rounded protrusions, and tighten firmly.
5. Clean rust or corrosion from cap threads and replace cap gasket if necessary. Apply a light coat of grease to the nozzle threads and install the cap.

NOTE: Where grease is specified, use Mystik® FG-2 Food Machinery Grease.

Figure 4. Mechanically Attached Hose Nozzle



Pacer – Nozzle Replacement

Caulked (Leaded-In) Pumper and Hose Nozzle



Introduction

These instructions provide the main steps necessary to replace hydrant nozzles in the field. Two methods are given. The first method involves removing the nozzle section from the standpipe while the second does not.

The first method is preferable because centering the nozzle in the cavity of the nozzle section is easier, and distribution of the lead around the nozzle will probably be more even.

NOTE: Where grease is specified, use Mystik® FG-2 Food Machinery Grease.

Method 1

This method requires removal of the nozzle section.

WARNING

Lead vapor hazard. May cause severe illness.

Only use molten lead in areas with adequate ventilation.

WARNING

Molten lead hazard. May cause severe burns.

Wear protective clothing, safety glasses and gloves to prevent injury from the molten lead.

1. Remove the nozzle section following the procedure outlined in the applicable installation and maintenance instructions.
2. Melt lead around the damaged nozzle and remove the nozzle. Chip out dirt, old lead, etc. to provide a clean seat for the new nozzle.
3. Position the nozzle section on a firm, horizontal support with the cavity for replacement nozzle up.
4. Position the new nozzle in the center of the cavity and pour melted lead around it. Peen lead with a blunt chisel or punch and chip away the excess lead which might interfere with the nozzle threads.

NOTE: A special caulking chisel, Part No. 61510, is available from Waterous for peening lead around the nozzle.

5. Replace the nozzle section following the procedure outlined in the installation and maintenance instructions.
6. Clean rust or corrosion from cap threads and replace cap gasket if necessary. Apply a light coat of grease to nozzle threads and install the cap.
7. Cap all hydrant nozzles and open the hydrant valve. Check the cavity around the repaired nozzle for leaks.

NOTE: There are times that the nozzle may loosen from the nozzle section cavity for various reasons which may result in slight leakage. This can be corrected by peening the lead caulking around the nozzle with a blunt chisel or our standard caulking chisel Part No. 61510, without removing any parts except the hydrant nozzle cap. After re-peening, it is suggested to retest this area by following the procedure in Method 1, Step 7.



Pacer – Nozzle Replacement

Caulked (Leaded-In) Pumper and Hose Nozzle

Method 2

If circumstances make removal of the nozzle section inconvenient, this method permits installing replacement nozzles without disassembling the hydrant. This method should normally not be used due to the following:

- Melted lead may flow unevenly around the nozzle.
- Lead may leak into the hydrant and foul the valve parts at the bottom.

WARNING

Lead vapor hazard. May cause severe illness.

Only use molten lead in areas with adequate ventilation.

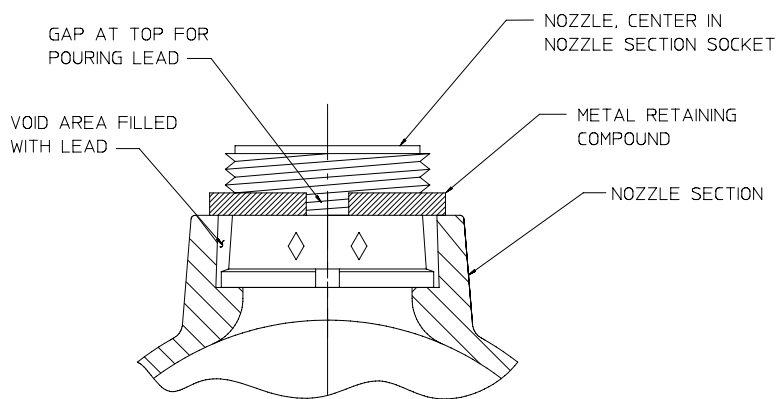
WARNING

Molten lead hazard. May cause severe burns.

Wear protective clothing, safety glasses and gloves to prevent injury from the molten lead.

1. Melt lead around the damaged nozzle and remove the nozzle. Chip out dirt, old lead, etc., to provide a clean seat for the new nozzle.
2. Wrap a 1/2 in. diameter bead of metal-retaining compound around the new nozzle to seal the cavity and to hold the nozzle in position. Leave a small gap at the top of the bead to permit pouring in melted lead.
3. Form a V-shaped, sheet-metal trough, small enough to enter the gap in the bead. Use the trough to pour melted lead around the nozzle.
4. Remove the metal-retaining compound and peen lead with a blunt chisel or punch. Chip away excess lead which might interfere with nozzle threads.
5. Clean rust or corrosion from cap threads and replace cap gasket if necessary. Apply a light coat of grease to nozzle threads and install the cap.
6. Cap all hydrant nozzles and open the hydrant valve. Check the cavity around the repaired nozzle for leaks.

Figure 5. Caulked (Leaded-In) Pumper and Hose Nozzle Replacement



IL1583-C

PACER – EXTENDING TRAFFIC MODEL



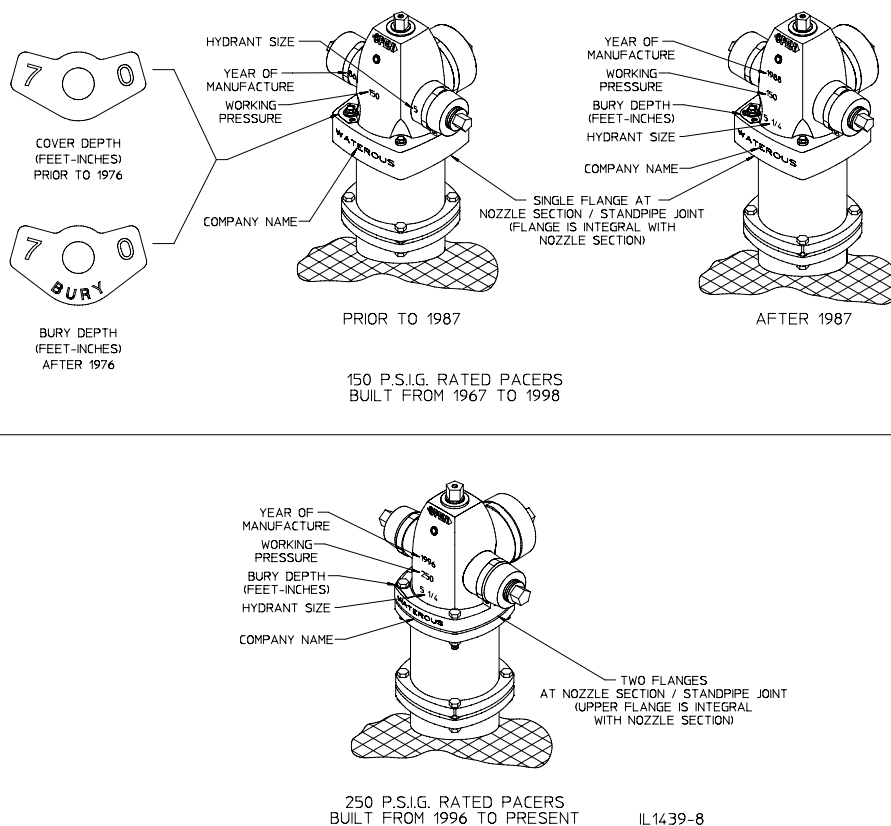
Introduction

This instruction covers the installation of the standpipe and rod extension kit (K562) for Pacer Traffic models. Traffic Pacer models are furnished in two main variations:

- 150 p.s.i.g. rated working pressure models WB67
- 250 p.s.i.g. rated working pressure models WB67–250

The extension kit installation is identical for both variations; however, the disassembly and reassembly varies slightly. Refer to the identification diagram below to identify which variation of Pacer hydrant you have.

Figure 1. Identification Diagram



Important Notes

1. Waterous recommends a new rod corresponding to the extended bury or cover depth be installed in place of a rod extension if the hydrants meet one or more of the following criteria:
 - a. The length of the rod extension required exceeds 4'-0".
 - b. The hydrant has already been extended. Only one rod extension per hydrant is recommended.
 - c. **150 P.S.I.G. rated Pacers only:**
The depth of the extended hydrant will exceed 9'-0" bury or 8'-6" cover. Depths of 9'-6" thru 11'-6" bury and 9'-0" thru 11'-0" cover should have a heavy duty (larger diameter) rod installed. Note that 250 PSI rated Pacers are supplied with heavy duty rods for all depths from the factory.
2. If extended depth of hydrant will exceed 11'-6" bury or 11'-0" cover, a "bottom extension" should be installed in place of a standpipe and rod extension.
3. Contact Waterous Company for appropriate parts and guidance if any of the above situations exist.



Pacer – Extending Traffic Model

Note: Where grease is specified, use Mystik® FG-2 Food Machinery Grease.

1. Closing the water main valve when installing extensions is usually not necessary. Water pressure will keep the hydrant valve closed.

250 P.S.I.G. Rated Pacers (See Figure 2, Page 2B–37)

- 2a. At the nozzle section, remove bolts (6A), nuts (6C), and allow flange (62B) to slide down the upper standpipe. Depth plate and washer (61) will come off with bolts.

150 P.S.I.G. Rated Pacers (See Figure 3, Page 2B–37)

- 2b. At the nozzle section, remove bolts (6A), nuts (6C) and clamps (62) from underneath flange of the nozzle section (60). Depth plate and plain washer (61) will come off with bolts.

Note: If clamps (62) should stick underneath the flange of the nozzle section (60), it may be necessary to drive them out.

3. Turn upper operating nut (17B) or weather-shield nut (101) in the opening direction to separate the nozzle section (60) and the support (56). Remove the nozzle section, lifting upwards. **Use proper handling techniques to avoid injury.**
4. Remove operating nut (17B or 17) from the nozzle section (60). (On hydrants with weathershield, it is necessary to drive out pin (102) and remove weathershield (101) before upper operating nut can be removed.)

Note: Bushing (89) is cemented in nozzle section (60). Removing it is not necessary unless it is damaged. If replacement is necessary, contact the Waterous Company.

5. Unscrew lower operating nut (17A – two-piece nuts, 17 – one-piece nut), and remove support tube (85).
6. Unscrew hex stop nut (86) from operating rod (28), and remove support (56).
7. Remove bolts (6B) and nuts (6C) and lift off upper standpipe (40). Discard gasket (92), bolts (6B) and nuts (6C). Note that on 250 PSI Pacers, flange (113) and (62B) will remain attached to the upper standpipe (40). On 150 PSI Pacers, flange (113) will remain attached. It is not necessary to remove these flanges. They may remain on the upper standpipe.
8. Disassemble breakable coupling. Unscrew nuts (87) and remove rod coupling halves (67) which join the upper rod (71) to the lower rod (72). Do not remove studs (88) unless they are damaged.

9. Install rod extension (74) on existing lower rod (72) using extension couplings (174). Slide coupling halves (174) onto studs in rod extension (74) and lower rod (72) and install nuts (87). Note: Be sure extension couplings are installed at the original ground line. Refer to Figure 5 on Page 2B–38.
10. Install flanges (63) and lock rings (64) onto standpipe extension (45). Be sure to orient flanges properly. Refer to Figure 4 on Page 2B–38.
11. Install gasket (92) on existing standpipe with lip pointing down. Install standpipe extension (45) on existing standpipe. Install bolts (6D) and nuts (6C) thru flanges (63) and tighten finger tight. Make sure flanges (63) are seated properly on lock rings (64) and tighten all bolts and nuts evenly. Tighten to 60–70 lb–ft torque.
12. Install existing upper rod (71) onto rod extension (74) using breakable couplings (67). Slide coupling halves (67) onto studs in rod extension (74) and upper rod (71) and install nuts (87). Note: Be sure breakable couplings are installed at the new ground line. Refer to Figure 5 on Page 2B–38.
13. Install gasket (92) on standpipe extension (45) with lip pointing down. Install existing upper standpipe (40) on standpipe extension. Install bolts (6B) and nuts (6C) thru flanges (113) and (63) and tighten finger tight. Be sure flanges engage lock rings (64) properly and tighten all bolts and nuts evenly. Note that breakable flange (113) must be on the bottom of the upper standpipe. Also, upper standpipe (40) must be installed properly with the groove 3/4 in. from the end at the top and the groove 3/8 in. from the end at the bottom. Refer to Figure 5 on Page 2B–38.
14. Grease O-ring and gasket grooves in support (56), and grease O-rings (59), gaskets (84) and lower tube seal (83). Tape threads of operating rod (71) to protect O-rings. Install support (56) onto operating rod (71), being careful not to damage O-rings on operating rod threads. Remove tape from threads.
15. Install hex stop nut (86), turning it down to end of thread. Snug up with a torque of 30 lb–ft (30 lb at end of 12 in. wrench).
16. Grease O-ring in upper end of support tube (85). Slide tube down over operating rod (71) until it is seated on support (56).
17. Grease threads of operating rod (71) and lower bearing surface of operating nut (17A or 17). Screw lower operating nut onto rod while centering support (56) on the standpipe. Tighten operating nut (17A or 17) to securely clamp support (56) against upper standpipe (40). Be sure support (56) is centered on upper standpipe (40).
18. Grease and install Teflon thrust ring (90) and O-ring (57) in operating nut (17B or 17). If hydrant has a two-piece operating nut, set upper operating nut (17B) on lower operating nut (17A) and engage lugs in slots.

Pacer – Extending Traffic Model

250 P.S.I.G. Rated Pacers (See Figure 2)

- 19a. Carefully lower nozzle section (60) over operating nut (17b or 17) until it seats on support (56). Rotate nozzle section (60) to desired position. Install bolts (6A) and nuts (6C) through flange of nozzle section and flange (62B) and tighten finger tight. Be sure to install depth plate and washers (61) in proper position. Also install extension plate (157) opposite the bury depth plate (see Figure 6). Make sure flange (62B) is seated properly with lock ring (64) and tighten all bolts and nuts evenly. Tighten to 60–70 lb–ft of torque.

150 P.S.I.G. Rated Pacers (See Figure 3)

- 19b. Make sure lock ring (64) is properly installed in upper standpipe. Carefully lower nozzle section (60) over upper operating nut (17B or 17) until it seats on support (56). Rotate nozzle section (60) to desired position. Install clamps (62), bolts (6A) and nuts (6C) in

flange of nozzle section and tighten finger tight. Be sure to install depth plate and washers (61) in proper position. Also install extension plate (157) opposite the bury depth plate (see Figure 6). Make sure all clamps are seated properly up under flange, and tighten all bolts and nuts evenly. Tighten to 60–70 lb–ft of torque.

20. Back off operating nut slightly to release tension on operating rod. Since water pressure will hold valve up against seat, it is not necessary to turn operating nut to a dead stop if the valve and seat are in good condition.
21. Lubricate hydrant as shown in Figure 7 on Page 2B–38.

Note: When a supply of gaskets and O-rings are available, always install new ones when reassembling the hydrant. Clean dirt from O-ring grooves.

Figure 2. Installation Diagram – 250 P.S.I.G. Rated Pacer

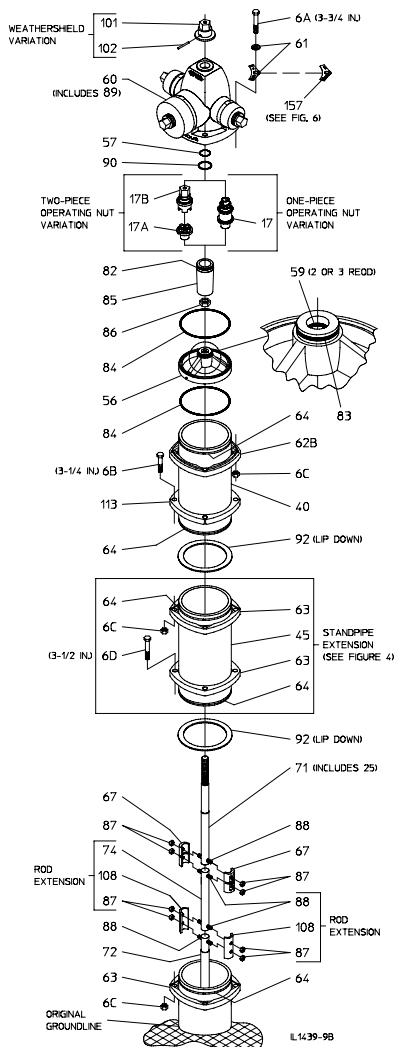
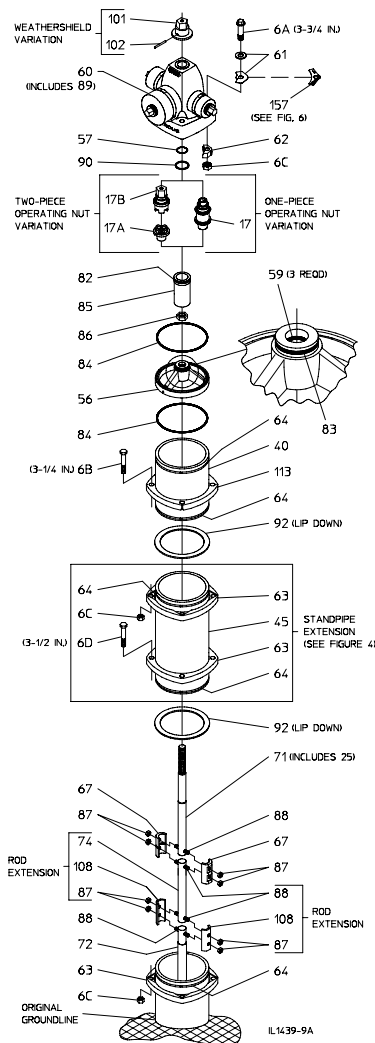


Figure 3. Installation Diagram – 150 P.S.I.G. Rated Pacer





Pacer – Extending Traffic Model

Figure 4. Standpipe Extension/Flange Orientation

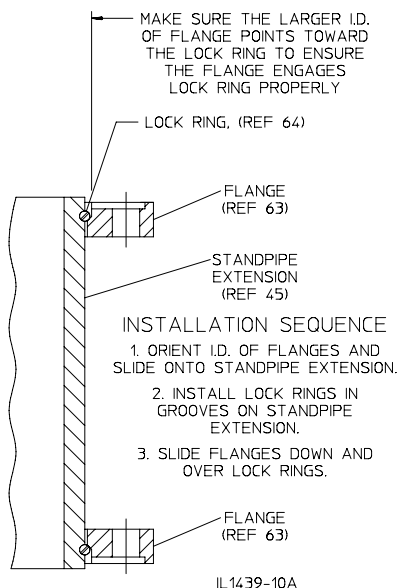


Figure 6. Extension Plate Installation

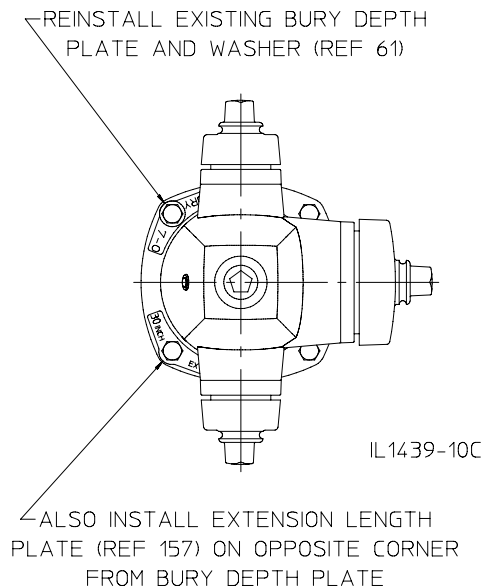


Figure 5. Extension Parts / Existing Parts Orientation

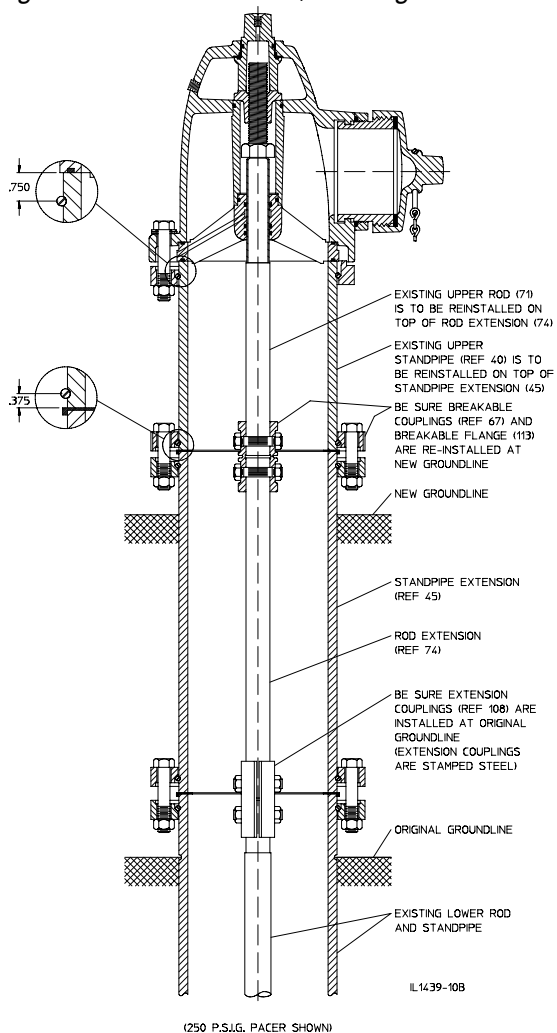
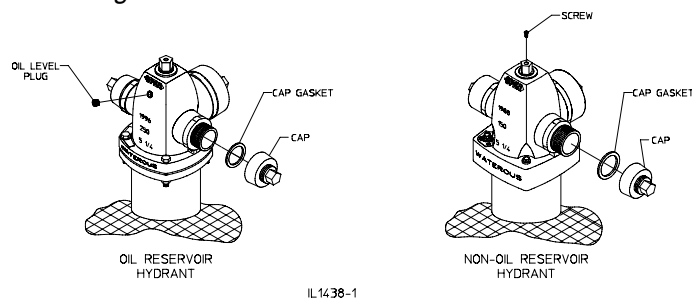


Figure 7. Lubrication Detail



1. Oil Reservoir Hydrants: Remove oil level plug. Add oil to the level of the plug. Use white mineral oil USP Mobil Whiterex 425 or equal.

Non-Oil Reservoir Hydrants: Remove screw from operating nut and add approximately one tablespoon of oil through opening. Replace screw. Use white mineral oil USP Mobil Whiterex 425 or equal.

2. Remove all nozzle caps, clean rust or corrosion from threads of nozzles and caps. Replace cap gaskets if necessary. Apply a light coat of grease to nozzle threads before replacing cap. Use Mystik® FG-2 Food Machinery Grease.

PACER – EXTENDING NON-TRAFFIC MODEL



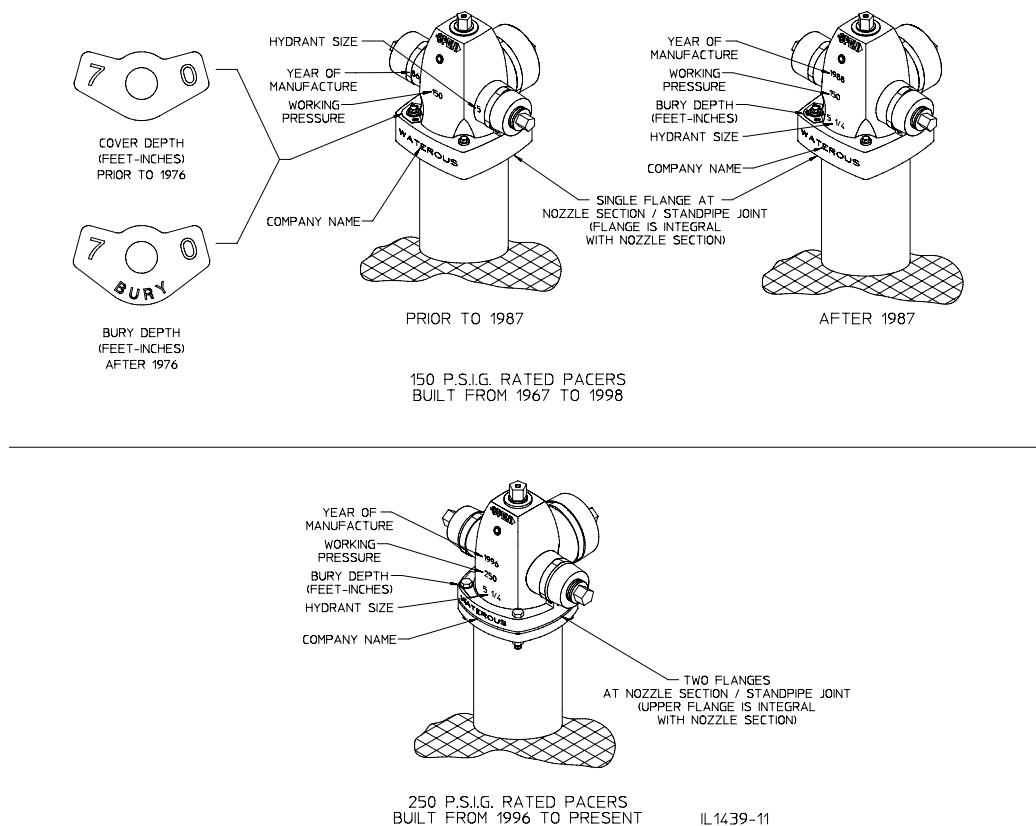
Introduction

This instruction covers the installation of the standpipe and rod extension kit (K563) for Pacer non-Traffic models. Non-Traffic Pacer models are furnished in two main variations:

- 150 p.s.i.g. rated working pressure models W67
- 250 p.s.i.g. rated working pressure models W67-250

The extension kit installation is identical for both variations; however, the disassembly and reassembly varies slightly. Refer to the identification diagram below to identify which variation of Pacer hydrant you have.

Figure 1. Identification Diagram



Important Notes

1. Waterous recommends a new rod corresponding to the extended bury or cover depth be installed in place of a rod extension if the hydrants meet one or more of the following criteria:
 - a. The length of the rod extension required exceeds 4'-0".
 - b. The hydrant has already been extended. Only one rod extension per hydrant is recommended.
 - c. **150 P.S.I.G rated Pacers only:**
The depth of the extended hydrant will exceed 9'-0" bury or 8'-6" cover. Depths of 9'-6" thru 11'-6" bury and 9'-0" thru 11'-0" cover should have a heavy duty (larger diameter) rod installed. Note that 250 p.s.i.g. rated Pacers are supplied with heavy duty rods for all depths from the factory.
2. If extended depth of hydrant will exceed 11'-6" bury or 11'-0" cover, a "bottom extension" should be installed in place of a standpipe and rod extension.
3. Contact Waterous Company for appropriate parts and guidance if any of the above situations exist.



Pacer – Extending Non-Traffic Model

Note: Where grease is specified, use Mystik® FG-2 Food Machinery Grease.

1. Closing the water main valve when installing extensions is usually not necessary. Water pressure will keep the hydrant valve closed.

250 P.S.I.G. Rated Pacers (See Figure 2, Page 2B-41)

- 2a. At the nozzle section, remove bolts (6A), nuts (6C), and allow flange (62B) to slide down the standpipe. Depth plate and washer (61) will come off with bolts.

150 P.S.I.G. Rated Pacers (See Figure 3, Page 2B-41)

- 2b. At the nozzle section, remove bolts (6A), nuts (6C) and clamps (62) from underneath flange of the nozzle section (60). Depth plate and plain washer (61) will come off with bolts.

Note: If clamps (62) should stick underneath the flange of the nozzle section (60), it may be necessary to drive them out.

3. Turn upper operating nut (17B) or weather-shield nut (101) in the opening direction to separate the nozzle section (60) and the support (56). Remove the nozzle section. **Use proper handling techniques to avoid injury.**
4. Remove operating nut (17B or 17) from the nozzle section (60). (On hydrants with weathershield, it is necessary to drive out pin (102) and remove weathershield (101) before upper operating nut can be removed.)

Note: Bushing (89) is cemented in nozzle section (60). Removing it is not necessary unless it is damaged. If replacement is necessary, contact the Waterous Company.

5. Unscrew lower operating nut (17A – two-piece nuts, 17 – one-piece nut), and remove support tube (85).
6. Unscrew hex stop nut (86) from operating rod (28), and remove support (56).

250 P.S.I.G. Rated Pacers (See Figure 2, Page 2B-41)

- 7a. Remove lock ring (64) from existing standpipe (29) and slide off flange (62B). Install new flange (63) on existing standpipe (29) and re-install lock ring (64). Retain flange (62B) for installation to standpipe extension (45) in step 9a. Refer to Figure 5 for proper flange operation.

150 P.S.I.G. Rated Pacers (See Figure 3, Page 2B-41)

- 7b. Remove lock ring (64) from original standpipe (29) and install new flange (63). Re-install lock ring (64). Refer to Figure 6 for proper flange orientation.
8. Install rod extension (75) on existing rod (28): Mark threads on existing rod 1-3/4 inch from the end and thread extension (75) down to that mark. Tighten set screws (76) securely. Refer to Figure 4 on Page 2B-42.

250 P.S.I.G. Rated Pacers (See Figure 2, Page 2B-41)

- 9a. Install flange (62B) on the top of standpipe extension (45) and flange (63) on the bottom of standpipe extension (45). Install lock rings (64) in grooves. Refer to Figure 5 for proper flange orientation. Note that flange 62B has four raised protrusions on one side, flange (63) is flat on both sides.

150 P.S.I.G. Rated Pacers (See Figure 3, Page 2B-41)

- 9b. Install flange (63) on the bottom of standpipe extension (45). Install lock rings (64) in grooves. Refer to Figure 6 for proper flange orientation.
10. Install gasket (92) on existing standpipe with lip pointing down. Install standpipe extension (45) on existing standpipe (29). Install bolts (6D) and nuts (6C) thru flanges (63) and tighten finger tight. Make sure flanges engage lock rings properly and tighten bolts and nuts evenly. Refer to Figure 5 for 250 P.S.I.G. Pacers and Figure 6 for 150 P.S.I.G. Pacers for orientation of standpipe extension.
11. Grease O-ring and gasket grooves in support (56), and install O-rings (59), gaskets (84) and lower tube seal (83). Tape threads of operating rod (28) to protect O-rings. Install support (56) onto operating rod (28), being careful not to damage O-rings on operating rod threads. Remove tape from threads.
12. Install hex stop nut (86), turning it down to end of thread. Snug up with a torque of 30 lb-ft (30 lb at end of 12 in. wrench).
13. Grease O-ring in upper end of support tube (85). Slide tube down over operating rod (28) until it is seated on support (56).
14. Grease threads of operating rod (28) and lower bearing surface of operating nut (17A or 17). Screw lower operating nut onto rod while centering support (56) on the standpipe. Tighten operating nut (17A or 17) to securely clamp support (56) against standpipe extension (45). Be sure support (56) is centered on standpipe extension (45).
15. Grease and install Teflon thrust ring (90) and O-ring (57) in operating nut (17B or 17). If hydrant has a two-piece operating nut, set upper operating nut (17B) on lower operating nut (17A) and engage lugs in slots.

Pacer – Extending Non-Traffic Model

250 P.S.I.G. Rated Pacers (See Figure 2)

- 16a. Carefully lower nozzle section (60) over operating nut (17B or 17) until it seats on support (56). Rotate nozzle section (60) to desired position. Install bolts (6A) and nuts (6C) through flange of nozzle section and flange (62B) and tighten finger tight. Be sure to install depth plate and washers (61) in proper position. Also install extension plate (157) opposite the bury depth plate (see Figure 7 on Page 2B-42). Make sure flange (62B) is seated properly with lock ring (64), and tighten all bolts and nuts evenly. Tighten to 60–70 lb–ft of torque.

150 P.S.I.G. Rated Pacers (See Figure 3)

- 16b. Make sure lock ring (64) is properly installed in standpipe (29). Carefully lower nozzle section (60) over upper operating nut (17B or 17) until it seats on support (56). Rotate nozzle section (60) to desired position. Install clamps (62), bolts (6A) and nuts (6C) in flange of nozzle section and tighten finger tight.

Be sure to install depth plate and washers (61) in proper position. Also install extension plate (157) opposite the bury depth plate (see Figure 7 on Page 2B-42). Make sure all clamps are seated properly up under flange, and tighten all bolts and nuts evenly. Tighten to 60–70 lb–ft of torque.

17. Back off operating nut slightly to release tension on operating rod. Since water pressure will hold valve up against seat, it is not necessary to turn operating nut to a dead stop if the valve and seat are in good condition.

18. Lubricate hydrant as shown in Figure 8 on Page 2B-42.

Note: When a supply of gaskets and O-rings are available, always install new ones when reassembling the hydrant. Clean dirt from O-ring grooves.

Figure 2. Installation Diagram – 250 P.S.I.G. Rated Pacer

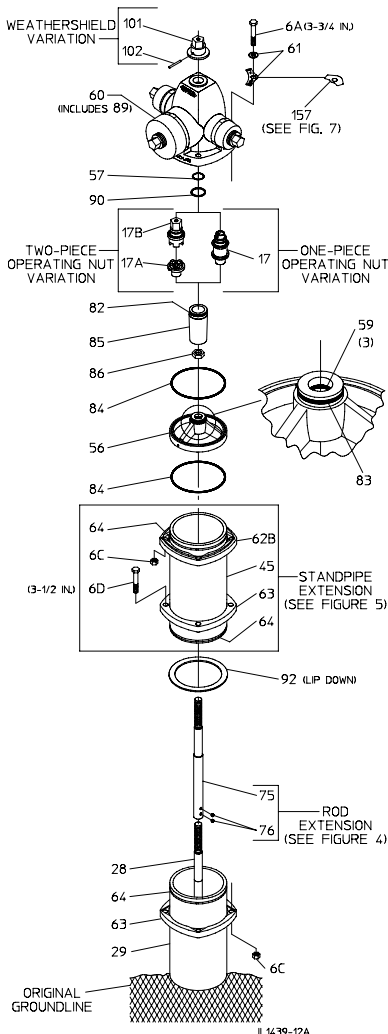
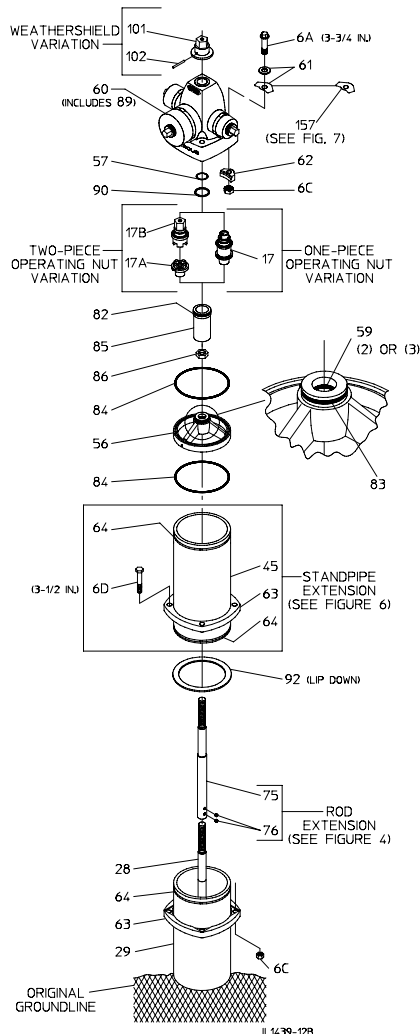


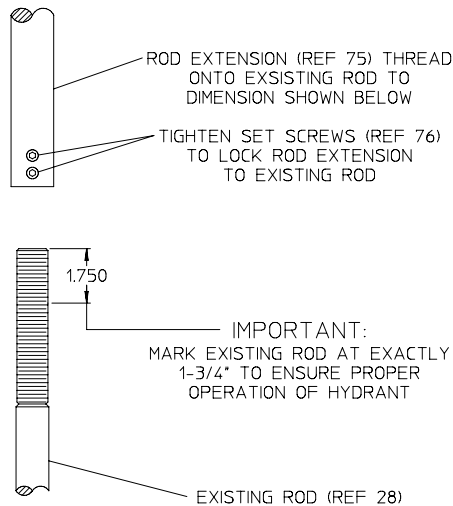
Figure 3. Installation Diagram – 150 P.S.I.G. Rated Pacer





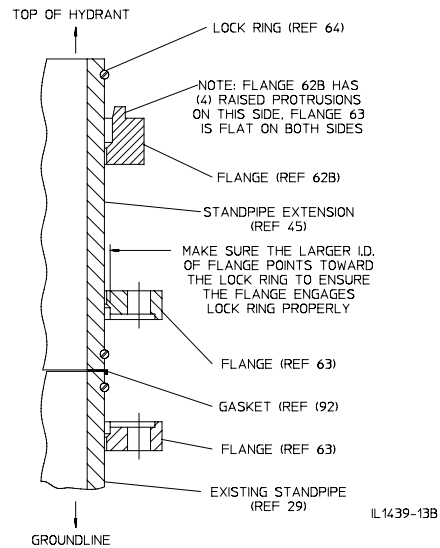
Pacer – Extending Non-Traffic Model

Figure 4. Rod Extension Installation



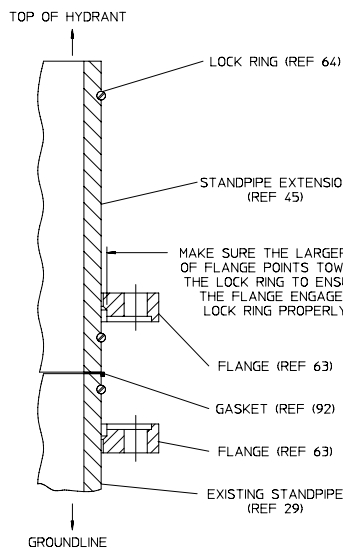
IL 1439-13A

Figure 5. Standpipe / Flange Orientation (250 P.S.I.G.)



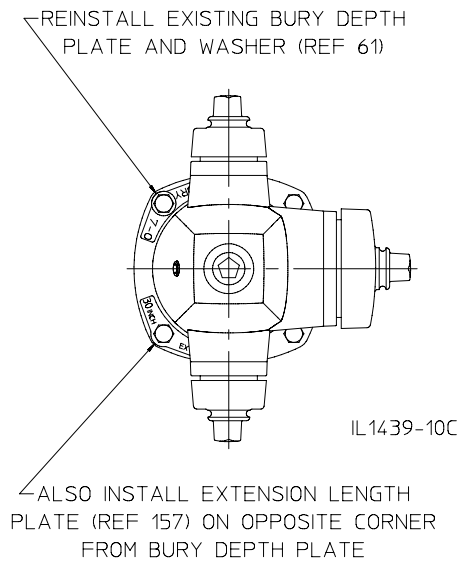
IL 1439-13B

Figure 6. Standpipe / Flange Orientation (150 P.S.I.G.)



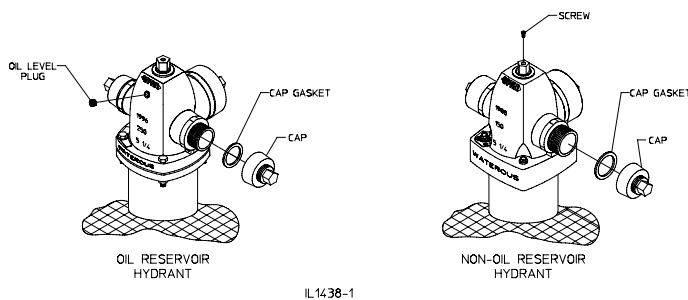
IL 1439-13C

Figure 7. Extension Plate Installation



IL 1439-10C

Figure 8. Lubrication Details



IL 1438-1

1. Oil Reservoir Hydrants: Remove oil level plug. Add oil to the level of the plug. Use white mineral oil USP Mobil Whiterex 425 or equal.

Non-Oil Reservoir Hydrants: Remove screw from operating nut and add approximately one tablespoon of oil through opening. Replace screw. Use white mineral oil USP Mobil Whiterex 425 or equal.

2. Remove all nozzle caps, clean rust or corrosion from threads of nozzles and caps. Replace cap gaskets if necessary. Apply a light coat of grease to nozzle threads before replacing cap. Use Mystik® FG-2 Food Machinery Grease.