

OPERATION AND MAINTENANCE MANUAL

4-1/2" AMERICAN-DARLING® MARK 73-5 FIRE HYDRANT



AMERICAN

FLOW CONTROL

THE RIGHT WAY



INDEX

4-1/2" AMERICAN-DARLING® MARK 73-5 FIRE HYDRANT OPERATION AND MAINTENANCE MANUAL

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Operation

AMERICAN Flow Control recommends you follow the general Inspection and Installation guidelines outlined in AWWA Manual M17 for Installation, Field Testing, and Maintenance of Fire Hydrants and/or as recommended below. The thrust bearing hydrant requires a minimum of torque to operate. **WARNING: Special care should be taken in the installation, inspection and repair of pressure containing devices such as valves and hydrants. FAILURE TO FOLLOW PROPER PRACTICE AND GUIDELINES CAN RESULT IN SERIOUS INJURY OR DEATH. High pressure and water hammer, due to rapid opening or closing of a hydrant or valve, can also cause major damage to the hydrant, valve, water main, fire hose, or other attached equipment.** It is possible to damage the hydrant by forcing it beyond its limits of travel with excess torque; therefore:

1. Check direction of opening as marked on the hydrant cover.
2. To open, turn the operating nut until the main valve is fully open and the travel stop nut limits further opening. **Do not force the hydrant in the opening direction beyond fully-open as indicated by sudden resistance to turning.** If water does not flow when the hydrant is open, it is probably due to a closed valve upstream from the hydrant. Always open the hydrant completely, never only partially. A hydrant that is partially open will allow pressurized flow through the drain valve, which may wash away the soil from the area surrounding the base, or the partially open main valve may trap small stones or other debris between the valve seal and seat.
3. To close, turn the operating nut until the valve stops the flow. **It is not necessary to close this style of hydrant with great force.** Once the flow has stopped, turn the operating nut in the opening

direction about 1/4 turn to take the strain off the operating parts of the hydrant. If the hydrant does not shut off completely, do not attempt to force the hydrant to close. Debris and small stones may be trapped in the valve seat and may be preventing the hydrant from closing. Partially open and close the hydrant several times to help dislodge the debris. If this does not work, safely remove the hydrant operating rod assembly, remove the debris and repair as detailed in subsequent sections of this manual.

4. **WARNING: FAILURE TO RELIEVE PRESSURE CAN RESULT IN THE CAP BLOWING OFF, CAUSING INJURY OR DEATH.** Make sure the auxiliary gate valve in the lateral between the main and the hydrant is closed and that the hydrant is not charged with pressure when removing caps.

Inspection

1. It is recommended that hydrants be inspected twice per year to ensure their satisfactory operation. After each use (especially in cold weather) hydrants should be specifically inspected for drainage.
2. Routine inspection should cover the points outlined in AWWA Manual M17 and include (but not be limited to) the following points:
 - a. External inspection of paint, caps, chains, etc.
 - b. Checking traffic type hydrants for damage to the breakaway feature.
 - c. Using a listening device to check the main valve for leakage.
 - d. Statically testing the hydrant to look for leakage at gaskets, caps, O-rings and drains.
 - e. Verifying the hydrant drains properly.
 - f. Cycling the hydrant from full open to full close.
 - g. Check for routine lubrication needs which includes but may not be limited to loss of lubricant, nozzle caps and operating mechanism.
3. At time of inspection, flush the hydrant to remove any foreign material from the hydrant and the lateral. If necessary, flush the drains by filling the hydrant and then cycling open the main valve two times to force water out of the drains under pressure. If the hydrant is non-draining type, pump water out after flushing.



Maintenance

AMERICAN Flow Control strongly recommends that you follow routine maintenance on fire hydrants as outlined in AWWA Manual M17 for Installation, Field Testing, and Maintenance of Fire Hydrants. The ease of operation and the frequency of repair depends on the condition of the water system and the maintenance given. Dirt, gravel and other foreign material in the hydrant may prevent it from closing or draining properly, which may result in damage to the hydrant main valve. Under most operating conditions, AMERICAN Flow Control recommends semi-annual lubrication and inspection of fire hydrants.

Note: Where grease is specified, use an AMERICAN Flow Control recommended food grade grease.

1. Twice per year, open the hydrant completely and flush for several minutes. Open and close valve to make sure it works properly, and check for leaks.
2. Remove a cap and verify that the hydrant is draining properly. After the main 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.
3. If it is necessary to add lubricant, turn operating nut back from tight closed position until it turns freely, then remove pipe plug in top of operating nut and pump food grade grease into operating nut. **DO NOT OVER PRESSURE LUBRICANT OR OVERFILL HYDRANT WITH LUBRICANT. FAILURE TO FOLLOW THESE INSTRUCTIONS WILL RESULT IN HARD OPERATION OF THE HYDRANT. SHOULD HARD OPERATION OCCUR REFER TO "TROUBLE SHOOTING GUIDE" DETAILED IN THIS MANUAL.**
4. 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.

4-1/2" AMERICAN-DARLING® MARK 73-5 TROUBLESHOOTING GUIDE



WARNING: Special care should be taken in the installation, inspection and repair of pressure containing devices such as valves and hydrants. **FAILURE TO FOLLOW PROPER PRACTICE AND GUIDELINES CAN RESULT IN SERIOUS INJURY OR DEATH.** High pressure and water hammer, due to rapid opening or closing of a hydrant or valve, can also cause major damage to the hydrant, valve, water main, fire hose, or other attached equipment.

Problem	Solution
1. Operating nut turns freely but hydrant does not open. 2. Hydrant will not shut off or ground around hydrant is highly saturated.	1. Inspect rod coupling for breakage and ensure rod pin is properly installed. 2. Close hydrant and remove nozzle cap. Check with listening device to determine if water is passing by main valve. If it is determined that the main valve is leaking, try the following: a. Flush hydrant in fully open position (watch to see if rocks or other foreign objects flush out of the barrel). b. After flushing for several minutes, shut off the 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 flushing does not solve the problem, it would indicate that something is trapped or has cut the main valve rubber. Safely follow the seat removal instructions to replace the valve. Check threads on bronze seat to be sure that it is not damaged. If threads appear worn or bent, replace the bronze seat. d. If replacing the valve does not stop the leakage, bolting at the hydrant shoe may be loose or the base gasket is damaged. The hydrant must be excavated to make the repair.
3. External leakage is noticed around the operating nut.	3. This indicates that O-rings are cut or missing. Replace o-rings as referenced in the disassembly and repair instructions.

4-1/2" AMERICAN-DARLING® MARK 73-5 TROUBLESHOOTING GUIDE

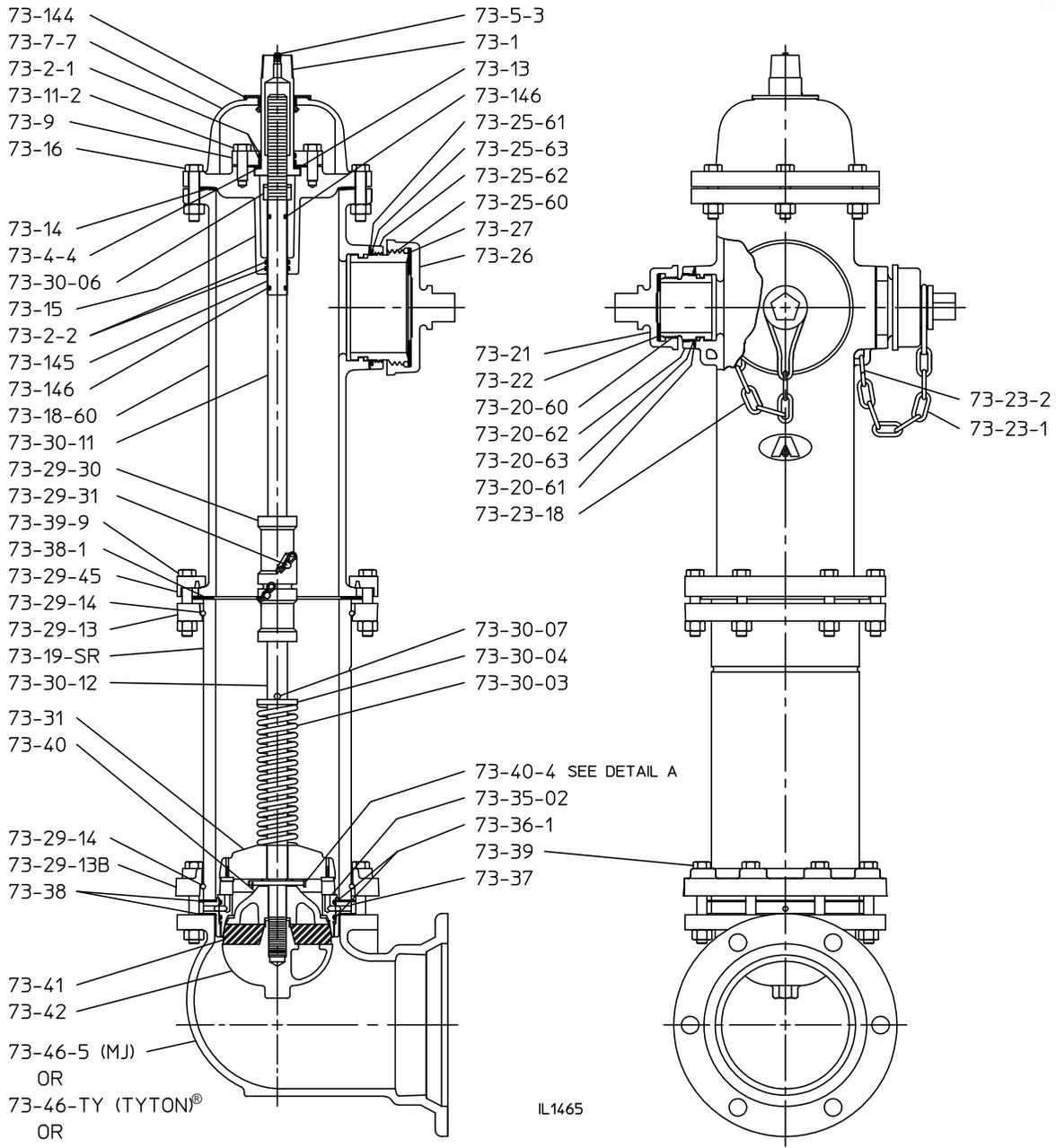


Problem

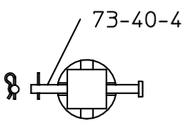
Solution

- | | |
|---|--|
| <p>4. Operating nut is extremely hard to turn.</p> <p>5. Water is dripping around nozzles.</p> <p>6. Hydrant will not drain properly.</p> | <p>4. Try to turn the operating nut. If the nut turns, carefully turn the nut back from a tight closed position until it turns freely. Remove the pipe plug in the top of the operating nut. If necessary, add food grade grease to the operating nut. DO NOT OVERPRESSURE THE LUBRICANT OR OVERFILL THE HYDRANT WITH LUBRICANT. FAILURE TO FOLLOW THESE DIRECTIONS MAY RESULT IN HARD OPERATION OF THE HYDRANT. ALWAYS FULLY OPEN AND CLOSE THE HYDRANT AFTER LUBRICATING. Replace the pipe plug taking care to replace the thread sealant. The hydrant should cycle freely. If this does not solve the problem, remove the operating nut. Verify the hydrant has not been over lubricated and inspect the threads of the operating nut and upper rod. Inspect the thrust washer to ensure it is lubricated and is undamaged. Replace and/or lubricate the thrust washer if necessary. If this does not solve the problem, remove the hydrant seat and flush thoroughly, then reassemble.
Note: Where grease is specified, use an AMERICAN Flow Control recommended food grade grease.</p> <p>5. Close hydrant and remove nozzle cap. Replace cap gasket. Check the nozzle to be sure it is properly installed.</p> <p>6. Check to be sure the water table has not risen too high to allow for drainage. Flush hydrant to be sure drains are clear. Open hydrant slowly several turns while leaving caps firmly in place to ensure hydrant drains are clear. Close hydrant and repeat this procedure. Do this slowly several times. If problem is not corrected, excavate the hydrant to see if concrete or other materials have blocked the drain outlets.</p> |
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4-1/2" AMERICAN-DARLING® MARK 73-5 PARTS LIST

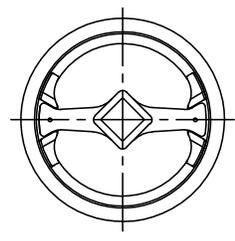


- 73-31
- 73-40
- 73-29-14
- 73-29-13B
- 73-38
- 73-41
- 73-42
- 73-46-5 (MJ)
- OR
- 73-46-TY (TYTON®)
- OR
- 73-46-2 (FLANGED)
- OR
- 73-46-2A (VERTICAL ENTRY)
- OR
- 73-46-PE (MJ PLAIN END)
- OR
- 73-46-AA (ALPHA™)
- OR
- 73-46-AX (ALPHA™ XL)



DETAIL A

TOP VIEW OF CLEVIS PIN & CLIP PIN USED TO SECURE HYDRANT VALVE ASSEMBLY



TOP VIEW OF SEAT AND DRAIN LEVER ASSEMBLY

TYTON® is a registered trademark of United States Pipe and Foundry Co., LLC.
ALPHA™ is a trademark of Romac Industries, Inc. (U.S. Patent 8,894,100)

4-1/2" AMERICAN-DARLING® MARK 73-5 PARTS LIST



Part No.	Qty.	Description	Material
73-1	1	Operating Nut	Bronze
73-2-1	2	Cover O-ring	Buna N
73-2-2	2	Housing O-ring	Buna N
73-4-4	1	Thrust Washer	Nylatron
73-5-3	1	Pipe Plug	Stainless Steel
73-7-7	1	Weather Cover	Gray Iron
73-9	1	Housing Cover	Gray Iron
73-11-2	4	Housing Cover Cap Screw	Plated Steel
73-13	1	Housing Cover Gasket	Fiber
73-14	1	Housing Gasket	Composition Rubber
73-15	1	Housing	Ductile Iron
73-16	6	Housing Bolt and Nut	Plated Steel
73-18-60	1	Upper Barrel	Ductile Iron
73-19-SR	1	Lower Barrel	Ductile Iron
73-20-60	2	Hose Nozzle	Bronze
73-20-61	2	Hose Nozzle O-ring Seal	Buna N
73-20-62	2	Hose Nozzle Retainer	Ductile Iron
73-20-63	2	Hose Nozzle Retainer Washer	Teflon
73-21	2	Hose Cap	See Note 8
73-22	2	Hose Cap Gasket	Rubber
73-23-1	1 Per Nozzle	Hose Cap Chain	Steel
73-23-2	1 Per Nozzle	S Hook	Steel
73-23-18	1 Per Nozzle	Pumper Cap Chain	Steel
73-25-60	1 or 0	Pumper Nozzle	Bronze
73-25-61	1 Per Nozzle	Pumper Nozzle O-ring Seal	Buna N
73-25-62	1 Per Nozzle	Pumper Nozzle Retainer	Ductile Iron
73-25-63	1 Per Nozzle	Pumper Nozzle Retainer Washer	Teflon
73-26	1 Per Nozzle	Pumper Cap	See Note 8
73-27	1 Per Nozzle	Pumper Cap Gasket	Rubber
73-29-13	1	Barrel Flange	Ductile Iron
73-29-13B	1	Base Flange	Ductile Iron
73-29-14	2	Snap Ring	Stainless Steel
73-29-30	1	Rod Coupling	Epoxy Coated Gray Iron
73-29-31	2	Rod Coupling Pin and Clip Pin	Stainless Steel
73-29-45	1	Breakable Flange	Gray Iron
73-30-03	1	Spring	Stainless Steel
73-30-04	1	Spring Plate	Stainless Steel
73-30-06	1	Travel Stop Nut	Bronze
73-30-07	1	Spring Plate Pin	Stainless Steel
73-30-11	1	Upper Rod	Steel
73-30-12	1	Lower Rod	Steel
73-31	1	Drain Lever	Bronze
73-35-02	1	Hydrant Seat	Bronze
73-36-1	2	Hydrant Seat O-ring	Buna N

4-1/2" AMERICAN-DARLING® MARK 73-5 PARTS LIST



Part No.	Qty.	Description	Material
73-37	1	Drain Ring	Bronze
73-38	2	Drain Ring Gasket	Composition Rubber
73-38-1	1	Barrel Gasket	Composition Rubber
73-39	8	Base Bolt and Nut	Stainless Steel
73-39-9	8	Barrel Bolt and Nut	Plated Steel
73-40	1	Valve Top	Ductile Iron
73-40-4	1	Valve Top Clevis and Clip Pin	Stainless Steel
73-41	1	Hydrant Valve	EPDM Rubber
73-42	1	Valve Bottom	Ductile Iron
73-46-2	1	Flanged Base	Ductile Iron
73-46-2A	1	Vertical Entry Base	Ductile Iron
73-46-5	1	Mechanical Joint Base	Ductile Iron
73-46-PE	1	Mechanical Joint Plain End Base	Ductile Iron
73-46-TY	1	TYTON® Base	Ductile Iron
73-46-6AA	1	Alpha™ Restraint Joint Base	Ductile Iron
73-46-6AX	1	Alpha™ XL Restraint Joint Base	Ductile Iron
73-144	1	Weather Shield	Rubber
73-145	1	Rod Sleeve	Bronze
73-146	2	Sleeve O-ring	Buna N
73-36-1	2	Hydrant Seat O-ring	Buna N

Notes

1. Size and shape of nut on operating nut and cap, threading on nozzles and caps, and the direction of opening made to specifications.
2. Cap chains are not furnished unless specified.
3. Working pressure 250 psig. Factory test pressure 500 psig.
4. Hydrant meets or exceeds the ANSI/AWWA C502 standard.
5. Upper barrel can be rotated 360 degrees.
6. UL Listed and Approved by FM Approvals at 250 psig in allowable configurations.
7. Certified to NSF/ANSI Standard 61-G.
8. National Standard and other common cap configurations are constructed of ductile iron. Other offerings may be constructed of gray cast iron.
9. Nominal turns to open is 19 1/2.
10. TYTON® is a registered trademark of United States Pipe and Foundry Co., LLC.
11. ALPHA™ is a trademark of Romac Industries, Inc. (U.S. Patent 8,894,100)

Spare Parts

Spare parts shall include the following:

O-ring for housing, O-ring for housing cover, O-ring for nozzles, barrel flange gasket, base flange gasket, main valve seat gasket or O-ring, hydrant valve and cap gaskets.

For traffic model hydrants, also include traffic repair kits.

4-1/2" AMERICAN-DARLING® MARK 73-5 REPAIR INSTRUCTIONS

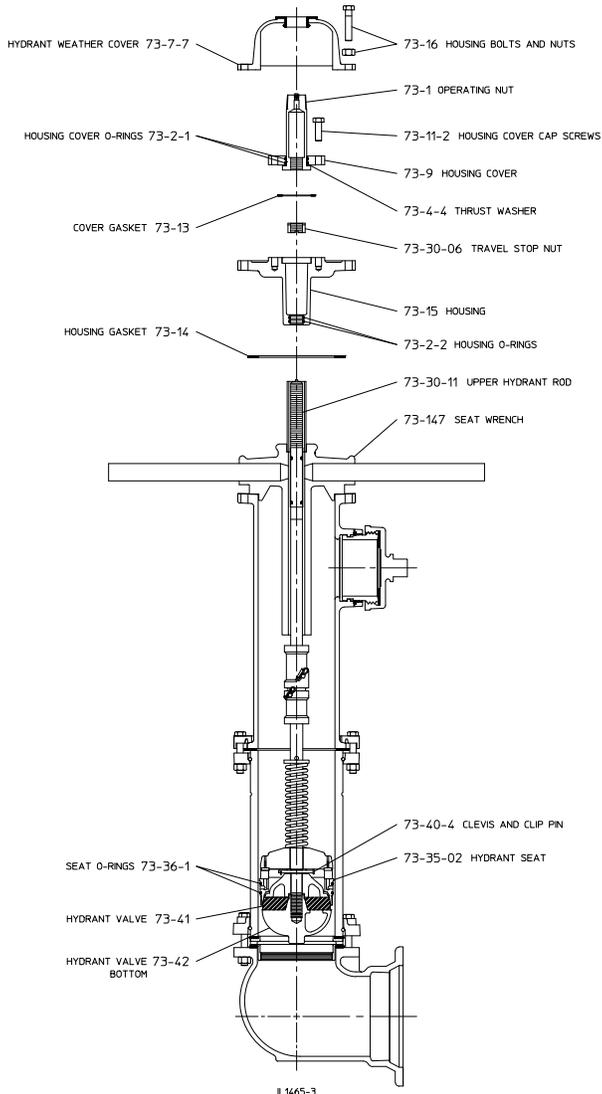


Disassembling the Hydrant

WARNING: Special care should be taken in the installation, inspection and repair of pressure containing devices such as valves and hydrants. **FAILURE TO FOLLOW PROPER PRACTICE AND GUIDELINES CAN RESULT IN SERIOUS INJURY OR DEATH.** High pressure and water hammer, due to rapid opening or closing of a hydrant or valve, can also cause major damage to the hydrant, valve, water main, fire hose, or other attached equipment.

Removing Internal Parts

One person with hand tools and a lightweight seat wrench can quickly remove all the working parts, including hydrant valve, drain lever and hydrant seat. To repair, it is not necessary to excavate American-Darling hydrants; merely remove the internal parts.



Directions for Removing Internal Parts of 4-1/2" American-Darling Mark 73-5 Hydrants

1. **Shut off water line leading to hydrant making sure the hydrant is not under pressure. FAILURE TO FOLLOW PROPER PRACTICE AND GUIDELINES CAN RESULT IN SERIOUS INJURY OR DEATH.**
2. Partially open hydrant valve to relieve trapped pressure.
3. Standing to the side of the hydrant and away from the direction of the hydrant cap(s), loosen one of the hose caps to relieve any pressure that may be present in the hydrant barrel. Close hydrant valve. From full open to full close takes approximately 17 1/2 turns.
4. Remove hydrant weather cover (73-7-7) with weather shield by removing two bolts and nuts (73-16).
5. Remove the four housing cover cap screws (73-11-2) on housing cover (73-9).
6. Unscrew and remove operating nut (73-1) from upper hydrant rod (73-30-11) together with housing cover (73-9) and thrust washer (73-4-4).
7. Use top of seat wrench to unscrew and remove travel stop nut (73-30-06).
8. Remove remaining housing bolts (73-16) then lift out housing (73-15). Inspect O-rings and replace if necessary. Special care must be taken to avoid damaging O-rings (73-2-2).
9. Place seat wrench over upper hydrant rod (73-30-11) and turn to the left (counterclockwise) to unscrew bronze hydrant seat (73-35-02) and lift out hydrant rod with completely assembled internal working parts attached, including hydrant seat, hydrant valve, drain lever and seat O-rings.

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.

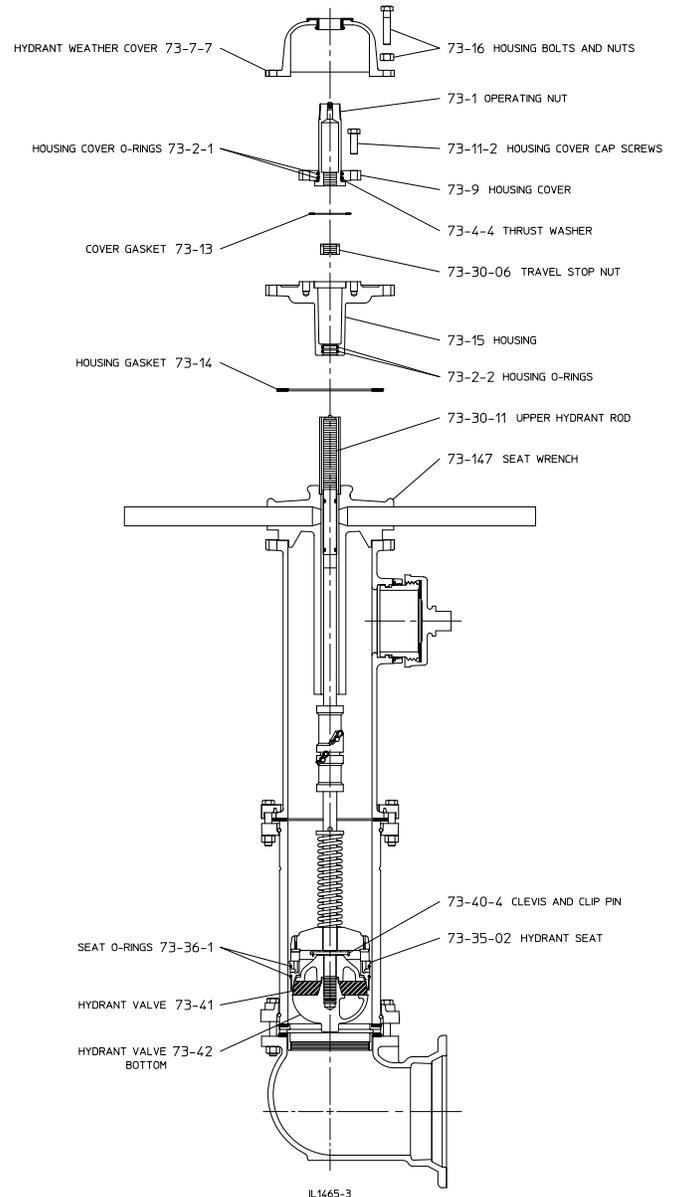
4-1/2" AMERICAN-DARLING® MARK 73-5 REPAIR INSTRUCTIONS



Reassembling the Hydrant

WARNING: Special care should be taken in the installation, inspection and repair of pressure containing devices such as valves and hydrants. **FAILURE TO FOLLOW PROPER PRACTICE AND GUIDELINES CAN RESULT IN SERIOUS INJURY OR DEATH.** High pressure and water hammer, due to rapid opening or closing of a hydrant or valve, can also cause major damage to the hydrant, valve, water main, fire hose, or other attached equipment.

1. When the hydrant valve is replaced, pin the valve ball assembly in place with the clevis and clip pin (73-40-4). Tighten lower valve bottom (73-42) to 145 ft-lbs. of torque. Advance slot in the valve top (73-40) to next pin location.
2. Thread the valve assembly (parts 73-40, 73-41, 73-42) to the lower hydrant rod. Grease the seat O-rings (73-36-1) and lower the parts through the hydrant barrel.
3. When the assembly has made contact with the drain ring (73-37), push the assembly straight down. To avoid cross threading, turn the seat wrench counterclockwise until an ajar is felt. This ajar indicates that the thread starts are properly aligned.
4. Turn the seat wrench clockwise approximately seven turns until it is tight. Pull upward on the rod to ensure it is securely fastened to the drain ring (73-37). Replace the housing gasket (73-14).
5. Grease the threads on the upper hydrant rod (73-30-11) and the O-rings (73-2-2) in the housing.
6. Slip the housing (73-15) over the rod. Note: Special care should be taken to avoid damaging housing O-rings. Thread the travel stop nut (73-30-06) onto the upper rod until contact is made with the brass rod sleeve. Care should be taken to not over tighten the travel stop nut or damage can occur to the sleeve.
7. Put the cover gasket (73-13) in place and then thread the bronze operating nut (73-1) onto the rod.
8. Bolt up the housing (73-15) using approximately 60 ft-lbs of torque.
9. Tighten the operating nut with the operating wrench and put the cover cap screws (73-11-2) in place. Then replace the weather cover (73-7-7) and bolt it up properly using approximately 60 ft-lbs of torque.
10. Carefully pressurize the hydrant and check for visual leaks.



Note: Where grease is specified, use an AMERICAN Flow Control recommended food grade grease.

4-1/2" AMERICAN-DARLING® MARK 73-5 TRAFFIC DAMAGE REPAIR



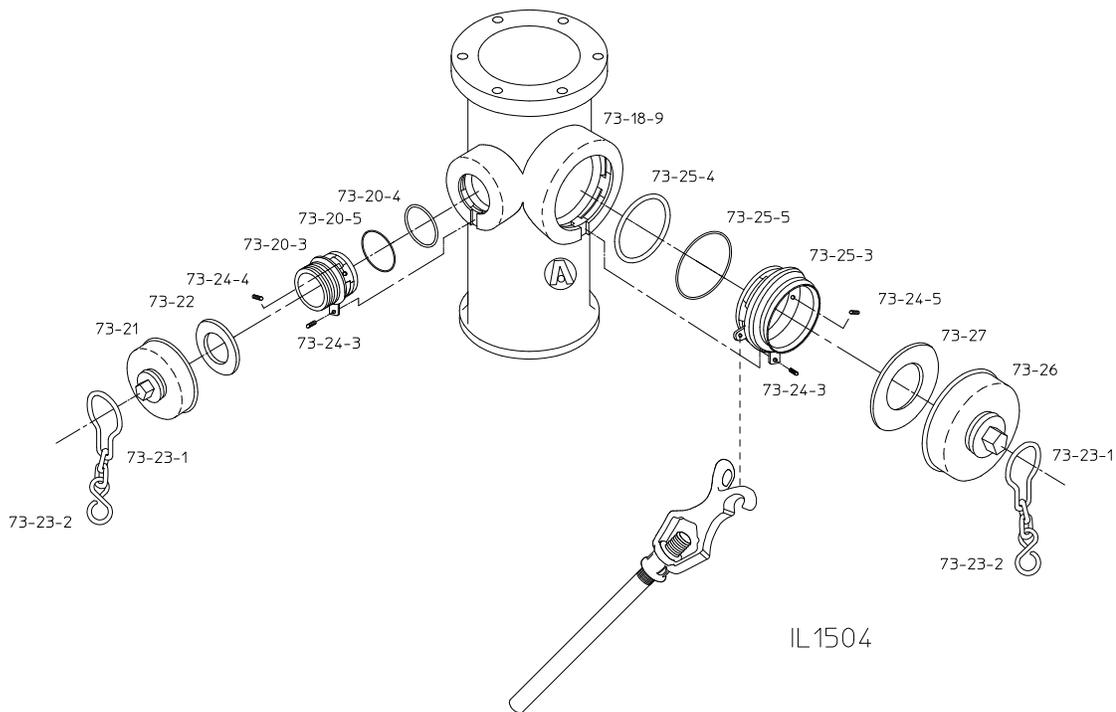
WARNING: Special care should be taken in the installation, inspection and repair of pressure containing devices such as valves and hydrants. FAILURE TO FOLLOW PROPER PRACTICE AND GUIDELINES CAN RESULT IN SERIOUS INJURY OR DEATH. High pressure and water hammer, due to rapid opening or closing of a hydrant or valve, can also cause major damage to the hydrant, valve, water main, fire hose, or other attached equipment.

Should a hydrant be struck by a vehicle such that the upper barrel is separated/broken from the lower barrel, the following procedure should be followed to reassemble the hydrant and make it operational. (A traffic damage repair kit for the specific **4-1/2" American-Darling Mark 73** hydrant is required to perform this procedure.)

1. Although it is possible to repair break features of the hydrant under pressure, the extent of a traffic impact may be unknown. It is considered safe practice to close the auxiliary valve ahead of the hydrant, or use another means to cut off flow and pressure to the hydrant.
2. Inspect the upper barrel (73-18-60) to determine if any of the components are fractured. Traffic impact usually results in a fractured traffic flange (73-29-45), broken or bent flange bolts (73-39-9), a fractured rod coupling (73-29-30) and damage to the gasket between the upper and lower barrels (73-38-1). Should cracking or fracture of any component occur, it should be replaced.
3. The operating nut (73-1) should be rotated to verify that it turns smoothly and easily and that the hydrant rod is centered in the barrel. (Should there be any binding or difficulty in turning the operating nut, the upper barrel should be disassembled and inspected for damaged parts.)
4. Remove the broken coupling (73-29-30) and verify that the upper hydrant rod (73-30-11) is not bent or damaged.
5. Inspect the lower barrel (73-19-SR) and clean any dirt or debris from the gasket seating surface.
6. Inspect the lower barrel flange (73-29-13) to determine that it will receive the new bolts contained in the traffic damage repair kit.
7. Turn the operating nut to place the hydrant in the full open position; this will extend the upper hydrant rod and ease the replacement of the rod coupling (73-29-30). Remove the broken rod coupling segment from the lower hydrant rod and verify that the rod end will receive the new coupling.
8. Orient the new rod coupling such that the end with the word "TOP" is placed on the upper hydrant rod such that the hole in the coupling aligns with the half hole on the hydrant rod. Lock coupling in place with stainless steel coupling pin (73-29-31) and clip pin.
9. Lift the upper barrel assembly and position it over the lower barrel while aligning the hydrant rod coupling on the upper hydrant rod with the lower hydrant rod such that the hole in the coupling aligns with the half hole on the lower hydrant rod. Slide the coupling over the lower valve rod and insert coupling pin and clip pin. Lift upper barrel assembly to ensure upper and lower rods are connected to coupling.
10. Turn operating nut in the closing direction which will lower the upper barrel onto the lower barrel. Rotate the hydrant to position the hose and pumper nozzles in the desired orientation to the curb. Be careful to position the barrel gasket (73-38-1) to achieve full coverage of the end faces of the upper and lower barrels. Install new traffic flanges (73-29-45). (Note: While lowering the upper section onto the lower section, a pinch point exists. Keep fingers clear.)
11. After nuts have been started on all bolts, tighten the flange bolts in an alternating pattern to a torque value of between 55 and 60 ft-lbs.
12. Once the hydrant has been reassembled, it is essential that it be operated to determine that it is fully functional via the following procedure.
13. Open the auxiliary or secondary gate valve in the lateral to allow water pressure to the hydrant.
14. The hose and pumper caps should be tightened and the operating nut turned in the open direction. After cracking the valve seat open, the operating nut should rotate freely without binding.

Traffic Damage Repair Kit Parts		
73-29-31	2	Rod Coupling and Clip Pin
73-29-30	1	Breakable Rod Coupling
73-29-45	2	Traffic Flange
73-38-1	1	Barrel Gasket
73-39-9	8	Barrel Bolts and Nuts

4-1/2" AMERICAN-DARLING® MARK 73 AMLOK NOZZLE REPLACEMENT (FOR HYDRANTS BUILT PRIOR TO 2006)



Amlok Nozzle Replacement

WARNING: POTENTIAL HYDRANT CAP HAZARD. FAILURE TO RELIEVE PRESSURE CAN RESULT IN THE CAP BLOWING OFF, CAUSING SERIOUS INJURY OR DEATH. Make sure the auxiliary gate valve in the lateral between the main and the hydrant is closed and that the hydrant is not charged with pressure when removing caps.

Step 1

Remove the nozzle cap. Remove the 5/16" internal set screw (73-24-4 or 73-24-5) with a 5/32" hex head allen wrench. Unscrew the 5/16" external slotted screw (73-24-3) out of the lug on the nozzle.

Step 2

Use a universal spanner wrench or AMERICAN Flow Control nozzle wrench to rotate nozzle 1/8 turn clockwise. The nozzle can now be pulled from the hydrant barrel.

Step 3

Remove O-ring gasket from the nozzle boss. Insert new O-ring and lubricate with food grade grease. Place the nozzle spacer O-ring (73-20-5) or (73-25-5) on the nozzle directly behind the nozzle collar. Place a small amount of lubricant on the plain end of the new nozzle.

Note: Where grease is specified, use an AMERICAN Flow Control recommended food grade grease.

Step 4

Insert the new nozzle into the hydrant barrel with the tapped lug at the 7:30 position. Push the nozzle home and rotate counterclockwise until the nozzle stops.

Step 5

Insert the 5/16" slotted nozzle set screw (73-24-3) into the tapped lug on the nozzle. Tighten the set screw into the slot on the hydrant barrel to remove any play in the nozzle. The top of the set screw should be flush with the surface of the nozzle lug.

Step 6

Start internal set screw (73-24-4) or (73-24-5) into the threaded hole inside the nozzle. Apply Loctite Thread Sealant #545 or equivalent to the external threads of the set screw. Continue to turn the set screw into the threaded hole with a 5/32" hex head allen wrench until it stops. DO NOT TIGHTEN. Replace the nozzle cap and hydrostatically test the hydrant.

4-1/2" AMERICAN-DARLING® MARK 73-5 NOZZLE REPLACEMENT MECHANICALLY ATTACHED PUMPER NOZZLE (FOR HYDRANTS BUILT BEGINNING IN 2006)



WARNING: POTENTIAL HYDRANT CAP HAZARD. FAILURE TO RELIEVE PRESSURE CAN RESULT IN THE CAP BLOWING OFF, CAUSING SERIOUS INJURY OR DEATH. Make sure the auxiliary gate valve in the lateral between the main and the hydrant is closed and that the hydrant is not charged with pressure when removing caps.

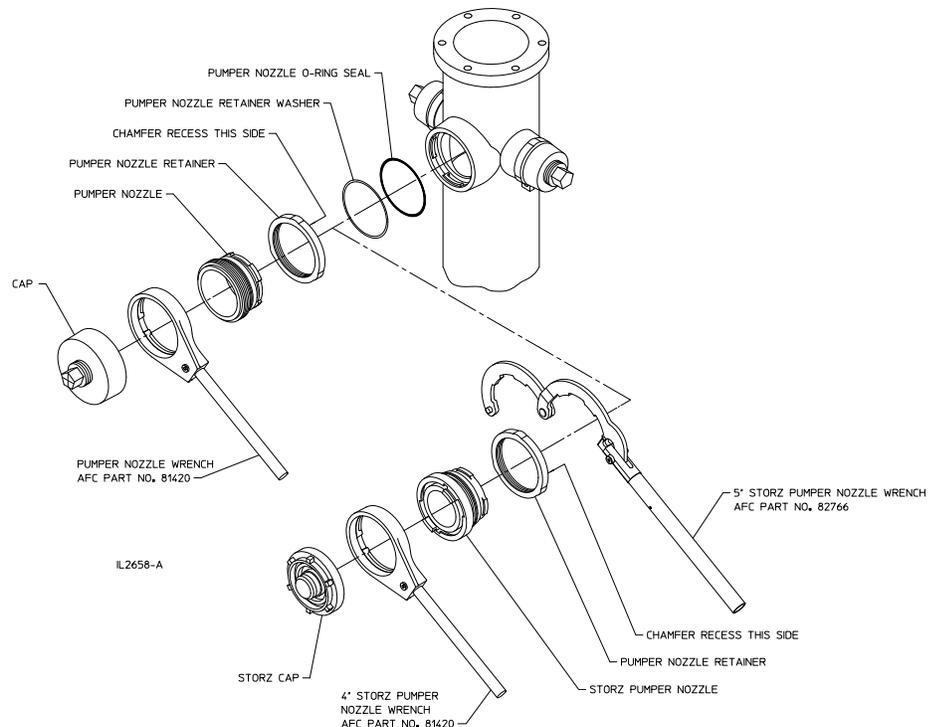
Removal

1. Remove cap.
2. Place wrench on the retainer so it engages the rounded protrusions and unthread from nozzle.
Note: Removal of the 4" and 5" Storz hydrant nozzle requires the use of the hinged pumper nozzle retainer wrench (AMERICAN Flow Control Part No. 82766).
3. Rotate nozzle counterclockwise until the four lugs on the nozzle disengage the recesses in the nozzle section socket which will allow the nozzle to be removed.

Installation

1. Thread retainer onto the retainer threads of the pumper nozzle.
 2. Place washer over nozzle starting from the end with the four lugs and into the chamfer recess in the retainer.
 3. Grease O-ring and place it over nozzle starting from the end with the four lugs and against the washer. Insert the nozzle/retainer/washer/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.
 6. Place wrench on the retainer so it engages the rounded protrusions, tighten firmly.
 7. Note: Installation of the 5" Storz hydrant nozzle requires the use of the hinged pumper nozzle retainer wrench (AMERICAN Flow Control Part No. 82766).
 8. 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. Cap all nozzles and open the hydrant valve, check the area around the repaired nozzle for leaks.
- NOTE: Where grease is specified, use an AMERICAN Flow Control recommended food grade grease.**

Mechanically Attached Pumper Nozzle



4-1/2" AMERICAN-DARLING® MARK 73-5 NOZZLE REPLACEMENT MECHANICALLY ATTACHED 2-1/2" HOSE NOZZLE (FOR HYDRANTS BUILT BEGINNING IN 2006)



WARNING: POTENTIAL HYDRANT CAP HAZARD. FAILURE TO RELIEVE PRESSURE CAN RESULT IN THE CAP BLOWING OFF, CAUSING SERIOUS INJURY OR DEATH. Make sure the auxiliary gate valve in the lateral between the main and the hydrant is closed and that the hydrant is not charged with pressure when removing caps.

Removal

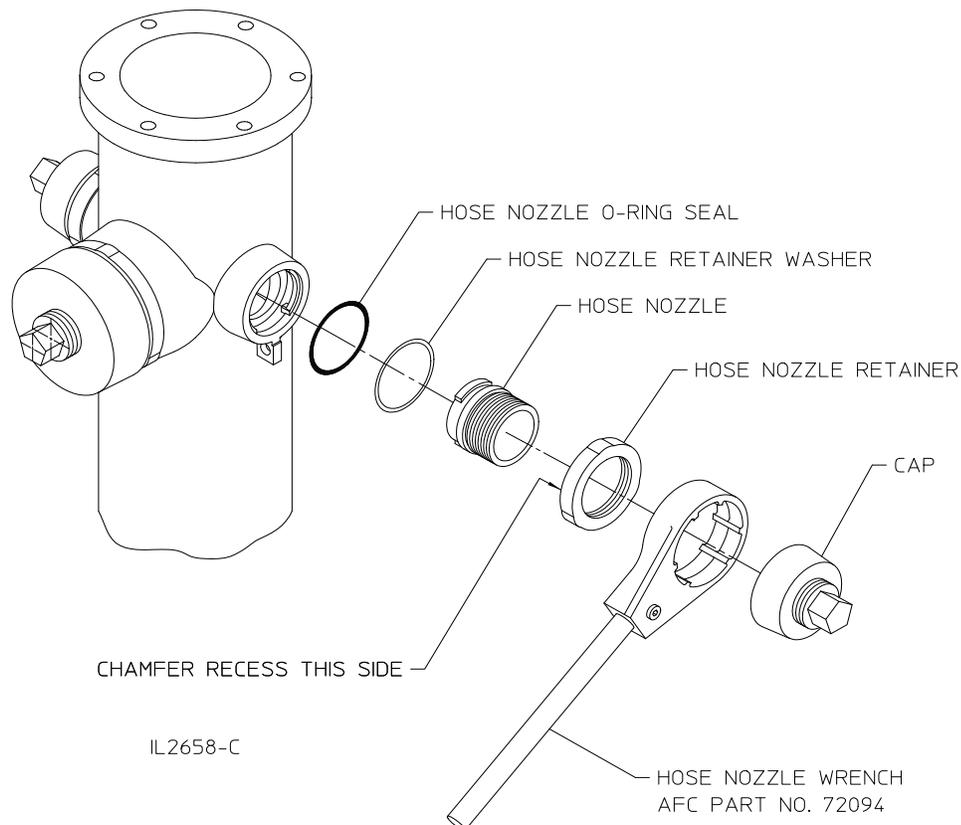
1. Remove cap.
2. Place wrench on the retainer so it engages the rounded protrusions and unthread from nozzle.
3. Rotate nozzle counterclockwise until the two lugs on the nozzle disengage the recesses in the nozzle section socket, which will allow the nozzle to be removed.

Installation

1. Thread retainer onto the retainer threads of the hose nozzle. **NOTE:** In cases where hose nozzle threads having a larger diameter than the retainer, the retainer will need to be assembled from the lug side only.
2. Place washer over nozzle starting from the end with the two lugs and into the chamfer recess in the retainer.
3. Grease O-ring and place it over nozzle starting from the end with the two lugs and against the washer.
4. Insert the nozzle /retainer/washer/O-ring subassembly into the socket in the nozzle section. Rotate the subassembly clockwise until it stops with the lugs on the nozzle fully engaged in the anti-rotation recesses in the socket.
5. Hand tighten the retainer to press O-ring against the face of the socket.
6. Place Hose Nozzle Wrench on Retainer so it engages the rounded protrusions, and tighten firmly. Apply no more than 190 ft-lbs. of torque.
7. 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 an AMERICAN Flow Control recommended food grade grease.

Mechanically Attached Hose Nozzle



4-1/2" AMERICAN-DARLING® MARK 73-5 EXTENSION INSTRUCTIONS



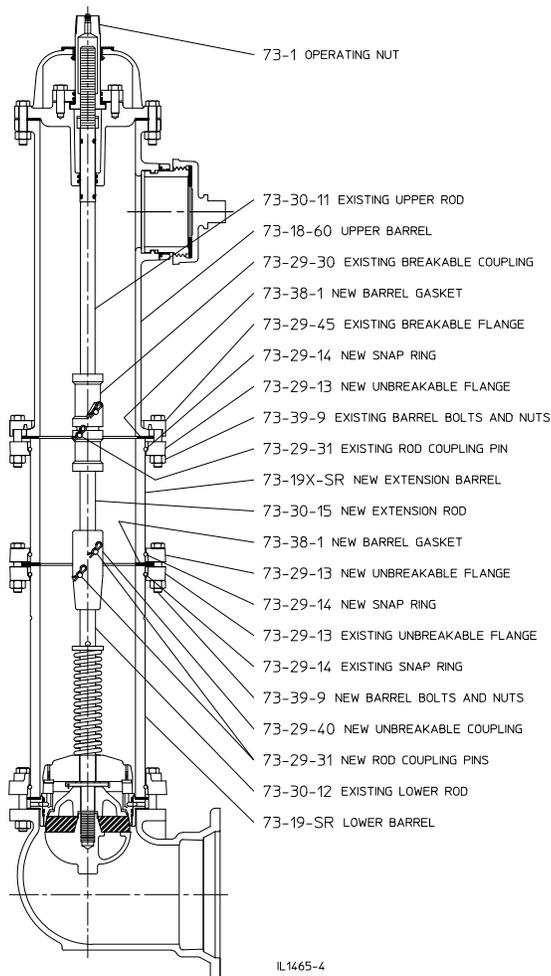
Procedure

The 4-1/2" American-Darling **Mark 73-5** hydrant is extended at the barrel flange above the ground line, eliminating the need for excavation.

Parts Required for Hydrant Extension

73-19X-SR	1	Extension Barrel*
73-29-13	2	Unbreakable Flanges
73-29-14	2	Snap Rings
73-29-31	2	Rod Coupling Pins
73-29-40	1	Unbreakable Rod Coupling
73-30-15	1	Extension Rod
73-38-1	2	Barrel Gaskets
73-39-9	8	Barrel Bolts and Nuts

*Extension barrels and rods are available in increments of 6 in., starting at 6 in. long.



NOTE: The use of extension lengths made by more than one extension kit is not recommended. When combined extension kit and existing trench depth exceeds 9 ft, replace existing lower rod with appropriate length lower rod instead of using rod extension. When combined length exceeds 12 ft rod guides are recommended for lower rod.

1. Close hydrant valve. It is considered safe practice to close the auxiliary valve ahead of the hydrant, or use another means to cut off flow and pressure to the hydrant. Always standing to the side of the hydrant and away from the direction of the hydrant caps, loosen one of the hose caps to relieve any pressure that may be present in the hydrant barrel. **WARNING: FAILURE TO RELIEVE PRESSURE CAN RESULT IN THE CAP BLOWING OFF, CAUSING SERIOUS INJURY OR DEATH.**
2. Remove existing barrel bolts and nuts (73-39-9).
3. Remove existing traffic barrel flange halves (73-29-45).
4. Raise upper barrel (73-18-60) from lower barrel (73-19-SR) by turning operating nut (73-1) in the opening direction and lifting the upper barrel at the same time to prevent the hydrant valve from opening.
5. Raise the upper barrel until there is sufficient separation from the lower barrel to permit removing of the lower rod coupling pin (73-29-31) and clip pin. **Block upper barrel in this position to ensure protection while removing the coupling pins.**
6. Safely remove lower rod coupling pin and clip pin. Lift and remove upper barrel assembly. **Use proper lifting techniques to avoid injury.**
7. Assemble new unbreakable rod coupling (73-29-40) to one end of the new extension rod (73-30-15) in position as shown. Insert a new coupling pin (73-29-31) and clip pin. Assemble other end of new unbreakable rod coupling to existing lower rod (73-30-12) using a new coupling pin (73-29-31) and clip pin.
8. Remove old gasket and place new barrel gasket (73-38-1) on lower barrel.
9. Place assembly on lower barrel making sure gasket and hydrant barrel inside diameters are aligned.
10. Assemble new barrel bolts and nuts (73-39-9). Torque in an alternating pattern to 80 ft-lbs.
11. Place new barrel gasket (73-38-1) on extension barrel. Lift upper assembly and attach existing breakable rod coupling (73-29-30) to new extension rod (73-30-15). **Use proper lifting techniques to avoid injury.**
12. **Block the upper barrel assembly as in Step 5** and insert a new coupling pin (73-29-31) and clip pin in the existing breakable rod coupling (73-29-30).
13. Lower upper barrel assembly to the extension barrel by turning operating nut in the closing direction, making sure gasket remains centered. Lift barrel flange and assemble breakable flange halves by using existing barrel bolts and nuts (73-39-9). Torque in an alternating pattern to 55-60 ft-lbs. Important: **Make sure gap between barrel flange (73-29-45) and new barrel flange (73-29-13) is equal around circumference of flanges.**
14. Safely shell test hydrant for joint tightness.



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