

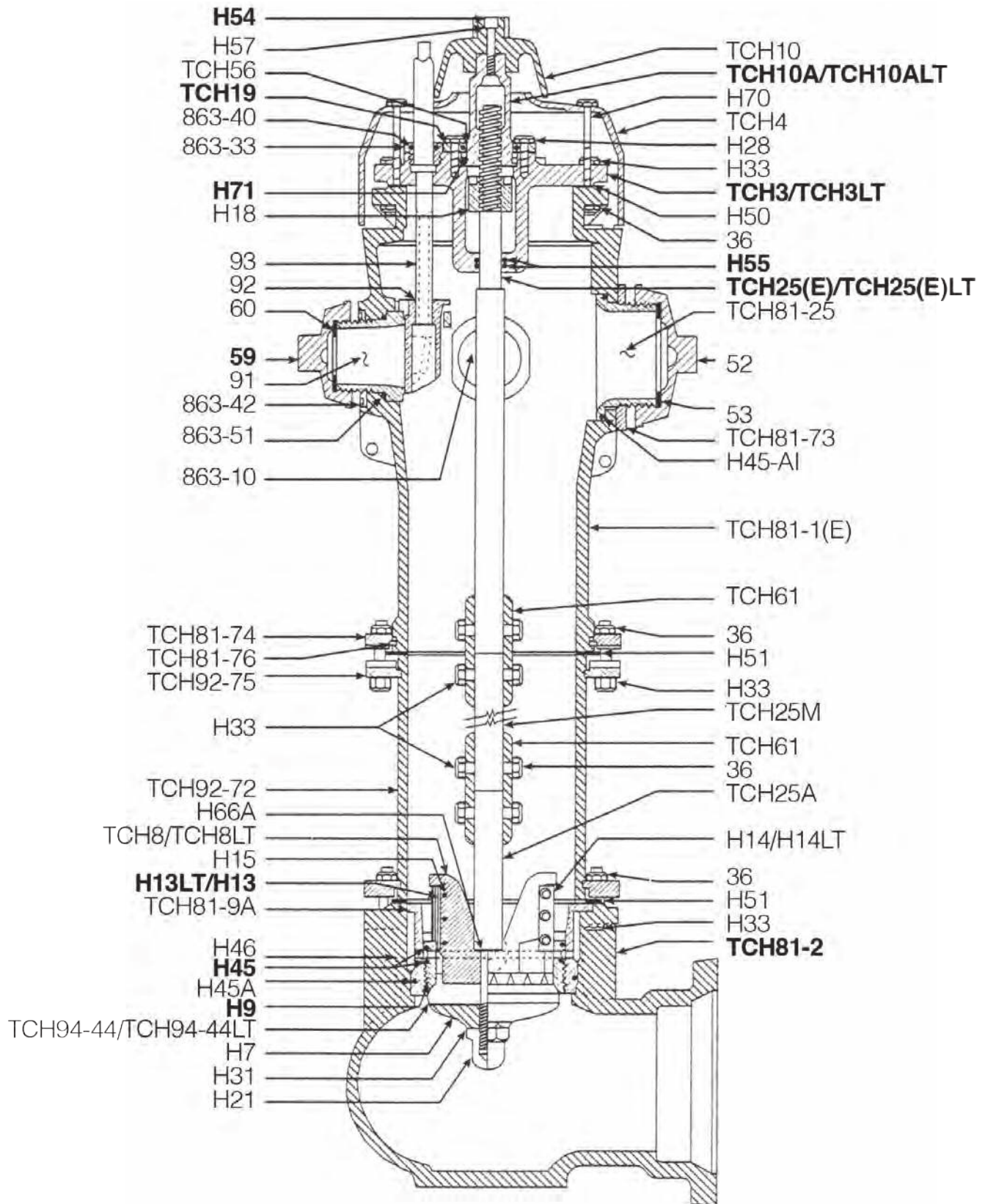


TERMINAL CITY IRON WORKS LTD.



MAINTENANCE MANUAL

C71P/LT Compression Fire Hydrant



PART NO	QUAN	NAME	MATERIAL
TCH81-1	1	Barrel	Cast Iron
TCH81-1E	1	Barrel (Extended Alt. to TCH81-1)	Cast Iron
TCH81-2	1	Elbow	Cast Iron
TCH3/TCH3LT	1	"0" Ring Seal Plate	Cast Iron
TCH4	1	Bonnet	Cast Iron
H7	1	Valve Bottom Plate	Cast Iron
TCH8/TCH8LT	1	Valve Top Plate	Nodular Iron
H9	1	Vale Seat Ring	Bronze
TCH81-9A	1	Subseat	Bronze
863-10	2	2.5" 1D Outlet	Bronze
TCH10	1	Operating Nut	Cast Iron
TCH10A/ TCH10ALT	1	Revolving Nut	Bronze
H13/H13LT	2	Drain Valve Face	Plasterized Rubber
H14/H14LT	2	Guide Plate	Brass
H15	6/8	Drain Valve Screw (LT Requires 8)	Stainless Steel
H18	1	Travel Stop Nut	Bronze
TCH19	1	Hold Down Plate	Cast Iron
H21	1	Valve Rod Cap Nut	Cast Iron
TCH81-25	1	4" 1D Pumper Outlet	Bronze
TCH25	1	Valve Rod Upper Section	Atlas Type 416 SS
TCH25E	1	Valve Rod Upper Section for TCH81-E Barrel	Atlas Type 416 SS
TCH25A	1	Valve Rod Lower Section	Hot Rolled Mild Steel
TCH25M	1	Valve Rod Middle Section	Hot Rolled Mild Steel
H28	4	Hold Down Plate Capscrew	Steel
H31	1	Valve Rod Bottom Gasket	Composition
H33	28	1/2" x 2 3/4" Hex Bolt	Grade 5 Steel
863-33	1	Independent "0" Ring Stuffing Box O Ring	Bronze
36	28	1/2" Heavy Hex Head Nut	Grade 5
863-40	2	Independent Stuffing Box "0" Ring	Buna N
863-41	2	2.5" 1D Outlet "0" Ring	Buna N
863-42	2	2.5" 1D Outlet Lock Ring	Ductile Iron
TCH94-44/ TCH94-44LT	1	Valve	Urethane / Rubber

PART NO	QUAN	NAME	MATERIAL
H45	2	Valve Seat "0" Ring	Buna N
H45A	1	Subseat "0" Ring	Buna N
H45AI	1	Pumper Outlet "0" Ring	Buna N
H46	2	Drain Hole Liner	Polyethylene
H50	1	Top Flange Gasket	CBS
H51	2	Extension and Elbow Gasket	CBS
52	1	Pumper Outlet Cap	Cast Iron
53	2	Pumper Outlet Cap Gasket	CBS
H54	1	Operating Nut and Lub Capscrew	Grade 5
H55	2	"0" Ring Seal Plate "0" Ring	Buna N
TCH56	1	Hold Down Plate "0" Ring	Buna N
H57	1	Operating Nut Capscrew Gasket	Vulcanized Fiber
59	2	2.5" 1D Outlet Cap	Cast Iron
60	4	2.5" 1D Outlet Cap Gasket	CBS
TCH61 C1	1	Valve Rod Couplings Upper Solid	Cast Iron
TCH61 D1	1	Valve Rod Couplings Lower Solid	Ductile Iron
H66A	1	Valve Top Plate Guasket	Vulcanized Fiber
H70	2	3/8" x 3 1/4" Hex Hd. Bonnet Bait	Grade 2
H71	1	Thrust Bearing Assembly 2 Washers	Polyethylene
		1 Washer	St Steel 304
TCH92-72	1	Extension	Ductile Iron
TCH81-73	1	Pumper Outlet Lock Ring	Ductile Iron
TCH81-74	1	Barrel Flange	Cast Iron
TCH92-75	2	Extension Flange	Ductile Iron
TCH81-76	1	Barrel Flange Retaining Ring	Steel
91	1	2.5" 1D Independent Outlet	Bronze
92	1	Independent Gate	Bronze
93	1	Independent Cut Off Screw	Brass
TCH41	3	Cap Attachment Chain	Wire Rope
633	1	Insulating Gasket (if part no. 633 required)	
634	1	6" Extension (if part no.633 required)	Cast Iron

*Part numbers listed with suffix /LT are required for the C71P/LT and H105/LT UL Listed Fire Hydrants

TC COMPRESSION HYDRANT SERVICE PROCEDURE

Bi-Annual Inspection

The hydrant shall be inspected *twice* a year as per National Fire Code of Canada 1995. Once in the fall, for a visual and maintenance inspection and once in the spring, a visual inspection.

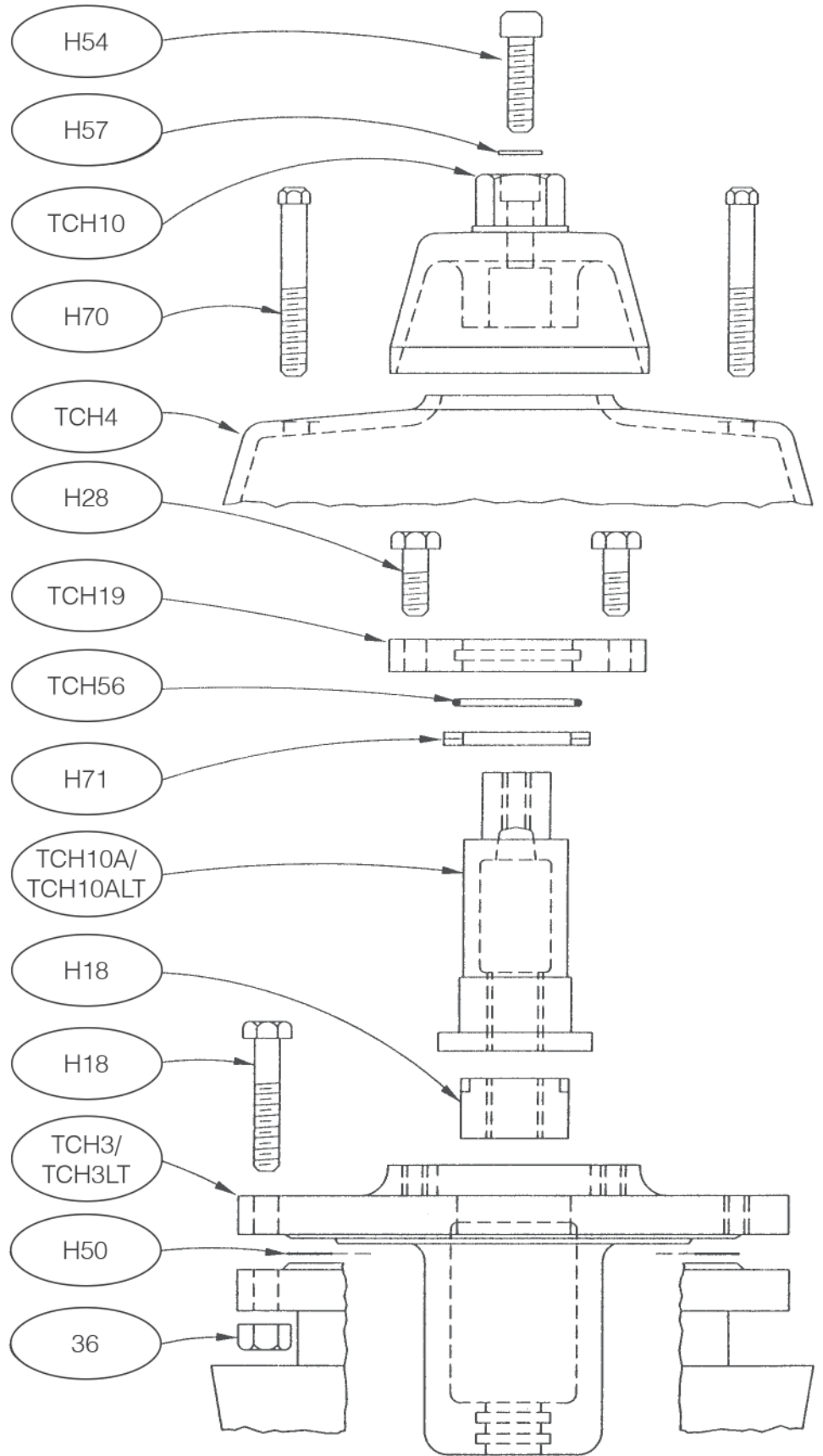
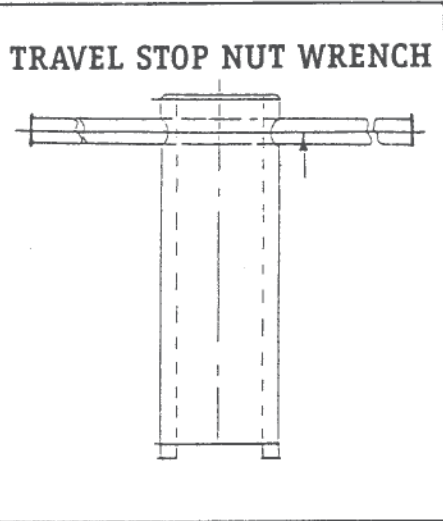
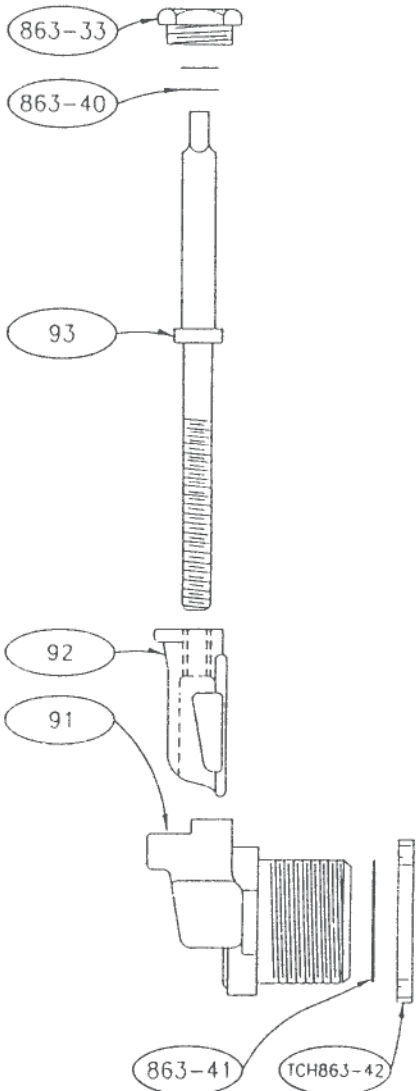
Visual Inspection:

Visually inspect the hydrant's appearance for vandalism or vehicular impact that may affect the operation of the hydrant.

The following inspection will help maintain proper operation and drainage of the hydrant.

- 1) Loosen one 2½" nozzle cap (**59**) and open the hydrant 6 - 7 turns until it is full of water.
- 2) Once all of the air has escaped, tighten the cap.
- 3) Open the hydrant completely. Excessive force to operate the hydrant would indicate a damaged revolving nut (**TCH10A**), valve rod upper section (**TCH25**), damaged thrust bearing (**H71**) or lack of lubrication in this area.
- 4) Check all caps. The "O" ring seal plate (**TCH3**), hold down plate (**TCH19**) and break-away flange area for leaks. Remove operating nut bolt (**H54**) and by observing the hole in the top of the revolving nut (**TCH10A**) it can be determined if water is entering the lubricating chamber, indicating damage "O" rings (**H55**). If the drain valve faces (**H13**) are damaged, water will exit through the drain opening and will appear around the outside of the hydrant extension at the ground line.
- 5) If a leak is found, replace the gaskets, "O" rings (**H45**) or drain valve faces (**H13**).
- 6) Close the hydrant.
- 7) To drain the hydrant remove a 2½" nozzle cap. Check if the hydrant is draining by placing your hand against the nozzle. If it is draining properly you should feel a suction against your hand. If the hydrant is not draining, put the cap back on and partially open the hydrant (2-3 turns). This will create pressure in the drains and may unplug them. Water should come to the surface around the hydrant barrel.
- 8) If the hydrant does not drain itself, you must remove the valve assembly and inspect it. (*Follow the procedure for valve assembly removal as explained in this literature on Page 5*). There are two drain holes in the valve seat ring (**H9**). If these holes appear not to be plugged, the soil around the outside of the hydrant elbow, may not be allowing the water to drain away through the drain holes provided in the elbow. One yard of drain gravel should be placed around the elbow (**TCH81-2**) for a drain pit.

INDEPENDENT CUT-OFF VALVE ASSEMBLY



"O" RING SEAL PLATE ASSEMBLY

TC COMPRESSION HYDRANT MAINTENANCE PROCEDURE

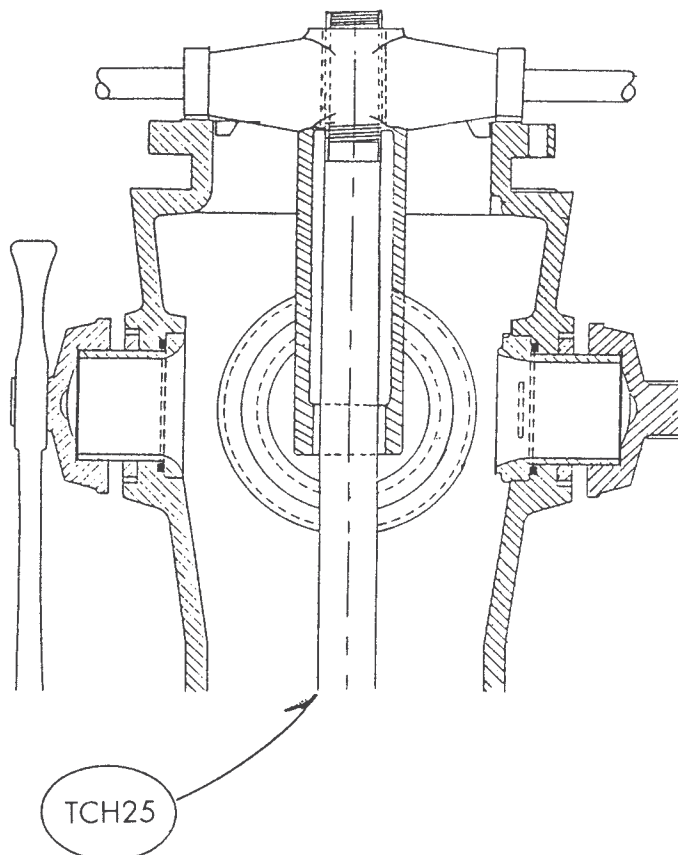
Direction For Disassembly & Inspection of “O” Ring Seal Plate:

- Close the hydrant isolating gate valve.
- Remove one (1) 2½” nozzle cap.
- **FULLY OPEN THE HYDRANT (11 TO 13 TURNS).**
- Remove the operating nut cap screw (**H54**) and cap screw gasket (**H57**).
- Remove the operating nut (**TCH10**).
- Remove the two bonnet bolts (**H70**).
- Remove the bonnet (**TCH4**).
- Remove the 4 hold down plate cap screws (**H28**), and remove the hold down plate (**TCH19**). Inspect the hold down plate “O” ring (**TCH56**) for cuts or abrasions. Replace the “O” ring if necessary. Lubricate the “O” ring.
- Disengage bronze revolving nut (**TCH10A**) and inspect the internal threads for damage.
- Remove the thrust bearing assembly (**H71**) and check for damage.
- Remove the travel stop nut (**H18**) with the travel stop nut wrench, rotating the wrench in the direction of the arrow on the operating nut, inspect the threads for damage.
- Remove the eight “O” ring seal plate bolts (**H33, 36**) and lift the “O” ring seal plate (**TCH3**) off the hydrant body being careful not to damage the internal “O” rings while drawing the plate off the threaded section of the valve rod. Inspect the “O” rings and replace if needed. For hydrants with an independent cut-off valve, open independent gate (**92**) at least 3 turns before removing the “O” ring seal plate.
- The top flange gasket (**H50**) may be torn while removing the seal plate. If so, replacement is necessary. Ensure all surfaces are clean to properly seal this gasket.

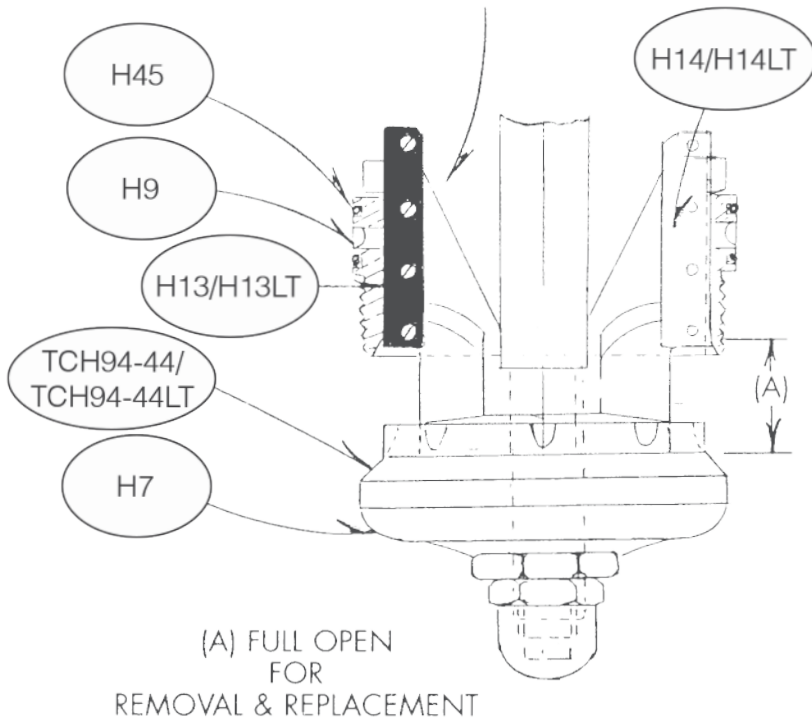
Direction For Disassembly & Inspection of Valve Assembly:

- For hydrants with an independent cut-off nozzle (**Part 91**) must be removed from the body by undoing the lock ring (**863-42**) prior to removal of the valve assembly.
- With the hydrant in the **FULL OPEN** position, remove the hydrant valve assembly as a unit by engaging the main valve wrench onto the square valve rod (**TCH25**). Rotate the wrench in a counter clockwise direction (9-10 turns). With the valve assembly unscrewed, you can remove the main valve wrench and now pull the rod with the main valve assembly out of the hydrant.
- Inspect the drain valve faces (**H13**) for cuts or abrasions and replace if required.
- Inspect guide plates (**H14**) for wear. If bent or distorted - replace.
- Inspect valve (**TCH92-44, TCH94-44**) for damage, i.e., cuts or indentations. Replace if necessary.
- Inspect valve seat ring (**H9**) for damage to the threads and plugged drain holes.
- Inspect valve seat “O” rings (**H45**) for cuts or abrasions and replace as needed.

MAIN VALVE WRENCH



MAIN VALVE ASSEMBLY

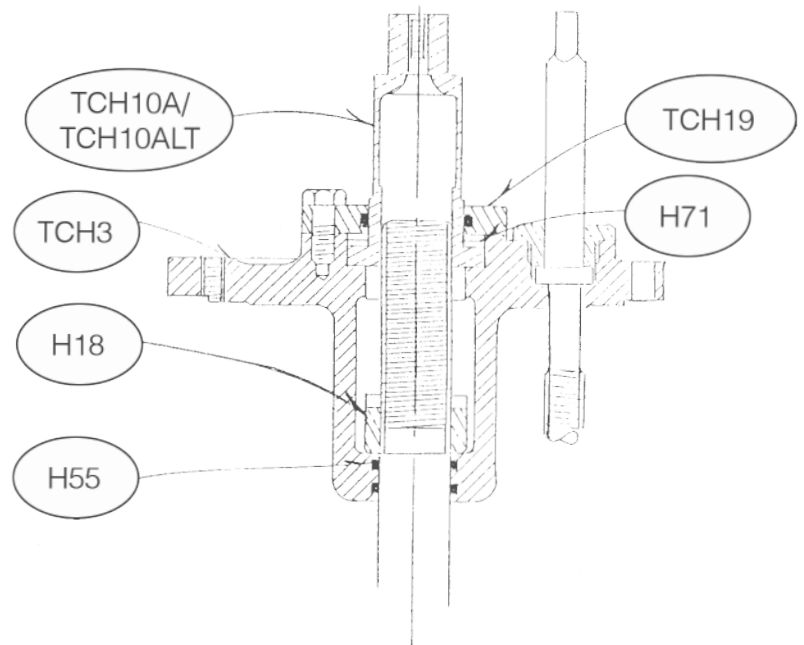


Direction For Reassembly of Hydrant:

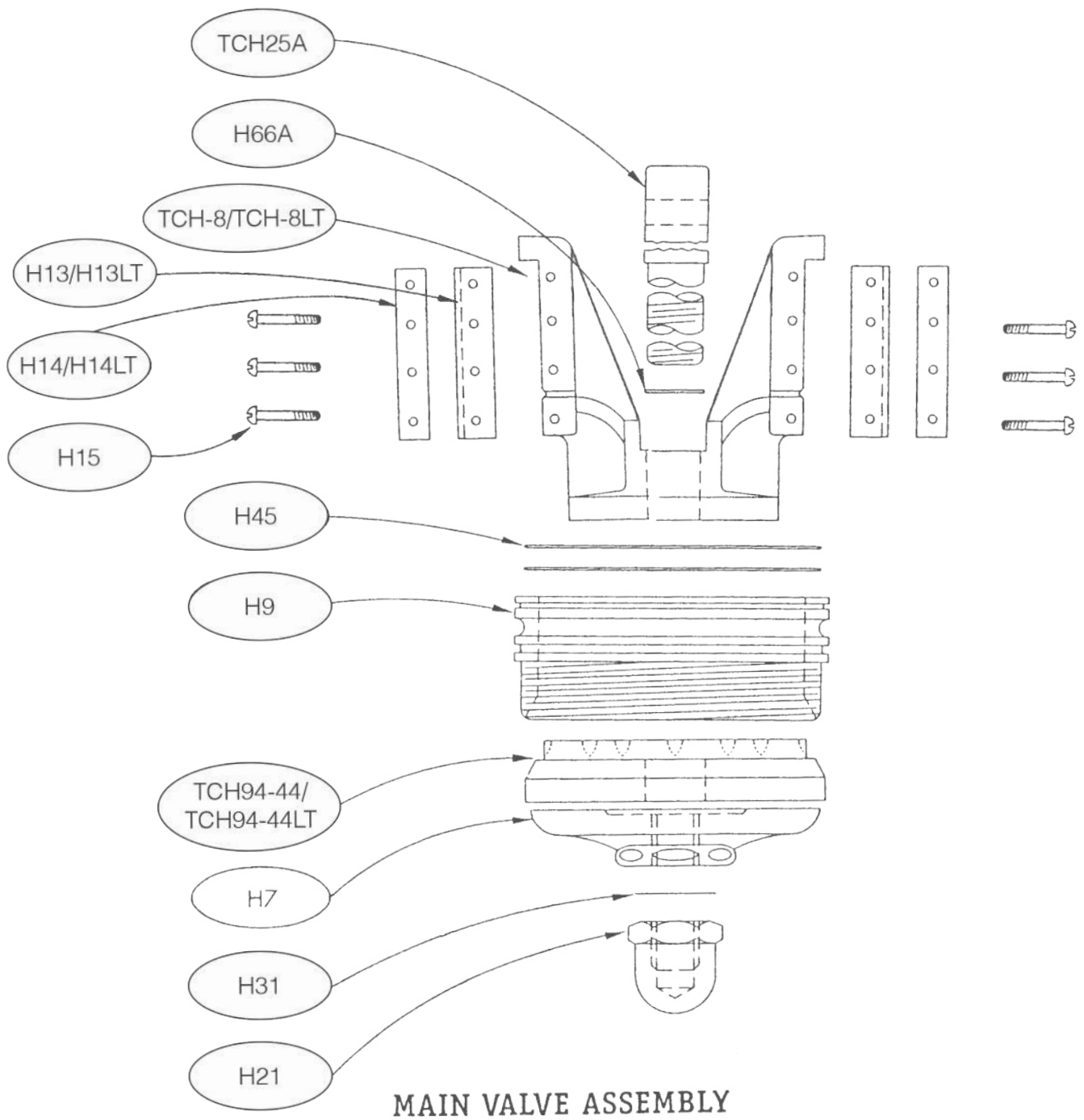
- Before replacing the valve assembly into the hydrant, lubricate the “O” ring seals (**H45**) and place the valve seat (**TCH92-44, TCH94-44**) in the **FULL OPEN POSITION**.
- Lower the valve assembly carefully into the unit and after one or two turns of engagement of the seat ring into the sub seat (**TCH81-9A**) **PUSH THE MAIN ROD DOWN** to assure the valve assembly remains in the **FULL OPEN POSITION**.
- Now thread the valve assembly into complete engagement with the subseat by rotating the wrench clockwise. The valve seat “O” rings (**H45**) automatically produce the pressure seal. **ONLY LIGHT TORQUE IS REQUIRED AS THERE ARE NO GASKETS TO BE MECHANICALLY COMPRESSED.**

- Reassemble independent cut-off nozzle (**part 91**) and “O” ring (**863-41**) if used.
- Reassemble “O” ring seal plate (**TCH3**), being careful not to damage the “O” rings when passing over threaded portion of the upper rod. Replace top flange gasket (**H50**) if required.
- Reassemble the travel stop nut (**H18**) onto the valve rod thread (with the wrench slots facing up). Place the stop nut wrench onto the stop nut and rotate until the stop nut seats on valve rod shoulder.
- Coat the threaded section of the valve rod upper section (**TCH25**) with grease for temperatures of -40°C to $+300^{\circ}\text{C}$
- Reassemble revolving nut (**TCH10A**) and hold down plate (**TCH19**) (with the thrust bearing assembly (**H71**) between the two pieces) as a unit followed by the replacement of the bonnet and operating nut.
- With one of the $2\frac{1}{2}$ " nozzle caps left loose, rotate the operating nut until the hydrant valve is closed. Open the isolating gate valve supplying hydrant. Now fully open the hydrant allowing the air to escape out of the loose nozzle cap. Tighten the cap and pressure test the assembled unit.

“O” RING SEAL PLATE



After the disassembly and reassembly of any fire hydrant, it is recommended that the servicing procedure be followed to assure that all parts are operating correctly. (See Page 2)



Direction For Rebuilding A Main Valve Assembly:

- Remove valve rod cap nut (**H21**) and valve rod bottom gasket (**H31**).
- Remove valve bottom plate (**H7**), replace if needed.
- Remove valve rubber (**TCH92-44**) or in the case of surge relief (**TCH94-44**).
- Remove valve seat ring (**H9**) from valve top plate **TCH8** (or **H8**).
- Replace guide plates (**H14**) and drain valve faces (**H33**) if required.
- Replace valve seat ring if required.
- Install valve top plate gasket (**H66A**) on valve rod lower section (**TCH25A**) followed by valve top plate **H8** (or **TCH8**) complete with seat ring (**H9**).
- Slide the urethane valve disc **TCH92-44** (or **TCH94-44**) into position on the valve rod immediately below the top plate **H8** (or **TCH8**).
- Thread the bottom plate onto the valve rod. A small amount of grease may be used on the bottom plate where it comes in contact with the urethane valve disc. This will allow the bottom plate to turn without binding against the urethane disc. Tighten the bottom plate **HAND TIGHT** against the disc. Using a wrench, tighten the bottom plate another $\frac{1}{8}$ to $\frac{1}{4}$ turn. **DO NOT USE EXCESSIVE FORCE WHEN TIGHTENING BOTTOM PLATE, TO DO SO MAY DISTORT THE VALVE DISC, MAKING FUTURE REMOVAL DIFFICULT.**
- Replace valve rod cap gasket and nut on valve rod. The Acorn nut is a lock nut. Be sure to hold the bottom plate (**H7**) from turning while tightening the lock nut (**H21**). **DO NOT TIGHTEN** bottom plate with the Acorn nut.
- To replace the valve seat “O” rings (**H45**), remove the old or worn “O” rings, clean the grooves that the “O” rings seat into and install new “O” rings. Apply with a brush, a **SMALL** amount of hydrant grease to the “O” rings. Avoid using too much grease as the excess grease can get under the “O” rings during reassembly causing them to jump from the groove that seats them and subsequently jam the assembly while it is being threaded back into the hydrant bottom end.

Terminal City Hydrant Parts

Terminal City would like to go on record as stating that components used in the maintenance of our hydrants other than the “Original Equipment Manufacturer” parts may void any warranty offered for same.

Our commitment to providing the users of our hydrants with a quality product remains unchanged, however the quality may be jeopardized with the use of other than “O.E.M.” parts. Please contact us with any questions or concerns you may have.

TC COMPRESSION HYDRANT

TROUBLESHOOTING FROM OPERATING CHARACTERISTICS

1. Fire Hydrant fails to open upon rotation of the operating spindle:

Compression Hydrant:

- stripped thread on main spindle or revolving nut (TCH25, TCH10A).
- broken valve rod coupling (TCH61).
- broken spindle (TCH25).
- broken hold-down plate (TCH19).

2. Fire Hydrant will not open or operating spindle will not turn:

Compression Hydrant:

- rocks and foreign material under valve in the elbow (TCH81-2).
- “off-pitch” thread on the revolving nut or main spindle causing a seized unit (TCH25, TCH10A).

3. Fire Hydrant will not shut off:

Compression Hydrant:

- foreign material trapped on the seating surfaces TCH92-44 (or TCH94-44, H9).
- damaged seat ring (H9).
- travel stop nut is not done up tight (H18).

4. Non-Draining of the Hydrant after shutoff:

Compression Hydrant:

- the outlet caps replaced onto the outlets immediately after closing of the hydrant. Allow at least 15 minutes before replacing caps.
- foreign material plugging the drain holes or an elbow completely encased in concrete.
- the hydrant could have been manufactured as a “non-drain” style. The non-draining feature is available for areas of high ground water table and the hydrant must be pumped out after use.

5. Leakage around hydrant barrel at the surface of the ground:

- drain mechanism is not closed.
- offset line from the main is cracked at the elbow connection to the hydrant or a leaking joint in the hydrant elbow.
- foreign material trapped on seating surface preventing final 2 to 3 turns of the main valve closure.
- worn drain valve rubber (for compression - H13).

6. External leakage from head, Outlet Caps, Groundline Flange:

- damaged gaskets.
- worn or damaged “O” rings.

7. Fire Hydrant is hard operating:

- lack of lubrication.
- bent main spindles.
- “off-pitch” threads.

8. Vibrating or Chattering Fire Hydrant:

- worn rubber seat.
- soft rubber seat.
- use of too many short extension assemblies.
- loose rubber seat.

PART NO	QUAN	NAME	MATERIAL
* TC H81-1E	1	BARREL - (ANTIQUE HYD'T - HI.)	CAST IRON
TCH92-72	1	EXTENSION	DUCTILE IRON
TCH98-2	1	ELBOW	CAST IRON
TCH3/TCH3LT	1	O RING SEAL PLATE	CAST IRON
* TCH4	1	BONNET-(ANTIQUE HYD'T H4)	CAST IRON
H7	1	VALVE BOTTOM PLATE	CAST IRON
TCH8/TCH8LT	1	VALVE TOP PLATE	NODULAR IRON
H9	1	VALVE SEAT RING	BRONZE
TCH98-9A	1	SUBSEAT	BRONZE
863-10	2	2½" I.D. OUTLET	BRONZE
* TCH10	1	OPERATING NUT -(T-H10)	CAST IRON
* TCH10A/ TCH10ALT	1	REVOLVING NUT -(TCH10A-H105)	BRONZE
H13/H13LT	2	DRAIN VALVE FACE	PLASTICIZED RUBBER
H14/H14LT	2	GUIDE PLATE	BRASS ASTH B16
H15	6	DRAIN VALVE SCREW	STAINLESS STEEL
H18	1	TRAVEL STOP NUT	BRONZE
TCH 19	1	HOLD DOWN PLATE	CAST IRON
H21	1	VALVE ROD CAP NUT	CAST IRON
TCH81-25	1	4" I.D PUMPER OUTLET	BRONZE
TCH 25	1	VALVE ROD UPPER SECTION	ATLAGE TYPE 416 STAINLESS STEEL
TCH 25A	1	VALVE ROD LOWER SECTION	HOT ROLLED MILD STEEL
H28	4	HOLD DOWN PLATE CAPSCREW	STEEL
TCH 25M	1	VALVE ROD MIDDLE SECTION	HOT ROLLED MILD STEEL
TCH 81-76	1	BARREL FLANGE RETAINING RING	STEEL
TCH 81-73	1	PUMPER OUTLET LOCK RING	DUCTILE IRON
H45-AI	1	PUMPER OUTLET ORING	RUBBER
TCH 92-75	4	EXTENSION FLANGE	DUCTILE IRON

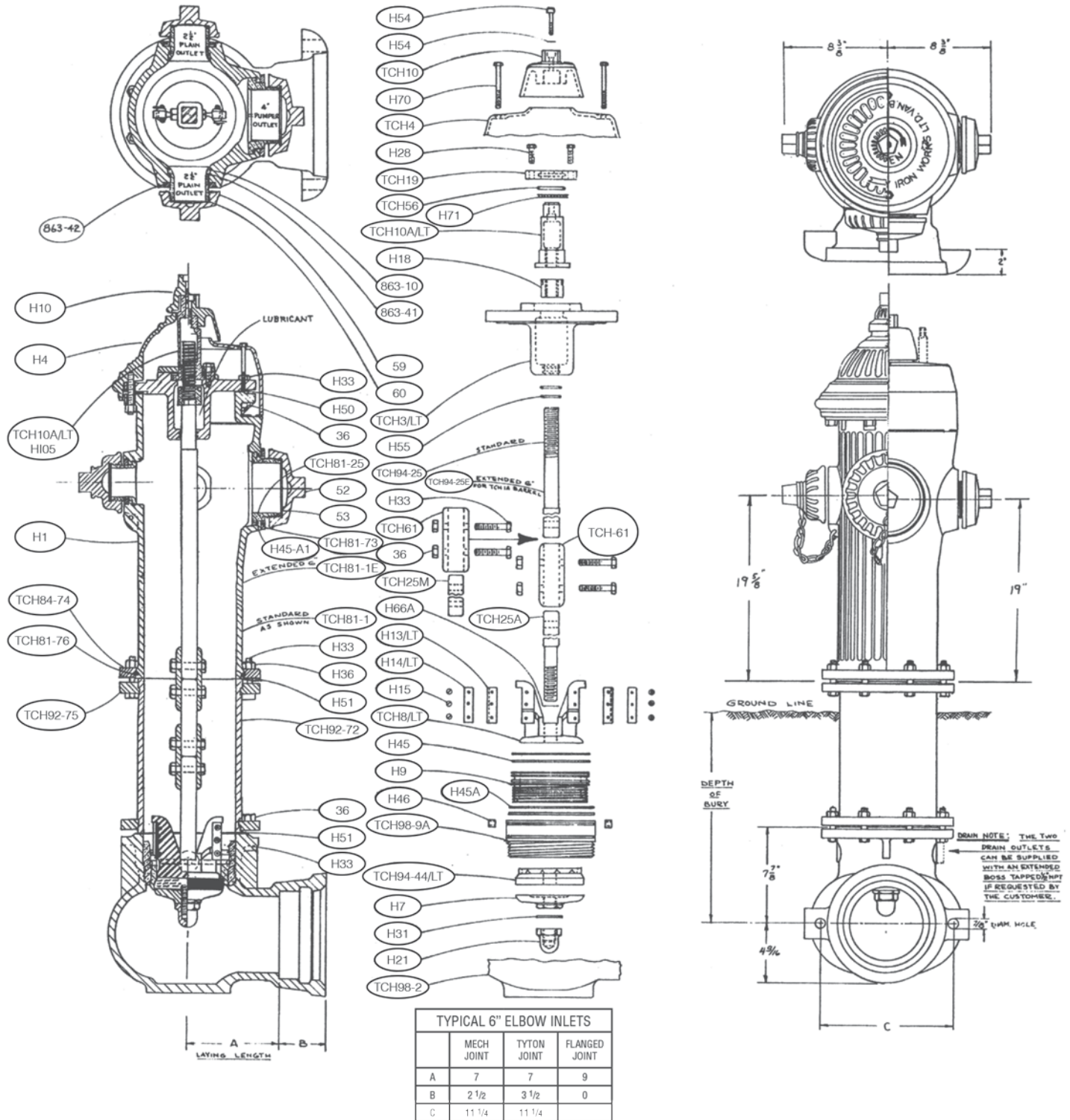
***REQUIRED FOR H105**

*Part numbers listed with suffix /LT are required for the C71P/LT and H105/LT UL Listed Fire Hydrants

PART NO	QUAN	NAME	MATERIAL
H31	1	VALVE ROD BOTTOM GASKET	COMPOSITION
H33	28	½NC X 2¾ L HEX HD ELECTRO-GALV.BOLT	GRADE 2 STEEL
36	28	½NC HEAVY HEX NUT	STEEL
863-41	2	2½" I.D. OUTLET O RING	SYN-RUBBER
863-42	2	2½" I.D. OUTLET LOCK RING	DUCTILE IRON
TCH94-44/LT	1	VALVE	URETHANE / RUBBER
H45	2	VALVE SEAT O RING	PLASTICIZED RUBBER
H46	2	DRAIN HOLE LINER	NYLON
TCH81-74	1	BARREL FLANGE	C1
H50	1	TOP FLANGE GASKET	CBS
H51	2	EXTENSION (AND OR) ELBOW GASKET	CBS
* 52	1	4" I.D. PUMPER OUTLET CAP (HGA)	CAST IRON
53	1	4" I.D. PUMPER OUTLET CAP GASKET	RED RUBBER
H 54	1	HEX. SOC. HD. OPERATING NUT & LUB CAPSCREW	STEEL
TCH 56	1	HOLD DOWN PLATE O RING	PLASTICIZED RUBBER
H57	1	OPERATING NUT CAP SCREW GASKET	COMPOSITION
* 59	2	2" I.D. OUTLET CAP - (H5)	CAST IRON
60	2	2" I.D. OUTLET CAP GASKET	RED RUBBER
TCH 61 TCH 61	2	VALVE ROD COUPLINGS	UPPER LOWER CAST IRON DUCTILE IRON
H66A	1	VALVE TOP PLATE GASKET	COMPOSITION
H70	2	¾NCX 3¼ L HEX HD BONNET NOLT ELECTRO-GALX	STEEL
H55	2	O RING SEAL PLATE O RING	SYN. RUBBER
H71	1	THRUST BEARING	2 WASHER 1 WASHER PENLON ST. STEEL
H45A	2	SUBSEAT TOP O RING	PLASTICIZED RUBBER
91	1	2½" I.D. INDEPENDENT OUTLET	BRONZE
92	1	INDEPENDENT GATE	BRONZE
93	1	INDEPENDENT CUT-OFF SCREW	TOBIN OR CAST BRONZE

***REQUIRED FOR H105**

TCIW HERITAGE H105 HYDRANT



CODE

C71 --- COMPRESSION HYDRANT 1971 WITH 2 PLAIN OUTLETS.

C71P --- COMPRESSION HYDRANT 1971 WITH 2 PLAIN OUTLETS. PLUS 1 PUMPER OUTLET

C71P1 --- COMPRESSION HYDRANT 1971 WITH 1 PLAIN OUTLET. PLUS 1 INDEPENDENT OUTLET PLUS 1 PUMPER OUTLET.

NOTE: 2 1/2" I.D. OUTLETS ARE TO B.C. ST'D 2 1/2" FIRE HOSE THREAD OR TO CUSTOMERS SPECIFICATION. PUMPER OUTLET TO CUSTOMERS SPEC.

EXTENDING THE TC C71 COMPRESSION FIRE HYDRANTS

1. Have a set of TC C71 Compression Hydrant wrenches consisting of:
3/8" Allen key, Travel Stop Nut Wrench, also needed are 9/16", 5/8" and 3/4" wrench/ratchet, sockets.
2. Close the isolating gate valve servicing the hydrant.
3. Dismantle the hydrant from the top by removing the operating nut, bonnet, hold down plate, revolving nut, travel stop nut and "O" ring seal plate.
4. Unbolt the ground line flange and lift the hydrant body over the valve rod upper section.
- * 5. Remove the **bottom bolt** on the ground line breakaway stem coupling (**CI**) that is connected to valve rod upper section. Leave this coupling attached to the valve rod upper section.
6. Place the new extension rod with a (**DI**) rod coupling onto the existing rod section and bolt together.
7. Reconnect the valve rod upper section and coupling to the new extension rod section. This will have the cast iron (**CI**) coupling at the **new** ground line flange intersection.
8. Place the new extension gasket on the existing extension. *Be certain to have cleaned the extension pipe of any previous gasket material.
9. The new length of ductile iron extension pipe is grooved at each end to accept a two piece ductile iron flange, with the flanges fitted into the groove at each end mount the extension onto the existing section of hydrant extension. When bolting the flanges together the first two bolts should be placed where the flanges halves are split followed by the remaining. *If the bolts supplied with the new extension piece appear to be too short, the flanges have been installed upside down. Remove the flanges and turn them over reinstall and continue with bolting the units together as described above.
10. Place a new extension gasket on the new extension. Lift the hydrant body over the valve rod upper section and bolt the body to the extension flange, be certain that the bottom of the hydrant body is free of any previous gasket material.
11. Reassemble the top section of the hydrant assembly/body.
12. Open the isolating valve and then open and close the hydrant to be sure that it functions properly.

If you have any concerns or problems regarding the maintenance of your hydrants, please do not hesitate to contact us!

NOTES

C71P - H105 Compression Fire Hydrant

1. All working parts accessible for inspection and service without excavating.
2. "O" ring sealed lubrication chamber for automatic lubrication of the operating spindle.
3. Thrust bearing to facilitate ease of operation.
4. "O" ring sealed hose outlets for ease of replacement if damaged.
5. Flange at ground line construction.
6. Hydrant body primer coated and finish painted to customer specifications.
7. Ductile iron barrel and connection flanges.
8. Automatic self-draining mechanism. When normal hydrant drainage is impossible, arrangements can be made to plug the drain.
9. Bronze-to-bronze seat ring threads to prevent corrosion of the seat ring to the elbow.
10. "O" ring sealed seat assembly. A minimum of torque is required to remove and re-install the valve assembly. There is no requirement to mechanically seal on a gasket or make a metal to metal seal.
11. A 5 1/4" diameter internal valve opening and 7" diameter barrel for full flow.
12. A replaceable main valve rubber which closes with the pressure to help prevent flooding in the event of above ground damage.
13. Totally enclosed tie rod lugs maintain a proper and secure connection of restraint.

All features manufactured to
AWWA C502-94.

ULC listed.

