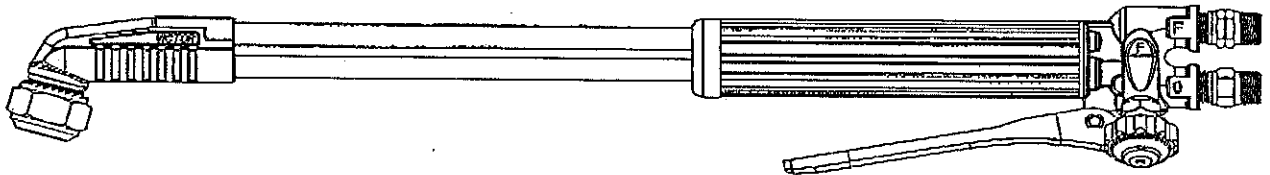


Form No. 0056-1333

VICTOR®Effective : June 2003
HC Series
Hand Cutting Torches

The Bulldog - HC1100C Series Hand Cutting Torches Parts & Service Bulletin



CAUTION

Check valves are mechanical devices that can leak when dirty or if abused. Check valves should be tested at least every six months. Careless usage, dirt or abuse can shorten the service life of check valves, thus requiring more frequent testing. Be sure to test check valves in a well-ventilated area! The escaping gases create conditions for fires and explosions!



WARNING

Apparatus improperly operated, maintained or repaired can be dangerous. Some parts and accessories manufactured by others may fit Victor apparatus but not conform to Victor's exacting standards. For your own protection, specify and use **ONLY** Victor-made parts and accessories with your Victor apparatus.

Only a qualified repair technician should perform service or repair of apparatus. Improper service repair or modification of the product could result in damage to the product or injury to the operator.

The term "Qualified Repair Technician" refers to repair personnel capable of servicing apparatus in strict accordance to this and other applicable Victor Parts & Service Bulletins.

Assembly Reference

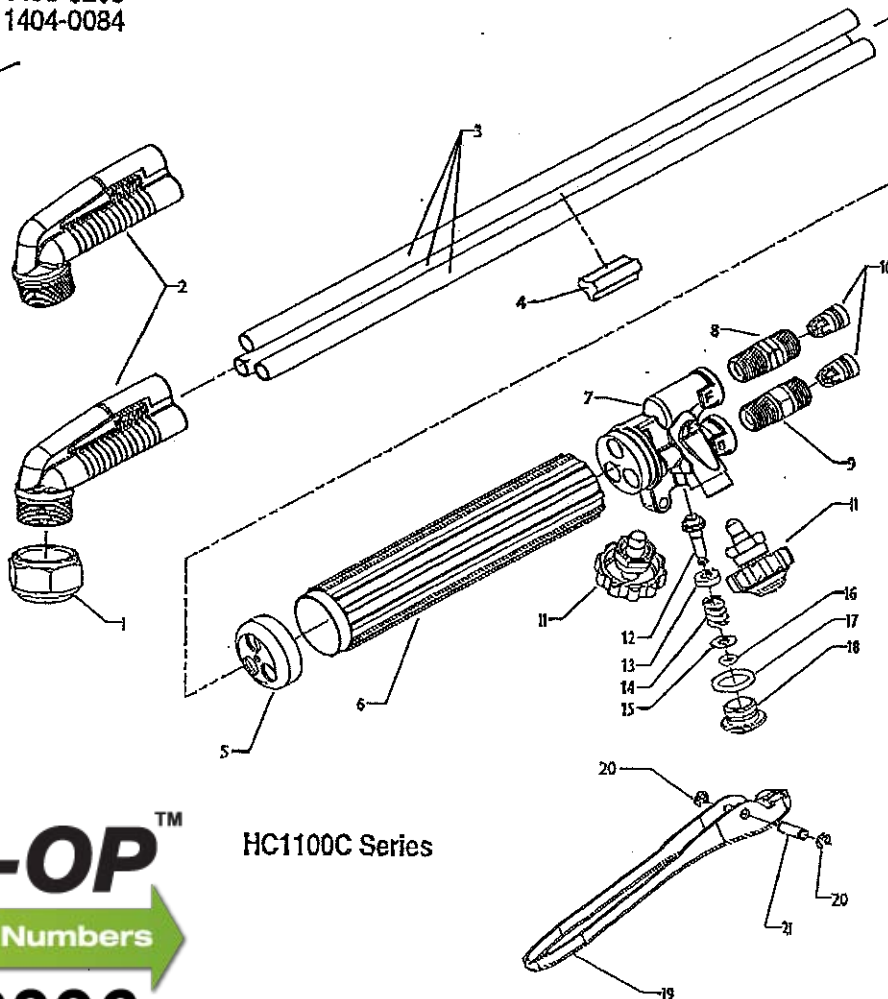
No.	Description	Part No.
1	Tip Nut	0309-0018
~	Heavy Duty Tip Nut	0309-0069
2	90° Head w/Mixer	0390-0070
~	75° Head w/Mixer	0390-0071
3	Tubes (3 req'd)	See Chart 1
4	Tube Support	See Chart 1
5	Collar	0306-0285
6	Barrel	0306-0284
7	Body	0301-0107
8	Fuel Inlet Connection	0960-0073
9	Oxygen Inlet Connection	0950-0099
10*	Check Valve ¹ Replacement Kit	0690-0027
11*	Control Stem Assy (2 req'd)	0662-0014
12**	Seat Assembly	0320-0079
13**	Seat Assembly Bushing	0320-0108
14**	Valve Spring	0320-0024
15**	Washer	1406-0006
16**	O-Ring (small)	1407-0005
17**	O-Ring (large)	1407-0016
18	Valve Cap	0320-0017
19	Lever	0307-0004
20	Retainer (2 req'd)	1406-0203
21	Lever Pin	1404-0084

Model	Length	Head°	Tubes/Supports	Part No.
HC1100C	21" / 533mm	90°	Tubes (3 req'd)	0303-0422
HC1101C	21" / 533mm	75°	None	
HC1110C	27" / 686mm	90°	Tubes (3 req'd)	0303-0423
HC1111C	27" / 686mm	75°	Supports (2 req'd)	0307-0093
HC1130C	36" / 914mm	90°	Tubes (3 req'd)	0303-0424
HC1131C	36" / 914mm	75°	Supports (3 req'd)	0307-0093
HC1150C	48" / 1.22m	90°	Tubes (3 req'd)	0303-0425
HC1151C	48" / 1.22m	75°	Supports (4 req'd)	0307-0093
HC1160C	60" / 1.52m	90°	Tubes (3 req'd)	0303-0427
HC1161C	60" / 1.52m	75°	Supports (5 req'd)	0307-0093

* Items included in Repair Kit (0390-0043).

Items most commonly used for torch repair and recommended for stock.

¹ Check Valve Replacement Kit Includes: Two (2) internal check valves and Instructions.



HC1100C Series

NASCO-OPTM
Power of Numbers
800-321-3396



CAUTION

Discard used O-rings, seat assembly, seat assembly seat bushing, spring and washer. Replace them each time you assemble a cutting torch.

Service Instructions:

Recommended Tools and Supplies:

- 3/8" open-end wrench
- 9/16" open-end wrench
- 5/8" open-end wrench
- 1/4"-20 x 2" long bolt
- Brazing Torch
(Recommended TurboTorch
Air/Fuel Torch)
- Bench Vise
- Loctite • #79 (0028-0056)
- Christo-Lube MCG 129
(0034-0021)
- 45% Silver Solder
- Silver Solder Flux

Disassembly Procedure:

1. Screw the 1/4"-20 bolt into the one of the internal check valves until it is finger tight.
2. Place the shank of the bolt in the vise. The head of the bolt must catch on the vise jaws. The bolt must move freely (see Figure 1).
3. Grasp the torch firmly and pull the torch up. The head of the bolt will catch on the bench vise jaws and the internal check valve will be removed.
4. Repeat steps 1 through 3 to remove the other internal check valve.
5. Secure the torch in a bench vise with the lever up.
6. If necessary, remove the oxygen and fuel inlet connections using a 9/16" open-end wrench.
7. Remove the oxygen and fuel control valve stem assemblies with a 5/8" open-end wrench.
8. Remove the lever by pushing off one of the retainer clips on the lever pin and then remove the lever pin.
9. Remove the valve cap assembly from the torch body using a 3/8" open-end wrench.
10. Remove the large o-ring from the valve cap and discard.
11. Remove the small o-ring, washer, valve spring, seat assembly bushing and seat assembly from the torch body. Discard these items.

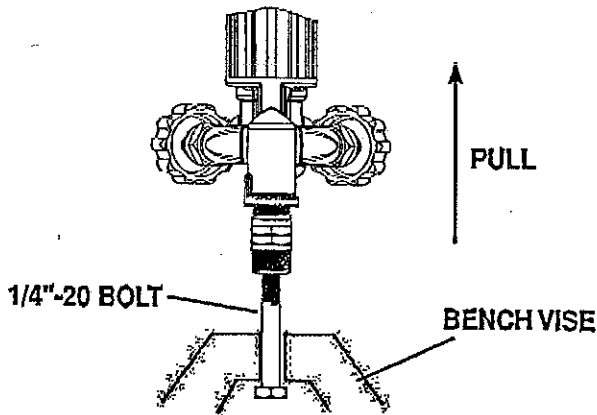


Figure 1: Removing the Internal Check Valves

Cleaning Parts:

Contact your local chemical supplier for recommended cleaning solvents applicable to the metals used in this product. Always use cleaning solvents in accordance with the manufacturer's instructions. Cleaning solvents must be compatible with oxygen.



CAUTION

DO NOT allow non-metal components to contact cleaning solvents! Cleaning solvents can cause elastomeric and plastic parts to swell and stress crack. If these parts require cleaning, use a mild soap solution followed by a thorough rinsing in water. Dry these parts completely before installing.

REPLACE NON-METAL PARTS THAT HAVE COME IN CONTACT WITH OIL, GREASE OR ANY OTHER PETROLEUM-BASED SUBSTANCE!

Petroleum-based substances become extremely flammable in the presence of oxygen.

Assembly Procedure:

1. Install any part of the torch sub-assembly that was removed. Make sure that the tubes bottom out in the head. If necessary, silver braze the head and tube assembly to the body or the tubes to the head, as applicable. After silver brazing, the torch assembly must be thoroughly cleaned before further assembly.

IMPORTANT!

When silver brazing the head to the tubes, the preheat oxygen tube must mate directly with the mixer flange. There should be no gap between the mixer flange and the preheat oxygen tube after brazing. See Figure 2. Always ream the tip-seating surface after applying heat to the head. (See REPAIR TOOLS table.)

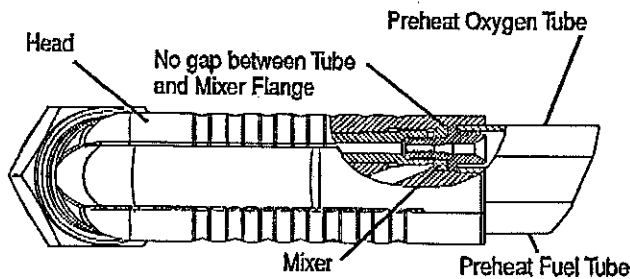


Figure 2: Assembling Head to Tubes

2. Apply a thin film of Christo-Lube MCG 129 to the new small and large o-rings. Also, apply a thin film to the seat assembly stem.
3. Assemble the following new components into the torch body: seat assembly, seat assembly bushing, valve spring, washer and small o-ring.
4. Assemble the large o-ring onto the valve cap and install into the body and tighten.
5. Install the lever onto the body by assembling lever pin and then securing with the two retainer clips. Make sure that the lever tabs fit into the groove on the seat assembly stem.
6. Apply a small amount of Christo-Lube MCG 129 to the end of the first few threads of the control valve stem assemblies. Install the control valve stem assemblies into the torch body. Tighten the packing nuts until it takes 1 1/4 - 2 in./lbs. of torque to turn the knobs.
7. If the inlet connections were removed, apply a small amount of LOCTITE (#79 to the second and third male tapered threads of the connections and install. Make certain the left-handed fuel connection is installed into the body inlet marked "F" and the right-handed oxygen connection is installed into the body inlet marked "O".
Note: The tapered thread on each connection that screws into the body is right-handed.

8. Press the internal check valves into the inlet connections by attaching the hose and tightening the hose nuts until the internal check valves are properly seated.



CAUTION

For your safety and the safety of the operator, always perform the following test procedures after assembling or repairing the HC1100C cutting torch.

Test Procedure:

Recommended Tools and Supplies:

- Plugged Cutting Tip (see Figure 3)
- 3-VBN Cutting Tip
(or similar Propane/Natural Gas cutting tip)
- 50 PSIG Source of Oil-free Air or Dry Nitrogen
- 50 PSIG Source of Oxygen
- 8 PSIG Source of Propane
- Reseating Tool, RT-33
(See REPAIR TOOLS table.)
- Head Reamer, RT-57
(See REPAIR TOOLS table.)
- Large Container of Water
- Spark Lighter (Striker)
- Firebrick

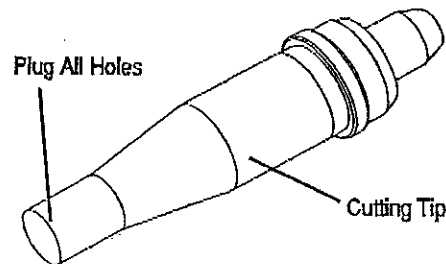


Figure 3: Plugged Cutting Tip for Leak Testing

Leak Testing the Torch:

1. Attach the hoses to the torch.
2. Close the control valves to a torque of 7 - 8 in./lbs.
3. Pressurize both inlets of the torch to 50 ± 5 PSIG of oil-free air or nitrogen.
4. Submerge the torch head in water.
5. Observe the torch head. If bubbles appear at the torch head, the cutting oxygen valve or the control valves are leaking.
6. If the cutting oxygen valve is leaking, inspect the seat assembly and mating body surface. Replace the seat assembly if the elastomeric surfaces exhibit imperfections. If the mating seating surface in the body is damaged, the body must be replaced. Repeat the leak test after repair.
7. If one or both of the control valves are leaking, remove the valve stem assembly of the leaking valve and ream the valve seating surface using the RT-33 reseating tool. Repeat the leak test after repair.
8. Remove the torch from the water and drain excess water from the torch. Install the plugged cutting tip (see Figure 3.) into the torch head. Tighten the tip nut to 15 - 20 ft./lbs. of torque.
9. Open both control valves and completely submerge the torch in water. Check for leaks around all external connections, valves and joints.
10. If bubbles are escaping from around the control valve packing nut, tighten the packing nut until it takes 1-1/4 - 2 in./lbs. of torque to adjust the control valve knob. Recheck for leaks. If leaks continue, replace the control valve stem assembly.
11. Remove the torch from the water and drain excess water from the torch. Bleed all pressure from the torch.

Testing the Internal Check Valves

Note: The plugged tip must remain in the torch and both control valves must be in the fully open position.

12. Remove one of the hoses from the torch.
13. Pressurize the hose that is connected to the torch to 2 - 5 PSIG.
14. Submerge the inlet connection that has no hose connected in water and observe the inlet opening for bubbles. If there is more than one bubble in 5 seconds, go to step 15., otherwise proceed to step 16.
15. Use the following procedure to flush the check valve. Close both control valves and remove the plugged tip. Attach the hose to the inlet connection of the leaking check valve. Increase pressure to 30 PSIG and open the control valve. Flush the check valve for 5 seconds. Retest the check valve per steps 12. - 14. If the check valve still leaks, replace it with a new one.

16. Reverse the hoses and test the other check valve per steps 12. - 14.
17. After all leak testing is complete, remove the torch from the water. Remove the plugged tip and open both control valves and the cutting oxygen valve for 10 seconds to remove any water that may be inside the torch. Once all water has been removed, shut-off the air or nitrogen supply and bleed all pressure from the torch. Remove the hose(s) from the torch.

Flame Testing the Torch:

1. Attach the oxygen and propane supply hoses to the torch.



WARNING

The HC1100C Series Cutting torch is for use with LP based gases and natural gas only. It is NOT for use with acetylene.

2. Install a 3-VBN cutting tip (or similar Propane/Natural Gas cutting tip) into the head. Tighten the tip nut to 15 - 20 ft./lbs. of torque.
3. Adjust the oxygen regulator to deliver 50 ± 5 PSIG. Adjust the propane regulator to deliver 8 ± 2 PSIG.
4. Open the oxygen control valve and purge the oxygen line for 10 seconds for every 25 feet of hose. Then, close the oxygen control valve. Open the fuel control valve and purge the fuel system in the same manner. Close the fuel control valve.



WARNING

- Always purge hoses in a well-ventilated area. The escaping gases can create conditions for fire and explosion.
 - Never open both fuel and oxygen control valves at the same time before and during lighting.
5. Open the fuel control valve about 1/4 turn. Ignite the gas using a spark lighter (striker).
 6. Slightly open the oxygen control valve and continue opening the valve until the large "feather" on the flame disappears.

At this point, slightly open each control valve in an alternating manner ("walking the flame up") until the desired flame intensity is reached and a neutral flame has been set.

8. If there is a popping sound coming from the tip/head area, there is a tip seat leak. Shutdown the torch and remove the tip. Inspect the tip seating surface. If damage is present, replace the tip with a new one. If this doesn't resolve the problem, inspect the tip seating surface in the head. If there are nicks, scratches or irregular surfaces present, reseal the tip seating surface by using the head reamer RT-57. Once the problem has been eliminated, relight torch and continue the testing.



WARNING

If you experience a sustained backfire (noted by a hissing or whistling sound), the flame is burning inside the torch. **IMMEDIATELY shut-off the oxygen control valve. THEN shut-off the fuel valve.** Allow the cutting torch to cool before relighting. If trouble recurs, disassemble the torch. Replace any damaged parts and retest.

9. With the proper flame set, depress the cutting oxygen lever and place the tip on a firebrick at approximately 10° from the vertical position (see Figure 4). Rock the torch from side to side for 5-8 seconds. The torch will produce multiple backfires during this operation. The torch must not produce a sustained backfire (burning inside the torch). This condition will be indicated by a hissing or whistling sound.

See the preceding **WARNING** message.

10. After testing is complete, release the cutting oxygen

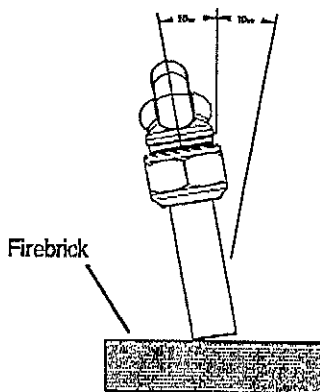


Figure 4: Flame Testing the Torch

9. With the proper flame set, depress the cutting oxygen lever and place the tip on a firebrick at approximately 10° from the vertical position (see Figure 4). Rock the torch from side to side for 5-8 seconds. The torch will produce multiple backfires during this operation. The torch must not produce a sustained backfire (burning inside the torch). This condition will be indicated by a hissing or whistling sound.

See the preceding **WARNING** message.

10. After testing is complete, release the cutting oxygen lever. Close the oxygen control valve and then the fuel control valve to extinguish the flame.
11. Close the oxygen and fuel cylinder valve or gas supply valves.
12. Open the oxygen control valve to release the oxygen from the system. Once all the oxygen is released from the system, close the oxygen control valve.
13. Open the fuel control valve to release the fuel gas from the system. Once all the fuel gas is released from the system, close the fuel control valve.
14. Remove the hoses from the torch.
15. The torch should be stored in a clean environment free of oil, grease and other petroleum based substances. The torch inlets should be capped to prevent contamination from entering the torch.

Repair Tools Table

Description	Part No.
Valve Body Die - 1/2"-27	1422-0075
Valve Body Tap - 5/16"-32	1422-0043
Valve Seat Reamer - RT-33	1420-0059
Head Die - 15/16"-18	1422-0114
Head Reamer - RT-57	1420-0086
Oxygen Inlet Conn. Die - 9/16"-18RH	1422-0091
Fuel Inlet Conn. Die - 9/16"-18LH	1422-0092