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</tr>
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</table>

**NOTE**

For Complete Operating Data Tables, and Information on Welding Technique, Joint Selection and Preparation, etc., Refer to F-6190, "How to Weld with HELIARC Torches," Which is Packed with Each HW-10 Torch.
The terms "Linde," "Heliarc," and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.
INTRODUCTION

The HELIARC HW-10 Torch is designed for hand-welding. It can be used with high-frequency stabilized alternating current, or with straight-polarity direct current. Its current capacity is 300 amperes at a normal welding duty cycle. Tungsten electrodes from .040-in. to 1/8-in. diameter are accommodated in the rated current capacity. The torch is available with either a 12-1/2 ft. or 25-ft. length of cable-and-hose assembly.

Both metal nozzles and ceramic gas cups can be used with the HW-10. The metal nozzles are cooled by their screwed connection to a water-cooled jacket. The water jacket, torch body, and power cable are water-cooled by internal passages to eliminate cumbersome hose and fittings which interfere with maneuverability and visibility during welding. Because of this, the torch is lightweight and well balanced for convenient and easy handling. Water-cooling also protects essential parts from excessive heat, thereby giving the torch durability.

Another important feature is that the torch is designed for quick-release collets for gripping electrodes. These collets make changing or adjusting the electrode a simple operation. To adjust an electrode, the operator merely loosens the torch cap a quarter-turn or less, positions the electrode, and retightens the cap. This method of electrode adjustment is convenient and time saving, and does not require the use of any wrenches or special tools.

The torch body passages are accessible for cleaning by simply removing the detachable head parts such as the water jacket, collet body, etc.

I. SETTING UP THE HW-10 TORCH TO WELD

A. Equipment Needed

Check to be sure you have the following before setting up the equipment.

1. HELIARC HW-10 Torch which includes the necessary hose and power cable.

2. An electrode and collet of corresponding size. (See Table 1 for recommended electrode diameters for different welding current ranges.)

3. A metal nozzle or ceramic cup of the correct size for the welding current you intend to use. (See Table 1 for recommended nozzle and cup sizes for different welding currents.)

4. Fuse assembly, Part No. 56Y46, (optional) to prevent the torch from overheating if the water supply should fail. It is strongly recommended for use where the water flow fluctuates widely. If a fuse assembly is not used, a power cable adaptor (Part No. 84Z84) is necessary for connecting the standard 3/8 water hose to the water-cooled torch cable. One or the other of these accessories must be used to place the torch in operation.

5. Cylinder of LINDE argon.

6. An OXWELD R-502 Argon Regulator and Flowmeter (Part No. 0380). (An OXWELD L-23 flowmeter, together with any standard oxygen cylinder regulator, such as an OXWELD R-64, may be substituted for the R-502.)

7. An OXWELD V-30 Double shutoff Valve (Part No. 16Y21).

8. A source of cooling water. (See Part II, Section A, for information on cooling water requirements.)

9. A drain for disposal of cooling water.

10. Additional hose assemblies.

(a) A 1/4-in. argon hose assembly of suitable length for connecting the regulator to the V-30 valve.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>10Y72</td>
<td>12-1/2-ft.</td>
</tr>
<tr>
<td>10Y68</td>
<td>25-ft.</td>
</tr>
</tbody>
</table>

(b) A 1/4-in. water hose assembly for connecting the V-30 valve to the water supply line. (A 1/4-in. pipe can be used if desired.)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>10Y93</td>
<td>12-1/2-ft.</td>
</tr>
<tr>
<td>10Y94</td>
<td>25-ft.</td>
</tr>
</tbody>
</table>

11. An OXWELD adaptor (Part No. 10Z30) for connecting the water inlet hose to the water supply line.

12. A source of electric power. (See Part I, Section C, for information on electric power requirements.)

13. A welding transformer and a high-frequency generator, if welding is with alternating current; a welding generator, if welding is with direct current.

14. Suitable lengths of 3/8 welding cable to connect the welding generator to the torch and to the work.

15. A clamp to ground the welding cable to the work.

16. A welder's helmet with the proper shade of glass for the welding current you intend to use.

<table>
<thead>
<tr>
<th>Glass No.</th>
<th>Welding Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Up to 30 amperes</td>
</tr>
<tr>
<td>8</td>
<td>30 to 75 amperes</td>
</tr>
<tr>
<td>10</td>
<td>75 to 200 amperes</td>
</tr>
<tr>
<td>12</td>
<td>200 to 250 amperes</td>
</tr>
</tbody>
</table>
FIG. 1 - SCHEMATIC DIAGRAM FOR "HELIARC" A.C. WELDING

FIG. 2 - SCHEMATIC DIAGRAM FOR "HELIARC" D.C. WELDING

**NOTE 1:** HEAVY LINES INDICATE CHANGES TO BE MADE IN GENERATOR CIRCUIT
**NOTE 2:** X INDICATES "BREAK CONNECTION HERE"
B. Hose Connections

1. Connect one of the accessory 1/4-in. water hose assemblies (Part No. 10Y93 or 10Y94) to the water supply line, using the adaptor (Part No. 10Z30) if required. Connect the other end of the hose assembly to the water inlet of the V-30 valve.

2. Connect the torch inlet water hose assembly to the water outlet of the V-30 valve.

3. Connect the torch power cable to the fuse assembly coupling. If no fuse assembly is used, screw the torch power cable nut onto the matching threads of the cable adaptor (Part No. 84Z84).

4. Connect the water outlet hose from the fuse assembly to a suitable water drain. If no fuse assembly is used, connect a length of hose from the water outlet of the cable adaptor to the water drain.

5. Connect the regulator to the argon cylinder. (See the instructions supplied with the regulator.)

6. Connect the outlet of the regulator to the argon inlet of the V-30 valve, using an accessory 1/4-in. argon hose assembly (Part No. 10Y72 or 10Y68).

7. Connect the torch argon hose to the argon outlet of the V-30 valve. However, if an R-64 regulator is used with an L-23 flowmeter, connect the flowmeter inlet to the V-30 valve argon outlet, using a 90-deg. adaptor (Part No. 18X59). (See the instructions supplied with the flowmeter.) Then connect the torch argon hose to the flowmeter outlet.

C. Electrical Setup

1. POWER REQUIREMENTS

   (a) For a.c. welding, a single-phase transformer requiring a 220-or 440-volt, alternating current supply, is generally used.

   (b) For d.c. welding, a motor-generator unit powered by a 220-or 440-volt, 3-phase alternating current supply is generally used.

   NOTE: Be sure to obtain manufacturer’s recommendations on power requirements for your transformer or generator.

2. SPECIAL CONTROL CIRCUITS Several special control circuits have been developed to automatically control various phases of the welding process. By use of these circuits, you can conserve argon and water, reduce radio interference when using high-frequency current, and provide greater convenience of operation. For specific details, call or write your nearest LINDE office. A booklet (Form 9067) giving descriptions of the circuits, and specifications for the equipment needed will be sent to you without charge upon request.

3. ELECTRICAL CONNECTIONS Before making any connections, refer to the schematic wiring diagram in Figures 1 and 2 for alternating current and direct current welding setups. Note that a foot switch is connected in an external circuit to interrupt welding current. Its use is recommended because it provides a convenient method of control. It also enables you to shut off welding current without removing the argon protection at the end of a seam, thus controlling crater cracking especially when welding high-temperature alloys. If you have an alternating current setup, radio interference caused by high-frequency current will be greatly reduced since no high-frequency current flows when the welding current is shut off. If no foot switch is used, the arc can be broken by lifting the torch from the work. However, this method of control is not as satisfactory for high-temperature alloys.

   CONNECTIONS FOR A.C. WELDING (FIG. 1)

   (a) Connect the fuse assembly or cable adaptor (1) to the “torch” terminal (2) of the high-frequency generator with a suitable length of 3/0 welding cable.

   (b) Connect the workpiece (3) to the “work” terminal (4) of the high-frequency generator with a suitable length of 3/0 welding cable. Fasten the cable to a clean surface of the workpiece with a clamp. This will give you a good contact.

   (c) Connect the input terminals (5) of the high-frequency generator to the output terminals (6) of the transformer secondary with suitable lengths of 3/0 cable.

   (d) Connect the input terminals (7) of the transformer primary to one set of terminals (8) of the main contactor. Then connect the other terminals (9) of the main contactor to the 220- or 440-volt main power supply (10). Be sure to select a conductor which will carry the maximum current you will use.

   (e) Connect the high-frequency generator (11) to the lines (12) leading from the main contactor to the transformer primary. This connection is made so that power to the high-frequency generator is shut off when the main contactor is open.

   (f) Connect one terminal (13) of the main contactor coil to one terminal (14) of the auxiliary contactor. Connect the remaining terminals (15) of the main contactor coil and the auxiliary contactor to opposite sides (16) of the 220- or 440-volt main power supply.

   (g) Connect one terminal (17) of the auxiliary contactor coil to one terminal (18) of the foot switch. Connect the remaining terminals (19) of the auxiliary contactor coil and the foot switch to opposite sides (20) of the low voltage a.c. supply. (A control circuit supply of 6 to 24 volts is recommended for safety reasons.)
(h) Make a ground connection (21) from the
“work” terminal (4) of the high-frequency
generator. MAKE NO OTHER GROUND
CONNECTION. Connect the case (22) of the
high-frequency generator and the case (23)
of the transformer to the “work” terminal
(4) of the high-frequency generator.

CONNECTIONS FOR D.C. WELDING (FIG. 2)
(a) Connect a suitable length of 3/0 welding
cable between the fuse assembly or cable
adaptor (1) and the “negative” generator
terminal (2) for straight-polarity welding.
Connect the “positive” terminal (3) of the
generator to the work (4). Use suitable
lengths of 3/0 welding cable for these connec-
tions. Secure the ground connection to clean
bright metal of the workpiece with a clamp for
good contact.

(b) Make separate ground connections (5) to the
work (4) and to the generator case (6).

(c) If you use a generator of the separately-
excited type shown in Figure 2 you can shut
off welding current remotely without lifting
the torch from the work by means of a foot or
hand switch which actuates a field relay.
Parallel the field coil contacts with a 0.25
Mfd, 600-volt discharge condenser. For all
other types of generators, obtain the manufac-
turer’s recommendations on installing a
remote current shutoff. Connect one ter-


\[
\begin{array}{|c|c|c|c|}
\hline
\text{Electrode Diameter} & \text{Metal Nozzle} & \text{Ceramic Cup No.} & \text{Welding Current (Amps.)} \\
\text{In.} & \text{No.} & \text{No.} & \text{A.C.} & \text{DCSP} \\
\hline
.040 & 4 & 4 & 10 - 60 & 10 - 80 \\
1/16 & 4 - 5 & 4 - 5 & 40 - 120 & 60 - 150 \\
3/32 & 5 - 6 & 6 - 7 & 100 - 160 & 150 - 250 \\
1/8 & 6 - 7 - 8 & 6 - 7 - 8 & 150 - 210 & 250 - 300 \\
\hline
\end{array}
\]

* Add 65% to top limits for 2% thoriated electrodes.

(d) Connect the input terminals (11) of the motor
side of the welding generator to the 220-or
440-volt alternating current main power
supply (12).

D. Metal Nozzles, Ceramic Cups, and
Electrode Collets
1. METAL NOZZLES AND CERAMIC CUPS. Five
metal nozzles and five ceramic cups are available
for use with the HW-10. Each nozzle or cup size
is intended for use with a different welding cur-
rent range. For the most effective argon pro-
tection, select the nozzle or cup size according
to the recommendations in Table I.

2. ELECTRODE COLLECTS. The electrode collets
are designed for quick and simple adjustment
of the electrode. They are available for four
different electrode sizes (.040-in. to 1/8-in.
diameter). Install the collet and electrode as
follows:
(a) Remove the torch cap from the torch.
(b) Insert a collet for the electrode size you
intend to use into the top of the torch head.
Mate the tapered end of the collet with the
tapered seat in the torch head.
(c) Insert an electrode of corresponding size
into the top of the collet. Allow the electrode
to protrude 1/8 to 3/16-in. beyond the end
of the nozzle for butt welding, and 1/4 to
3/8-in. for fillet welding. Then screw the
torch cap onto the torch head and tighten it
just enough to hold the electrode firmly.

E. Final Steps Before Welding
1. Check all argon and water connections for tight-
ness. Turn on the cooling water supply, making
sure that the flow is adequate. (See Part II,
Section A below for recommended pressure,
volume, and temperature.)

2. With the regulator flow-adjusting valve closed,
open the argon cylinder valve.

3. Remove the torch from the V-30 valve arm; then
turn the regulator flow-adjusting valve counterclockwise to obtain the desired flow.

4. Set the welding generator or transformer for
the desired welding current.

5. Close the foot or hand switch.

6. Draw a test arc on a heavy piece of scrap steel
or copper. (Do not use a carbon pencil or carbon
block for starting an arc.)
II. GENERAL NOTES ON TORCH OPERATION

A. Cooling Water Requirements

1. USE CLEAN COOLING WATER  The cooling water that circulates through the torch body, water jacket, and cable and hose assembly should be clean and free from dirt or other solid material which might clog the water passages.

If the torch becomes clogged, it can sometimes be flushed out by reversing the connections to reverse the water flow. CAUTION: BE SURE NOT TO WELD WITH WATER FLOW REVERSED. The water should cool the torch body and water jacket before it flows through the cable and hose assembly. If the water flow is reversed when a fuse assembly is used, (1) the inlet water will first cool the fuse and render it inoperative at the temperature for which it was designed, and (2) the temperature of the water flowing to the torch body is too high for effective protection of the torch.

To prevent further clogging, install a strainer, such as the 1/4-in., type 340, semi-steel, 60-mesh brass screen available from Kleiy and Mueller, Inc., 1053 Fourth Street, North Bergen, N. J., or equivalent.

2. COOLING WATER INLET PRESSURE, VOLUME AND TEMPERATURE  The 300-ampere capacity rating of the torch is based on cooling water flow of one quart per minute with 25 psi inlet pressure and 60-deg. F. inlet temperature. If the inlet pressure is above 50 psi, a water regulator should be installed to prevent possible damage to hose. A suitable regulator is the type 463, 1/4-in. water regulator available from Kiely and Mueller, Inc., 1033 Fourth Street, North Bergen, N. J. (Any equivalent regulator can also be used.)

B. Leakage in the Torch Head

An ‘O’ ring (Part No. 84W85) acts as a seal between gas and water in the torch head. If this ‘O’ ring is damaged, or if the torch-head nut (Part No. 84Z66) is not sufficiently tight, leakage may develop at the joint. If leakage occurs:

1. Unscrew the torch cap and the torch-head nut.
2. Inspect the ‘O’ ring. Replace with a new ‘O’ ring if defective.
3. Retighten the torch-head nut, and screw on the torch cap.

C. Fuse Installation and Replacement

1. To install a fuse assembly, simply connect the power cable nut to the fuse assembly coupling. Then connect the standard 3/0 welding cable to the fuse assembly lug, and lead the water outlet hose to an open drain.

2. To insert a new fuse, proceed as follows:

(a) Bend the fuse link to a 90-deg. angle about 1/4-in. from one end.
(b) Insert the fuse link in one of the fuse-centering disks and place it into one end of the fuse body.
(c) Replace the lock screw.
(d) Place the other fuse-centering disk at the opposite end of the body, taking care to insert the end of the fuse link through the slot in the disk. Then press the centering disk down into the groove in the fuse body.
(e) Bend the end of the fuse link against the disk and replace the lock screw, tightening it firmly.
(f) Replace the two large end nuts.

3. To replace or inspect a fuse, proceed as follows:

(a) Remove the large nut and lock screw from each end.
(b) If the fuse link is centered properly, a round impression from the lock screw should be visible.
(c) If the fuse link has been caught in the lock screw threads, remove the centering disks and the fuse link. Then replace with a new fuse link, making sure that it is seated properly.
(d) The fuse link (Part No. 84W30) is brass-plated for corrosion resistance. Its use is recommended when replacement becomes necessary. Standard 30-ampere 250-volt links may be used in an emergency but are not recommended for regular operation.

4. Two fuse links must be used to accommodate the 300-ampere capacity rating of the torch.

D. Torch Hose

1. Make certain that all argon hose connections and the gas-cap connections are gas-tight. If they are not, the argon may become diluted by air due to leakage, resulting in incomplete arc protection. The electrode should be silvery in color when it cools. A bluish color denotes air leakage. When welding aluminum, the presence of a dark gray deposit on or beside the weld, or a cloudy weld puddle also indicates air leakage.

2. Keep hoses off hot metal. Plastic hose softens and begins to lose strength when heated to about 125 deg. F.
3. For instructions on hose repair and replacement, refer to page 11.

E. Do Not Let the Nozzle Touch the Work
   If a nozzle touches the work, the arc may jump the gap from the electrode to the nozzle rather than to the work because of the conductivity of the hot gases. For this reason, hold the torch so that the nozzle does not touch at any point of the work.

F. Keep the Electrode Clean
   1. If weld spatter sticks to the electrode, a black soot may appear when welding aluminum; or a reddish deposit may appear when you weld stainless steel. To clean the electrode, simply draw an arc for a few seconds on a heavy piece of scrap steel or copper (do not use a carbon block).
   2. Should contamination of the electrode occur, due to contact with the weld puddle, shut off the power and remove the electrode from the torch. Break off a small piece from the end, and then replace the electrode. Always remove the electrode before breaking it off, to minimize waste of electrodes.
   3. It is advisable to nick the electrode slightly with a grinding wheel at the point where the break is to be made. Then remove the contaminated end with pliers gripped close to the nick.

G. Conservation of Tungsten
   Tungsten is in short supply. Conserve tungsten electrode wherever possible. Here’s how:
   1. Avoid contamination of electrodes caused by unnecessary contact with the workpiece.
   2. Weld stub ends to make electrodes of usable length. Welding can be done with a HELIARC Torch, using either DCSP or ACHF, currents from 30 to 100 amperes, argon flow of 6-8 liters per minute.
   3. Don’t scrap stub ends. The tungsten in them can be reclaimed for continued use in the defense effort.

III. SAFETY PRECAUTIONS

A. Use a standard welder’s helmet with the proper shade of glass for the welding current to be used (See Table on Page 3).
B. Wear suitable clothing to protect exposed skin from arc burns.
C. Be sure to shut off power before adjusting or replacing electrodes.
D. When welding copper indoors, provide good ventilation or use a respirator.
E. If you use chlorinated solvents for degreasing or cleaning the workpiece, do not weld near degreasing tanks.
Type HW-10 "HELIARC" Water-Cooled Welding Torch

Spare Parts Supplied
- Insulator Gasket: 84268
- "O" Ring: 84W85, 85W30, 85W51

Accessories (Not Supplied)
Refer to Replacement Parts List on opposite page under "Accessories."
**Replacement Parts List**

**FOR**

HW-10 "HELIARC" HAND-WELDING TORCH

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>84W85</td>
<td>&quot;O&quot; Ring</td>
<td>78263</td>
<td>Water Outlet Connection</td>
</tr>
<tr>
<td>85W30</td>
<td>&quot;O&quot; Ring</td>
<td>56Y59</td>
<td>Water Jacket</td>
</tr>
<tr>
<td>85W51</td>
<td>&quot;O&quot; Ring</td>
<td>84Z53</td>
<td>Handle</td>
</tr>
<tr>
<td>54Y60</td>
<td>Water Inlet Hose Assembly (12-1/2 ft.)</td>
<td>84263</td>
<td>Water Jacket Adaptor</td>
</tr>
<tr>
<td>54Y61</td>
<td>Argon Inlet Hose Assembly (12-1/2 ft.)</td>
<td>84265</td>
<td>Collet Body</td>
</tr>
<tr>
<td>54Y62</td>
<td>Water Inlet Hose Assembly (25 ft.)</td>
<td>84266</td>
<td>Nut</td>
</tr>
<tr>
<td>54Y63</td>
<td>Cable and Hose Assembly (12-1/2 ft.)</td>
<td>84267</td>
<td>Washer</td>
</tr>
<tr>
<td>55Y70</td>
<td>Argon Inlet Hose Assembly (25 ft.)</td>
<td>84268</td>
<td>Insulator Gasket</td>
</tr>
<tr>
<td>55Y72</td>
<td>Cable and Hose Assembly (25 ft.)</td>
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<td></td>
</tr>
<tr>
<td>56Y44</td>
<td>Torch Cap (Long) Includes:</td>
<td>84W85</td>
<td>&quot;O&quot; Ring</td>
</tr>
<tr>
<td>85W50</td>
<td>&quot;O&quot; Ring</td>
<td>85W30</td>
<td>&quot;O&quot; Ring</td>
</tr>
<tr>
<td>56Y47</td>
<td>Torch Body Includes:</td>
<td>85W51</td>
<td>&quot;O&quot; Ring</td>
</tr>
<tr>
<td>79240</td>
<td>Inlet Connection (2 Used)</td>
<td>84268</td>
<td>Insulator Gasket</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

(These parts must be purchased separately)

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>DESCRIPTION</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>56Y45</td>
<td>Torch Cap (Short)</td>
<td>84Z56</td>
<td>No. 6 Nozzle</td>
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<tr>
<td>56Y48</td>
<td>Fuse and Hose Assembly Includes:</td>
<td>84Z57</td>
<td>No. 7 Nozzle</td>
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<td>54Y25</td>
<td>Fuse Assembly Includes:</td>
<td>84Z58</td>
<td>No. 8 Nozzle</td>
</tr>
<tr>
<td>84W30</td>
<td>Fuse Link</td>
<td>84Z59</td>
<td>.040-in. Collet</td>
</tr>
<tr>
<td>75291</td>
<td>Fuse Body</td>
<td>84Z60</td>
<td>1/16-in. Collet</td>
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<tr>
<td>75292</td>
<td>Fuse Disk (2 Used)</td>
<td>84Z61</td>
<td>3/32-in. Collet</td>
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<td>75297</td>
<td>Locking Screw (2 Used)</td>
<td>84Z62</td>
<td>1/8-in. Collet</td>
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<td>Coupling (2 Used)</td>
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<td>Cable and Body Assembly Includes:</td>
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<td>No. 4 Ceramic Cup</td>
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<td>Lug</td>
<td>85Z08</td>
<td>No. 5 Ceramic Cup</td>
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<td>Body</td>
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<td>Cable</td>
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<td>No. 7 Ceramic Cup</td>
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<td>54Y78</td>
<td>Water Outlet Hose Assembly</td>
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<td>No. 8 Ceramic Cup</td>
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<td>76212</td>
<td>Fuse Casing</td>
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<td>Standard Electrodes (7 in. long)</td>
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<td>(3) Fuse Link (Supplied)</td>
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<td>84255</td>
<td>No. 5 Nozzle</td>
<td>76251</td>
<td>1/16</td>
</tr>
</tbody>
</table>
HOSE REPAIR AND REPLACEMENT

Power Cable-and-Hose Assembly

If the power cable-and-hose assembly becomes damaged, we recommend that you purchase a new assembly, or send the damaged cable-and-hose assembly over to your nearest LINDE repair station for possible repair. DO NOT TRY TO REPAIR IT YOURSELF. The connection fittings at each end of the assembly are crimped to the cable and insulator hose by special crimping tools at the factory to obtain a strong and completely water-tight joint. A satisfactory repair job cannot be done without these tools.

Argon and Water Hose Assemblies

If an argon or water hose assembly becomes damaged, we recommend that you purchase a new hose assembly or send the damaged hose assembly to the nearest LINDE repair station for possible repair. DO NOT ATTEMPT PERMANENT REPAIRS YOURSELF. As with the power cable-and-hose assembly, the connection fittings are crimped on at the factory by special crimping tools to assure a leakproof connection. A completely satisfactory job cannot be done without these tools. Improper repair of an argon hose connection, for example, could cause argon dilution, resulting in incomplete arc protection and consequent unsatisfactory welds. If you must continue to use the torch until new or properly-repaired plastic hose can be installed, temporary repairs can be made as follows:

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Hose</th>
<th>Nut</th>
<th>Nipple</th>
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<tbody>
<tr>
<td>54Y60</td>
<td>Water Inlet (Torch End)</td>
<td>76Z04</td>
<td>3382</td>
<td>03Z83</td>
</tr>
<tr>
<td></td>
<td>(Inlet End)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54Y61</td>
<td>Argon Inlet (Torch End)</td>
<td>76Z04</td>
<td>3382</td>
<td>03Z83</td>
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<tr>
<td></td>
<td>(Inlet End)</td>
<td></td>
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<td></td>
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<tr>
<td>54Y78</td>
<td>Water Outlet</td>
<td>76Z10</td>
<td>36Z40</td>
<td>32A12</td>
</tr>
</tbody>
</table>
LINDE Supplies These Quality Products to the Nation’s Industries

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LINDE Oxygen, Nitrogen, Argon, Neon, Helium,
Krypton, Xenon, Hydrogen
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Acetylene Generators
Manifolds, Regulators and Valves
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PREST-O-WELD Welding and Cutting Apparatus
PUROX Welding and Cutting Apparatus
PREST-O-LITE Air-Acetylene Apparatus and Small Tanks
CARBIC Acetylene Flood Lights
Acetylene Generators

ELECTRIC WELDING EQUIPMENT
UNIONMELT Automatic Welding Apparatus and Supplies
HELIAARC Welding Torches
LINDE Sigma Welding Equipment

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Plate-Edge Preparation Equipment
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