SUPERIOR

ELECTRIC SOLDERING MACHINE

Catalog No. 42-553

This machine has been carefully packaged with the following items. Please check carefully before discarding any packaging material.

1 Package containing:

Item	Catalog No.
2 small carbons, pointed	42-553-01
1 large carbon, round	42-553-02
1 large carbon, with flat	42-553-03
1 large carbon, pointed	42-553-04

1 Package containing:

Item	Catalog No.
1 alligator clamp with rod	42-553-11
1 bulldog clamp	42-553-12
1 contact rod	42-553-18

1 Package containing:

Carbon Holder and Base	42-553-19

This includes the following parts:
1 cast iron base, 2 round head machine screws, 1 wing nut, 1 U bracket, 1 carbon bracket, 1 tubing connector and directions for assembling

1 Set of General Directions

Unit No. 077726

Packaged by: Rose

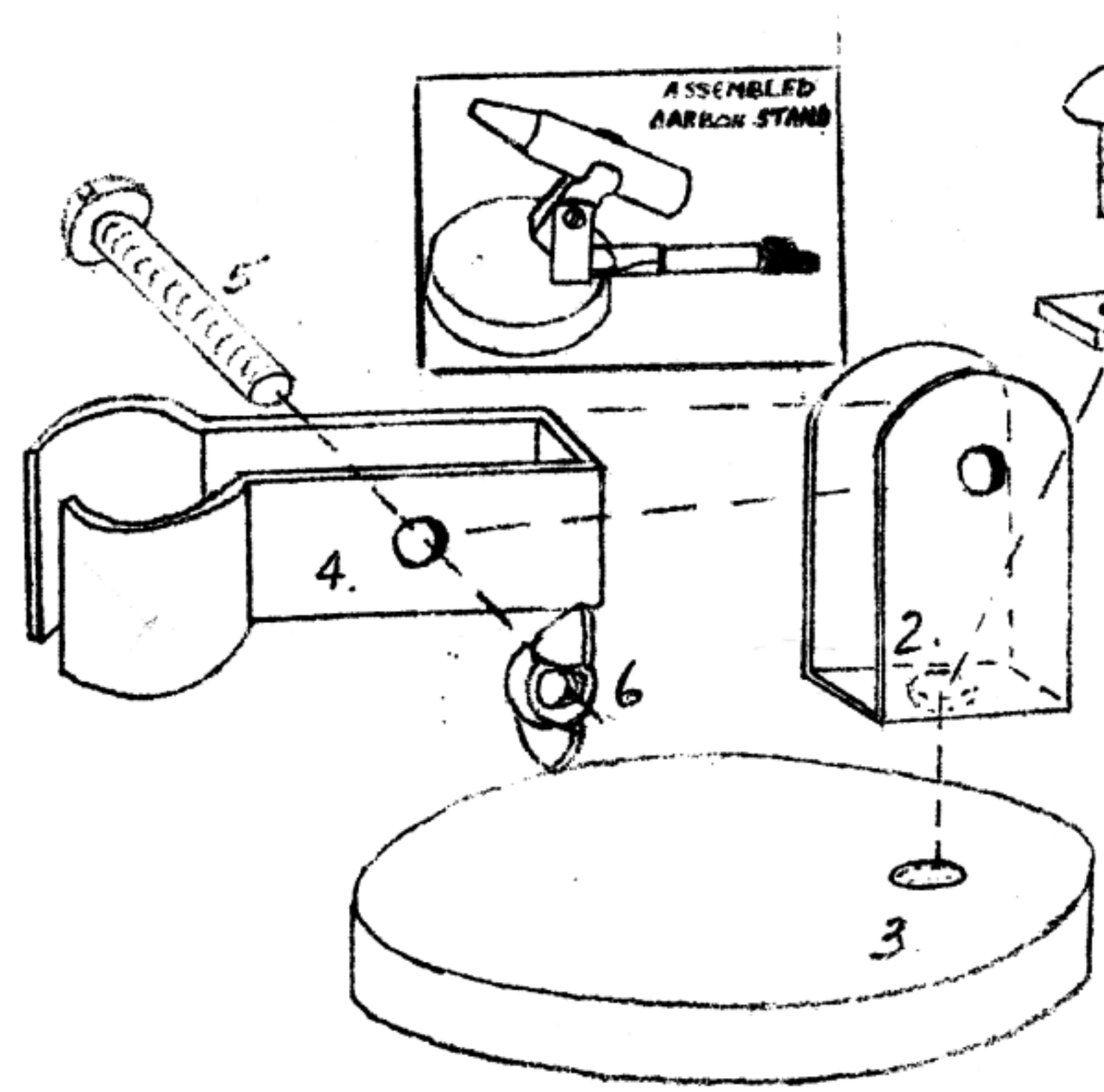
TO ASSEMBLE THE CARBON STAND #42-553-19

1. The smaller screw assembles the tubing connector (1) and the upright clamp (2) to the base (3). The screw goes into the threaded hole in the base to hold the parts securely.

2. The carbon holder (4) is placed within the arms of the upright clamp, the holes are lined up and the longer screw (5) is passed through the holes.

3. The wing nut (6) is screwed on to the long screw to hold the parts in place.

4. The carbon may be placed within the rounded portion of the carbon holder and the whole positioned at the desired angle. The wing nut is tightened to hold the parts securely.



OPERATING INSTRUCTIONS FOR HR SUPERIOR SOLDERING MACHINE No. 42-553

The HR Superior Soldering Machine is designed to operate on 115 volt, 60 cycle AC current. A 15 ampere circuit is ample, provided the line is not overloaded with other equipment. After connecting the machine to a wall outlet, step on the foot switch. A buzzing sound will indicate the machine is receiving current and is ready for use.

The HR Superior Soldering Machine is shock-proof! Those unfamiliar with electric soldering must overcome any fear of shock. The voltage at the highest heat is very low and the hands may touch any part of the carbon holders or contact clips without any sensation of shock.

The heat for soldering is produced by the HR Superior Soldering Machine electrically, without flame, by touching a carbon electrode to the work to be soldered. The current passing through the carbon will heat the object to be soldered in a matter of seconds.

FAMILIARIZE YOURSELF WITH THE MACHINE AND ACCESSORIES

The carbon holder stand is for the large round carbons and is plugged into the end of the cord coming from the left of the machine. The large carbon holder can be adjusted to use carbons both horizontally or vertically, and is made low enough so that both hands can rest on the bench to steady them while soldering.

The pencil carbons also fit into the end of the cord coming from the left of the machine, and are generally used on large articles where it is difficult to bring the work to the carbons, and for soft soldering of joints, catches, etc.

Carbons are copper plated to insure good contact. Do not attempt to solder on the copper coated section.

Two sizes of spring contact clips are supplied, and one or the other is plugged into the cord coming from the right side of the machine. These are used to hold the article to be soldered. Use the large clip when possible.

The pointed brass rod is used to make contact when the spring clips will not grasp the articles due to being extremely large or small size. In such cases, the rod is grasped with the large clip and touched to the article to make electrical contact.

Heat is controlled by the indicator knob so that you can dial the correct heat. The amount of heat required depends on the type of solder and the area to be soldered. Low heat is required for lead, bismuth and silver solder; medium for gold; and high for chrome metals. Some experimentation will soon enable you to judge which heat settings will be required for various jobs.

The foot switch turns the machine on and off, although as an extra precaution, we recommend disconnecting the machine from the electrical outlet when you are through with your work.

The HR Superior Soldering Machine can also be used as a demagnetizer for watch movements and small tools. Hold the object to be demagnetized over the small hole in the end of the right side of the machine and press foot switch. Keep the machine on, while you draw the object away from the machine to about 2 feet, then release foot switch. Test object for magnetism and repeat operation, if necessary.

FLUXES -- Because most metals oxidize when heated, which prevents solder from adhering and flowing, a flux is used to dissolve the oxides. The flux also acts as a protective film to keep the air away from the metal, thus checking oxidization.

Since the oxides formed by hard metal alloys are different than in softer metals, fluxes are compounded especially for the metals and alloys which will be used in each soldering process. Furthermore, fluxes must withstand the temperature used in each process.

Therefore, selection of the correct type of flux is important. Various fluxes are listed in catalogs, along with recommendations for use. Schwerter's solutions are made for both soft and hard soldering and are very acceptable. Borax, or solutions containing borax, crystallize into a hard scale which tends to break electrical contact with the work, and are not recommended.

SOLDERS -- The type selected must melt at a lower temperature than the pieces being joined, or the work will melt before the solder. Furthermore, they must bond with the metals being joined, and generally, metals which can be alloyed with the work, should be present in the solder. In jewelry work, it is often important that the joints be invisible, and the color of the solder should match the original piece. It is for this reason that there is a gold solder to match almost every color and karat.

CLEANLINESS -- To form a strong bond, the solders and metals to be joined must be clean. Scratch brush and scrape the area to be soldered so that it is clean and bright.

Carbons should also be kept clean by using coarse emery cloth, leaving the surface somewhat rough.

SOLDERING PROCEDURE

Before attempting new work, it is best to practice on old articles from the scrap box to familiarize yourself with the general procedure.

1. Arrange work so that hands can be held steady. The idea is to provide a complete electrical circuit, with the carbon at the point to be soldered.

   a. Attach contact clip to the article, or larger of the two pieces to be joined, and as near as possible to the joint being soldered. If clips cannot be used, use pointed brass rod in large clip to touch the article to make electrical contact.

   b. Adjust carbon so that you can conveniently touch the joint to be soldered.

2. Place solder at the joint. Where two separate pieces are to be joined it is usually preferable to place the solder between them or directly under the joint. In soldering ring shanks, the solder can be pressed into the joint and then soldered. Placing solder on top of the work usually results in the solder forming a ball and rolling away. It is also sometimes convenient to "tack" the solder at low heat to one part before fusing the joint together.

3. Apply flux to solder as well as joint to be soldered, but keep from carbon as much as possible.

4. The heat control should be set as closely as possible to what the operator thinks is the correct setting. Remember that a small point of contact will create intense heat, and therefore, the control should be set relatively low. The greater the area of contact, the less concentrated the heat, and the control should be set higher. After a little practice, you will be able to determine the exact settings for different jobs and metals.

5. Bring the joint to be soldered in contact with the carbon and hold steady. Do not apply undue pressure to avoid flat spots or deforming the article. Apply the heat by stepping on the foot switch. If the solder flows immediately, release the foot switch, before removing the work from the carbon.

   a. If the solder does not flow immediately (within 3 seconds), the heat control might be set too low. Set control slightly higher and try again.

   b. If the heat control was initially set too high, the joint might burn, although it is possible for the quick, intense heat to oxidize the joint, thereby destroying the electrical contact. Examine the article carefully for discoloration caused by oxidation. If discolored, start over again, cleaning the article and solder thoroughly.

SOLDERING SUGGESTIONS

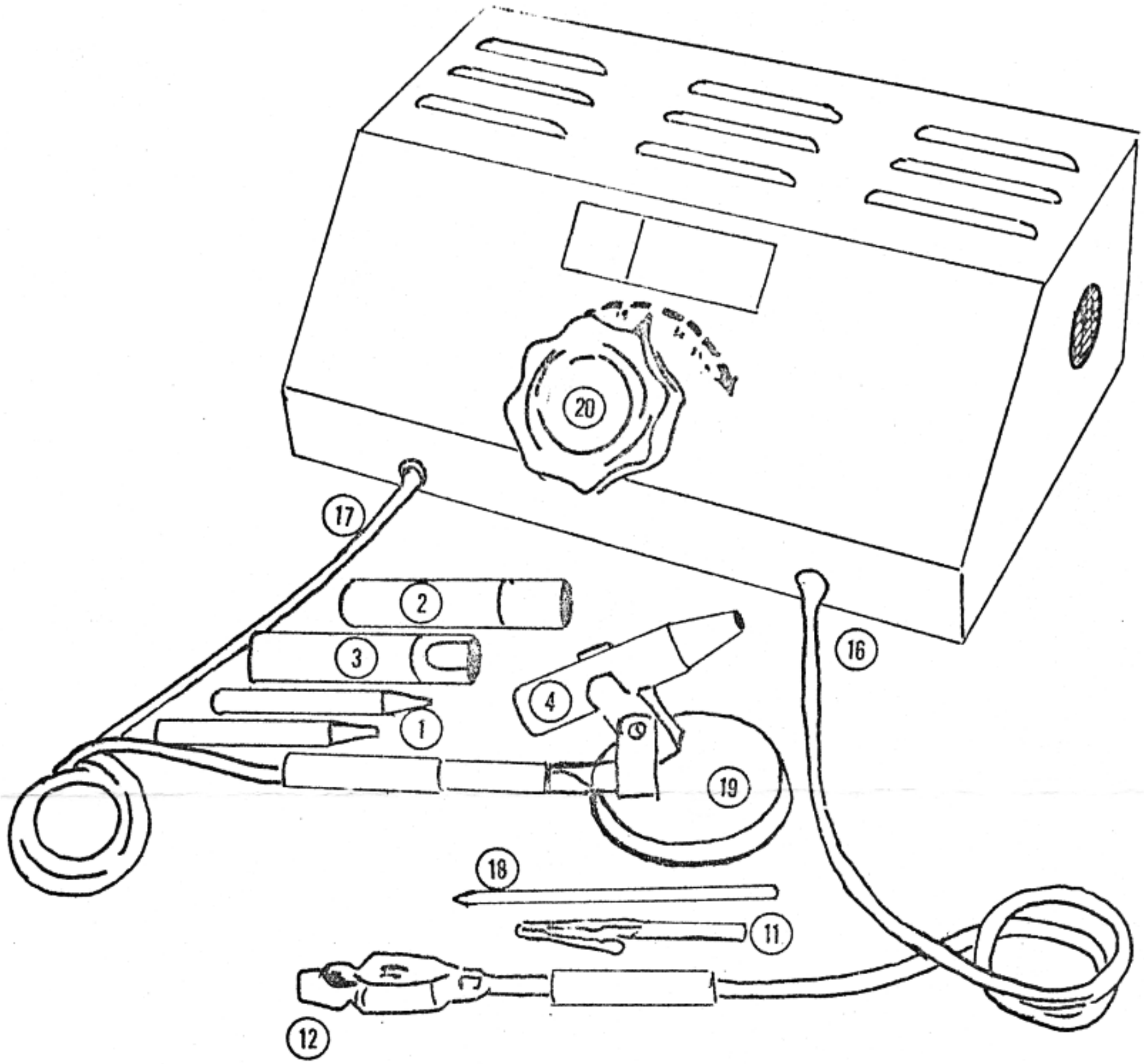
A. Due to the fact that the heat is localized at the point where the work touches the carbon, and because of the fact that heat is generated quickly, many jobs which are difficult or impossible with a flame, are easily accomplished with the HR Superior Soldering Machine. For example, spectacle frames with zylo pads can be soldered near the pad and quenched before the heat has travelled far enough to do damage. Gem stones can be protected by covering them with Kool Jool to prevent heat from damaging them.

B. Fine chains can be held in a pair of tweezers with the contact clips attached to the tweezer.

C. Sizing rings to a larger size can be accomplished by using a length of ring sizing material much longer than required, and soldering on one side first, after which the material can be shaped to size and then the other side soldered.

D. A piece of emery cloth attached to the top of the bench is very useful for removing flux from the article and also to clean carbons.

E. If crystallized flux breaks the contact whilesoldering, move the work to another spot on the carbon or scrape the flux from the article where it makes contact. Do not increase the heat if contact is broken, as this can result in ruined work.



No. 42-553 SOLDERING MACHINE PARTS LIST

		Order No.
(1)	Small Carbons, pencil shape	42-553-01
(2)	Large Carbon, cylindrical	42-553-02
(3)	" " " , w/flat	42-553-03
(4)	" " , pencil shape	42-553-04
(11)	Small Alligator Clip	42-553-11
(12)	Large Bulldog Clip	42-553-12
(16)	Right Hand Lead Wire.	42-553-16
(17)	Left Hand Lead Wire	42-553-17
(18)	Contact Rod	42-553-18
(19)	Carbon Holder Stand	42-553-19
(20)	Control Knob	42-553-20
(21)	Foot Switch (not shown)	42-553-21