

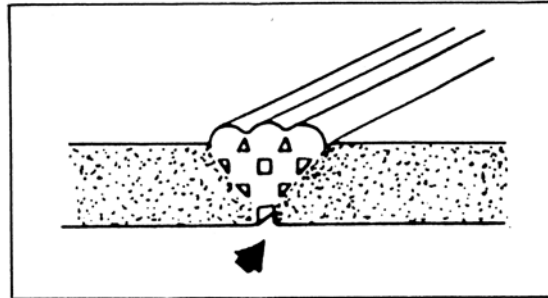
PLASTIC WELDING:

1. Caution: Practice should be done on scrap material before attempting to work on project.
2. Install the welding tip on the heat gun.
3. Cut the end of the plastic welding rod you are going to use at a 60-degree angle. It is recommended that the welding rod be as long as the joint being welded. This will prevent a weak spot in the weld where the rods may be joined.
4. Clean the parts you are going to weld with a damp cloth and then dry with a dry cloth. Next align the parts in the position you want to weld them. It may be necessary to clamp them in position.
5. Turn the heat gun on and let it warm up for about 30 seconds and set it to the proper welding temperature.
6. Hold the weld rod close to the starting point and apply heat to the rod and the base material until both are tacky. (The rod will start to soften). Press the welding rod down to the starting point on the joint to be welded at a 90-degree angle.
7. Continue moving the heat gun and the rod along the joint applying some pressure on the rod as it melts into the joint and move the heat gun in a slight half moon motion. Keep applying the heat immediately over the joint. Move at an even speed and with a constant pressure across the joint. Do not stretch the rod, as this will cause a weak section in the weld.
8. At the end of the weld cut the rod off with a knife or side cutter. Be sure to let the welding material cool to room temperature before testing the strength of the weld.

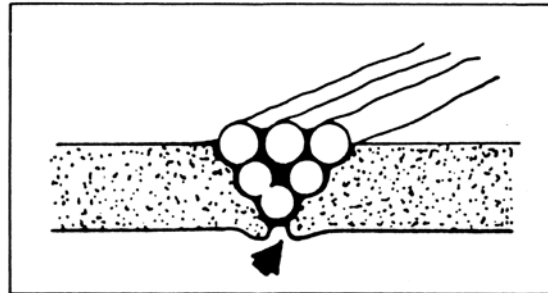
CAUTION: Plastic welding requires practice. Practice will give you the "feel" for the correct pressure to apply to the rod, how fast to move across the weld and what to look for to determine the strength of the weld.

WELDED JOINT:

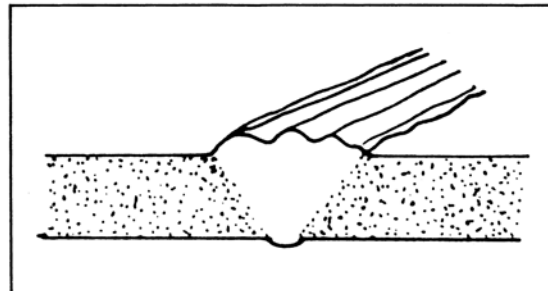
The following figures indicate what proper and improper welds may look like:



No bond, rods not completely fused
(weld can be pulled apart)



Burned weld and material charred,
rods not completely fused (weak weld)



Proper weld (rods fused)

STEINEL[®]

PLASTIC WELDING WITH STEINEL ELECTRONICALLY CONTROLLED HEAT GUNS



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Welding with STEINEL Electronically Controlled Heat Guns

Plastic Welding is very similar to metal welding in that to do plastic welding one must know what kind of plastic is involved, its melting point and how to make a proper weld joint. It is also important to remember that plastic welds will appear the same as metal welds and that a grinding and finishing process must be done before the weld will be complete. This is only a brief overview of plastic welding and contains only basic information that may be needed to do all types of plastic welding and finishing.

Introduction to Plastic Welding

Plastics that can be welded are called “thermoplastics” meaning that when heated to a sufficiently high temperature they will soften and therefore can be welded. The most common types of thermoplastics are Polyethylene, Polypropylene, Polyvinyl Chloride, Polyurethane and Acrylonitrile Butadiene Styrene (ABS).

Hot air welding is most effective if the material is more than 1/16” thick. A good weld will produce a joint that is about as strong or stronger than the original material.

It is necessary that you practice on scrap material to get the “feel” of plastic welding before starting on an actual project. Plastic welding takes practice just like metal welding.

Base Material and Welding Rod

The welding rod must be the same material as the material you are attempting to weld.

In some cases you may be able to determine the material you are working with from information provided by the manufacturer of the product; in other cases you will not.

One method of determining the type of plastic is by using the “Burn Test”. This is accomplished by observing how it burns, if it burns, the color of the flame and the smell of the smoke. It may be necessary to remove a small sliver of the material to perform the burn test.

The following chart provided the descriptive characteristics of the thermoplastics when subjected to the “burn test.”

No smoke, blue flame, candle wax odor	PE
No smoke, orange flame, and odor	PP
Black sooty smoke hang in the air	ABS
Sweet odor	ABS
Self Extinguishing, Won't Flame	PVC
Black smoke, sputtering affect	TPUR

WELDING TEMPERATURES:

The correct temperature of the airflow from the heat gun is very critical to making a good weld. Too much heat or not enough heat will result in weak welds.

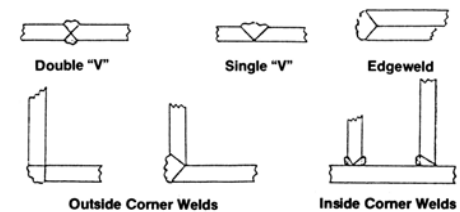
The following shows the correct welding temperatures for the various types of thermoplastics:

Type of Plastic Material	Welding Temp.
Polypropylene (PP)	575 ° F
Polyethylene (PE)	550° F
Acrylonitrile Butodiene Styne (ABS)	500° F
Polyvinyl Chloride (PVC)	525° F
Polyurethane (TPUR)	575° F

To test the temperature output apply heat to the welding rod you have selected. If the temperature is right the rod should get tacky and then very soft. If the rod starts to liquefy the temperature is too hot.

TYPES OF WELDS:

Plastic welds are very similar in appearance to metal welds and many of the same welding techniques are used. Note that the edges of the parts to be welded are beveled. This is important to make a smooth weld. The following figures show the various types of common welds.



STEINEL PLASTIC WELDING NOZZLES AND ACCESSORIES:

07062 – is placed on the heat gun as a base for 07201 and 07091

07201 – is used if you are using a rigid welding rod

07091 – is used if the rod material is flexible or rigid



The temperature control dial should be set between 7 and 8 on Models HL 1802 E and HL 2002 LE. The temperature control on the HL 1800 E should be set between 2 and 3 and on the HG 2000 E thumb wheel it should be set between the 2 and 3 notches.