

Socket Fusion Pipe Welder
HY PRO-X Series



DESCRIPTION

The HAYES HY PRO-X Series is the new digital socket fusion pipe welder (heating tool) that is suitable for joining a variety of thermoplastic pipes and fittings for different applications in the industry. This machine can weld HDPE (Polyethylene), PP-R (Polypropylene), PB (Polybutene).

Our heating tool is designed and manufactured according to the American international standard ASTM F2620. Our line of ancillary accessories such as heating adapters, cold ring pliers and chamfer/depth gages are manufactured to ASTM F1056 guidelines, which will assist in completing a quality fusion consistently if the pipe manufacturer's procedures are followed carefully.

We offer a variety of options for all our customer's needs. Our goal is to deliver world class guaranteed plastic pipe fusion tools with fast shipping for a very competitive price.




PROCEDURE / APPLICATION

Definition according to the ASTM F2620: The socket fusion technique consists of simultaneously heating both the external surface of the pipe end and the internal surface of the socket fitting to a designated temperature, then fuse them together by application of a sufficient force. Thereby resulting in fusion.

Socket fusion tools consist of a heating tool, heating adapter, cold rings pliers and chamfer/depth gages.



HEATING IRON TECHNICAL INFORMATION

	HY1PRO	HY2PRO	HY4PRO
Heating Tool			

Working range (Inches)	½" – 1" IPS	½" – 2" IPS	½" – 4" IPS
Power	600W	800W	1200W
Voltage range	110V	110V	110V
Frequency	50 / 60Hz	50 / 60Hz	50 / 60Hz
Display Temperature	Fahrenheit	Fahrenheit	Fahrenheit
Temperature setting range	0°F - 554°F	0°F - 554°F	0°F - 554°F
Factory Setting	500 ± 10°F	500 ± 10°F	500 ± 10°F
Warning Temperature	599°F	599°F	599°F
Socket temperature range	500 ± 10°F	500 ± 10°F	500 ± 10°F
Environment temperature	-68°F - 140°F	-68°F - 140°F	-68°F - 140°F
Relative humidity	45% - 95%	45% - 95%	45% - 95%
Insurability Resistance	≥1MΩ	≥1MΩ	≥1MΩ
Leakage Current	≤5Ma	≤5Ma	≤5Ma
Weight and dimensions	2.09 LBS 13x5x2 inches	3.52 LBS 15x5x2 inches	3.96 LBS 19x8x7 inches

✓ Heating tool features

- Heat resistant aluminum plate
- Digital screen with adjustable temperature control
- Accurate heating temperature
- Automatic adjustable environment temperature
- Ergonomic handle
- Durable and efficient to maximize the pipe fusion
- Voltage protection
- Different working pipe sizes



✓ **Professional heating tool kits**

All our kits include: Tool bag with insulated pockets, stand and tool/screw set.

HY1PRO-X-KIT



This specific kit also includes?

Heating tool HY1PRO capable to weld up to 1"

3 IPS Heating adapters

- ▶ ½ in.
- ▶ ¾ in.
- ▶ 1 in.

Weight/Dimensions:
6.61 lbs. / 23x9x11.4 in
3 kg / 58x23x29 cm

HY2PRO-X-KIT



Heating tool HY2PRO capable to weld up to 2"

6 IPS Heating adapters

- ▶ ½ in.
- ▶ ¾ in.
- ▶ 1 in.
- ▶ 1-1/4 in.
- ▶ 1-1/2 in.
- ▶ 2 in.

Weight/Dimensions:
14.3 lbs. / 23x9x11.4 in
6.5 kg / 58x23x29 cm

HY4PRO-X-KIT



Heating tool HY4PRO capable to weld up to 4"

8 IPS Heating adapters

- ▶ ½ in.
- ▶ ¾ in.
- ▶ 1 in.
- ▶ 1-1/4 in.
- ▶ 1-1/2 in.
- ▶ 2 in.
- ▶ 3 in.
- ▶ 4 in.

Weight/Dimensions:
21 lbs. / 23x9x11.4 in
9.5 kg / 58x23x29 cm

✓ **Complete heating tool kits**

Complete kits include: Tool bag with insulated pockets, accessory bag, stand and tool/screw set.

HY2PRO-X-CKIT



This specific kit also includes?

Heating tool HY2PRO capable to weld up to 2"

6 IPS Heating adapters
6 IPS Cold rings pliers
6 IPS Chamfer/Depth gage

- ▶ ½ in.
- ▶ ¾ in.
- ▶ 1 in.
- ▶ 1-1/4 in.
- ▶ 1-1/2 in.
- ▶ 2 in.

Weight/Dimensions:
27.8 lbs. / 23x9x11.4 in
12.61 kg / 58x23x29 cm

HY4PRO-X-CKIT



Heating tool HY4PRO capable to weld up to 4"

8 IPS Heating adapters
6 IPS Cold rings pliers
6 IPS Chamfer/Depth gage

- ▶ ½ in.
- ▶ ¾ in.
- ▶ 1 in.
- ▶ 1-1/4 in.
- ▶ 1-1/2 in.
- ▶ 2 in.
- ▶ 3 in. (Only sockets)
- ▶ 4 in. (Only sockets)

3" and 4" IPS sold rings and chamfers are sold separately.

Weight/Dimensions:
34.5 lbs. / 23x9x11.4 in
15.6 kg / 58x23x29 cm

Heating accessories**Heating adapters**

Standard (In.)	Ref.
½"CTS	SK1/2C
½"IPS	SK1/2I
¾"IPS	SK3/4
1"IPS	SK1
1-1/4"IPS	SK1-1/4
1-1/2"IPS	SK1-1/2
2"IPS	SK2
3"IPS	SK3
4"IPS	SK4

**Chamfer and depth gage**

Standard (In.)	Ref.
½"CTS	BS1/2C
½"IPS	BS1/2I
¾"IPS	BS3/4
1"IPS	BS1
1-1/4"IPS	BS1-1/4
1-1/2"IPS	BS1-1/2
2"IPS	BS2
3"IPS	BS3
4"IPS	BS4

**Cold Ring Pliers**

Standard (In.)	Ref.
½"CTS	AF1/2C
½"IPS	AF1/2I
¾"IPS	AF3/4
1"IPS	AF1
1-1/4"IPS	AF1-1/4
1-1/2"IPS	AF1-1/2
2"IPS	AF2
3"IPS	AF3
4"IPS	AF4





USER'S MANUAL

Socket Fusion Pipe Welder (Before use, please read the manual carefully)





ABOUT THIS MANUAL

This manual is only a manufacturer's guide. It does not take the place of proper training by qualified instructors and does not exceed the experience of a professional. The information in this manual is operational and cannot cover all the situations that may occur in the field such as environmental temperature, pipe material, thickness, selected welding standard, etc.

BEFORE THE WELDING PROCESS

- A. Cut and chamfer the pipe.
- B. Place the cold ring at the proper depth on the pipe as determined by the depth gauge.
- C. Attach the coated heating adapters to the heating tool when the tool is cold.
- D. Connect to a 110V grounded power source only and begin operating the welding machine. Permit enough preheating to stabilize the temperature.

MACHINE SET UP

- Once the unit is connected to proper power source it will automatically turn on and begin to heat to the temperature that is set.
- Set the desired temperature by pressing the **SET** button and then using the "up/down" buttons   to choose the proper temperature and then press **SET** button again to start the heating process.
- Red light displays when the unit is in process of heating up.
- Green light displays when the unit has reached the desired temperature.

WELDING PROCESS

Put the pipes and fittings into the heating adapters, remove pipes and the fittings from the heating adapters when they reach the proper heating time. Connect the pipes and fittings together until the bead is formed.



IMPORTANT NOTES

Welding procedure

- ✓ Skill and knowledge are required to obtain a good quality joint.
- ✓ Ensure you select the proper temperature according to the pipe manufacturer's recommendation.
- ✓ It is important to know the technical information before you use your heating tool.

Non-stick coating

The heating adapters have a coated surface that has been treated to reduce polymer adhesion. If the polymer adheres to the heating plate, lightly wipe with a clean cotton cloth to remove. Do not use a wire brush or an abrasive.

Welding parameters

Pipe and fitting manufacturers have established qualified fusion procedures which should be followed precisely. You should obtain a copy of the pipe manufacturer's procedures or appropriate joining standard for the pipe being fused.

Heating iron temperature

To meet pipe manufacture's temperature specifications, the surface temperature of the **heating adapters** should be measured with a surface pyrometer prior to initial use and at reasonable time intervals thereafter.

Ensure you test the temperature on the surface of the heating adapters and not on the heating plate itself. The heater's built-in thermometer indicates internal temperature and should only be use for reference.

CAUTION

Heating iron

- ✓ The heater is to be used with AC power only. Check heater to confirm correct power requirements and only use a power source with the correct voltage and current capacity.
- ✓ Connect heating tool to power and permit sufficient preheating to stabilize the temperature before the welding process.
- ✓ When welding, if temperature adjustment is needed, please turn off the heating tool first and turn it on again to adjust the new temperature. Adjustment of the temperature when it is already set will damage the temperature control components.
- ✓ It is recommended to use an insulated heater bag to store the heating tool when it is hot.

!WARNING!

Avoid Injury

This unit must be operated by trained personnel only.





**Industrial Safety
RISK MATRIX**

Be alert and report anything that you see, feel, smell or hear differently than expected, or that you think is unsafe.

SOURCE: Heating tool and heating adapters

Do not adjust temperature above 575 °F. This can result in damage to the heater components and the non-stick surfaces.

HAZARD	RISK	RISK CONTROL
<p>ELECTRICAL</p> 	<p>Electrocution</p>	<ul style="list-style-type: none"> • Make sure to use a power source with the correct voltage and current capacity. • Connect to a 110V grounded power source only. • Keep the cables away from chemical agents or water.
<p>THERMAL</p> 	<p>Risk of fire</p>	<ul style="list-style-type: none"> • Do not use the machine in atmospheres with explosion risk, due to the presence of gases, flammable vapors, etc
	<p>Burn Risk</p>	<ul style="list-style-type: none"> • Wear protective gloves. Never touch the surface of the heating tool or heating adapters when they are hot. • Move the heating plate cautiously when it is hot and carefully remove the heating adapters.

TOOL BAG SAFETY DATA SHEET

Pictures:



Identification:

Product name: Tool bag with insulated pockets
Product description: This tool bag is manufactured with inside silver fiberglass pockets which will allow you to carry a warm element inside the silver pockets. Black fabric is polyester with temperature resistant lower than 392°F (200°C)

Product composition:

1. Main Body	Black Polyester	Temp. resistant – PPA lower than 392°F (200°C)
2. Internal pockets	Silver Fiberglass	Temp. resistant 1000°F (538°C)
	Silicone rubber coating	Flame retardant. Temp. resistant 500 °F (260 °C)
3. Handle	201 Stainless steel	PVC & rubber foam



!WARNING!

Fiberglass fabric is considered safe, stable and non-toxic under normal condition and when handling correctly.

To ensure a hassle-free using fiberglass fabric, consider these factors:

- ✓ Keep the silver fiberglass fabric intact, with no tears.
- ✓ Do not cut or rip the silver fiberglass fabric.
- ✓ Do not use the bag if the silver fiberglass fabric has been separated or pulled apart.
- ✓ Keep the heated elements in the silver pockets with a temperature below 500°F/260°C.
- ✓ Clean the silver pockets with water. Do not use abrasives or corrosive liquids.
- ✓ Black fabric is a regular polyester and it is not made to resist high temperatures.



Conditions to avoid: Decomposition of the fabric.

Accidental fibers release: If the fiberglass fabric releases small amounts fibers and dust, it may cause mild skin and respiratory irritation. Avoid breathing fibers or dust.

If inhaled: Breathing of fibers or dust may cause mechanical irritation of the mouth, nose, and throat. Move to fresh air and keep comfortable for breathing. Seek medical attention if you feel unwell.

If skin irritation occurs: Direct skin contact with fiberglass dust may cause mechanical irritation and transitory dermatitis. Flush with ample cool water followed by washing with mild soap to remove accumulated fibers. Seek medical attention if you feel unwell.

Eye Contact: Flush with flowing water for 15 minutes. Seek medical attention if you feel unwell.

Ingestion: Not likely to occur through normal use. Should ingestion occur, seek medical attention if you feel unwell.

Accessory bag



This accessory bag is design to fit inside the main tool bag and carry the accessories such as cold ring pliers and chamfer/depth gages.

Accessory bag fabric material: Polyester (Not heat resistant)

All data in this data sheet is offered in good faith as typical values. The information was compiled from data supplied by the vendors of the components of this product and is believed to be accurate, it is the user's responsibility to determine the safety, toxicity, and suitability for their own use of the product described herein. Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by HAYES INDUSTRIAL SOLUTIONS INC as to the effects of such use, the results to be obtained, or the safety and toxicity of the product, nor does HAYES INDUSTRIAL SOLUTIONS INC assume any liability arising out of use, by others, of the product referred to herein. The information is intended only to assist in the safe handling of this material.



SOCKET FUSION TIME CYCLES

American National Standard - ASTM F2620

Polyethylene (PE)

Temperature: 490 - 510 °F / 254 - 266 °C

PIPE SIZE	
Pipe Size	
Inches	mm
1/2"CTS	16
1/2"IPS	20
3/4"	25
1"	32
1 1/4"	40
1 1/2"	50
2"	63
2 1/2"	75
3"	90
4"	110

PE80 MDPE Medium Density Polyethylene - PE 2406/PE 2708		
Heating Time	Fusion Time	Cooling Time
Sec.		Sec.
6-7	Immediate	30
6-7	Immediate	30
6-7	Immediate	30
10-12	Immediate	30
12-14	Immediate	45
14-17	Immediate	45
16-19	Immediate	45
18-20	Immediate	45
20-24	Immediate	60
24-29	Immediate	60

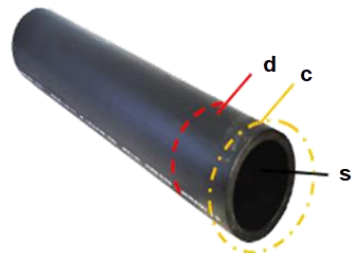
PE100 HDPE High Density Polyethylene - PE 3408/PE 3608/PE 4710		
Heating Time	Fusion Time	Cooling Time
Sec.		Sec.
6-10	Immediate	30
6-10	Immediate	30
6-10	Immediate	30
15-17	Immediate	30
18-21	Immediate	60
20-23	Immediate	60
24-28	Immediate	60
24-28	Immediate	60
28-32	Immediate	75
32-37	Immediate	75

* Allow the joint to cool an additional five (5) minutes before exposing the joint to any type of stresses.

NOTE: Some recommend using a 50-60 grit emery or garnet cloth to roughen the outside of the pipe and inside of the fitting as a means of minimizing any possible skin interface when making the fusion. Sandpaper is not recommended for this purpose, as it might disintegrate and contaminate the joint interface.

Pipe chamfer(c) and Insert depth (d)

Pipe Size (s)	Pipe Chamfer (c)	Insert depth (d)
Inches		mm
1/2"CTS	2 mm	13 mm
1/2"IPS		14 mm
3/4"		15 mm
1"		17 mm
1 1/4"		18 mm
1 1/2"	3 mm	20 mm
2"		26 mm
2 1/2"		29 mm
3"		32 mm
4"		35 mm



HEAT FUSION VISUAL APPEARANCE GUIDELINE

American National Standard - ASTM F2620

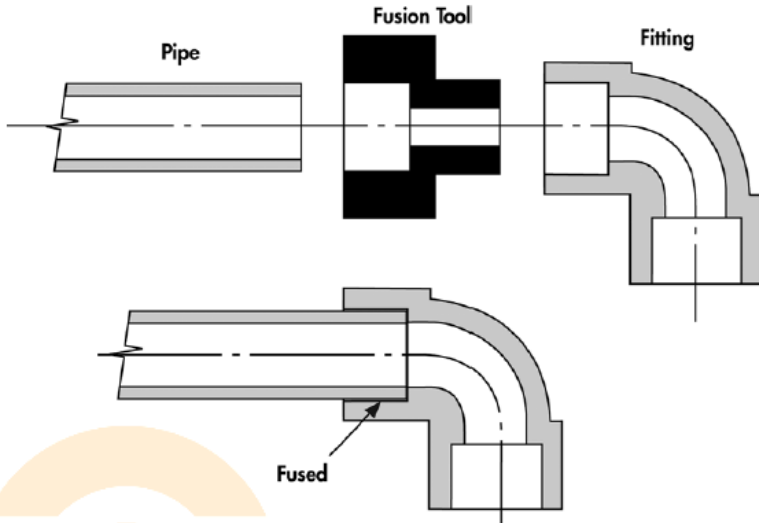


FIG. 1 Socket Fusion

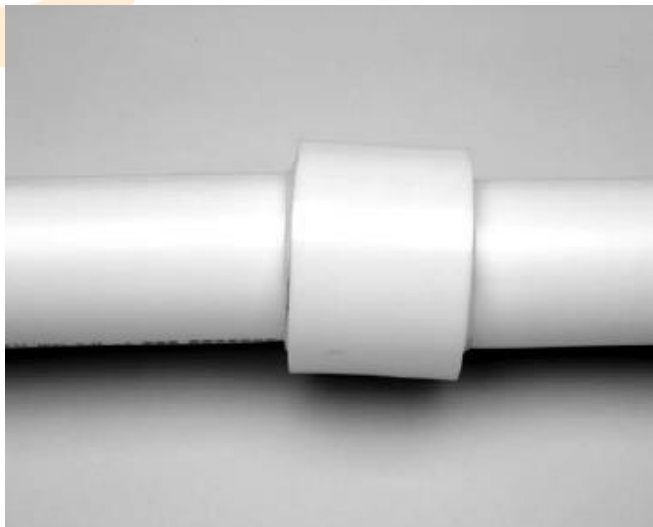
Acceptable Visual Appearance



- ✓ Melt bead flattened by cold ring.
- ✓ No gaps or voids.
- ✓ Good alignment between pipe and fitting.

Unacceptable Visual Appearance

- ✓ Melt bead not flattened against the fitting/cold ring.
- ✓ Improper insertion depth; no cold ring.
- ✓ Excessive heating.

Unacceptable Visual Appearance

- ✓ Misalignment.

WARRANTY AND RETURN POLICY

Warranty Policy

Limited Warranty: Hayes Industrial Solutions, Inc. warrants all products distributed. All products have 12 months warranty against manufacturer's defects from the date of purchase directly from Hayes Industrial Solutions, Inc. or Hayes Industrial Solutions, Inc. authorized dealers. Furthermore, this warranty only covers factory defects.

Warranty limitations and exclusions

- ✓ These warranties do not apply to Hayes® Products where:
- ✓ Repairs have been made or attempted by others
- ✓ Repairs are required because of normal wear and tear.
- ✓ The tool has been abused, misused, improperly maintained or operated.
- ✓ Alterations have been made to the tool

Returns Policy

Return of Goods: Buyer must receive written authorization directly from Hayes Industrial Solutions, Inc. or Hayes Industrial Solutions, Inc. authorized dealer before any returns. The goods must be in the same condition as received. The buyer has 15 days to request a return of goods after the date of the purchase. Buyer is responsible for return freight for any reason other than manufacturer's defects.

Returns Periods

15 days: Products can be returned within 15 days with proof of purchase on www.hayesindustrialsolutions.com or www.hayesfusion.com.

30 days: Products can be exchanged within 30 days with proof of purchase on www.hayesindustrialsolutions.com or www.hayesfusion.com. The goods must be in the same condition as received.

NON-RETURNABLE / NON-REFUNDABLE

Hayes Industrial Solutions, Inc. reserves the right to decline returns on the following grounds:

- ✓ Where a product does not have a manufacturing defect but has been damaged by the customer, or to prevent fraud or abuse.
- ✓ Specialty orders or custom products do not qualify for returns, such as Hydraulic Butt fusion Machines made to order.
- ✓ Products ordered and tailored specifically to customer's requirements or measurements.

[This warranty and return policy give you specific legal rights, and you may also have other rights which vary from state to state.](#)

IMPROVEMENT

Hayes Industrial Solutions inc. reserves the right to make any changes in or improvements on its products without incurring any liability or obligation to update or change previously sold machines and/or the accessories.

PROPRIETARY RIGHTS

All proprietary rights pertaining to the design, colors, and branding, are exclusively the property of Hayes Industrial Solutions inc.

HEATING TOOL INSPECTION

Heating Tool Model No.: _____ Inspector: _____
Heater Serial No.: _____ Date Tested: _____
Factory Setting: _____