KUSTOMFLO

ELECTROFUSION

Instructions

SOLENO

MASTERING WATER SUSTAINABLY

INSTRUCTIONS FOR KUSTOMFLO PIPES WITH AN INTEGRATED ELECTROFUSION SOCKET

STEP 1

ELECTRIC POWER SUPPLY:

Generator with minimum capacity of 15 kVA. Pay attention to a constant power output or electricity connection with 3 phases and 400v.

STEP 2

Those performing electrofusion shall be instructed by a representative from Soleno and provided with the appropriate documentation.

STEP 3

The welding area has to be protected against dirt, humidity, and direct solar radiation. In case of temperatures below 40°F(+ 5°C) appropriate actions like covering by a tent and preheating are to be carried out to prevent a further decrease of temperature at the welding location.

STEP 4

Do not remove the protective tape before cleaning and assembling of the socket and spigot end.

STEP 5

Check socket and spigot end for transportation damages.

STEP 6

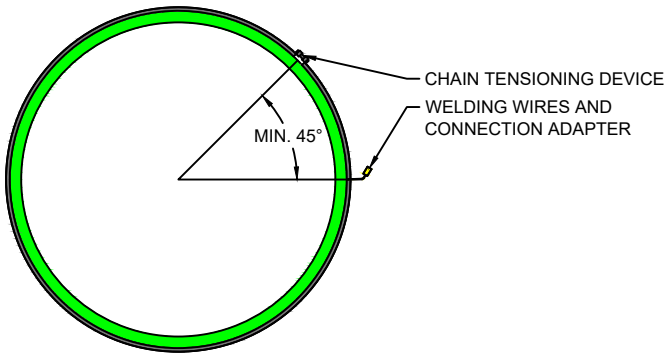
Position the pipes so that the welding connections are easily accessible.

STEP 7

Clean the socket and spigot ends of the pipes that will be connected, with PE cleaner and a lint-free and a non-pigmented paper towel.

STEP 8

Measure socket length. Then mark the insertion depth on the spigot end using a waterproof pen according to the socket length.



STEP 9

Attach the chain tensioning device onto the groove on the socket end of the KUSTOMFLO pipe. The chain tensioning device cannot be in contact with the connection wires. The tensioning device should be roughly 45 degrees from the connection wires.

STEP 10 WARNING

Put the spigot end into the socket up to the measured marking made in STEP 8. Adjust them axially and vertically. Take care that there is no humidity between socket and spigot end.

ALL THESE PREPARATIONS HAVE TO BE DONE BEFORE WELDING!

STEP 11 ⚠ CRITICAL STEP

Place a support ring into the spigot end (for pipes greater than or equal to 36” (910mm) internal diameter) . The positioning of the support ring (approx. 1” (25 mm) from edge) as well as its tensioning has to be done **AFTER the KUSTOMFLO spigot is inserted into the socket.**

STEP 12 ⚠ CRITICAL STEP

Tighten the chain with the chain tensioning device according to the initial tensioning pressure listed in the attached table (page 9).

Check that there is no visible gap between the socket and the spigot. If a gap is present at the connection and there are no foreign objects obstructing the gap, the chain tensioning device can be tightened until gap is closed.

STEP 13

Connect the electrofusion adapter to the connection wires embedded in the socket. Then connect the electrofusion adapter to the welding wires from the electrofusion welding device. Extension cables are included in the welding device case. Check that the chain tensioning device and any other conductive surfaces are not in contact with the connection wires, to avoid short-circuiting.

STEP 14

Enter the welding parameters into the welding device, either using the attached barcode or manually. Start the welding process. A barcode will be provided with each Soleno order. If needed, you can also retrieve one from the Electrofusion section of the Krah Pipe Calculation App available on the following links :

KRAH Pipe Calculation - Apps on Google Play
KRAH Pipe Calculation on the App Store

STEP 15

During the last third of the welding timeline, tighten the chain tensioning device to the second measurement shown in the attached table.

STEP 16

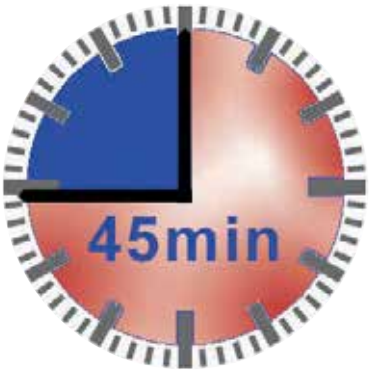
After the welding duration, mark the connection with a waterproof pen, listing the joint number, date of weld, welding voltage, welding time, and welding device. Remove the welding wires and the adapter.

STEP 17

Do not move the pipe during the 45 minute cooling process.

STEP 18

After the 45 minute cooling process, remove the chain tensioning device and the support ring.



STEP 19

If project specifications call for joint testing, proceed with Pneumatic Joint Testing per the project specifications after the completion of the cooling process.

STEP 20

To export the Electrofusion data, use a metal-only USB flash drive. With the machine still powered on, insert the flash drive. The machine will beep twice and display a new menu on the screen. Select “Download Data Work File” then choose the desired report type and/or specify the date range or project range. Finally, disconnect the flash drive and connect it to a computer to access the exported reports.

ELECTROFUSION TROUBLESHOOTING

Electrofusion joints are reliable, but issues can arise on-site. This section provides quick actions for common problems encountered during jointing. A Soleno representative is always available for further support. Here are some of the main electrofusion errors you can encounter:

1. **Smoke Emission During Fusion (12" or more along circumference)**

Possible Causes:

- Connection not tight enough. Smoke is a sign of the presence of oxygen.
- Overheating due to incorrect voltage or prolonged heating.
- Damaged or defective fitting.
- Contaminants like oil, dirt, and moisture inside the joint.

Immediate Action:

- Stop the fusion process immediately and re-torque the joint. If localized smoke is present, allow electrofusion process to finish.
- Disconnect power and allow the joint to cool naturally.
- Inspect for burn marks or deformation. Do not continue if the fitting is damaged.
- Restart electrofusion process.

Prevention:

- Localized smoke is likely to occur at the wire leads. Small bubbling of HDPE will also be visible at this location. This localized smoke is not a concern.
- Verify correct fusion parameters before starting.
- Ensure proper surface cleaning and preparation.
- Always use calibrated fusion equipment.

2. **Machine Stops Suddenly**

Possible Causes:

- Power supply interruption (generator overload, unstable current, etc.)
- Faulty cables or loose connections.
- Internal fault in the fusion control box.

Immediate Action:

- Check power source stability and restart the machine.
- Inspect cables, plugs, and connectors for damage.
- If interruption occurred mid-cycle: the joint is not reliable yet. Restart electrofusion process after allowing wire to cool down. A custom program can also be entered into the app to adjust for consistent issues. Reach out to your Soleno representative for the creation process.

Prevention:

- Use a generator sized for electrofusion loads.
- Regularly check equipment before use.
- Train operators to monitor the current and voltage during fusion.
- Secure the welding wires to the terminal. Zip ties and tape are two common tools to attach the wires to the pipe, to prevent sagging and disconnection.

3. **Resistance Error on the Electrofusion Machine**

Possible Causes:

- Welding was interrupted mid-cycle.
- As the wire inside the socket heated up in a previous electrofusion attempt, its resistance changed.
- E-box machine wire resistance check doesn't match the input electrofusion parameters.

Immediate Action:

- Wait 10 to 15 minutes before starting the welding process again.
- If interruption occurred mid-cycle: the joint is not reliable yet. Restart electrofusion process after allowing the wire to cool down.

Prevention:

- Regularly check equipment before use to avoid a mid-cycle interruption.

Additional Field Error Quick Facts

- Discrepancies in the electrofusion completion times (KRAH app vs. E-box): It's a common occurrence. The machine recalculates welding time based on the current temperature.
- E-box "wind" noise: This is simply the machine's ventilation system in operation.
- Post-fusion error to avoid: Do not ignore the required cooling time before handling the joint.

SOLENO
MASTERING WATER SUSTAINABLY

Table 1: Electrofusion Parameters for KUSTOMFLO Pipe						
Nominal Diameter		Voltage	Time	Number of Electrofusion Welding Devices	Tightening Torque at the beginning of fusion	Tightening torque for over-tightening after 2/3 of fusion period
mm	in	v	s		N-m	N-m
600	24	24	1020	1	42	45
900	36	36	840	1	47	52
1050	42	40	1200	1	50	55
1200	48	43	1260	1	50	55
1350	54	28	1020	2	53	58
1500	60	32	1020	2	55	60
1650	66	36	1140	2	58	62
1800	72	40	900	2	60	63
2100	84	40	1200	2	65	68
2400	96	43	1260	2	65	68
1750	108	40	900	3	TBD	TBD
3050	120	40	1200	3	TBD	TBD
3450	136	35	900	4	TBD	TBD

Note1: For larger diameters with TBD in the torque field, contact your Soleno representative for values.

ELECTROFUSED CROSS SECTION

SOLENOUSA.COM

SOLENO

MASTERING WATER SUSTAINABLY

Contact our experts for more details.

WWW.SOLENOUSA.COM

With reservation for technical modification (01/2025)