



Mobile TruFLARE™ Training Manual
Model No.: MTF416-110

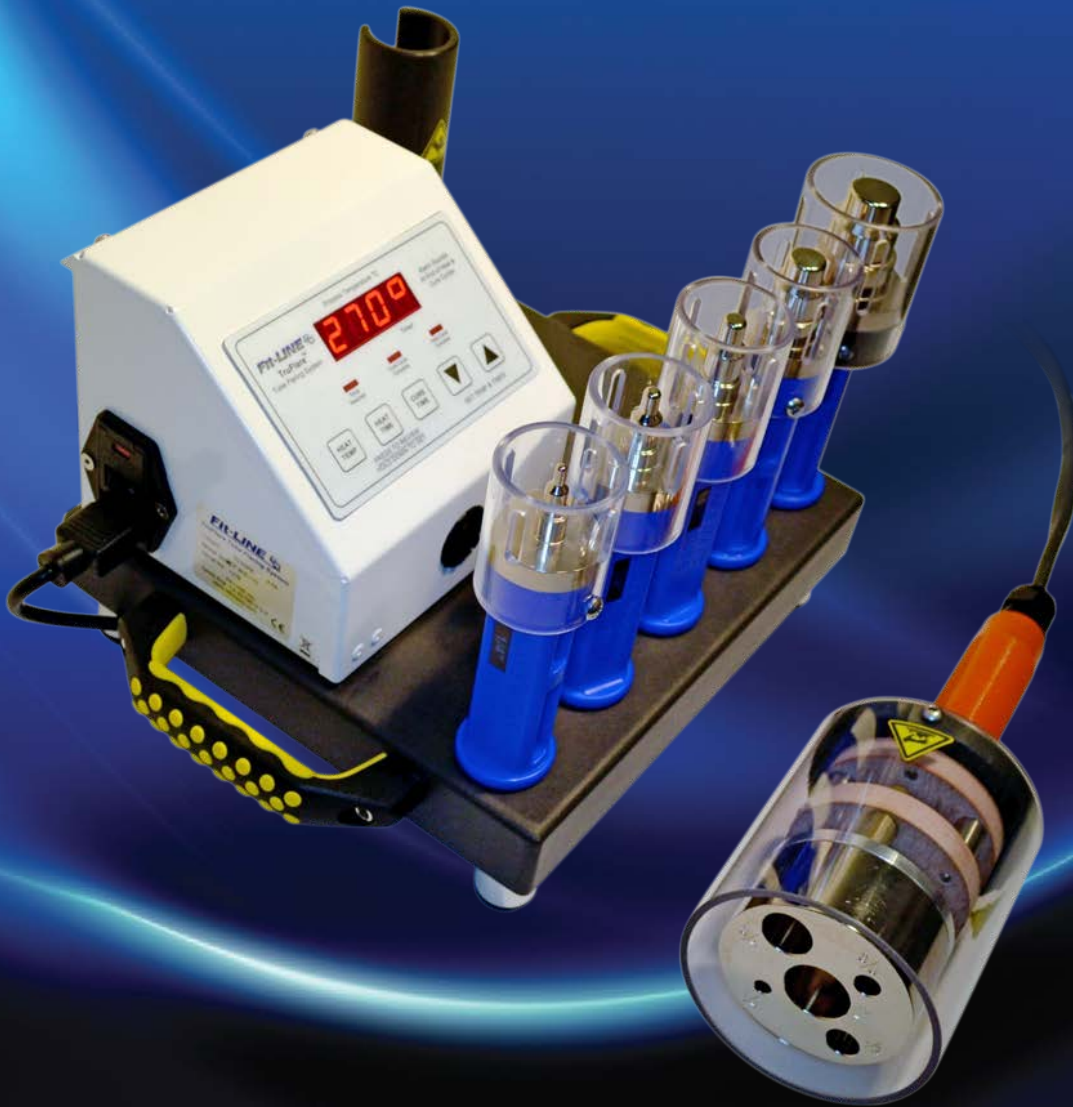


Table of Contents

Introduction	3
Parts List	3
Safety Instructions	4
Setup	5
Tube Selection	6
Setting Controller	7
Tube Flaring	8 - 9
Good and Bad Flares	10
Flare Assembly	11
Training Effectiveness Evaluation and Certification	12
Revisions	12

Fit-LINE's mobile TruFLARE system creates a standard tube flare end by pressure forming and rapidly cooling the flare form. It's ideal for production flaring. It assures precise, concentric, repeatable tube flare connections.



Parts List

- | | |
|------------------|-----------------------|
| 1. Controller | 6. Heater Wand Saddle |
| 2. On/Off Switch | 7. Mandrels |
| 3. Power Cord | 8. Heater Wand Cord |
| 4. Handle | 9. Heater Wand |
| 5. Heater Ports | |

This device is electrically powered and must be operated in a safe environment to avoid risk of fire, explosion, or electric shock.

1. Symbols



CAUTION

Statements that identify conditions or practices that could result in damage to the equipment or other property.



WARNING

Statements that identify conditions or practices that could result in personal injuries or loss of life.



EYE PROTECTION

Eye protection must be worn while operating or working near equipment.



HOT SURFACE

Heating unit of flaring system and tubing will be very hot during flaring operation.



NOTES AND RECOMMENDATIONS

Noteworthy statements and recommendations.

2. This tube flaring system contains no user-serviceable parts. Contact your local distributor for service.
3. Power Requirements: 110VAC, 50 or 60 Hz
Maximum Current: 4.0A
3. GROUND AND EXTENSION CORD INFORMATION: This unit must be grounded against electrical shock. It is equipped with a three-wire conductor and three prong plug to fit a grounded receptacle.
4. NEVER CONNECT THE GREEN OR GREEN/YELLOW WIRE TO A LIVE TERMINAL. Use only three-wire extension cords that have three-prong, grounding-type plugs and three-pole receptacles.
5. The extension cord wire size must meet the following specifications:

For 0 to 25 ft, the recommended minimum wire gauge is 14 AWG.

For 25 to 50 ft, the recommended minimum wire gauge is 12 AWG.

1. Select an appropriate location that is clean and will lit, well ventilated, and away from fume and flammable materials.



2. Set the machine on a flat and stable surface.
3. Insert the power cord into the side of the control unit. Verify voltage. See Fig. 2A.
4. Plug the other end of the power cord into a power supply appropriate for the voltage of the machine.
5. Turn on the unit using the On/Off switch just above the power cord on the control unit. See Fig. 2A.

Fig. 2



Fig. 2A
Power Cord and
On / Off Switch

Fit-LINE

TruFLARE Tube Flaring System

115VAC	50/60Hz	4.0A
Model No.: MTF 416-110		
Serial No.: XXXX		

Fit-LINE Inc.
Santa Ana, CA 92705 U.S.A.
www.fitlineinc.com

CE

Fig. 2B. Verify Voltage



If the flaring system is not operated for a period of approximately 2 1/2 hours, it will automatically enter a standby mode with the heater shutting off and the system cooling. Press any button on the control panel to reactivate unit.

The mobile TruFLARE system is designed to flare fluoropolymer tubes for use with assemblies requiring flare fittings and flared tube ends. The tubing sizes referenced in Tables 1 and 2 can be flared on this machine:

Table 1

PFA Standard Tube				
Size	Wall Thickness	Heater Temp	Heat Time (Seconds)	Cure Time (Seconds)
1/4"	.047"	230° - 270°C	20 - 70	50
1/4"	.031" *	160° - 170°C	20 - 30	50
3/8"	.062"	270°C	60 - 70	90
1/2"	.062"	270°C	70 - 80	120
3/4"	.062"	270°C	80 - 90	150
1"	.062"	270°C	80 - 90	150
1-1/4"	.075"	285°C	160 - 180	300
40 MM (1-1/2")	2.29 MM (.090")	285°C	240 - 300	480

* Non-standard mandrel required for 1/4" x .031" thick PFA tube. Factory part number for mandrel is FFM-4-02.

Table 2

FEP Standard Tube				
Size	Thickness	Heater Temp	Heat Time (Seconds)	Cure Time (Seconds)
1/4"	.047"	160°C	15 - 20	35 - 40
3/8"	.062"	160°C	60 - 70	45 - 50
1/2"	.062"	160°C	70 - 80	45 - 50
3/4"	.062"	160°C	70 - 80	50 - 55
1"	.062"	160°C	70 - 80	55 - 60

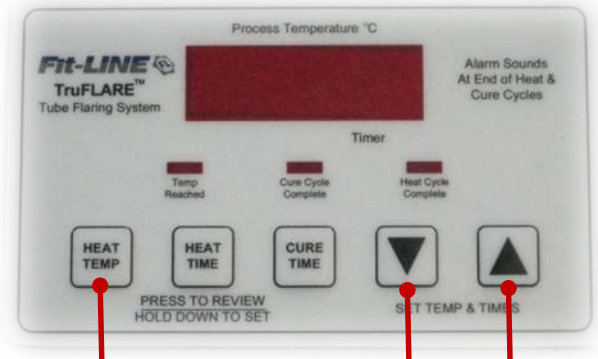


Temperature adjustments may be required due to material variation and or type of tubing being used.

1. Setting HEAT TEMP

Press “HEAT TEMP” button and simultaneously press the “UP or “DOWN” button to set temperature. See Fig. 3.

Fig. 3

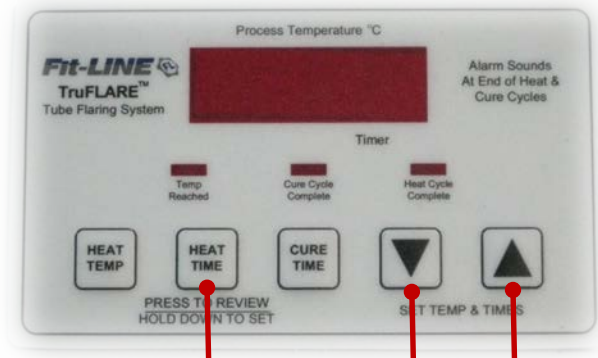


Press “HEAT TEMP” button and simultaneously press the “UP or “DOWN” button to set temperature.

2. Setting HEAT TIME

Press “HEAT TIME” button and simultaneously press the “UP or “DOWN” button to set time. See Fig. 4.

Fig. 4

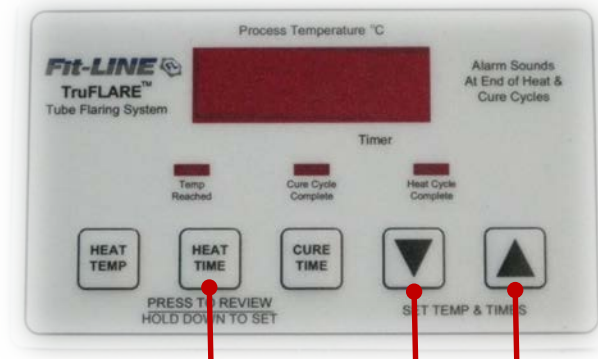


Press “HEAT TIME” button and simultaneously press the “UP or “DOWN” button to set time.

3. Setting CURE TIME

Press “CURE TIME” button and simultaneously press the “UP or “DOWN” button to set time. See Fig. 5.

Fig. 5



Press “CURE TIME” button and simultaneously press the “UP or “DOWN” button to set time.

Tube Flaring Steps

1. Start by making sure that the end of the tube that is going to be flared is square. We recommend using a Virax* tube cutter to perform a clean-square cut. See Fig. 6.
2. To begin flaring insert the tube into the correct heater port located on the wand. Make sure the tube bottoms out inside the heater port. See Fig. 7.
3. Once you insert the tube, push the timer activation switch on the wand. This will start the “Heat Cycle” timer. See Fig. 8.
4. When the “Heat Cycle” is complete, an audible alarm will sound.
5. Push the timer activation switch to turn off the alarm. See Fig. 8.



Fig. 6.

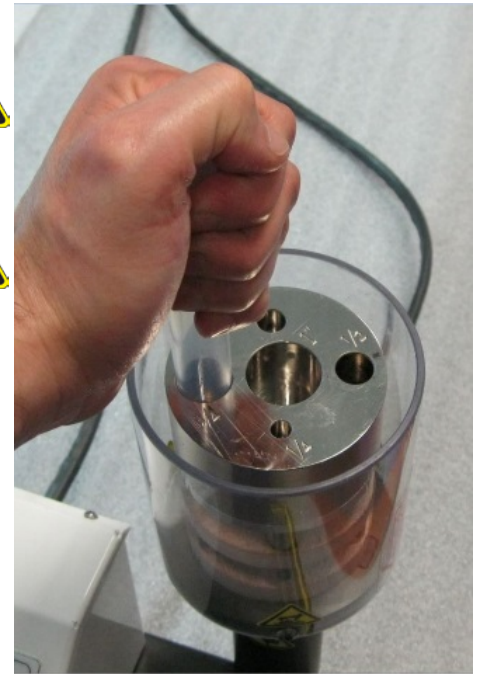


Fig. 7.
Insert tube into heater port



Fig. 8.
Timer activation switch



During production the nut is installed over the tube prior to flaring.

* A Virax tube cutter is supplied, by Fit-LINE, with the purchase of an MTF-416 machine.

Tube Flaring Steps - Continued

- Remove the tube from the heater port and push it onto the appropriate flaring mandrel; hold for 5 to 10 seconds. See Fig. 9.



Note: Tube must sit flush with shoulder on mandrel. See Fig. 10.

- Once the tube is on the mandrel, push the timer activation switch on the wand to start the “Cure Time” cycle. See Fig. 8.
- When the “Cure Cycle” is complete the audible alarm will sound.
- Push the timer activation switch “once” to turn off the alarm. See Fig. 8.



Note: After pushing the activation switch to turn off the alarm in step 8, the system is now ready to begin your next tube flare.

- Remove the tube from the mandrel.



Gripping pad is recommended when flaring 1/4” tubing due to its small diameter. Gripping pad helps hold tube firmly while pushing onto mandrel.

- Proceed and flare all five tube sizes and verify that they are good, per the figures shown on page 10.



Fig. 9.
Push tube onto flaring mandrel

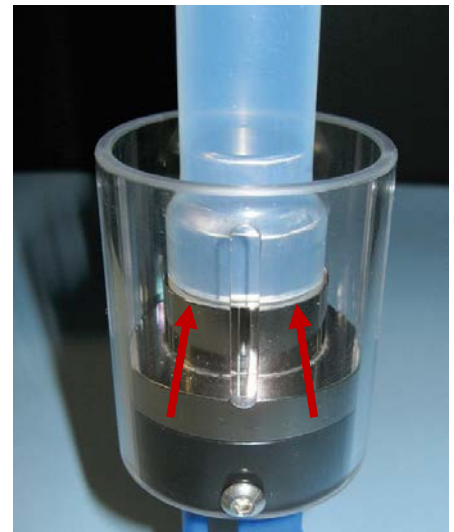


Fig. 10.
Tube must sit flush with shoulder on mandrel

Good Flare

Flared end should be consistent around the circumference of the tubing. All angles should be sharp and consistent with not deformed areas. See Fig. 11.

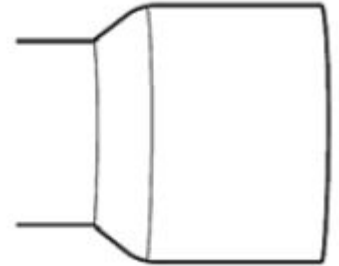


Fig. 11
Good Flare

Overheated Tubing

The heat temperature was set too high and or the heat time too long a time. See Fig. 12.

Solution: Decrease the “Heat Temp” and or the “Heat Time”.

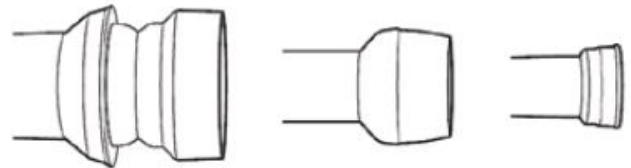


Fig. 12
Bad Flare. Overheated
Tubing

Under Heated Tubing

The heat temperature was set too low and or for too short a time. See Fig. 13.

Solution: Increase the “Heat Temp” and or the “Heat Time”.

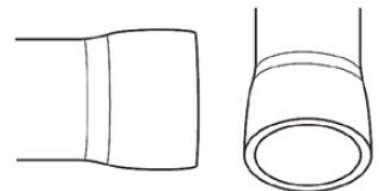


Fig. 13
Bad Flare.
Under Heated Tubing



To ensure a proper seal between flared tube and fitting the following three variables must be addressed:

- Fitting Quality
- Tube Flaring Quality
- Nut Tightening Method

Flare Assembly

1. Push the flared tube end onto the fitting. See Fig. 14.
2. Make sure flared end of tube is pushed all the way up to the flared end of the fitting. See Fig. 15.
3. Screw nut on to fitting by hand. Do not tighten. See Fig. 16.
4. Tighten nut using a TruFASTEN™ torque wrench to ensure that the proper torque value is applied to the fitting assembly. See Fig. 17.



Fig. 14



Fig. 15
Flared end of tube must be pushed up to flared end of fitting.



Fig. 16



Fig. 17
Finish tightening with torque wrench.



TruFASTEN Features:

- Wrenches are calibrated to preset torque values based on nut size.
- Wrench claw clicks over when required torque value is reached.
- Ratcheting action allows the nut to be rapidly tightened, making jobs easier and faster.

Training and certification are available through local distributors. This will measure the effectiveness of the training and comprehension of the trainee.

During the certification process two kits will be provided, as shown in table 3. The trainee will be required to successfully flare one 1/4" and one 1/2" fitting assembly, which will be submitted to the factory for testing.

The flared assemblies will be hydrostatic tested as outlined in procedure P-622-102. If the flared assemblies pass the test the trainee will receive a certificate showing successful completion of the training course.

Certification Kit:

Table 3

Kit Part Number: TK-4-8		
Includes:		
Part Number	Description	Qty
TB4-3-02	1/4" x .047" Thick x 6" Long PFA Tubing	6
TB8-3-02	1/2" x .062" Thick x 6" Long PFA Tubing	3
UES44N-3	Union Elbow Sweep, 1/4" with PFA Nuts	1
UES88N-3	Union Elbow Sweep, 1/2" with PFA Nuts	1

Revisions

Rev.	Date	Section	Paragraph	Summary of Change	Authorized by
A	2/20/15			Initial release	G. Alvarado
B	3/18/15	Training Effectiveness Evaluation and Certification	Table 3	Replaced glove with grip pad and removed table 4.	G. Alvarado
C	4/3/15	Training Effectiveness Evaluation and Certification	Table3	Updated table 3 to reflect latest certification kit	G. Alvarado