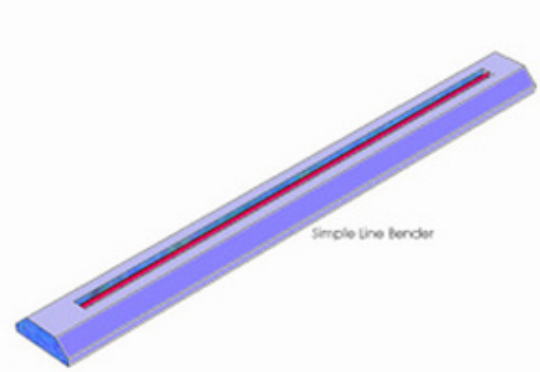
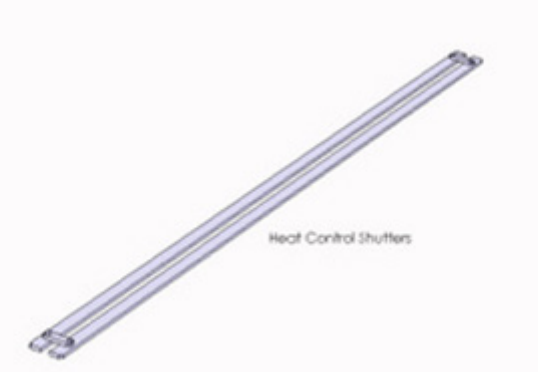
Line Bending KYDEX® Thermoplastic Sheet

INTRODUCTION

- Line bending is a common method for bending KYDEX® Sheet in a straight line. This process involves heating a narrow strip of the sheet and bending it to a particular angle (up to 180°). By heating a narrow strip of the sheet it allows only that area to bend and leaves the rest of the sheet flat and straight. This type of heater is often called Strip Heater, Line Bender, or Free Standing Heater. Below is an illustration of a simple Line Bender and the Gap Adjustment Shutters.



Simple Line Bender



Heat Control Shutters

TYPES OF MACHINES

Calrod Strip Heater

Consists of a calrod heating element recessed in a metal base. An adjustable shutter is placed above the heating element to allow adjustment of the gap to accommodate different thicknesses. This type of bender is good for intermittent use, but continuous production will allow the uncooled shutter to heat up and heat the sheet on the sides of the bend.

Straight Nichrome Resistance Wire Heater

Consists of a thin Nichrome resistance wire instead of a heating element. It has some advantages over calrod heaters in that the heating time is shorter, it requires lower voltage and has a more concentrated line of heat.

CAUTION: Ensure there are guards in place to prevent touching the Nichrome wire; it is a burn/shock hazard.

Coiled Resistance Wire

Consists of a coiled resistance wire in place of a straight wire. Coiled wires must be supported and can be difficult to distribute the coils evenly. Uneven distribution of the coils can cause temperature variation across the sheet's width, which could result in stress and distortion.

Radiant Quartz Tube Heaters

Consists of a coiled resistance wire housed in a quartz coated glass tube. These are among the most efficient sources of heat energy.

Customer Collaboration
6685 Low St, Bloomsburg, PA 17815 USA
Phone: 800.325.3133, +1.570.389.5810
Email: info@kydex.com

appLab™
Phone: 800.682.8758
Email: applab@kydex.com

kydex.com

Line Bending KYDEX® Thermoplastic Sheet

GUIDELINES

- The forming temperature of KYDEX® Sheet is between 330°F (166°C) and 380°F (193°C).
- Avoid overheating or heating the sheet too quickly, as this could cause bubbling or blistering. IMPORTANT: The temperature of KYDEX® Sheet should not exceed 400°F (204°).
- Heat a strip that is around three times as wide as the thickness of the sheet to be formed. For example, if the sheet is 0.157" (4.0mm) thick, heat a strip that is 0.472" (12.0mm) wide. Most machines should have the capability to vary the gap over the heater.
- When heating only one side, bend the part away from the heated side. For example, if the heating element is on the bottom, bend the sheet upward.
- Routing a V-groove along the desired line for bending will help ensure a sharp, straight bend with little to no bowing.

PROCEDURE

1. Adjust the gap over the heating rod to around three times the thickness of the sheet.
2. Turn the heating element on and set it to the appropriate temperature.
3. NOTE: Temperature will depend on the machine and material thickness. Start out low until you have found a setting that is suitable.
4. Place the sheet so that the strip that is to be heated is directly over the heating element.
5. Heat the sheet until it bends easily. If your machine does not have the capability to heat both the top and the bottom of the sheet you may flip the sheet occasionally to heat both sides.
6. NOTE: Do not touch the heated area. It will be hot and can burn you. If it is necessary to touch the heated area use cotton or heat resistant gloves.
7. Remove the sheet and quickly bend the sheet to the desired angle by hand or by placing it in a jig.
8. Allow the material to cool sufficiently before removing it. You may use weights or clamps to keep it in place.

Customer Collaboration
6685 Low St, Bloomsburg, PA 17815 USA
Phone: 800.325.3133, +1.570.389.5810
Email: info@kydex.com

appLab™
Phone: 800.682.8758
Email: applab@kydex.com

kydex.com

Line Bending KYDEX® Thermoplastic Sheet

EQUIPMENT SUPPLIERS

Barnes Plastic Welding Equipment Ltd.
Unit 11, Hamilton Street
Blackburn, Lancashire
United Kingdom, BB2 4AJ
Phone: 01254 660910
Fax: 01254 660915
Email: info@plasticweldingequipment.co.uk
www.plasticweldingequipment.co.uk

FTM, Inc.
327 Industrial Drive, Unit 1
Placerville, CA 95667 USA
Phone: 530.626.1986
Fax: 530.642.2602
Email: info@123ftm.com
www.thefabricatorssource.com

TAP Plastics, Inc.
1859 Pacific Avenue
Stockton, CA 95204
Phone: 800.246.5055
Fax: 209.937.9400
Email: info@tapplastics.com
www.tapplastics.com

Customer Collaboration
6685 Low St, Bloomsburg, PA 17815 USA
Phone: 800.325.3133, +1.570.389.5810
Email: info@kydex.com

appLab™
Phone: 800.682.8758
Email: applab@kydex.com

kydex.com

This information supersedes all previously published data.

