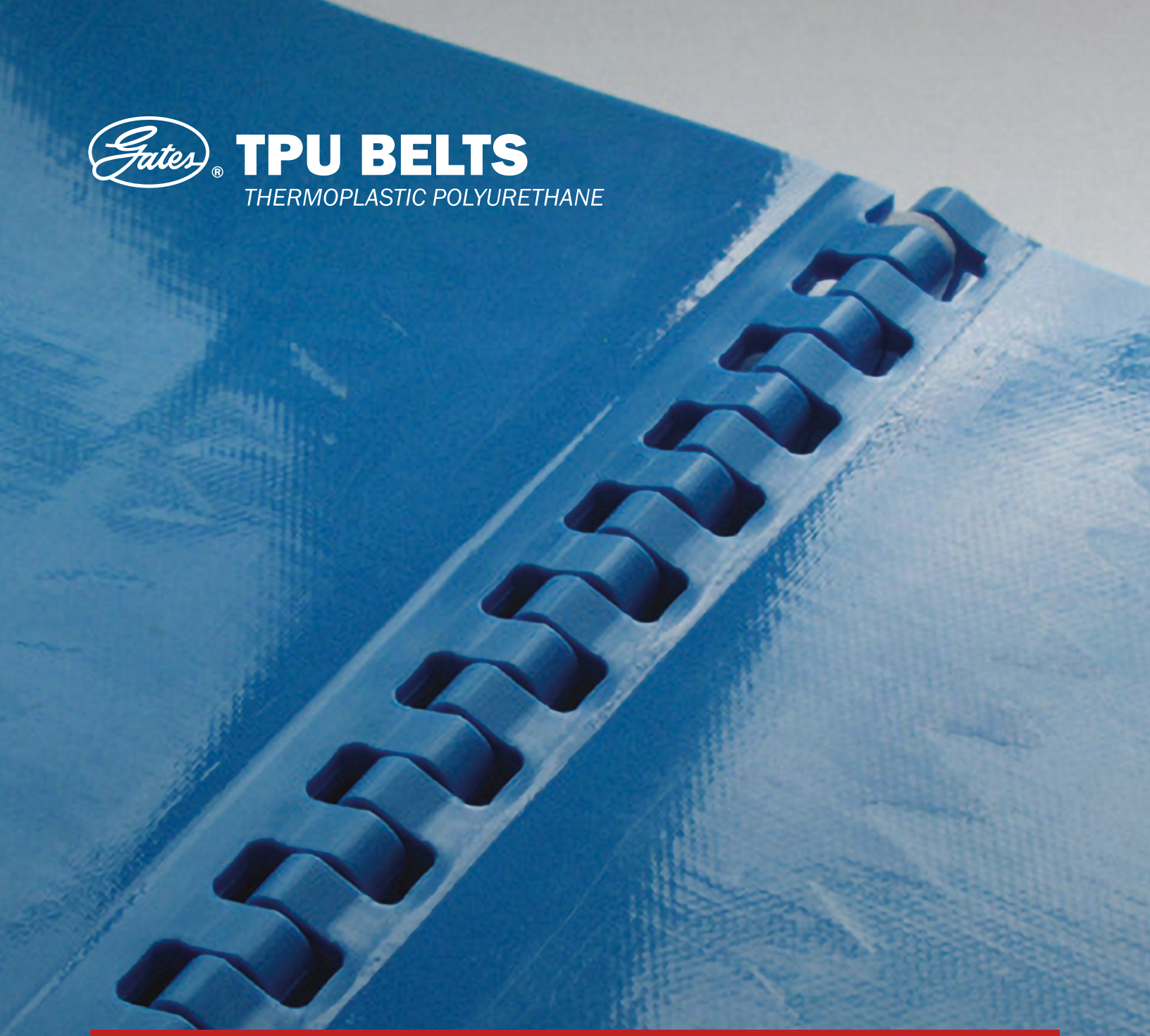


TPU BELTS

*THERMOPLASTIC POLYURETHANE*

# WELDING GUIDELINES

## POSILACE™ MECHANICAL SPLICE GUIDELINES

# TABLE OF CONTENTS

# CAUTIONS

## OVERALL SAFETY RULES

**To Avoid Severe Personal Injury or Property Damage, Read Carefully and Understand the Following Safety Precautions.**

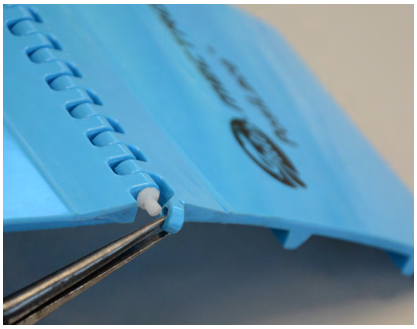
**DANGER**
Terminate electrical hazards by removing power cord from wall receptacle or machine base inlet.

**CAUTION**
Avoid temperature related hazards by handling press components and belt once safely cooled.

# GUIDELINES FOR THE POSILACE MECHANICAL SPLICE

The PosiLace splice provides a sanitation friendly means of joining belt without welding in the field. It is recommended for any food belt applications where sanitation is important and speed of installation helpful.

## AMONG ITS ADVANTAGES ARE:



- Ease of installation
  - Using a Flexco Amigo splice press, the PosiLace splice can be welded to the belt in 30 minutes start to finish
  - PosiLace with ~12" (305 mm) extensions, depending on pitch, is available for welding with a platen press
- Ease of cleaning
  - Draft angles incorporated into the knuckles allows any foreign material to be easily flushed out
- Built-in locking tab
  - Allows the pin to be removed without damaging the pin or the belt. The same pin can be removed and reinserted many times over
- Safe failure mode
  - 26 lb. per inch (0.46 kg/mm) maximum allowable tension
    - By design, the failure mode caused by tension overload should be a gradual pulling out, "snaking", of the nylon pin rather than the fracturing of the knuckles
      - Think of this as a mechanical "fuse"
      - Less risk of product contamination by broken knuckles, no permanent damage to the mechanical splice

# BELT PREPARATION

## PPE:

- Goggles
- Cut Resistant Gloves
- Heat Resistant Gloves

## TOOLS:

- Measuring Tape
- Clippers
- Masking Tape
- Marker
- Belt Level Check Tool
- Skive Tool
- Heat Gun
- Grinder
- ½" (12.7 mm) Wide, .125" (3.175 mm) Thick Silicone Strip, Same Length or Longer than PosiLace

### CAUTION, WEAR PROTECTIVE GLOVES

- Cut PosiLace to belt width
  - A. Always position a locking tab on the far left of one side of the belt
    - 1) "LOCKING TAB" callouts are molded in every 12" (304.8 mm) on the PosiLace topside
- Determine belt length
  - A. Measure enough rollstock and add two extra teeth
  - B. Mark the side of the tooth that will be next to the PosiLace. Place tape over the next tooth on the outside of this marked tooth (Figure 1) to identify the tooth that will be replaced with the PosiLace
- Welder Setup for cutting the belt
  - A. Open the safety guard and remove the front and back clamp bars
  - B. Insert the Flexco insert (UniLace Proto) on the operator side
    - 1) One insert serves all pitches
  - C. Verify that the lever is in the "Cut/Load" position and that the pin is locked (Figure 2)
  - D. Insert the crank handle onto the shaft and crank counterclockwise to position the cutting blade to the far left side
  - E. Install belt with one tooth on the scrap side and securely tighten front clamp bar (Figure 3)
  - F. Install back clamp bar and lightly hand tighten
- Cutting
  - A. Crank handles clockwise to advance the cutting blade across the belt material until the blade locks into the housing at the far right of the welder
    - 1) Be sure to use a consistent pace when cutting
  - B. Remove back belt and discard as scrap

Figure 1

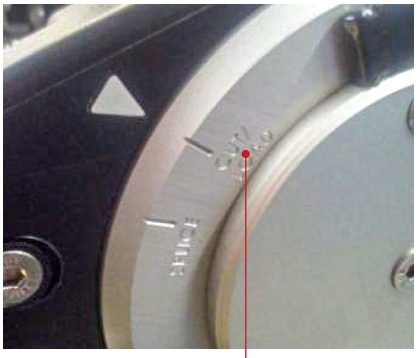



Figure 2


Figure 3

# WELDER ASSEMBLY AND OPERATION

- PosiLace setup (after the belt is cut)
  - A. Using the side lever disengage from the “Cut/Load” position and slightly open welder
    - 1) Install PosiLace inserts (Gates TPU part # 000016676) into welder on the back side
      - a) Verify that a locking tab is on the left for the first side of the belt and that the locking tab marking is facing up
  - B. Install silicone strip centered over PosiLace flat area (Figure 4)
  - C. Install back clamp bar and hand tighten loosely
    - 1) Front bar should already be in place from the cutting step
  - D. Close welder and verify that the PosiLace is snug against the belt
  - E. Open the welder using the side lever. Tighten back clamp bar completely and close welder
  - F. Verify that the height of the PosiLace and the belt is the same by running a level check tool across the same the full width of the belt
    - 1) If it is not level, the bottom plate must be adjusted before continuing
      - a) Adjustment screws are on side at plate end and top of back bottom plates (Figure 5)

- Welding
  - A. Remove the hand crank handles and release the locking pin
  - B. Pull lever back to raise the heating element
  - C. Close safety guard, verify interlocks are engaged and the guard is secured by the magnetic locks
  - D. Turn on the power outlet switch
  - E. Verify that the thermal switch is set to “Splice”
  - F. Set the timer for 64 seconds (Figure 6)
    - 1) Note that this setting is different when welding belt end to belt end
    - 2) Both the belt and PosiLace are from the same resin family for best weld strength but the PosiLace is a higher durometer and has different melt characteristics
  - G. Press the Start button to initialize the welding cycle
  - H. At the end of the cycle, alarm will sound

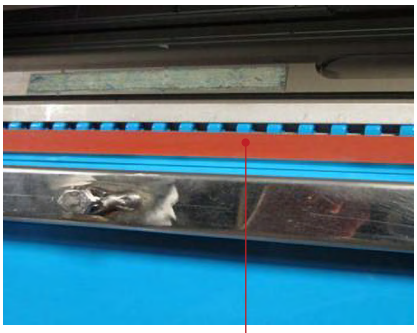


Figure 4


Figure 5

Figure 6

# WELDER ASSEMBLY AND OPERATION (CONTINUED)

I. Immediately push the lever slowly and evenly to the “splice” position
   1) The key to preventing cord exposure (typically on the tooth side) is by controlling the size of the weld bead
      a) Swing the safety guard open as you begin pushing the lever and watch the weld bead develop
         (i) Push the lever far enough to create a bead .006” (0.15 mm) wide but no wider
         (ii) If the bead becomes 0.008” (0.20 mm) or greater, it is likely that the cord ends will be pushed downward exposing the cords when/if the tooth side bead is trimmed off
   2) One option is to lift the safety guard and watch the flash develop as the two belt ends meet so as to not create too much flash (and risk exposing cord)

J. Keep the unit in this position until 104°F (40°C) is displayed and the white light comes on

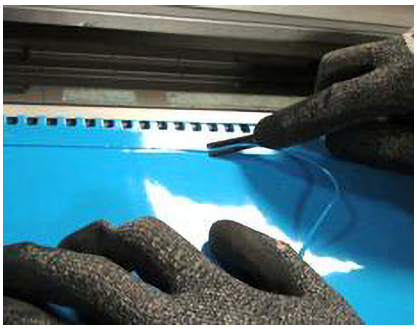


Figure 7

- Finish
  A. Open the safety guard and remove belt
  B. Lay flat
  C. Using skiving tool, remove the weld build in one fluid motion (Figure 7)
     1) Tip: heat skiving tool with a Leister hot-air gun to easily trim bead

- Now repeat these steps again for the other belt side
  A. If available, align the open end of an uncut section on the left side. If PosiLace must be cut, ensure that left side is open to accommodate the mating locking tab on the other belt half already welded. The simplest way to do this is to lay the PosiLace to be cut on the belt side already welded, with the right edges flush and trim the excess from the left side

# PIN COLLAR FORMING AND INSERTION

- Creating the pin collar
  - A. Cut the pin to the belt width plus a little extra that will be trimmed off when the pin is inserted into the PosiLace
  - B. Insert the cut piece into the base of the collar forming tool (Part # 000016787) as far as it goes (Figure 8)
  - C. Slide the other half of the tool over the pin to the base but leave the cap “window” open
  - D. Using the heat gun, heat the pin stock until it starts to melt
    - 1) It should turn clear in color (Figure 9)
  - E. Close the two tool pieces together to form the collar
  - F. After it has cooled, remove the pin and grind off any imperfections (Figure 10)
- Pin insertion
  - A. Pull back the locking tab with a pair of pliers and insert the pin into the PosiLace (Figure 11)
  - B. When finished, the collar should be positioned between the locking tab and the next knuckle

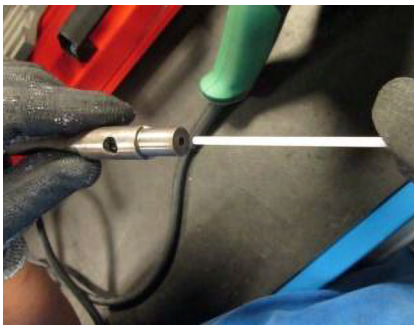


Figure 8

Figure 9

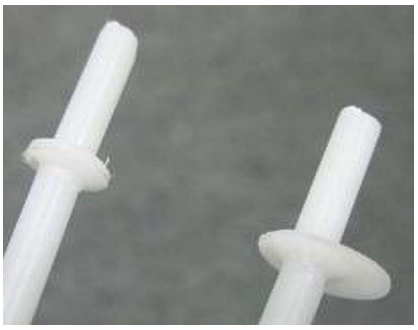


Figure 10

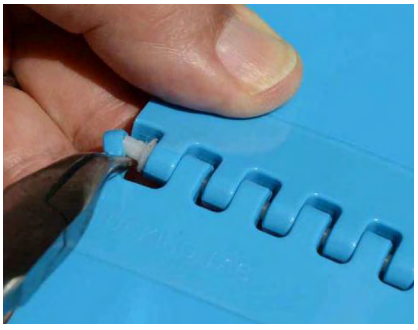


Figure 11

# TPU BELTS

*THERMOPLASTIC POLYURETHANE*

**NORTH AMERICA**
Gates TPU
9 Northwestern Drive
Salem, NH 03079
Tel. +1(800) 394-4844
Email: contact@gates.com

**EMEA**
Gates TPU GmbH
Wermer von Siemens Strasse 2
64319 Pfungstadt, Germany
Tel. +49 (0) 6157-9727-0
Email: sales-pfungstadt@gates.com



**GATES.COM/TPU**