

Urethane Wear Liners

Installation Guide



STEP 1 • REQUIRED MATERIALS & TOOLS

- Welder (MIG, TIG, or stick and (2) welding helmets
- Metal flame protectors - 1-3/4" diameter x 2" length pipe segment
- Solvent - Methylene Chloride or Methyl Ethyl Ketone
- Rubber gloves
- Work gloves
- Rags
- 5 gallon bucket of water
- Adhesive - RTV silicon
- Fire extinguisher
- High volume fan(s)
- Safety glasses
- Compressed air supply and/or shop vacuum
- TOOLS: sawzall, drill, hammer, pry bar, pliers, screwdriver, c-clamps, tape measure, water spray bottle.

STEP 2 • UNPACKAGING AND PARTS IDENTIFICATION

Carefully unpack the liner sections and inspect for any damages. Take an inventory of all of the liner sections and insure liner is complete. (Most models will require (8) each of each drum section except for the end-ring liners which require only (4) sections - (SEE FIG. 1).

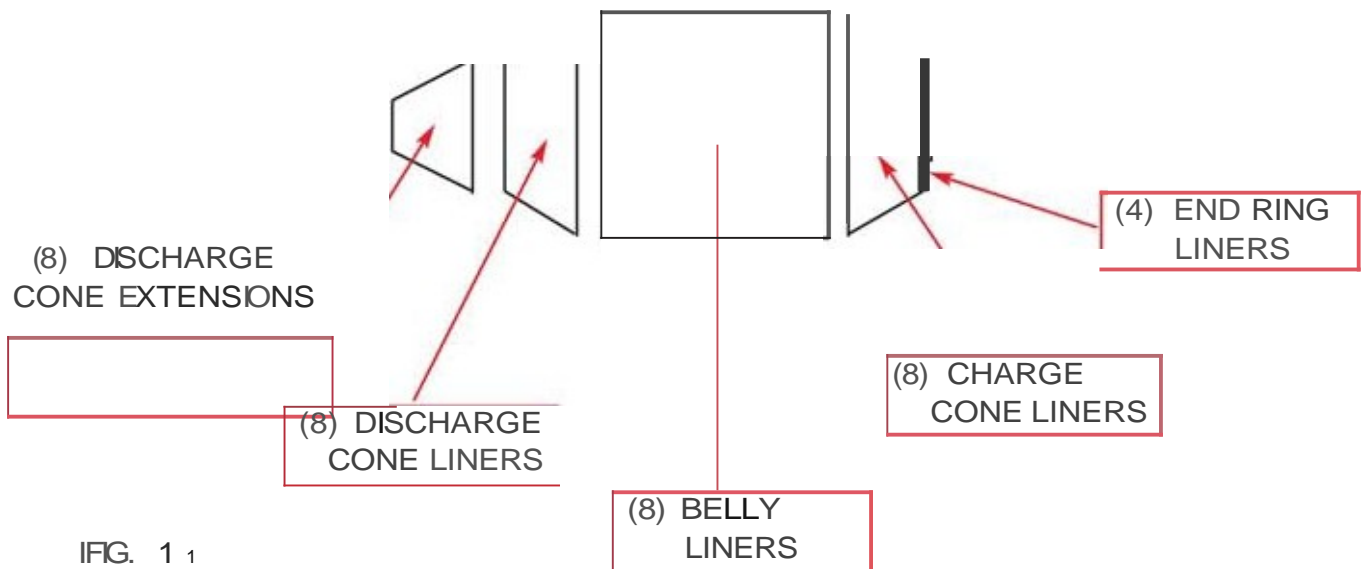


FIG. 1

STEP 3 - LINER SECTION POSITIONING

Liner sections are installed beginning at the charge end of the drum and ending at the discharge end. Before installing, it is recommended that (1) of each section (A,B,C,D & E) first be positioned on the drum bottom as shown in FIG. 2. Ideally the gaps between the sections should be 1/8" or less. If there are gaps greater than 1/8" in the seams of panels A through E, adjust the position of the panels as to even-out the disparity in the gaps. Note that the panel seams may not concisely match the drum weld seams. Tack weld the panels in place (see FIG. 3) welding only 4 to 5 weld plates on each liner section.

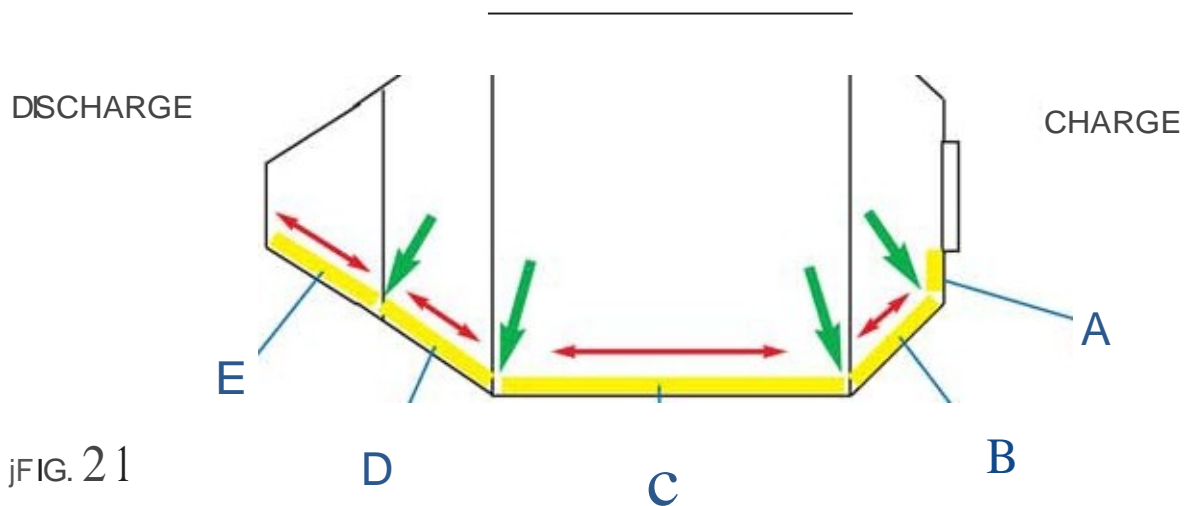


FIG. 2

STEP 4 - WELDING USING PIPE SECTIONS

The pipe segments act as a heat sink and shield in protecting the urethane liner during welding. To weld, press the liner flush with the mixer shell and place a pipe segment into the plug weld opening. Firmly holding the pipe segment in place with a vice grip pliers, insert the welder into the pipe and weld a bead around the weld plate hole (see FIG. 3 below).

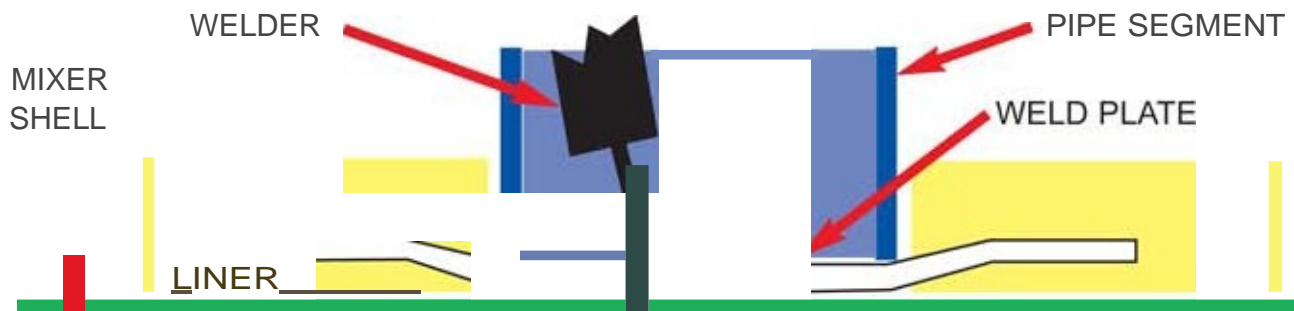
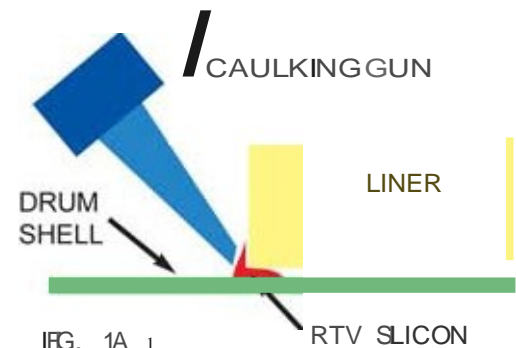


FIG. 3

WARNING: IN THE PROCESS OF WELDING, GRINDING, CUTTING, ETC., DUSTS, METAL FUMES, AND POLYMER DECOMPOSITION PRODUCTS MAY BE PRODUCED. DUSTS MAY BE IRRITATING TO EYES AND RESPIRATORY TRACT. DUSTS MAY ALSO BE FLAMMABLE. KEEP AWAY FROM FLAME OR OTHER SOURCES OF IGNITION. MUST BE PROTECTED FROM HEAT AND SPARKS GENERATED BY WELDING OR CUTTING TORCHES. HAZARDOUS DECOMPOSITION PRODUCTS INCLUDE: CARBON MONOXIDE, CARBON DIOXIDE, HYDROGEN CYANIDE, NITROGEN OXIDES, MISCELLANEOUS HYDROCARBONS AND POLYMER FRAGMENTS, METAL FUMES, AND OXIDES.

After welding the plate, the pipe segments can be cooled in a pail of water while a new pipe segment is utilized for the next weld. Continue this rotation of the pipe segments throughout the installation. Knock-in weld plugs are installed with a hammer or mallet. Before installing plugs, clean out liner welds with compressed air or a shop vacuum.



STEP 5 - INSTALLING THE END RING LINERS

After one of each of the charge, belly, discharge and extension cone liners have been linearly aligned (FIG. 1), begin the radial installation of the end ring liners. The perimeter of each liner section should be sealed with RTV silicon before completely securing all of the weld plates (FIG. 1A). C-clamps may be used to secure the liner sections before welding.

Hint: Tack weld each liner section on just a few weld plates - then complete welding all plates after all end ring sections have been properly positioned. Do this for all of the sectors of the drum.

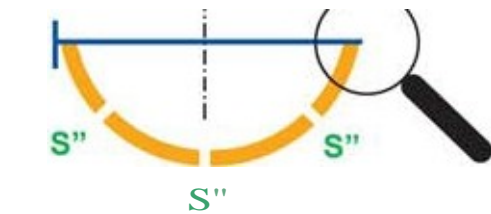


STEP 6 - INSTALLING THE CHARGE CONES

After completion of the end ring liners, proceed with installing the charge cones. It is crucial that these sections are properly aligned to the end ring liners. Slight variances in this alignment will accumulate into gaps and/or overlays when the final charge cone sections are welded. Review the alignment at the halfway point and adjust i



SPACING OR TRIMMING LINER SECTIONS RADIALLY

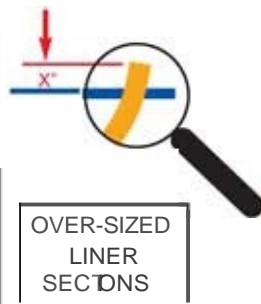


S'' = seam width 1/8" }

— = drum centerline

— = (4) liner sections installed

FIG 4



OVER-SIZED
LINER
SECTIONS

(4) Liners exceed centerline by X Length:

$$\text{TRIM} = (X'' + S'') / 2$$

EXAMPLE: (4) LINER SECTIONS INSTALLED WITH 1/8" SEAMS EXCEED CENTERLINE BY 1518"

$$\text{TRIM} = (1518'' + 118'') / 2 = 718''$$

(4) REMAINING SECTIONS NEED TO BE TRIMMED 718" AND INSTALLED WITH THE SAME 1/8" SEAMS.



UNDER-SIZED
LINER
SECTIONS

(4) Liners short of centerline by Y Length:

$$\text{NEW SEAMS} = S'' + [(Y'' - S'') / 2]$$

EXAMPLE: (4) LINER SECTIONS INSTALLED WITH 1/8" SEAMS ARE SHORT OF CENTERLINE 318"

$$\text{NEW SEAMS} = 118'' + [(318'' - 118'') / 2] = 144''$$

(4) REMAINING SECTIONS NEED TO HAVE A NEW SEAM WIDTH OF 1/4" AND WITH NO TRIMMING

STEP 7 - INSTALLING BELLY LINERS

With one belly section positioned (from Step 3), begin welding the belly section liners radially insuring that each seam is sealed with RTV just before the adjacent belly section is positioned (refer to FIG. 1A). Insure that each section has enough welded secured plates to support it when the drum is rotated. After securing 4 belly sections, use the spacing/trimming calculations (see FIG. 4) to trim and / or space the remaining 4 belly sections. Liners should be trimmed with a sawzaw. Weld all remaining weld plates, clean, and install knock-in plugs with hammer.



STEP 8 - INSTALLING THE DISCHARGE CONES LINERS

Weld the discharge cone sections in the same manner as the belly cone sections. Again apply RTV silicon to each seam just before positioning the adjacent liner section. Trim / space out last 4 sections (see FIG. 4)



STEP 9 - INSTALLING THE DISCHARGE CONE EXTENSION LINERS

Weld the discharge cone extension sections in the same manner as the belly cone sections. Again apply RTV silicon to each seam just before positioning the adjacent liner section. Trim / space out last 4 sections (see FIG. 4). C-clamps may be used to hold liner sections in place while spacing and welding.



STEP 10 - FINAL SEALING / INSPECTION

Inspect entire liner for gaps greater than 1/8" and seal with the RTV silicon. (Seams or gaps greater than 1/4" should not be sealed with RTV - consult Tandem Products before proceeding). Weld any missed unwelded weld plates and insure that all weld plates are capped with a knock-in plug.

