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# ◆ YARN TENSIONING & FILLING END-FEED PIRNS◆

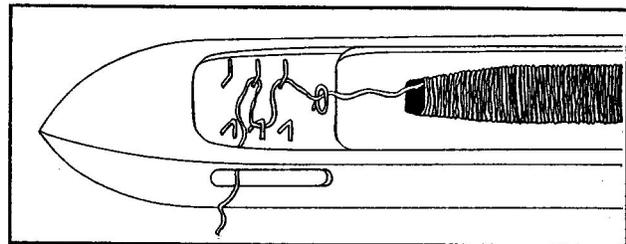
## BLUSTER BAY END-FEED BOAT SHUTTLES

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End-feed boat shuttles use a special, tapered bobbin called a pirn that does not spin inside the shuttle as yarn is released. Instead, the yarn is released off the end of the pirn, through a tensioning device, and then out the side of the shuttle. This design allows for consistent weft tension no matter how much yarn is on the pirn. The result is faster weaving with smooth selvages.

To thread your Bluster Bay end-feed shuttle:

1. Feed the weft yarn through the screw eye at the end of the pirn shaft. It may be easier to do this *before* you slip the fully wound pirn onto the shaft.
2. Pull the end of the yarn out the slot on the side of the shuttle.
3. To adjust the tension, hook the yarn around as many brass hooks as necessary. A small crochet hook may be of aid.



When tensioned correctly, the weft should unwind freely as the shuttle is thrown. It should neither pull too tightly nor leave loops of weft at the selvages. The number of tensioning hooks you use will vary with every weft yarn. Bulky, fuzzy yarn may need no tensioning. Very fine linen, silk or Mylar filament may need to be looped around all of the hooks.



To unwind smoothly, end-feed pirns must be wound correctly. Many types of bobbin-winders can be used to fill pirns, including hand-operated and electric winders designed for side-delivery bobbins or paper quills. However, the shafts on some winders may need to be built up with masking tape, duct tape or surgical tubing to provide a snug fit for pirns.

When filling a pirn, always keep your tension *very* firm. The full pirn should feel hard. Begin winding yarn at the wide end of the pirn, initially covering about one inch. Gradually wind on more yarn, carefully following the cone shape of the pirn.

For 8" and 5½" wood or plastic pirns, move down the pirn about one-half inch with each new layer of yarn. Each layer should cover no more than about two inches. For the smaller Swedish paper pirns, move down the pirn less than one-half inch with each new layer of yarn and each layer should cover no more than about 1½ inches.

Keep in mind that the weft yarn will unwind off the small end of the pirn. Never wind too far forward or back over the area already filled. With practice, winding a pirn is no more difficult than filling a conventional, side-feed bobbin.