Single-Zone Crown Control

Swimming Rolls

• Farrel S-Roll
• Voith – Nipco Econo Nip
• Metso – Sym S
• Kusters – Swimming Roll
  Piston (Shoe) Loaded
• Metso (Beloit) – CC Roll
Swimming Roll

Diagram showing the components of a Swimming Roll.

- Fixed end
- Free end
- Shaft
- Snap ring
- Pressurized chamber
- Shell
- Oil scoop
- End seals
- Snap ring
- Seal ring
- Nonpressurized chamber
- Nylon buttons
- Spherical support bushing
- Seal support cover
- Spherical roller bearing
- End seal ring
- End seal support ring

Color code:
- Fluid under pressure
- Fluid not under pressure
- Rotating elements
- Stationary elements

FARREL-KÜSTERS “Swimming Roll” NON-DRIVEN TYPE
Driven S-Roll
Ramp Up

• Purge Air Out of Oil System
• Start Rotating the Roll
• Begin Warming at 4°F/Minute
• Check Oil Flow at Site Glasses
• Ensure Oil Flow at Exits on Both Ends of the Roll
• Once Operating Temp is Reached, Close Nip Prior to Pressurizing
Monitor

- Periodically Check Site Glasses for Oil Flow
- Check Flow Gauges for Proper Flow
- Check Pressure at Console Gauge and at Roll (if equipped)
- Check Oil Filters
- Check Oil Temperature
S-Roll Axial Seals

AXIAL-SEAL ARRANGEMENT

- Pressurized chamber
- Filler
- Axial-seal spacer
- Axial-seal springs
- Axial seal
- Nonpressurized chamber

Color code:
- Red: Fluid under pressure
- Blue: Fluid not under pressure
- Green: Raising elements
- Yellow: Stationary elements

Shell

Shaft
S-Roll End Seal

END-SEAL ASSEMBLY

- Lockwashers
- End-seal support ring
- Socket-head cap screw
- Springs
- Short axial seal
- Dowel
- Nylon buttons
- Socket-head cap screw
Seal Problem Symptoms

- Sheet Profile, Smoothness and/or Gloss Degradation
- As Seal Wears, Pressure Drops (Unattended)
- Increased Oil Flow to Maintain Operating Pressure
- Continued Increase of Oil Flow Until End of Control is Reached
- Verify by: Increasing to Max PSI and Check Flow Rate – Compare to Rating
Pressure Test
Disassembly
Inspection
Replace Seals
Rebuild End Seal Support
Rebuild & Machine End
Seal Ring
Re-Assembly
Dynamic Pressure Test
S-rods have internal bearings that are not easily removed for shipment. To reduce potential damage, secure the shell with collars enabling the shaft to exert its weight to load the bearings. This will minimize relative movement of the rollers to the races and reduce transit vibration effects. Also block the external roll bearing housings.
S-Roll Blocking