

# RIS

The RIS seal has a unique non-clogging design that does not utilize springs or bellows.

The innovative design of the adaptive components allows the seal to be installed from the wet-end of the pump and to be adjusted externally. With many pump designs, the seal may be reset automatically during impeller clearance adjustment.

The stationary seal face is attached to a smoothly contoured flexible rubber element which holds the seal faces together and helps to absorb the relative shaft movement when the pump is in operation.

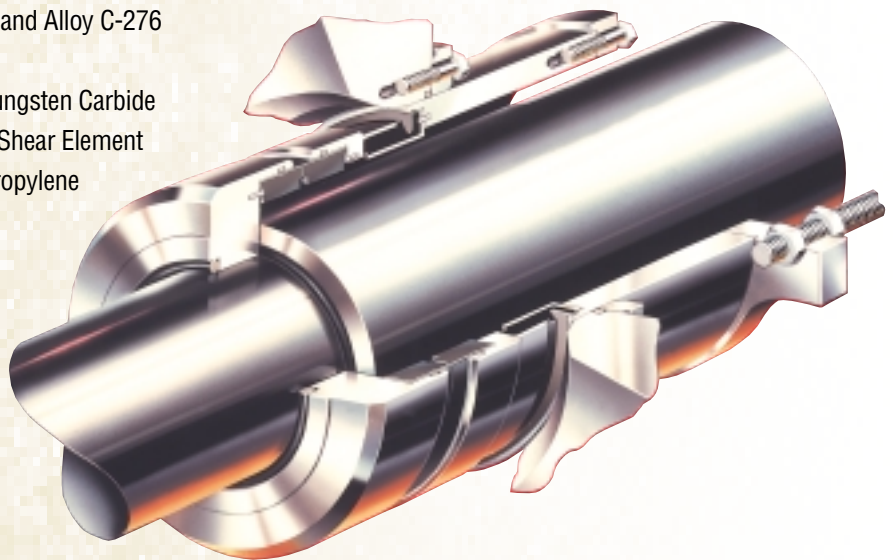
In line with Flowserve's traditional policy, customized designs can be made to meet special needs.

### **Features/Benefits**

- No Flush Required - control of slurry composition, savings in water eliminates flush system
- No Springs or Bellows - a true non-clogging design to provide longer MTBF
- External Adjustment - compensation for minor seal wear with no pump disassembly and compensates for pump misalignment
- No Dynamic Gaskets - provides longer MTBF by eliminating seal face hang-ups
- Factory and Field Tested - extensive development tests on hard slurries insures consistent performance
- Eliminates Process Leakage - reduces water disposal problems, packing sleeve wear and bearing failures

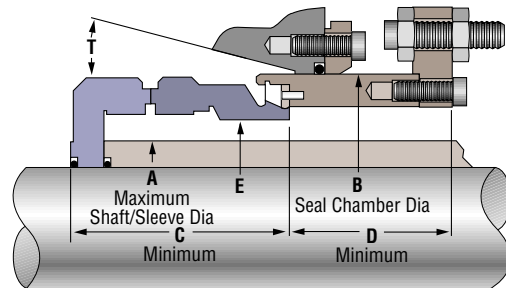
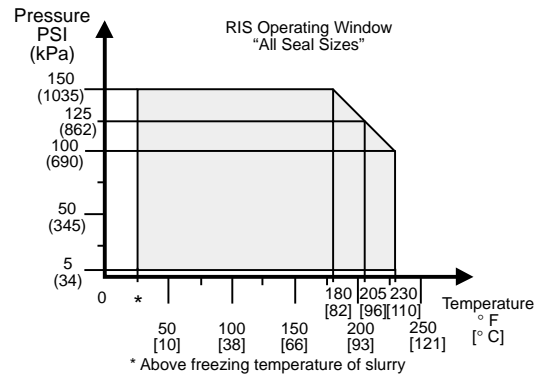
### **Materials of Construction**

- Stationary Assy: CD-4MCu and Alloy C-276
- Balance of Parts: AISI 316, CD-4MCu and Alloy C-276
- Other materials available optionally
- Seal Faces: Silicon Carbide or Tungsten Carbide
- Elastomers: Bortex I\* Rubber in Shear Element  
O-Rings Ethylene-Propylene



### Operating Parameters

- Maximum Static Pressure (for hydrotesting): 300 psig (2062 kPa) at Ambient Temperature
- Minimum Seal Chamber Pressure (all sizes): 5 psig (35 kPa). If necessary, remove back vanes from impeller to avoid seal chamber pressures below 5 psig.
- Tapered self-venting seal chamber recommended for proper product circulation and solids distribution. Recommended Tapered Angle "T": 10° min. to 30° max.
- Water based slurries with maximum 5.0 MOH particle hardness (when using Tungsten Carbide Faces) and 7.0+ MOH particle hardness (when using Silicon Carbide Faces). Operates in pH levels from 2-14.
- Shaft size: Up to 9-1/4 inches (234.7mm) covered by seven seal sizes. Surface speed up to 35 ft./sec. (11 m/sec.)



### Dimensional Data

Inches					Seal Size	Metric (mm)				
A	B	C	D	E		A	B	C	D	E
1.750	2.940	2.522	2.562	1.935	1875	45	74.68	64.06	65.1	49.1
2.625	3.875	2.799	2.531	2.810	2750	67	98.43	71.09	64.3	71.4
3.625	4.875	2.799	2.531	3.810	3750	92	123.83	71.09	64.3	96.8
4.250	6.250	3.882	3.032	4.562	4500	108	158.25	98.60	77.0	116
5.250	7.250	4.006	3.032	5.562	5500	133	184.15	101.75	77.0	141
6.250	8.250	4.257	3.032	6.562	6500	159	209.55	108.13	77.0	167
7.250	9.250	4.381	3.032	7.562	7500	184	234.95	111.28	77.0	192
9.250	11.250	4.757	3.032	9.562	9500	235	285.75	120.83	77.0	243

### Typical RIS Applications

Industry	Application	Seal Size	Press PSI [Bar]	Temp F [C]
Power, FGD	Recycle Limestone/Gypsum	4500-9500	30-50 [2-3.3]	120-150 [49-66]
Power	Thickener Underflow	1875-3750	30-75 [2-5]	Ambient
Power	Bottom Ash Removal	4500-5500	30-75 [2.5]	Ambient
Ore Processing	Reagent Feed	1875-3750	20-50 [1.3-3.3]	130-160 [54-71]
Phosphate Chemical	Phosphoric Acid/Gypsum	4500-7500	30-75 [2-5]	150-190 [66-88]
Alumina	Alumina Hydrate/Clarification	1875-7500	30-75 [2-5]	150-190 [66-88]
Iron Ore	Taconite Concentrate	4500-5500	20-75 [1.3-5]	Ambient

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