

High Pressure Radial Shaft Seals

Your Technology Specialist

simrit[®]

High Pressure Radial Shaft Seals from Simrit

Premium pressure seals from Simrit offer one-piece construction, small load rise as a function of pressure, and improved seal life span due to improved lubrication at the sealing lip.

A superior seal for high pressure applications

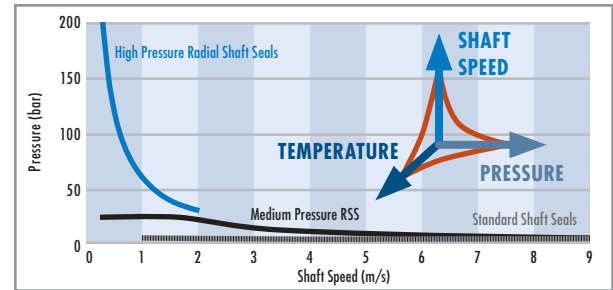
Seal life is highly dependent on three key related variables:

- Pressure
- Shaft speed
- Temperature

As pressure increases the seal life dramatically decreases due to atypical seal wear that is caused by an increased of friction in the system.

Simrit's standard line of TCV, BABSL, and TCN radial shaft seals have a proven record of durability and

longevity in a variety of medium pressure applications. Simrit is also the industry leader with field proven, specialty designed high pressure seals.

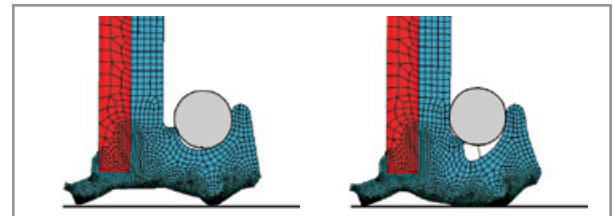


Simrit's Advanced Design for a Better Sealing Lip

As system pressure increases, the elastomeric flex section of the seal deforms which results in excessive seal to shaft contact. The enlarged contact band width increases friction, heat generation, and wear.

Simrit's medium and high pressure radial shaft seals are designed to prevent this deformation via a combination of a shorter flex section, flex section support features, reinforced metal cases, defined lip geometries, and proprietary wear resistant materials. Our advanced

designs ensure a sealing lip that functions correctly as pressure increases in the application.



FEA of RSS deformation change from bar 1 to bar 10.

Simrit Premium Pressure Seal (PPS) Design

The addition of this patented design now stretches the capability of the medium pressure seal range:

- Significantly lower wear and friction through patented "inverse" lip design which keeps the lip profile stable to twice the level of previous designs, i.e., no hollow wear.
- Lower torque under pressure than comparable radial shaft seals (50% reduction at highest pressure levels).

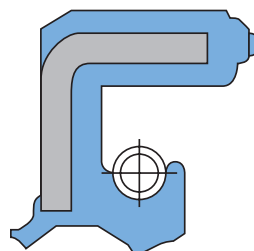
- Specially engineered materials minimize seal lip deformation, friction, wear, and provide compatibility with a wide variety of oils.
- Lower torque and less wear improve the overall PV capability of the seal to twice the previous levels (wearband widths on average ca. 0.4mm, verses 1.3–1.5mm)

Average ratings with backup support:

- ▶ Static pressure up to <100 bar
- ▶ Pulse pressure up to 25 bar
- ▶ Average dynamic pressure up to 7 bar

Recommended:

- ▶ Grease filling by user, e.g., Klüber Amblygon TA 15/2
- ▶ Dirt protection lip

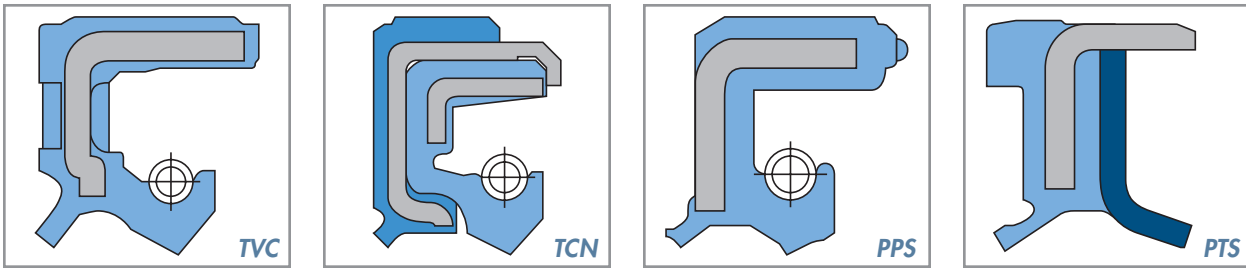


Reduced wear and friction through patented sealing edge design

Variations:

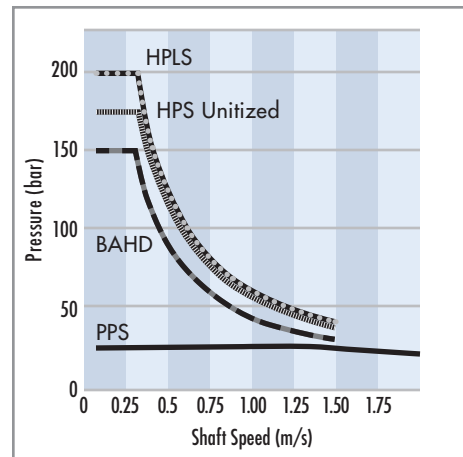
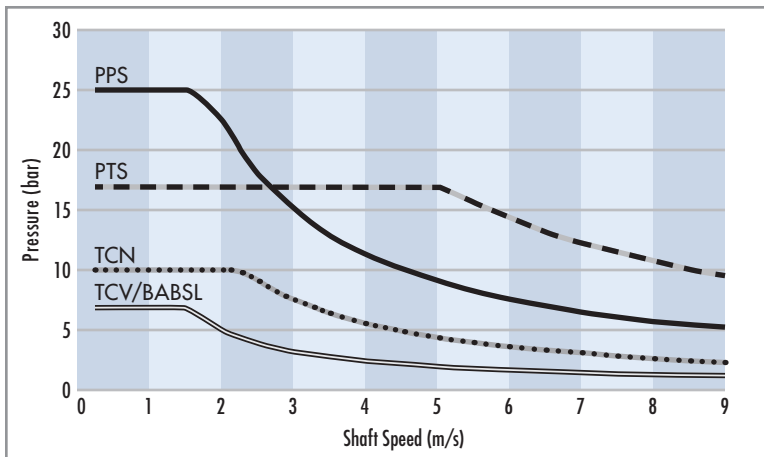
- ▶ HBR, HNBR, and FKM materials specially formulated for decreased wear and deformation resistance
- ▶ Anti-stick bumpers to aid with automated assembly
- ▶ Disassembly holes in metal case (optional)

Medium Pressure Seal Designs: The TCV, TCN, PPS, and PTS radial shaft seals



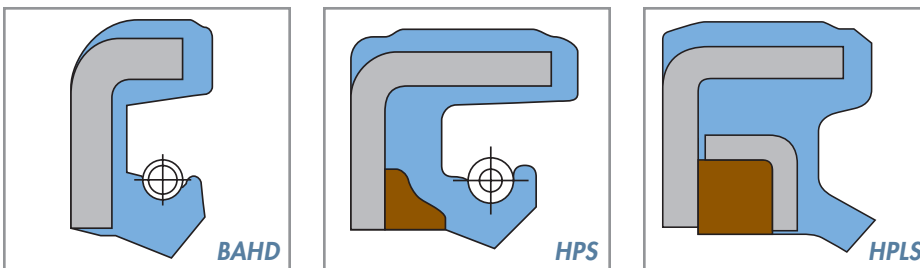
Seal Type	Pressure avg bar	Pressure max bar	Velocity max m/s	PV max m*bar/s	Material for Rating	Progression
TCV/BABSL	3.5	7	9	10	FKM	Industry standard for decades
TCN	7	10	9	23	FKM	Improved pressure rating; better shaft follow-ability
PPS	7	25	15	45	FKM	Improved pressure rating, one piece seal, and lowers friction
PTS	8	17	30	60	PTFE	Loss of pressure resistance, but improves speed rating via PTFE lip

Seal Design Pressure/Speed Comparisons*



*Data for reference use only. Actual values will vary depending upon conditions.

High Pressure Seal Designs: The BAHD, HPS, and HPLS (patented) radial shaft seals



Seal Type	Pressure avg bar	Pressure max bar	Velocity max m/s	PV max m*bar/s	Material for Rating	Progression
BAHD	100	150	1.5	45	HNBR	Significantly increases pressure capability but with limited follow-ability
HPS	100	175	1.5	60	HNBR	Improved shaft follow-ability and PV rating
HPLS	150	200	1.5	60	HNBR	Latest "zero leak" design with high pressure/low speed capability

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