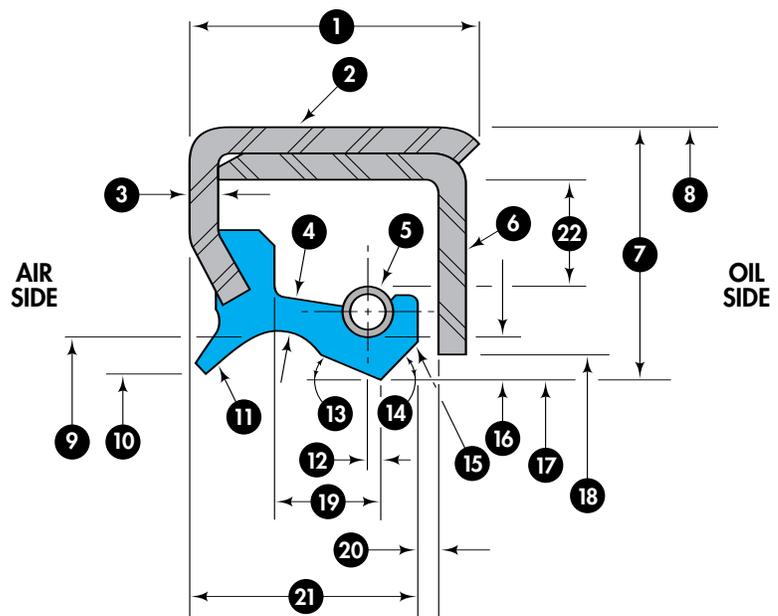


## SEAL NOMENCLATURE DEFINITIONS

1. **Seal Width**– Overall width of the seal.
2. **Case**– Metal stamping to which the elastomer is bonded.
3. **Case Thickness**– Metal case thickness varies based on size and application of seal. (See chart page 30.)
4. **Lip Flex Thickness**– The thickness of the primary lip section between the spring and the case that flexes outward when the shaft is installed through it. The thickness of the flex section helps energize the lip against the shaft and governs the seal's resistance to pressure. It also contributes to the amount of friction between the lip and the shaft.
5. **Garter Spring**– The garter spring is a helically coiled wire with its ends connected to form a ring. It is used to add a constant load to the seal's primary lip. The garter spring compensates for the loss of lip force against the shaft as the elastomer relaxes when exposed to elevated temperatures over time. The garter spring is considered essential when sealing low viscosity fluids or shafts rotating at high RPM. (See chart page 10.)
6. **Inner Case**– A metal stamping incorporated within the outer case to provide additional seal rigidity and to protect the elastomeric lip during seal installation.
7. **Radial Section with Free Lip**– The cross-section of the seal measured from the outside diameter to the primary-lip inside diameter.
8. **Outside Diameter**– The diameter of the seal's outer surface which is press-fit into its mating bore. This surface provides the static sealing interface to the housing, as well as mechanically locking the seal in the assembly.
9. **Lip Clearance Diameter or Heel Diameter**– The seal's inside diameter which provides clearance with the shaft. It is the surface of the seal's inside diameter that determines the flex section.
10. **Dirt Lip Diameter**– The inside diameter of the air side lip that is typically designed for only net contact with the shaft to prevent additional frictional heat. This diameter can be designed with shaft interference for increased dirt exclusion at the cost of increased frictional heat.
11. **Dirt Lip**– The dirt lip is located at the air side of the seal to prevent contaminants from entering the assembly. It is also used to retain grease.



12. **R Value**– The axial distance between the lip contact point and the centerline of the garter spring. The garter spring is typically offset to the air side of the lip 0.25 to 0.75mm for optimum sealing.
13. **Barrel Angle**– The angle between the seal centerline and primary lip’s conical surface to the air side of the seal. This angle should be approximately 30 degrees to allow a meniscus of fluid to be retained between the lip and the shaft. A properly designed seal rides on this meniscus rather than the shaft itself to reduce friction and wear.
14. **Scraper Angle**– The angle between the seal centerline and primary lip’s conical surface to the oil side of the seal. This angle is typically 55 degrees and helps to form the meniscus of fluid on which the seal contact point rides.
15. **Primary Seal Lip**– The lip located on the oil side of the seal. It performs the principle dynamic sealing function. If the seal utilizes a garter spring, it will be located on this lip.
16. **Head Thickness**– Head thickness is the radial distance between the primary lip’s contact point and the spring pocket.
17. **Primary Seal Lip Inside Diameter**– The smallest diameter of the seal primary lip. This diameter is stretched onto the shaft energizing the elastic properties of the lip creating the dynamic interface for the assembly.
18. **Inner Case Inside Diameter**– The smallest diameter of the inner case designed to protect the lip from damage. It protects against the spring becoming dislodged at assembly and guarantees clearance between the inner case and the shaft.
19. **Beam Length**– The axial distance between the lip contact point and the base of the lip flex thickness. Short beam lengths provide greater resistance to internal pressure. Longer beam lengths provide more flexibility to better follow shaft eccentricities at higher RPM.
20. **Axial Lip Clearance**– The axial distance between the primary seal lip and the inside wall of the inner case. This dimension is critical to ensure clearance between the case and the lip after being installed over the shaft.
21. **Lip Length**– The primary seal lip’s overall length measured from its air side face to the back of the seal.
22. **Radial Spring Clearance**– The radial distance from the outside diameter of the garter spring to the inside wall of the seal’s outer case. This clearance is important to ensure free movement of the lip.

