Product parameters

Parameter	Typical value / guidance
Primary function	Fluid retention and contaminant exclusion in static joints and low→medium dynamic hydraulic sealing (rod/piston/glands).
Common elastomer materials	NBR (Buna-N), HNBR, FKM (Viton), EPDM, Silicone (VMQ); material chosen by fluid compatibility, temperature and wear needs.
Typical temperature ranges (examples)	NBR: ≈ −30° C to +100° C; HNBR: ≈ −40° C to +150° C; FKM: ≈ −20° C to +200° C; EPDM and Silicone ranges vary by grade. (Exact limits depend on compound grade — always check vendor datasheet.)
Hardness (durometer)	Typical hydraulic elastomer seals: 60 – 90 Shore A; 70 Shore A is a common general-purpose choice.
Pressure capability	Static seals (O-rings, flange seals) — very high pressures possible with correct groove & backups; dynamic elastomeric seals (rod/piston U-cups) — rated per profile and typically used from low up to several hundred bar depending on design and back-up rings. Consult manufacturer pressure tables for each profile.
Dynamic performance limits	Elastomeric seals perform well in reciprocating service at moderate speeds when lubricated; for high speed or extreme pressure/temperature, consider PTFE-jacketed or spring-energized seals (manufacturer guidance required).
Common seal forms	O-rings, U-cups (rod & piston), X-rings, square rings, wipers, lip seals — selected by application (static vs rod vs piston vs rotary).
Standards & sizing references	AS568 (inch O-rings) and ISO 3601 (metric O-rings); hydraulic cylinder sizing often references ISO 3320 (bore/rod series) and vendor profile tables (Parker, SKF, Trelleborg).
Surface finish & tolerances	Rod/piston running surfaces must meet vendor-recommended Ra and hardness (polished/chrome-plated rods typical); improper finish or nicks cause premature failure. Check manufacturer installation and rod-finish tables.
Failure modes	Extrusion (insufficient backup), abrasion (contaminants), chemical attack (wrong compound), thermal degradation, and dry-running. Mitigate via correct material, backup rings, filtration and correct groove design.