Mechanical Limit Switches — Actuator Heads, Contact Actions and the XCK / 3SE5 Systems

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Choosing a limit switch by actuator head (roller lever, plunger, adjustable rod), body format and contact action — snap versus slow-break, and why positive-opening NC contacts are the safety requirement — across the stocked Telemecanique XCKJ/XCMD and Siemens SIRIUS 3SE5 modular ranges, plus when to go non-contact instead.

The head does the sensing, the body does the switching

Industrial limit switches are two-part machines. The actuator head — roller lever, dome or roller plunger, adjustable rod, spring whisker — converts machine motion into a defined stroke, and on the quality ranges it rotates in 90° steps and replaces separately. The body carries the contact block and cable entry. Both stocked systems are modular this way: Telemecanique's classic metal XCKJ110513 roller-lever unit and compact XCMD series (plunger versions like the XCMD21F0L5 included), and Siemens' SIRIUS 3SE5 where body and actuator head are literally separate order numbers — which is also why a worn lever is a cheap fix, not a new switch.

Contact action is a safety decision

Action | Behaviour | Choose it for |

Snap action | Contacts flip at a fixed point regardless of actuator speed | Slow or creeping cams — the snap guarantees a clean switch point |

Slow-break | Contacts travel with the actuator; break point follows the stroke | Faster motions; gives overlapping NC/NO sequencing options |

Positive opening ("–) | Actuator mechanically forces the NC contact apart | Mandatory for safety functions — welded contacts get torn open |

Safety interlocks on guards and hatches use positive-opening NC channels as a rule — the stocked 3SE5 metal safety switch with 1 NO + 2 NC is the dual-channel shape, same logic as the e-stop contacts in the pushbutton guide. Environmental details finish the selection: metal bodies and IP66/67 for washdown and deck duty, cable entry size (M20-entry XCKJ variants are stocked), and approach speed/angle inside the head's rated window.

When to stop using a lever at all

High cycle rates, wet abrasive environments, or targets that would batter a roller are the signal to go non-contact — an inductive sensor has no moving parts to wear (the proximity-sensor guide covers the swap), at the cost of needing supply voltage and metal targets. Close to 900 limit-switch line items are stocked across Telemecanique, Siemens and others, legacy references included — quote the number off the old body or head and the current equivalent, or the head alone, is confirmed within 24 hours.

Frequently asked questions
Can I replace just the roller lever on a limit switch?On the modular ranges, yes — heads and levers are separate spare parts and most heads re-clock in 90° steps, so a bent or worn lever never costs a whole switch.What does positive opening mean on a limit switch?The actuator mechanically forces the NC contact open through a rigid linkage — even welded contacts are torn apart. It is the property safety standards require of interlock and e-stop contacts, marked with the arrow-in-circle symbol.Snap action or slow action — which do I need?Snap action for slow-moving cams and anywhere a crisp, repeatable switching point matters; slow-break where the machine moves briskly and staged NC/NO sequencing within the stroke is useful.Why did my limit switch fail after months outdoors?Usually the entry, not the contacts: wrong gland size or unsealed conduit lets water into the contact chamber. Check the M20 entry's gland and the lid gasket before condemning the range.Are limit switches better than proximity sensors?Different tools: mechanical switches need no supply, switch mains-level loads directly and give positive-opening safety contacts; proximity sensors win on cycle life and sealed, no-touch sensing. Many machines run both.

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