

Industrial Limit Switches — Choosing Bodies, Heads and Actuators in the XCK/ZCK System

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How modular limit switches compose from a contact body and an operating head, choosing between plunger, roller plunger, roller lever, adjustable lever, cat's-whisker and cross actuators, snap versus slow-break contacts, and the stocked XCK complete switches and ZCK bodies, heads and levers.

Modular anatomy

Industrial limit switches are a kit: a contact body (the switch element with its cable entry) plus an operating head (the mechanism) plus, on lever heads, the lever/arm. Complete pre-assembled references exist (XCK...), and every element is also a spare: bodies (ZCK J/M/S/L and ZCM D/ZCD lines), heads (ZCK D/E), levers and rods (ZCKY, ZC2JY, ZCY). That modularity is why a flooded or smashed switch is a two-minute repair if you can name the parts.

Choosing the actuator

Actuator | Motion it suits | Stocked examples |

End/metal plunger | Precise linear cam, short overtravel | XCKD2110 M12, head ZCKD109 |

Roller plunger | Sliding cam across the face | XCKML502 roller plunger, plastic XCMN21F2 |

Roller lever (fixed) | General cams/dogs, both directions | XCKJ short lever/roller, steel-roller XCKJ10513 M20 |

Adjustable-length roller lever | Site-set geometry, conveyors | XCKD2145 PG11, XCKP2145 M16, head ZCE24 |

Rotary roller lever (spring return) | Swinging dogs, gates | XCKN2118 NC+NO M20 |

Cat's whisker / spring rod | Any-direction touch, fragile targets | XCKD2106 M12, head ZCE06, rods ZCY53/ZCY54 |

Metal cross lever | Multi-direction hopper/chute flaps | XCKMR54D1 M20 |

Lever w/ plastic roller, horizontal | Light product sensing | XCKM521 |

Contacts: snap or slow-break

Snap-action contacts change state at a fixed cam position with contact speed independent of actuation speed — repeatable to fractions of a millimetre, right for position signalling. Slow-break contacts move with the actuator — the choice where positive opening with generous travel matters, and the basis of safety versions. Bodies stock both, in metal and plastic, with the contact set named in the listing: NO+NC snap (ZCKJ1, plug-in ZCKJ11), slow-break NO+NC (ZCKJ5, ZCKM5), 2NO+2NC (ZCKJ4 M20), NC+NC overlapping (ZCKM7), three-contact sets (ZCMD39 1NO/2NC, ZCD31), and pre-cabled compact bodies (ZCMD/ZCD with M12 or 1–5 m leads, e.g. ZCMD21M12).

Mechanical application rules

Cam angle "d 30° onto plungers and levers; steeper cams hammer the mechanism.

Use 70–90 % of travel, never bottom the actuator as a mechanical stop.

Orient cable entries down or seal properly (entries stocked as PG11/PG13.5/M16/M20/1/2" NPT and M12 connector variants — match the gland).

Levers clock in 10–15° steps on their serrated hubs — set geometry there, not by bending arms; acid-resistant arms (ZC2JY313) for washdown.

Manual-reset versions (XCPR latching, XCTR reset) where a trip must be acknowledged at the switch.

For guard doors and personnel protection use the safety-rated families instead — positive-opening safety limit switches and interlocks in the interlock guide; a standard snap body on a guard is not a safety function.

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