

MATERIAL *SAFETY & PERFORMANCE* FOR LOW VOLTAGE SWITCH GEARS

Globally, electric energy consumption is expected to double by 2050.

This is due in large part to the growth of sustainability-focused technologies, including smart grids, electric cars and connected homes. To meet increasing demands and the need for more sustainable power systems, power distribution providers work closely with equipment manufacturers to optimize compact electrical systems – including low voltage switch gears for residential and industrial electrical distribution. Designed to handle more power, low voltage switch gears are highly durable, and better integrate with next-generation electrical distribution technology.

The increase in global demand for power distribution, together with ongoing miniaturization and electronics integration requirements is driving the adoption of high-performance plastics in parts manufacturing.

Manufacturers need to minimize the risk of potentially catastrophic electrical accidents by ensuring all replacement materials they select consistently meet or exceed safety standards – International Electrotechnical Commission requirements are essential to low voltage switch gears.



KEY LOW VOLTAGE SWITCH GEAR APPLICATION REQUIREMENTS

Enclosure

Encases the circuit breaker and requires:

- CTI above 400V
- GWFI up to 960°C
- Excellent short circuit properties
- High dielectric strength after short circuit

Bobbin support

Is initiated by a short circuit inside the low voltage switch gear and requires:

- GWFI up to 650°C
- High HDT to prevent malfunction

Flange

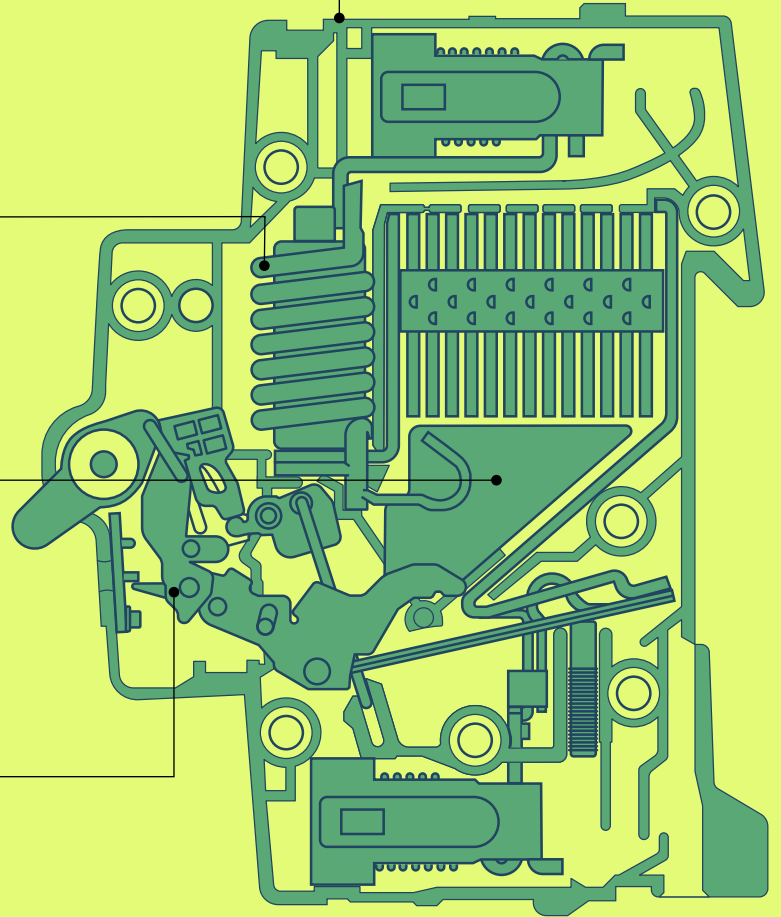
Contains the arc-cutting or quenching mechanism that stops an electric arc and requires:

- Reliable arc breaking performance
- Low soot formation to prevent build-up of conductive surfaces

Switching mechanism

Shuts off electrical connection when thermal overload or short circuit are detected and requires:

- GWFI up to 650°C
- Low friction
- Low creep
- High dimensional stability



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ENVALIOR MATERIALS

Envalior Expertise in Power Distribution

Envalior is a leading global supplier of engineering plastics for power distribution applications. Working directly with industry leaders to understand their requirements, we've developed a portfolio of thermoplastic materials designed for all low voltage switch gear housing and internal parts. Leveraging extensive research and development, our proven solutions meet the safety and performance requirements for each component, including:

- High comparative tracking index (CTI)
- High glow wire flammability index (GWFI)
- Industry-leading arc-cutting performance
- Excellent V-0 and V-2 performance in UL 94 testing
- Superior flow and processability for thin-walled designs
- Fully halogen-free and flame-retardant grades
- Low corrosion, both in manufacturing and use
- Excellent heat deflection temperature (HDT) and dielectric aging performance



CTI 600

Comparative Tracking Index



V-0

UL 94 flammability rating

Envalior Recommended Materials

Enclosure	Bobbin support	Flange	Switching mechanism
AKULON® K222-KGV4 (PA6, 20% GF)	STANYL® TE200F6 (PA46, 30% GF)	STANYL® CR310 (PA46, 30% GF)	XYTRON™ G4010W (PPS, 40% GF)
DURETHAN® BKV25FN27 (PA6, 25% GX)	POCAN® BFN4231 (PBT, 25% GF)	AKULON® S223-E (PA66, unreinforced)	XYTRON™ M6510A (PPS, 65% GF+MD)
AKULON® K222-KGV6 (PA6, 30% GF)			ARNITE® AV2 372 (PET, 35% GF)
AKULON® SG-KGS5/HV (PA66, 25% GF)			POCAN® T7391 (PBT+PET, 45% GF)
STANYL® HFX61S (PA46, 35% GF)			
FORTII® F11/T11 (PA4T/PPA, 30% GF)			

To learn more, contact us via Envalior.com.



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