LW36A/B-72.5/126/145 HV SF6 Circuit Breaker

Summary

This product is based on the technology of LW36A/B-72.5/126/145, developed by Xi'an HV Electrical Apparatus Institute and HEAG group. It absorbs experiences and technics in similar product manufacturing and perfected as a new generation of self-evolving SF6 HV circuit breaker. LW36A/B-72.5/126/145 is used to control and protect circuit in 72.5/126/145kV and AC 50/60Hz power system. It is SF6 insulation with CT30 spring operation mechanism.

Execution standards

IEC62271-100	HV Alternating Current Circuit Break
GB311-2002	Usage Rule of HV Distribution and Insulate Apparatus
GB/T16927-1997	HV Testing Technology
GB1984-2003	HV Alternate Current Circuit Breaker
GB3309-1989	HV Switchgear Mechanical Testing under Normal Temperature
GB4473-1996	HV Alternate Current Circuit Breaker Compound Testing
GB5582-1993	HV Electric Apparatus Outer Insulating with Pollution Grade
IEC60694 & GB11022-1999	Common Technical Requirements of HV Switchgear and Control Apparatus
GB11023-1989	HV switchgear SF6 Air-proof Testing Guide
GB/T8905-1996	Electrical Management and Checking Guide of SF6 Electric Apparatus
GB12022-1989	Industrial Using SF6
GB/T13384-1992	General Technical Condition of Electrical Product Packing
GB191-2000	Packaging and Transportation Mark

Model

L W 36 A/B - 72.5(126)(145) / □ - □

- Rated short-circuit breaking current
- Rated current
- Rated voltage
- Improved model
- Design serial No.
- Outdoor
- SF6 circuit breaker

Ambient condition

1. Altitude: 1000m (high-altitude is of particular order);
2. Ambient temperature: -25℃~+40℃ (under -25℃ is of particular order);
3. Maximum wind speed: 42.2m/s;
4. Earthquake intensity: 8 degree;
5. Pollution degree: Ⅲ(25kV/mm), Ⅳ(31kV/mm)

Product feature

1. Excellent breaking performance of arc-extinguish chamber;
2. Good insulation capacity;
3. Dependable mechanical maintenance;
4. Reduction of noise;
5. Convenient installation and debugging;
6. Dependable air-proof feature;
7. Long mechanical life and maintenance-free;
8. Safe and reliable operation.

Technical specification

No.	Item			Unit	Data
1	Rated voltage			kV	72.5, 126,145
2	Rated current			A	1250, 1600, 2000,3150
3	Rated frequency			Hz	50,60
4	Rated short-circuit withstand current(4s)			kA	31.5,40
5	Rated short-circuit duration			s	4
6	Rated short-circuit breaking current		Short-circuit current	kA	31.5,40
			DC Shunt	-	44%
7	Rated short-circuit making current(peak)			kA	80,100
8	Rated peak withstand current			kA	80,100
9	Short-line fault breaking current			kA	Ie×90%　Ie×75%
10	Rated out-of-phase breaking current			kA	Ie×25%
11	Rate charging line breaking current			A	10, 31.5, 50
12	Rated insulating level	1min P.F withstand voltage	Across open contacts	kV	200, 265, 315
			Phase to phase		160, 230, 275
			Phase to earth		160, 230, 275
		Lightning impulse withstand voltage(peak)	Across open contacts		385, 630, 650
			Phase to phase		350, 550, 650
			Phase to earth		350, 550, 650
		5min zero-pressure withstand voltage test(virtual value)	Across open contacts		95
			Phase to earth		95
13	First pole to clear factor			-	1.5
14	Rated operate sequence			-	O-0.3S-CO-180S-CO; CO-15S-CO
15	Full breaking			ms	≤60
16	SF6 gas rated pressure(20℃)			Mpa	0.60
17	Alarming pressure				0.55
18	Locking pressure				0.50
19	Terminal static pulling power		Level lengthways	N	1250
			Level transverse		750
			Vertical		1000
20	Fixed opening time		Rated voltage	ms	30±3
21	Closing time			ms	75±8
22	Reclosing O-0.3S-3CO		Primary opening time	ms	30
			OC time		280~300
			Closing time		75
			CO time		≤60
			Second opening time		35
23	Control circuit voltage			V	AC/DC, 110/220
24	CO loop voltage			V	AC/DC, 110/220
25	CO loop current			A	2
26	Motor voltage			V	AC/DC, 110/220
27	Motor			W	600
28	Heater voltage			V	AC220
29	Mechanical duration			Times	6000, 10000
30	Radio interrupting voltage			μV	≤500
31	Electrical life of rated short-circuit breaking current			Times	20
32	Protection grade of enclosure			-	IP4X
33	Creepage distance			mm	1813, 2248, 3150, 3800, 4495, 5800

Spring operating mechanism

Diagram A: After circuit breaker is closed, the close and open spring store energy, inside crutch arm and outside crutch arm bear moment from anti-clockwise, once the opening winding electrified, the lock releases and rotate in anti-clockwise driving by open spring, and inside crutch arm open circuit breaker. The moment is locked up by keeping engine and engine under opening state. (On diagram B)

Diagram B: When spring mechanism is opening, close spring storage, ratchet wheel axis bear moment from opening spring in anti-clockwise, the moment is locked up by holding engine and opening engine. When opening winding electrified, the cam and ratchet wheel connected with clocking devices release. The cam driving by close spring in anti-clockwise, and its moment depresses open spring as to open the circuit breaker.

Diagram C: As the circuit breaker finished with closing, close spring is releasing, (as that in diagram A) the pawl axis connects with motor by gear. The motor start up instantly and open spring store energy.

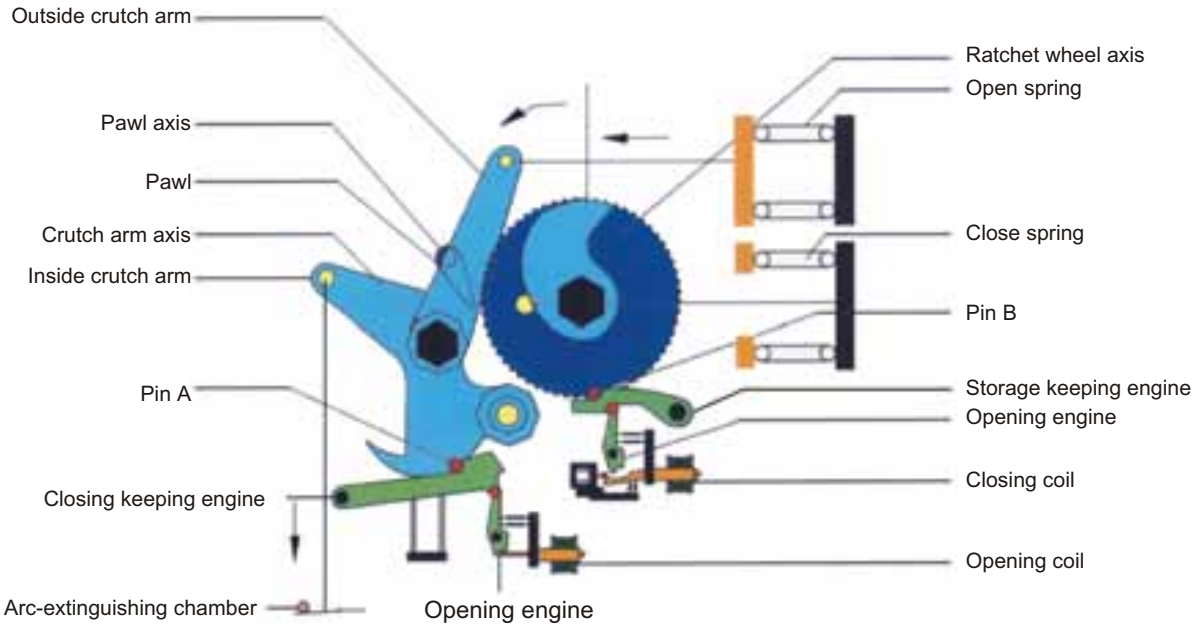


Diagram A Opening operation

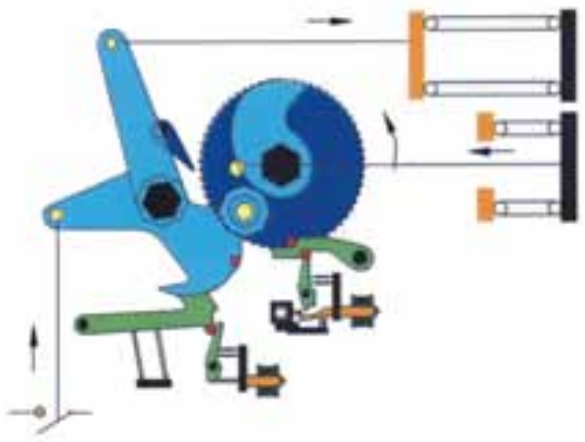


Diagram B Closing operation

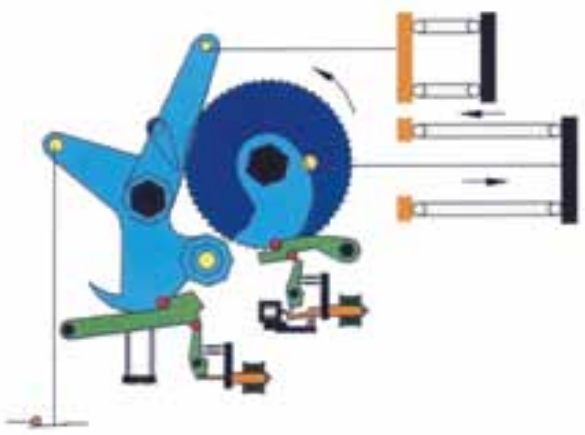
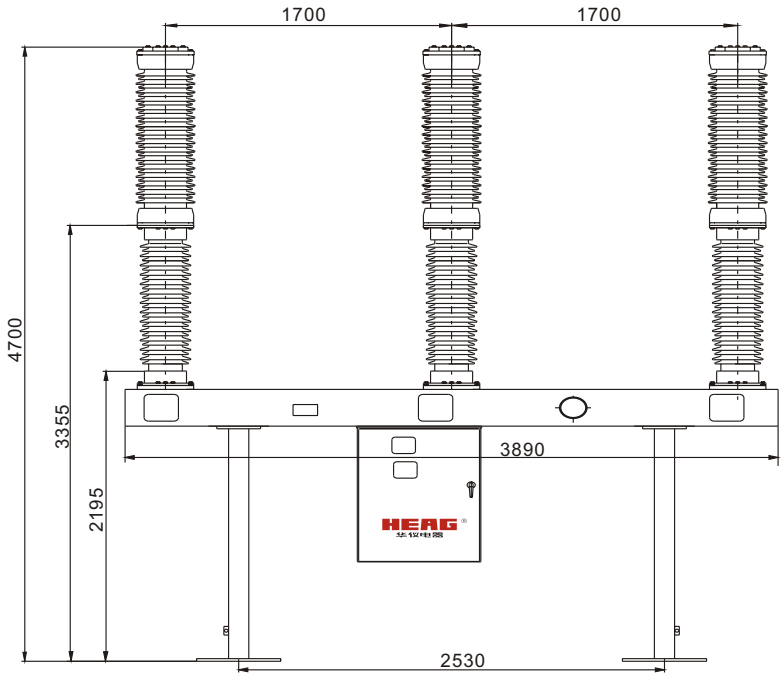
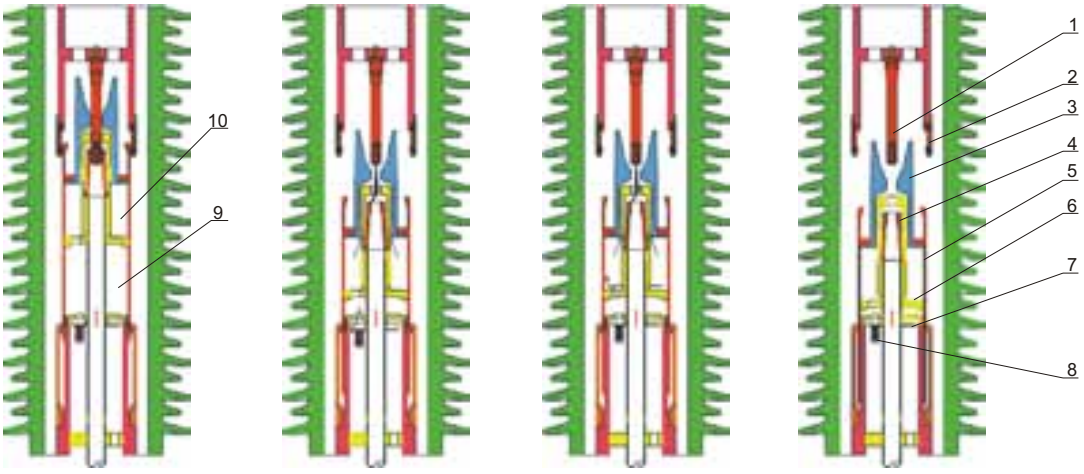


Diagram C Mechanism power-storage

Outline dimension



Arc extinguishing principle



A
Closed position

B
Breaking heavy current

C
Breaking light current

D
Open position

1.Static arcing contact 2.Main contact 3.Nozzle orifice 4.Moving arcing contact
5.Cylinder 6.Non-return value 7.Pressure release value 8.Relief spring
9.Gas chamber 10.Thermal expansion chamber