

Indoor Air Switch Disconnecter, NAL - NALF

Rated voltage: 12-40.5 kV

Rated current: 400-1250 A

Catalogue 1YMR602130-en



Based on a modular principle

Applications

- as line and transformer switches within distribution networks
- as motor switches
- as capacitor switches

3-pole switch disconnecter and switch fuse combination

Optional automatic fuse tripping

Optional fuse base on the opening side

More than 550 00 units in service world wide

Manufactured according to ISO 9001 and ISO 14001

Accessories can easily be added

Compliance with standards: IEC 60265, 62271-105, GOST 1T16.3-96, GOST 17717-79, ANSI C37.20.4, CSA C22.2 No. 193



Technical specification Switch disconnecter type NAL/NALF																		
Rated voltage		Un	kV	12 kV			17.5 kV			24 kV			36 kV			40,5 kV		
Rated current		In	A	400	630	1250	400	630	1250	400	630	1250	630	800	1000	630	800	1000
Max. rated current		I	A	400	630	1150	400	630	1150	400	630	1150	630	800	800	630	800	800
Short circuit making capacity		I _{ma}	kA peak	67	67	67	50	50	50	50	50	50	50	50	50	50	50	50
Peak withstand current*		I _{dyn}	kA peak	82	82	82	82	82	82	82	82	82	66	66	66	66	66	66
Short time current		l _{th}	kA eff	1 sec.	31.5	31.5	31.5	31.5	31.5	31.5	25	25	31.5	25	25	25	25	25
				2 sec.	25	25	25	25	25	25	25	25	25					
				3 sec.	20	20	20	20	20	20	16	16	16					
Mainly active load breaking capacity ²⁾ (test duty 1 and 2, IEC 60265-1 (IEC 265))		I	A	400	630	1250	400	630	1250	400	630	1250	630	800	630	800	630	800
Mainly capacitive breaking capacity (test duty 4, IEC 60265-1 (IEC 265))		I	A	150	150	150	45	45	45	80	80	80	50	50	50	50	50	50
Mainly inductive breaking capacity cosφ = 0.15		A		16	16	16	16	16	16	16	16	16	16**	16**	16**	16**	16**	16**
Rated earth fault breaking capacity, IEC 60265-1 (IEC 265))		I	A	150	150	150	70	70	70	75	75	75	50	50	50	50	50	50
Earth fault breaking capacity, fig. 6																		
Capacitive breaking capacity, fig. 7																		
Max. breaking capacity in co-operation with fuses IEC 62271-105 (IEC 420 1990-11)		A		1600	1600		1600	1600		900	900		300*	300*	300*	300*	300*	300*
Max. fuse size ⁴⁾ (value for ABB fuses type CEF)		In	A	125	125		125	125		80	80		40	40	40	40	40	40
Power frequency withstand voltage 50 Hz 1 min. - to earth and between poles			kV	42			45			55			80			95		
- across isolating distance			kV	45			60			70			88			120		
Impulse withstand voltage 1.2/50µs - to earth and between poles			kV	75			95			125			170			190		
- across isolating distance			kV	85			110			145			195			220		
Pole distance		P	mm	150, 170 and 210			170 and 210			170***, 235 and 275			360					
Max. operating torque at: - closing K/A mech.			Nm	115-120 Nm												80-100 Nm		
- opening K/A mech.			Nm	K-mech. 120 Nm/A-mech. 3 Nm												K-mech. 80-100 Nm		
Operating angle on the shaft			degrees	130												120		
Opening time			ms	40 - 60												60		

* - IEC 420 - 1973

** - power factor = 0,1

***- with insulating barriers

Earthing switch type E ¹⁾ for NAL/NALF and type EB																		
Rated voltage		Un	kV	12			17.5			24			36					
Peak withstand current ³⁾		I _{dyn}	kA peak	62/82			40/82			38/82			66					
Short time current		l _{th}	kA eff	1 sec.	31.5	31.5						31.5	25					
				2 sec.	25	25						25	16					
				3 sec.	20	20						20	16					
Short circuit making capacity ³⁾		I _{ma}	kA peak	62/67			40/62.5			38/50			50					
Test voltage 50 Hz 1 min.			kV	42			45			55			80					
Power frequency withstand voltage 1.2/50µs			kV	82			95			125			170					
Pole distance		P	mm	150, 170 and 210			170 and 210			170, 235 and 275			360					

LCES earthing switch type E ¹⁾ for NAL/NALF and type EB																		
Rated voltage		Un	kV	12			17.5			24			36					
Peak withstand current ³⁾		I _{dyn}	kA peak	50			50			50			50					
Short time current		l _{th}	kA eff	1 sec.	20	20						20	20					
				3 sec.	16	16						16	16					
Test voltage 50 Hz 1 min.			kV	28			38			50			70					
Power frequency withstand voltage 1.2/50µs			kV	75			95			125			170					
Pole distance		P	mm	150 and 210			170 and 210			235 and 275			360					

¹⁾ Mechanical interlocking can be fitted, but not for KS-mechanism.

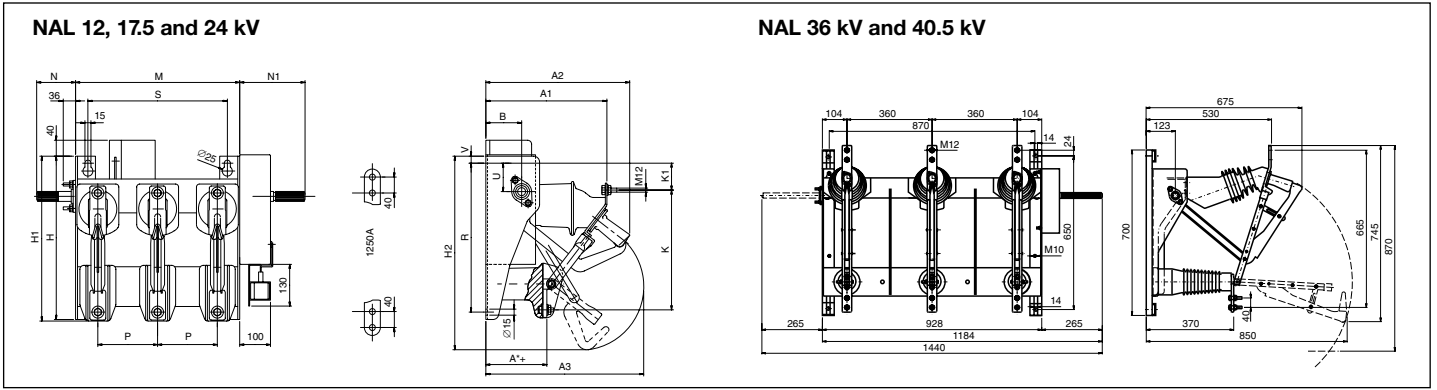
²⁾ At I_n = 630 A, 100 x CO. At I_n = 1250 A, 20 x CO

³⁾ When fed from switch disconnecter/earthing switch side.

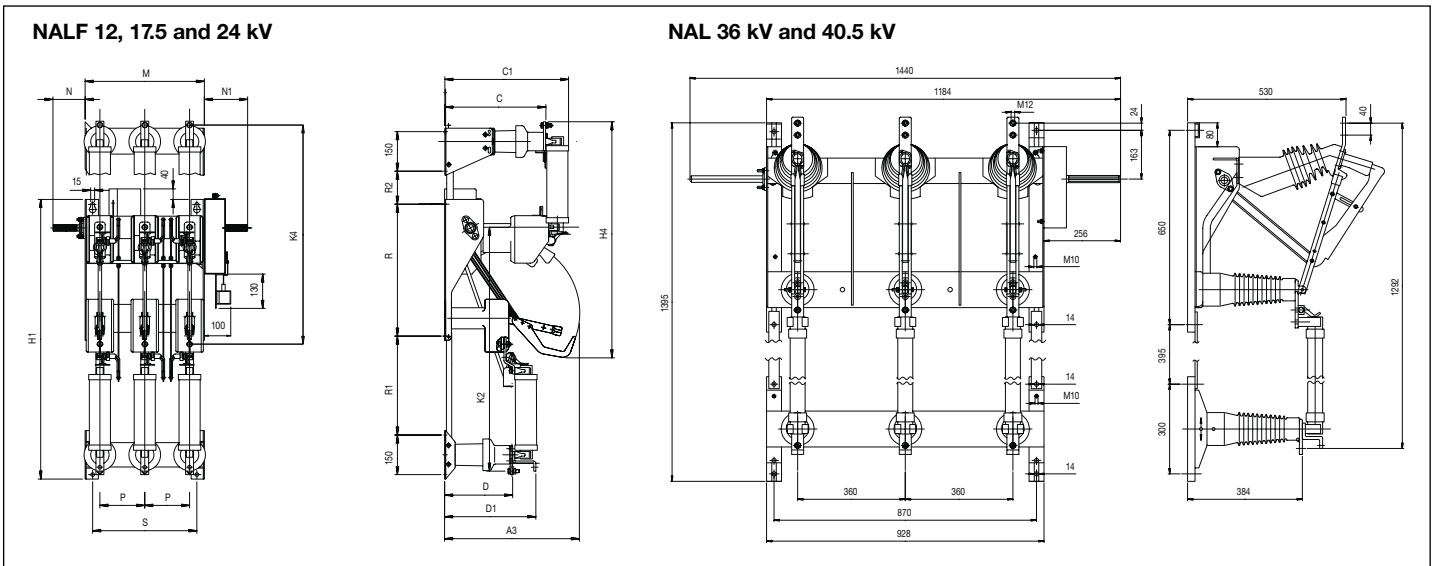
⁴⁾ Max. fuse size is ref. to time current characteristics for CEF.

⁵⁾ Power factor = 0,1

Dimensional drawings switch disconnecter with mechanism



Type	A	A1	A2	A3	B	H	H1	H2	K	K1	M	N	N1	P	R	S	U	V
NAL 12-A/K/KS, P=150	166	320	362	394	90	422	428	510	310	63	412	122	164	150	375	350	75	33
NAL 12-A/K/KS, P=170	166	320	362	394	90	422	428	510	310	63	452	122	164	170	375	390	75	33
NAL 17.5-A/K/KS, P=170	225	375	418	511	98	534	577	600	441	87	452	122	164	170	500	395	90	18
NAL 24-A/K/KS, P=170	225	375	418	511	98	534	577	600	411	87	452	186	202	170	500	395	90	18
NAL 12-A/K/KS, P=210	166	320	362	394	90	422	428	510	310	63	532	122	164	210	375	470	75	33
NAL 17.5-A/K/KS, P=210	225	375	418	511	98	534	577	600	441	87	532	122	164	210	500	470	90	18
NAL 24-A/K/KS, P=235	225	375	418	511	98	534	577	600	441	87	582	186	202	235	500	525	90	18
NAL 24-A/K/KS, P=275	225	375	418	511	98	534	577	600	411	87	562	186	202	275	500	605	90	18



Type	Fuses		C	C1	D	D1	H1	H4	K2	K4	R1	R2		
	kV	Length												
NALF 12 kV	3.6/7.2	192	328	430	173	261	848	710	722	598	275	50		
		292					948	810	822	698	375	150		
	12	292					1098	960	972	848	525	300		
		442					1060	895	925	828	375	125		
NALF 17.5 kV	17.5	292	383	485	258	346	1210	1045	1075	978	525	275		
		442					1194	1045	986	978	425	275		
NALF 24 kV	24	442					275	476	1284	1140	1090	1073	525	370
		537												

TABLE according to CSA -C22.2

Rated Nominal Voltage	kV	4,16	13,8	27,6	34,5
Rated Maximum Voltage	kV	4,76	15	29,8	38
Rated Current	A	600/1200	600/1200	600/1200	600/800
Impulse Test Voltage	kV	60	95	125	150
Power Frequency Withstand Voltage	kV	28	38	60	70
Pole Spacing	mm/inches	150/5,9	170/6,69	235/9,25	360/14.1
		210/8,25	210/8,25	275/10.8	
			235/9,25		
Momentary Rating Current	kA asym.	40	40	40	40
Fault-Closing Rating Current	kA asym.	40	40	40	30
Short Time Current	kA asym. - 2s	25	25	25	25

TABLE according to ANSI C 37.20.4

Rated Nominal Voltage	kV	4.73	12-13.8	12-16.8	22.9-24.9	34.5
Rated Maximum Voltage	kV	8.25	15	17	27	38
Rated Current	A	200/600/1200	200/600/1200	200/600/1200	200/600/1200	600/800
Impulse Test Voltage	kV	75	95	110	125	150
Power Frequency Withstand Voltage	kV	26	36	50	60	80
Pole Spacing	mm/inches	210/8.25	170/6.69	235/9.25	275/10.8	360/14.1
Momentary Rating Current	kA asym.	40	40	40	40	40
Fault-Closing Rating Current	kA asym.	40	40	40	40	30
Short Time Current	kA asym. - 2s	25	25	25	25	25

ABB is working to continuous improve the products. Therefore we reserve the right to change design, dimension and data without prior notice.

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