SIEMENS

3AE8
Vacuum Circuit Breaker

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3AE8 Vacuum Circuit Breaker

Overview

High-quality 3AE-SION Vacuum Circuit Breaker

Thanks to 40-year vacuum product design and operation experiences, 3AE-SION series is the latest generation of circuit breaker developed and manufactured by Siemens for electric power market, featuring advanced technologies from Germany and leading the future of vacuum circuit breakers, which can be widely used in power distribution fields, such as power grid, power plant, metallurgy, petrochemical and urban infrastructure.

- Compact design, suitable for 7.2 to 40.5kV switchgear.
- Optional pole-center distance and width across flats for various special needs.
- 12/24kV:Compliant with the requirements of Classes E2, M2 and C2

  40.5kV:Compliant with the requirements of Classes E2, M2, C2 and S2
- 30 cycles of rated short-circuit current breakings, 30,000 cycles of mechanical life, and maintenance-free within 10,000 cycles under normal operation.
- Improved insulation strength due to innovative insulation design and new materials, and more suitable for technical standards and all-insulation operation requirements of power system.circuit breakers thanks to long creepage distance insulation design and the newly developed vacuum interrupter with long creepage distance.
- Perfect and fast technical supports and flexible solutions are provided.

With Siemens' more than 40 years of vacuum switch production experiences, 3AE8 pole type vacuum circuit breakers aim to serve the high-end market and meet the market's requirements for poles, featuring high mechanical life, large breaking current, low contact wear, low cut-off current, maintenance-free operation and high economic advantages.

Vacuum interrupter

With reasonable structural design, high quality raw materials and advanced parts processing technology, Siemens vacuum interrupters ensure higher insulating strength of the interrupter.

- Strong breaking capability of short-circuit current
- Lower contact resistance
- Good vacuum leakproofness
- Lower average chopping current
- Less contact burning loss
- High insulating strength

Fully embedded pole

With embedding technology, the vacuum interrupter, primary circuit and insulating tension pole are fully embedded in an epoxy resin pole, so primary conductive circuit is isolated completely from the outside;

Modular operating mechanism

Advanced processing technology guarantees high resistance of the operating mechanism to pollution and corrosion, simple and reliable operation, minimal maintenance in the life cycle;

Overview

Operating Environment

1. Ambient air temperature: -5˚C to +40˚C (for -25° requirement, please contact with Siemens);
2. Relative humidity: up to 95% (daily average) or 90% (monthly average);
3. Installation altitude: up to 1000m (for high altitude requirement, please contact with Siemens);
4. Seismic intensity up to 8°;
5. No fire and explosion hazard, serious pollution, chemical corrosion and severe vibration.

When operational environment exceeds the above scope, please consult with Siemens to determine the allowable range and technical measures.

Technical Parameters

3AE-SION vacuum circuit breakers comply with GB1984 and IEC 62271-100 and other relevant standards of main industrialized countries.

Rated voltage		kV	12	24	40.5
Rated frequency		Hz	50	50	50
Rated insulation level	**Rated 1min power-frequency withstand voltage phase-to-earth and between phases/between open contacts**	kV	42/48	65/79	95
	Lightning impulse withstand voltage (peak) phase-to-earth and between phases/between open contacts		75/85	125/145	185
Rated current		A	630/800/1250/1600/2000/2500/3150/4000*[1]/5000*[1]	630/800/1250/1600/2000/2500/3150*[1]	1250/1600/2000/2500/3150*[1]
Rated short-circuit breaking current		kA	25/31.5/40	25/31.5	25/31.5
DC Component			52%	52%	55%
Rated short-time withstand current		kA	25/31.5/40	25/31.5	25/31.5
Rated short-circuit duration		s	4	4	4
Rated short-circuit making current (peak)		kA	63/80/110	63/80	63/80
Rated peak withstand current		kA	63/80/110	63/80	63/80
Power frequency withstand voltage of secondary circuit (1 Min)		V	2000	2000	2000
Opening time		ms	≤ 30	≤ 30	≤ 30
Closing time		ms	≤ 60	≤ 60	≤ 60
Arcing time		ms	≤15	≤ 15	≤ 15
Contact bounce duration at closing operation		ms	≤ 2	≤ 2	≤ 3
Closing/opening non-synchronism		ms	≤ 2	≤ 2	≤ 2
Mechanical life		cycles	30000*[2]	30000*[2]	30000*[2]
Breaking cycles at rated short-circuit breaking current		cycles	30/E2	50/E2	50/E2
Rated closing operating voltage		V	AC 110V/220V, DC110V/220V	AC 110V/220V, DC110V/220V	AC 110V/220V, DC110V/220V
Rated opening operating voltage		V	AC 110V/220V, DC110V/220V	AC 110V/220V, DC110V/220V	AC 110V/220V, DC110V/220V
Spring charge time		s	≤ 15	≤ 15	≤15
Rated operation sequence			OFF- 0.3s-ON/OFF-180s -ON/OFF Fast reclosing OFF- 0.3s-ON/OFF-15s -ON/OFF	OFF-0.3s-ON/OFF-180s-ON/OFF Fast reclosing OFF- 0.3s-ON/OFF-15s -ON/OFF	0-03s-ON/OFF-180s-ON/OFF Fast reclosing OFF- 0.3s-ON/OFF-15s -ON/OFF

*[1)] Forced air cooling for OEM switchgear.
*[2)] Maintenance-free within 10,000 cycles, and maintainable within 30,000 cycles.
*[3)] For 60Hz requirements, please contact with Siemens.

Scope of Supply

3AE-SION (3AE8)

Fixed type

MLFB (First 8)	Pole-center distance (mm)	Width across flats (mm)	Lower pole to circuit breaker (mm)	Rated voltage (kV)	Rated short-circuit making current (kA)	Rated short-circuit breaking current (kA)	Duration of rated short circuit (S)	Rated current (A)	Rated power-frequency withstand voltage (kV)	Rated lighting impulse withstand voltage (KV)
3AE8104-1	150	205	217.5	12	63	25	4	630/800	42	75
3AE8114-1	150	275	237.5							
3AE8164-1	210	205	217.5							
3AE8174-1	210	275	237.5							
3AE8574-1	275	275	238							
3AE8104-2	150	205	217.5	12	63	25	4	1250	42	75
3AE8114-2	150	275	237.5							
3AE8164-2	210	205	217.5							
3AE8174-2	210	275	237.5							
3AE8574-2	275	275	238							
3AE8184-3	210	310	237.5	12	63	25	4	1600	42	75
3AE8194-3	210	310	252.5							
3AE8584-3	275	310	237.5							
3AE8594-3	275	310	252.5							
3AE8184-4	210	310	237.5	12	63	25	4	2000	42	75
3AE8194-4	210	310	252.5							
3AE8184-6	210	310	237.5	12	63	25	4	2500	42	75
3AE8194-6	210	310	252.5							
3AE8105-1	150	205	217.5	12	80	31.5	4	630/800	42	75
3AE8115-1	150	275	237.5							
3AE8165-1	210	205	217.5							
3AE8175-1	210	275	237.5							
3AE8575-1	275	275	238							
3AE8105-2	150	205	217.5	12	80	31.5	4	1250	42	75
3AE8115-2	150	275	237.5							
3AE8165-2	210	205	217.5							
3AE8175-2	210	275	237.5							
3AE8575-2	275	275	238							
3AE8185-3	210	310	237.5	12	80	31.5	4	1600	42	75
3AE8195-3	210	310	252.5							
3AE8585-3	275	310	237.5							
3AE8595-3	275	310	252.5							
3AE8185-4	210	310	237.5	12	80	31.5	4	2000	42	75
3AE8195-4	210	310	252.5							
3AE8585-4	275	310	237.5							
3AE8595-4	275	310	252.5							
3AE8185-6	210	310	237.5	12	80	31.5	4	2500	42	75
3AE8195-6	210	310	252.5							
3AE8185-7	210	310	237.5	12	80	31.5	4	3150	42	75
3AE8195-7	210	310	252.5							
3AE8585-8	275	310	237.5	12	80	31.5	4	4000[1)]	42	75
3AE8595-8	275	310	252.5							

1) Forced air cooling for OEM switchgear

Scope of Supply

3AE-SION (3AE8)

Fixed type (continued)

MLFB (First 8)	Pole-center distance (mm)	Width across flats (mm)	Lower pole to circuit breaker (mm)	Rated voltage (kV)	Rated short-circuit making current (kA)	Rated short-circuit breaking current (kA)	Duration of rated short circuit (S)	Rated current (A)	Rated power-frequency withstand voltage (kV)	Rated lighting impulse withstand voltage (KV)
3AE8176-2	210	275	237.5	12	100	40	4	1250	42	75
3AE8196-2	210	310	252.5							
3AE8576-2	275	275	237.5							
3AE8596-2	275	310	252.5							
3AE8186-3	210	310	237.5	12	100	40	4	1600	42	75
3AE8196-3	210	310	252.5							
3AE8586-3	275	310	237.5							
3AE8596-3	275	310	252.5							
3AE8186-4	210	310	237.5	12	100	40	4	2000	42	75
3AE8196-4	210	310	252.5							
3AE8586-4	275	310	237.5							
3AE8596-4	275	310	252.5							
3AE8186-6	210	310	237.5	12	100	40	4	2500	42	75
3AE8196-6	210	310	252.5							
3AE8586-6	275	310	237.5							
3AE8596-6	275	310	252.5							
3AE8186-7	210	310	237.5	12	100	40	4	3150	42	75
3AE8196-7	210	310	252.5							
3AE8586-7	275	310	237.5							
3AE8596-7	275	310	252.5							
3AE8586-8	275	310	237.5	12	100	40	4	4000[1)]	42	75
3AE8596-8	275	310	252.5							

1) Forced air cooling for OEM switchgear

Scope of Supply

3AE-SION (3AE8)

Withdrawable type

MLFB (First 8)	Pole-center distance (mm)	Width across flats (mm)	Lower pole to circuit breaker truck (mm)	Rated voltage (kV)	Rated short-circuit making current (kA)	Rated short-circuit breaking current (kA)	Duration of rated short circuit (S)	Rated current (A)	Rated power-frequency withstand voltage (kV)	Rated lighting Impulse withstand voltage (KV)
3AE8104-1	150	205	260	12	63	25	4	630/800	42	75
3AE8114-1	150	275	280							
3AE8164-1	210	205	260							
3AE8174-1	210	275	280							
3AE8574-1	275	275	280							
3AE8104-2	150	205	260	12	63	25	4	1250	42	75
3AE8114-2	150	275	280							
3AE8164-2	210	205	260							
3AE8174-2	210	275	280							
3AE8574-2	275	275	280							
3AE8184-3	210	310	280	12	63	25	4	1600	42	75
3AE8194-3	210	310	295							
3AE8584-3	275	310	280							
3AE8594-3	275	310	295							
3AE8584-4	275	310	280	12	63	25	4	2000	42	75
3AE8594-4	275	310	295							
3AE8584-6	275	310	280	12	63	25	4	2500	42	75
3AE8594-6	275	310	295							
3AE8105-1	150	205	260	12	80	31.5	4	630/800	42	75
3AE8115-1	150	275	280							
3AE8165-1	210	205	260							
3AE8175-1	210	275	280							
3AE8575-1	275	275	280							
3AE8105-2	150	205	260	12	80	31.5	4	1250	42	75
3AE8115-2	150	275	280							
3AE8165-2	210	205	260							
3AE8175-2	210	275	280							
3AE8575-2	275	275	280							
3AE8185-3	210	310	280	12	80	31.5	4	1600	42	75
3AE8195-3	210	310	295							
3AE8585-3	275	310	280							
3AE8595-3	275	310	295							
3AE8585-4	275	310	280	12	80	31.5	4	2000	42	75
3AE8595-4	275	310	295							
3AE8585-6	275	310	280	12	80	31.5	4	2500	42	75
3AE8595-6	275	310	295							

1) Forced air cooling for OEM switchgear

Scope of Supply

3AE-SION (3AE8)

Withdrawable type (continued)

MLFB (First 8)	Pole-center distance (mm)	Width across flats (mm)	Lower pole to circuit breaker truck (mm)	Rated voltage (kV)	Rated short-circuit making current (kA)	Rated short-circuit breaking current (kA)	Duration of rated short circuit (S)	Rated current (A)	Rated power-frequency withstand voltage (kV)	Rated lighting Impulse withstand voltage (KV)
3AE8585-7	275	310	280	12	80	31.5	4	3150	42	75
3AE8595-7	275	310	295							
3AE8585-8	275	310	280	12	80	31.5	4	4000[1)]	42	75
3AE8595-8	275	310	295							
3AE8176-2	210	275	280	12	110	40	4	1250	42	75
3AE8196-2	210	310	295							
3AE8576-2	275	275	280							
3AE8596-2	275	310	295							
3AE8186-3	210	310	280	12	110	40	4	1600	42	75
3AE8196-3	210	310	295							
3AE8586-3	275	310	280							
3AE8596-3	275	310	295							
3AE8586-4	275	310	280	12	110	40	4	2000	42	75
3AE8596-4	275	310	295							
3AE8586-6	275	310	280	12	110	40	4	2500	42	75
3AE8596-6	275	310	295							
3AE8586-7	275	310	280	12	110	40	4	3150	42	75
3AE8596-7	275	310	295							
3AE8586-8	275	310	280	12	110	40	4	4000[1)]	42	75
3AE8596-8	275	310	295							
3AE8586-9 (H3B)	275	310	280	12	110	40	4	5000[1)]	42	75

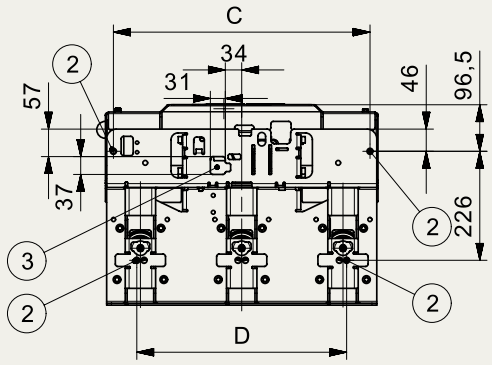
1) Forced air cooling for OEM switchgear

Design and Dimension Drawings of 3AE-SION (3AE8, 12kV)

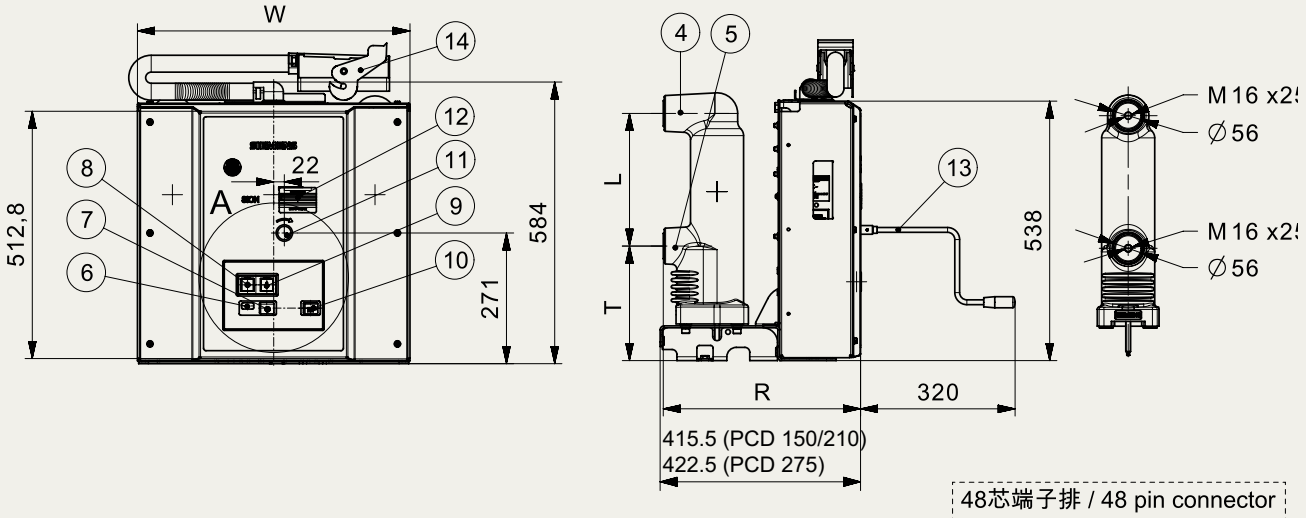
Design and Dimension Drawings

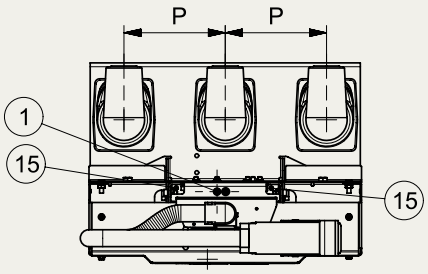
3AE-SION (3AE8)

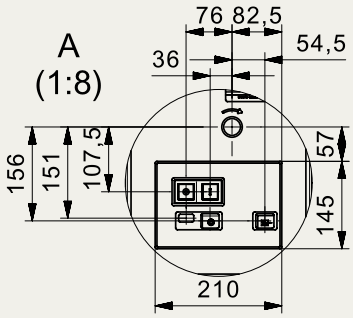
Fixed type

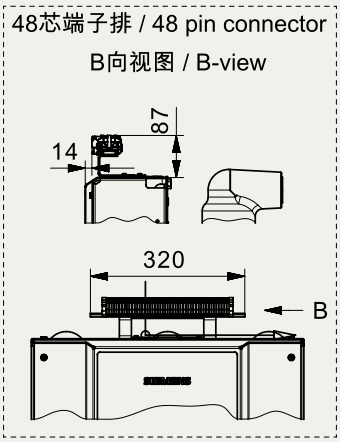


MLFB	12kV		P	L	W	C	T	R	D
3AE8104-1/3AE8105-1	25kA	630A/800A	150	205	449	400	217	418	380
3AE8114-1/3AE8115-1				275			237	409	
3AE8164-1/3AE8165-1			210	205	569	532	217	418	435
3AE8174-1/3AE8175-1				275			237	409	
3AE8104-2/3AE8105-2		1250A	150	205	449	400	217	418	380
3AE8114-2/3AE8115-2				275			237	409	
3AE8164-2/3AE8165-2			210	205	569	532	217	418	435
3AE8174-2/3AE8175-2				275			237	409	
3AE8574-1/3AE8574-2	31.5kA	630A/800A/1250A	275	275	265	635	238	409	645
3AE8575-1/3AE8575-2									









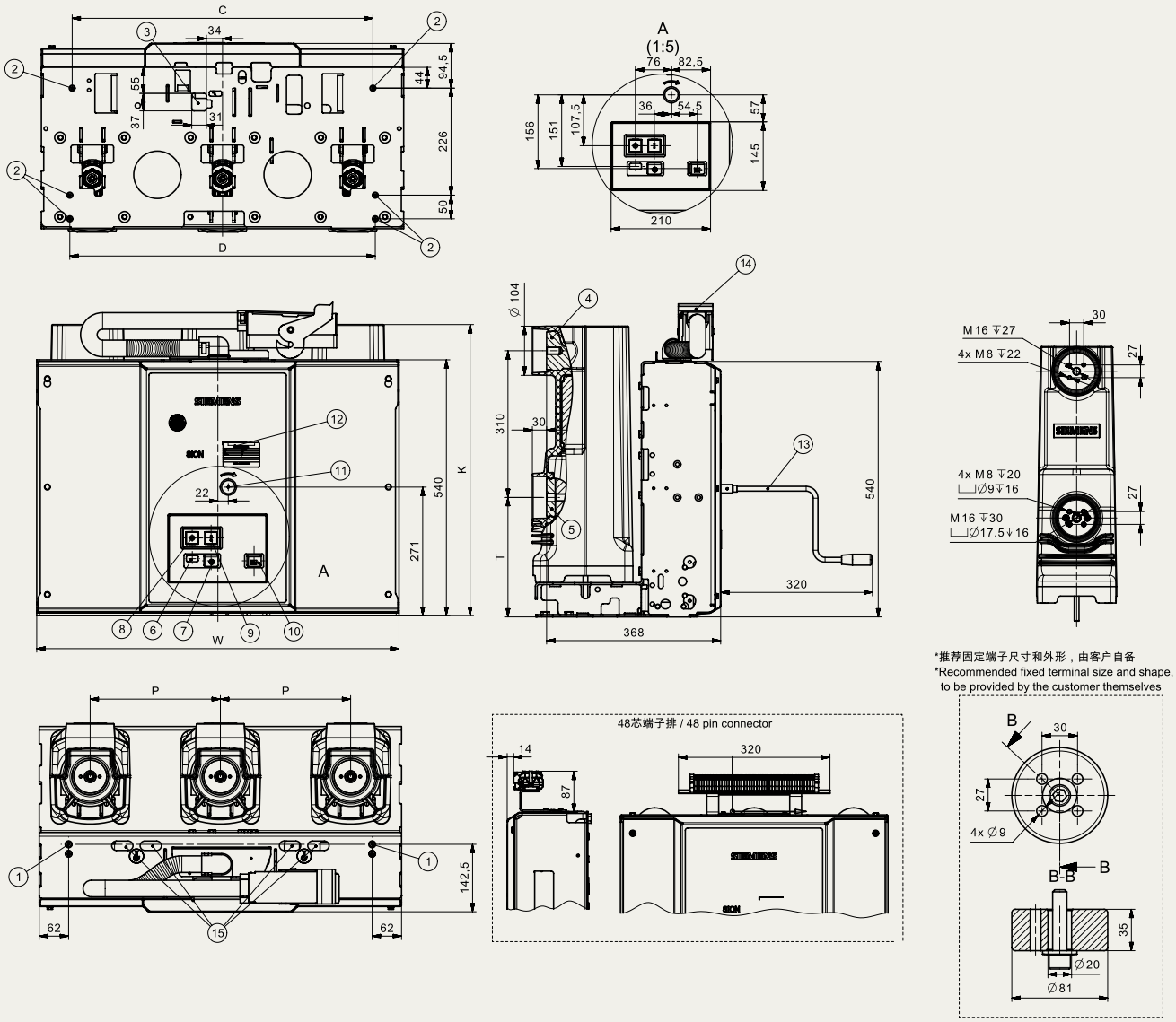
说明 / Caption：

1. 接地螺母M12 / M12 earthing screw
2. 断路器固定螺母M10 / Breaker installation with M10
3. 连锁引出孔 / Opening for mechanical interrogation and interlocking
4. 上出线端 / Upper terminal areas
5. 下出线端 / Lower terminal areas
6. 计数器 / Operation cycle counter
7. 合分指示 / Position indication device
8. 分闸按钮 / Pushbutton "OFF"
9. 合闸按钮 / Pushbutton "ON"
10. 储能指示 / Indication "charged"
11. 储能操作孔 / Opening for detachable hand crank
12. 铭牌 / Name plate
13. 操作手柄（根据订单配置） / Hand crank (per order)
14. 二次插头（58芯） / Connector (58 pin)
15. 起重机挂钩孔 / Opening for crane hooks

Design and Dimension Drawings

3AE-SION (EP12)

Fixed type



说明 / Caption：

1.接地螺母M12(任意选择一边)
M12 earthing screw, optional side
2.断路器固定螺母M10
Breaker installation with M10
3.联锁引出孔
Opening for mechanical interrogation and interlocking
4.上出线端
Upper terminal areas
5.下出线端
Lower terminal areas
6.计数器
Operation cycle counter
7.合/分指示
Position indication device
8.分闸按钮
Pushbutton "OFF"
9.合闸按钮
Pushbutton "ON"
10.储能指示
Indication "Charged"
11.储能操作孔
Opening for detachable hand crank
12.铭牌
Name plate
13.操作手柄(根据订单配置)
Hand crank (per order)
14.二次插头（58芯）
Connector (58 pin)
15.起重机挂钩孔
Opening for crane hooks

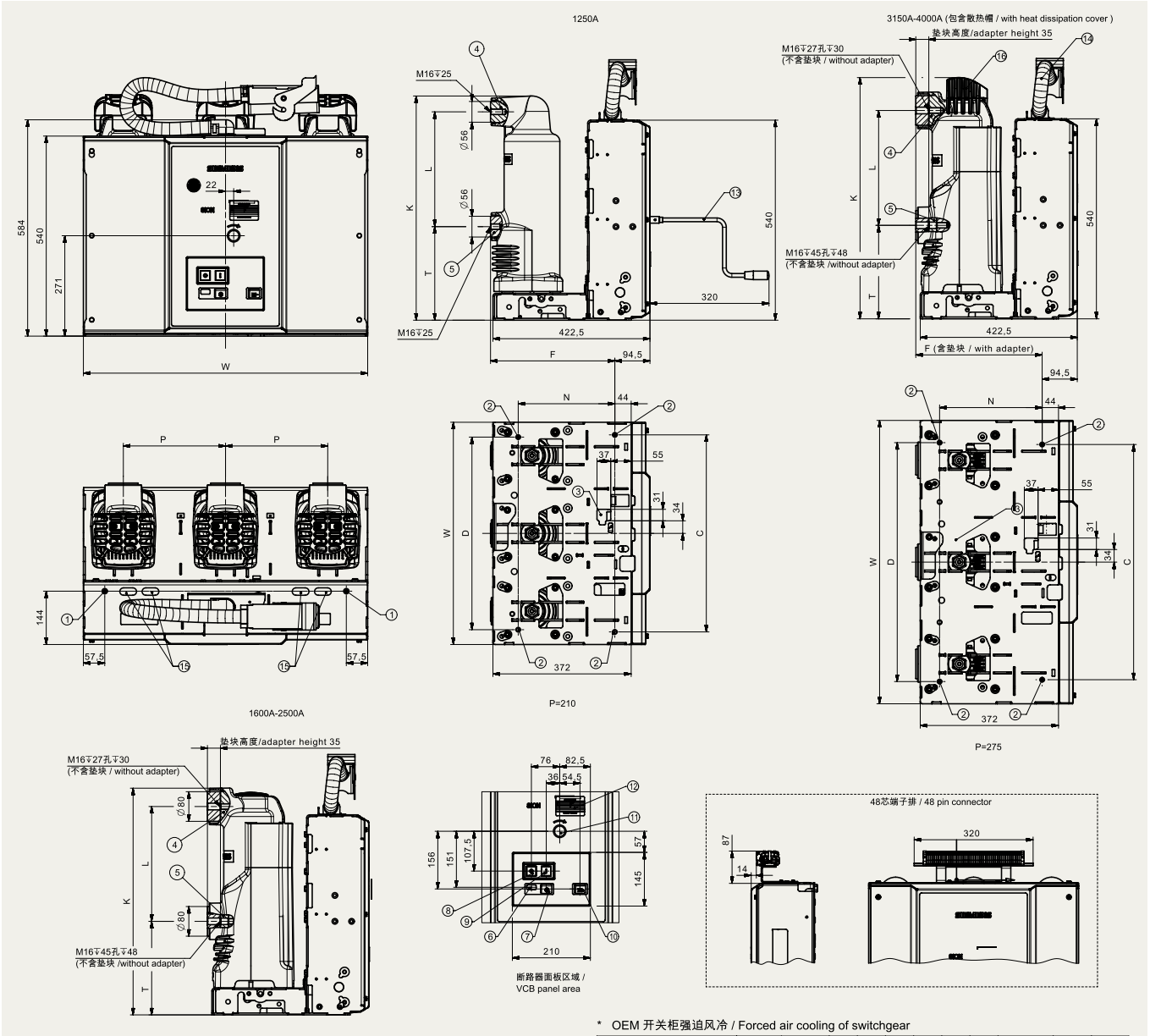
12kV		MLFB	W	P	D	C	K	T
25kA/ 31.5kA	1600A	3AE8184-3/3AE8185-3	600	210	435	532	599.5	237.5
		3AE8194-3/3AE8195-3					614.5	252.5
		3AE8584-3/3AE8585-3	765	275	645	635	599.5	237.5
		3AE8594-3/3AE8595-3					614.5	252.5
	2000A	3AE8184-4/3AE8185-4	600	210	435	532	599.5	237.5
		3AE8194-4/3AE8195-4					614.5	252.5
		3AE8584-4/3AE8585-4	765	275	645	635	599.5	237.5
		3AE8594-4/3AE8595-4					614.5	252.5
	2500A	3AE8184-6/3AE8185-6	600	210	435	532	599.5	237.5
		3AE8194-6/3AE8195-6					614.5	252.5
		3AE8584-6/3AE8585-6	765	275	645	635	599.5	237.5
		3AE8594-6/3AE8595-6					614.5	252.5

Design and Dimension Drawings of 3AE-SION (3AE8, 12kV)

Design and Dimension Drawings

3AE-SION (EP12)

Fixed type



说明 / Caption：

1.接地螺母M12(任意选择一边)
M12 earthing screw,optional side
2.断路器固定螺母 M10
Breaker installation with M10
3.联锁引出孔
Opening for mechanical interrogation and interlocking
4.上出线端
Upper terminal areas
5.下出线端
Lower terminal areas
6.计数器
Operation cycle counter
7.合/分指示
Position indication device
8.分闸按钮
Pushbutton "OFF"
9.合闸按钮
Pushbutton "ON"
10.储能指示
Indication "Charged"
11.储能操作孔
window for manual charge
12.铭牌
Name plate
13.操作手柄(根据订单配置)
manual charge handle (per order)
14.二次插头(58芯)
Connector(58 pin)
15.起重机挂钩孔
Opening for crane hooks
16.散热帽, (仅用于电流 ≥3150A)
Heat-sink, only for current ≥3150A

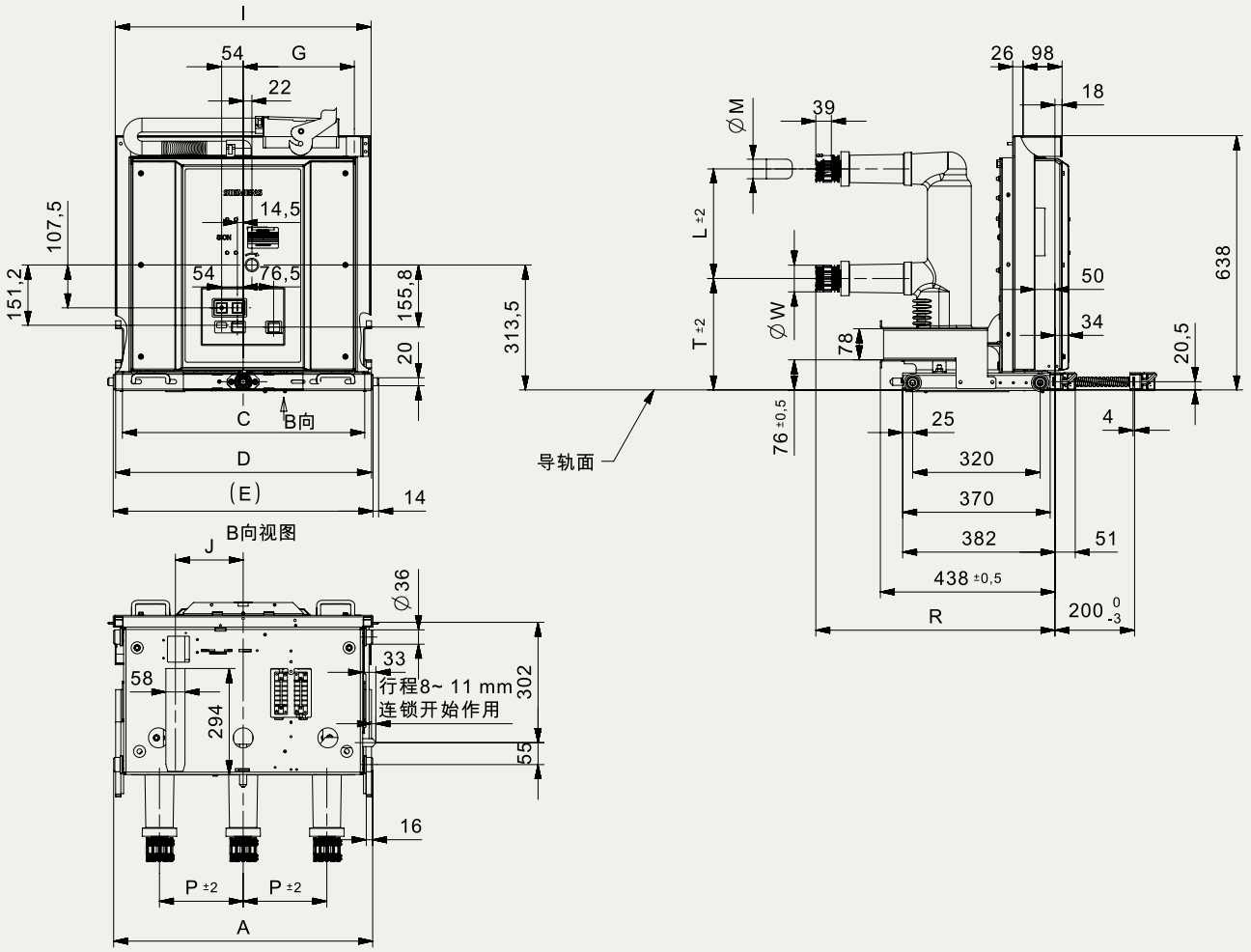
* OEM 开关柜强迫风冷 / Forced air cooling of switchgear

MLFB	12kV		P	L	D	C	N	W	F	T	(K)
3AE8176-2	40kA	1250A	210	275	520	532	260	600	334.5	237.5	554
3AE8196-2				310						252.5	606
3AE8576-2			275	275	645	635	276	765		237.5	554
3AE8596-2				310						252.5	606
3AE8186-3		1600A	210	310	520	532	260	600	340 (含垫块 / with adapter)	237.5	598
3AE8196-3										252.5	613
3AE8586-3			275		645	635	276	765		237.5	598
3AE8596-3										252.5	613
3AE8586-4		2000A								237.5	598
3AE8596-4										252.5	613
3AE8586-6		2500A								237.5	598
3AE8596-6										252.5	613
3AE8585-7 / 3AE8586-7	31.5kA /40kA	3150A								237.5	637
3AE8595-7 / 3AE8596-7										252.5	652
3AE8585-8 / 3AE8586-8		4000A*								237.5	637
3AE8595-8 / 3AE8596-8										252.5	652

Design and Dimension Drawings

3AE-SION (3AE8)

Withdrawable type



MLFB	12kV		P	A	C	D	E	G	L	I	J	M	W	T	R
3AE8104-1/3AE8105-1	25kA	0F 630A/800A	150mm	500	458	492	502	204	205	492	102	35	75	260	609
3AE8114-1/3AE8115-1				500	458	492	502	204	275	492	102	35	75	280	600
3AE8164-1/3AE8165-1			210mm	650	608	642	652	279	205	642	170	35	75	260	609
3AE8174-1/3AE8175-1				650	608	642	652	279	275	642	170	35/49*	75/89*	280	600
3AE8574-1/3AE8575-1			275mm	850	786	836	852	379.5	275	844	200	35/49*	75/89*	280	600
3AE8104-2/3AE8105-2		1250A	150mm	500	458	492	502	204	205	492	102	35	75	260	609
3AE8114-2/3AE8115-2				500	458	492	502	204	275	492	102	35	75	280	600
3AE8164-2/3AE8165-2			210mm	650	608	642	652	279	205	642	170	35	75	260	609
3AE8174-2/3AE8175-2				650	608	642	652	279	275	642	170	35/49*	75/89*	280	600
3AE8574-2/3AE8575-2	31.5kA		275mm	850	786	836	852	379.5	275	844	200	35/49*	75/89*	280	600

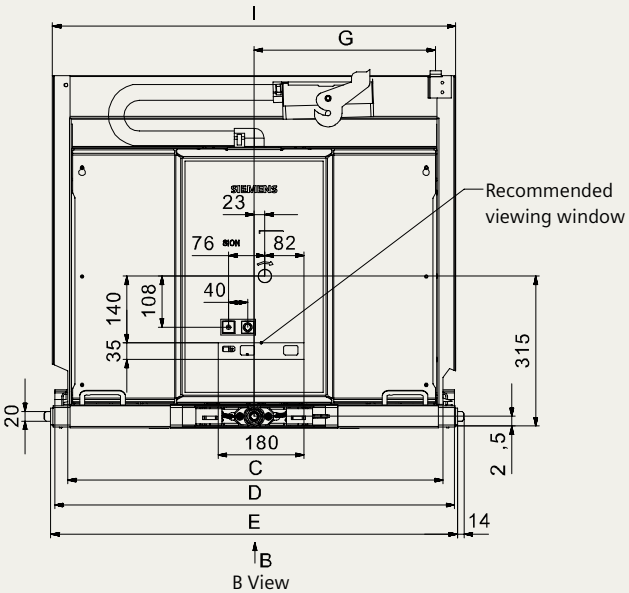
*如需要配直径49mm静触头，所配开关柜触头盒内径尺寸需要大于120mm

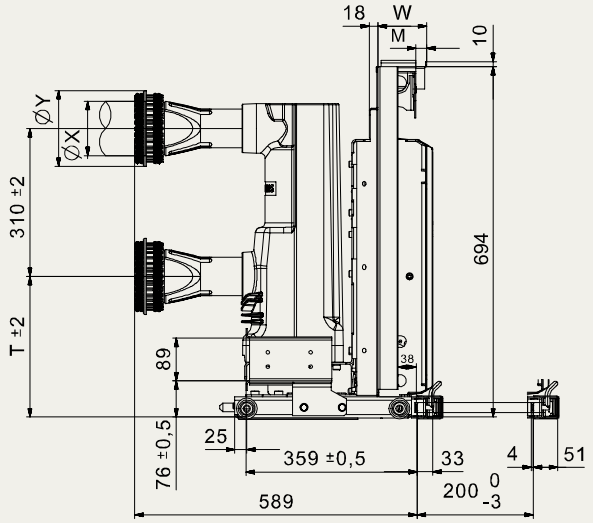
Design and Dimension Drawings of 3AE-SION (3AE8, 12kV)

Design and Dimension Drawings

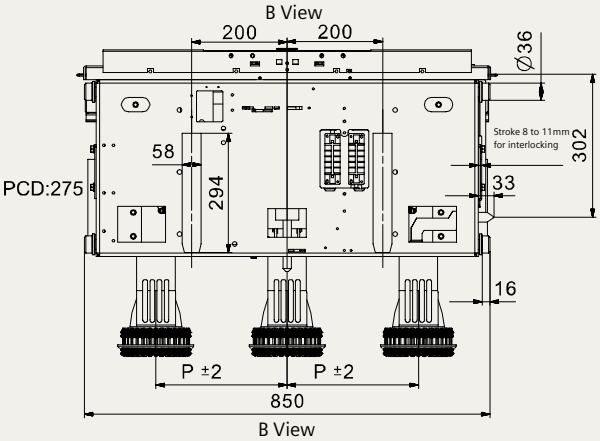
3AE-SION (EP12)

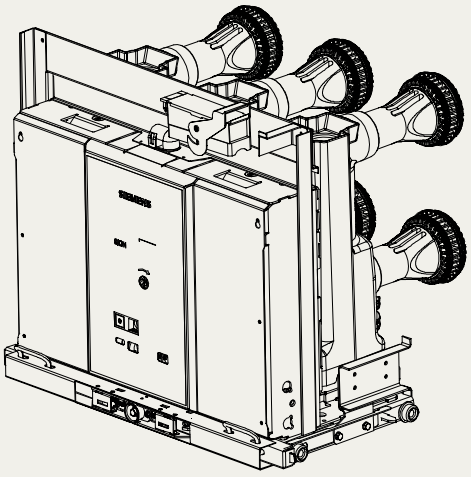
Withdrawable type

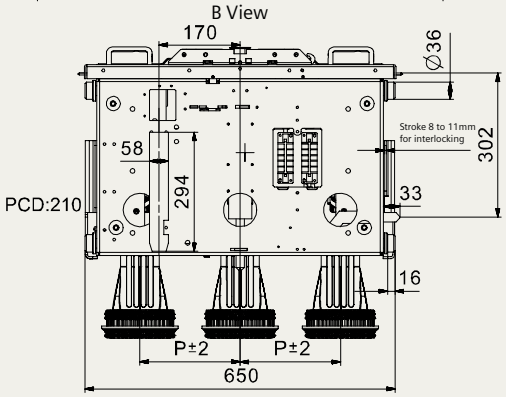




For : 1600A~2500A 25kA/31.5kA





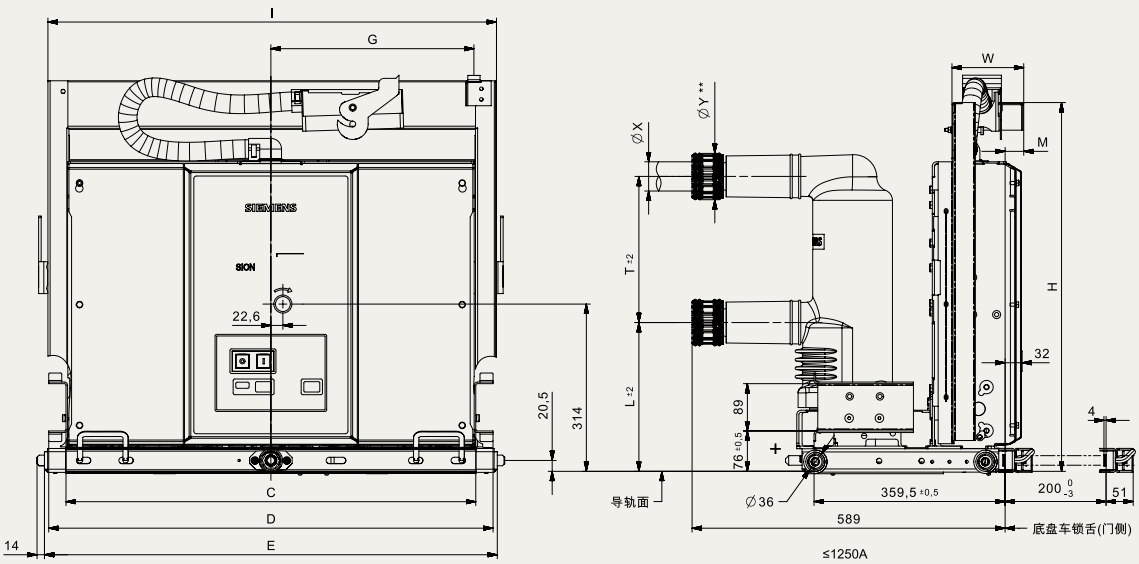


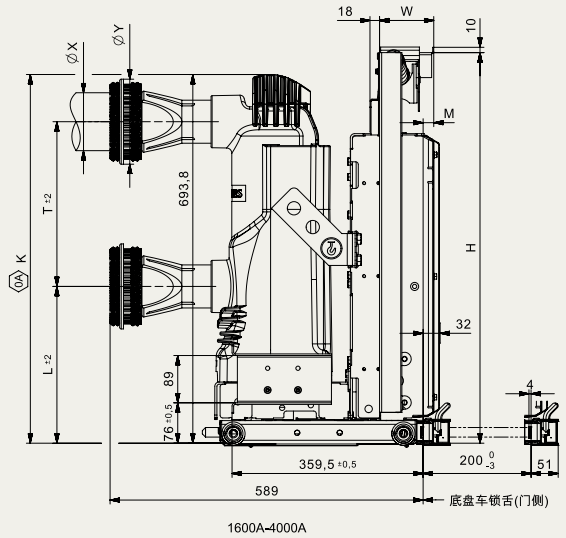
12kV		MLFB	P	T	C	D	E	I	G	M	W	X	Y
25kA/ 31.5kA	1600A	3AE8184-3/3AE8185-3	210	280	612	640	652	644	279	37	135	55	95
		3AE8194-3/3AE8195-3		295									
		3AE8584-3/3AE8585-3	275	280	792	836	852	844	379	22	102		
		3AE8594-3/3AE8595-3		295									
	2000A	3AE8584-4/3AE8585-4	275	280	792	836	852	844	379	22	102	79	128
		3AE8594-4/3AE8595-4		295									
	2500A	3AE8584-6/3AE8585-6	275	280	792	836	852	844	379	22	102	109	159
		3AE8594-6/3AE8595-6		295									

Design and Dimension Drawings

3AE-SION (EP12)

Withdrawable type

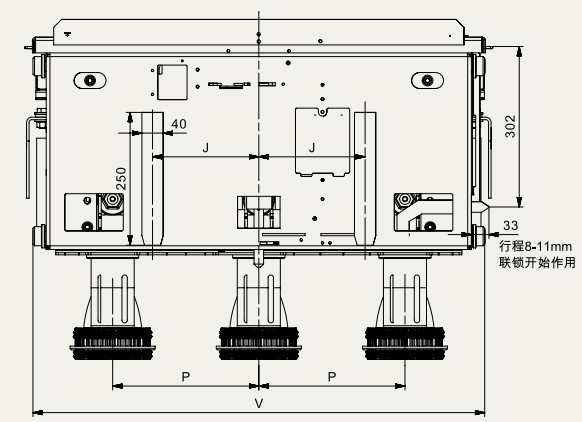


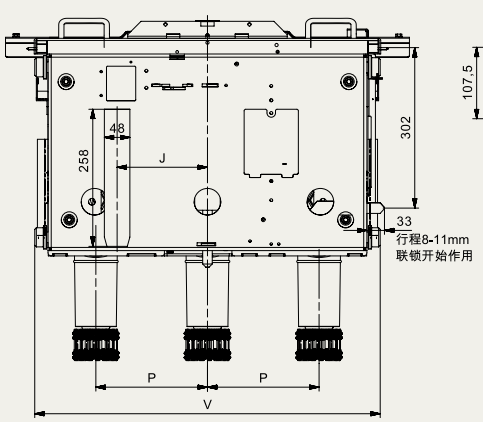


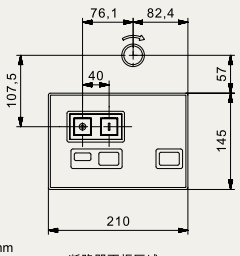
* OEM 开关柜强迫风冷

** 开关柜触头盒内径尺寸需要>120mm

MLFB	12kV		P	T	L	C	D	E	G	H	I	J	K	M	V	W	X	Y
3AE8176-2	40kA	1250A **	210	275	280	606	640	652	279	694	644	170	-	35	650	135	49	88 **
3AE8196-2				310	295													
3AE8576-2			275	275	280	792	836	852	379		844	200			850	102		
3AE8596-2				310	295													
3AE8186-3		1600A	210	310	280	606	640	652	279		644	170			650	135	79	128
3AE8196-3					295													
3AE8586-3			275		280	792	836	852	379		844	200		20	850	102		
3AE8596-3					295													
3AE8586-4		2000A			280													
3AE8596-4					295													
3AE8586-6		2500A			280												109	159
3AE8596-6					295													
3AE8585-7 / 3AE8586-7	31.5kA /40kA	3150A			280					735			681					
3AE8595-7 / 3AE8596-7					295								696					
3AE8585-8 / 3AE8586-8		4000A*			280								681					
3AE8595-8 / 3AE8596-8					295								696					
3AE8585-9 (H3B)	40kA	5000A*			280								681					







Scope of Supply of 3AE-SION (3AE8, 24kV)

Scope of Supply

3AE-SION (3AE8, 24kV)

Fixed/withdrawable type

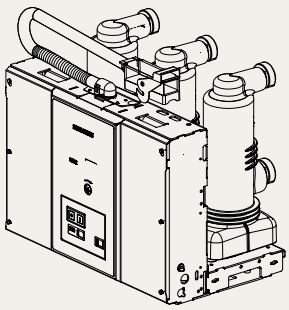
MLFB (First 8)	Pole-center distance (mm)	Width across flats (mm)	Rated voltage (kV)	Rated short-circuit making current (kA)	Rated short-circuit breaking current (kA)	Duration of rated short circuit (S)	Rated current (A)	Rated power-frequency withstand voltage (kV)	Rated lightning impulse withstand voltage (kV)
3AE8354-1	275	310	24	63	25	4	630/800	65	125
3AE8354-2	275	310	24	63	25	4	1250	65	125
3AE8354-3	275	310	24	63	25	4	1600	65	125
3AE8354-4	275	310	24	63	25	4	2000	65	125
3AE8354-6	275	310	24	63	25	4	2500	65	125
3AE8354-7	275	310	24	63	25	4	3150[1)]	65	125
3AE8355-1	275	310	24	80	31.5	4	630/800	65	125
3AE8355-2	275	310	24	80	31.5	4	1250	65	125
3AE8355-3	275	310	24	80	31.5	4	1600	65	125
3AE8355-4	275	310	24	80	31.5	4	2000	65	125
3AE8355-6	275	310	24	80	31.5	4	2500	65	125
3AE8355-7	275	310	24	80	31.5	4	3150[1)]	65	125

[1)] Forced air cooling for OEM switchgear

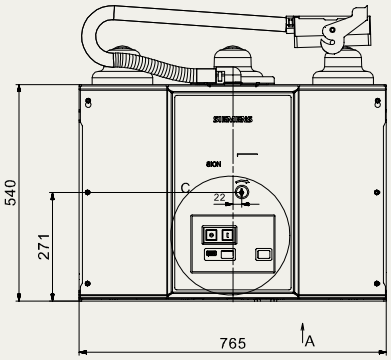
Design and Dimension Drawings

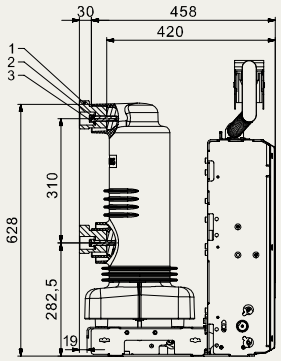
3AE-SION (EP24)

Fixed type

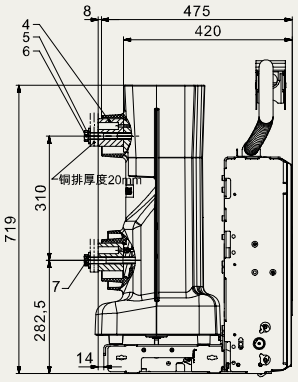


630A/800A/1250A

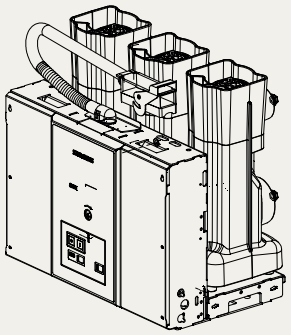




630A/800A/1250A

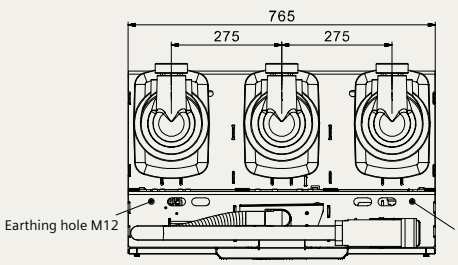


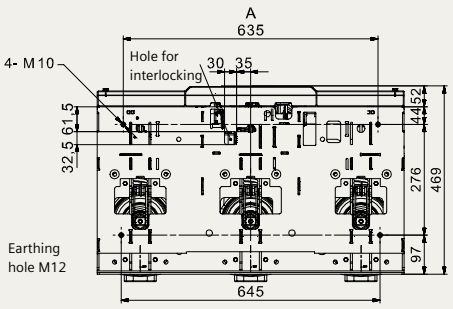
1600A/2000A/2500A/3150A

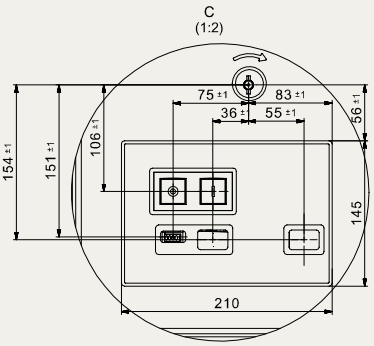


1600A/2000A/2500A/3150A

MLFB	24kV		
3AE8354-1/2 /3AE8355-1/2	25/31.5kA	630/800/1250A	
3AE8354-3 /3AE8355-3		1600A	
3AE8354-4/6 /3AE8355-4/6		2000/2500A	
3AE8354-7 /3AE8355-7		3150A	Forced air cooling for switchgear



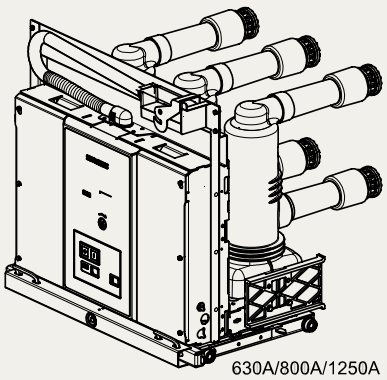




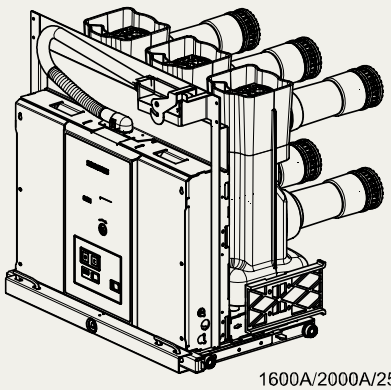
Design and Dimension Drawings

3AE-SION (EP24)

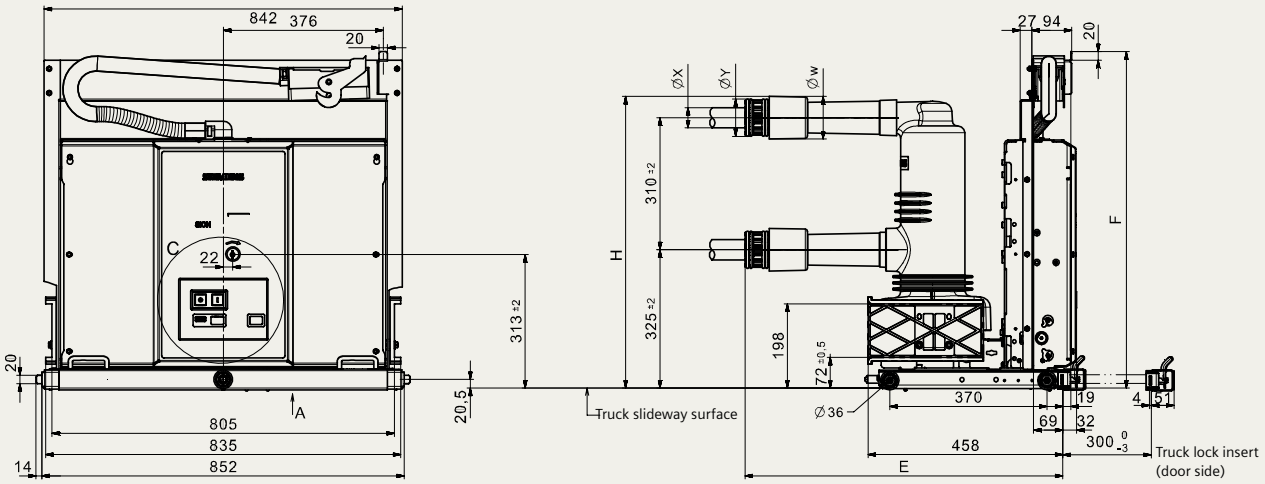
Withdrawable type

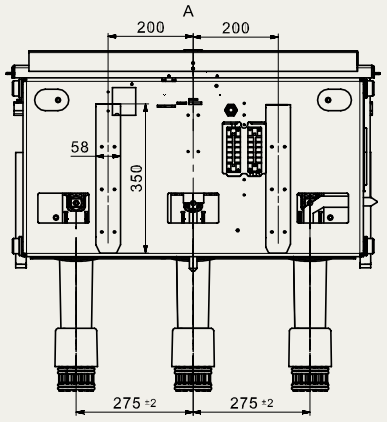


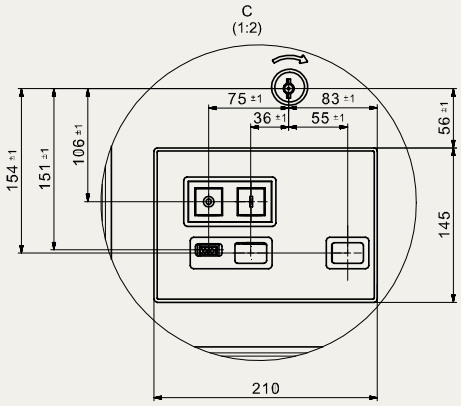
630A/800A/1250A



1600A/2000A/2500A/3150A







0A

MLFB	24kV		E	F	H	X	Y	W	Remark
3AE8354-1/2/3AE8355-1/2	25/31.5kA	630/800/1250A	747	790	685	49	88	100	
3AE8354-3/3AE8355-3		1600A	737	834	762	79	128	114	
3AE8354-4/6/3AE8355-4/6		2000/2500A	737	834	762	79	128	114	
3AE8354-7/3AE8355-7		3150A	737	834	762	79	128	114	Forced air cooling for switchgear

Scope of Supply

Fixed type

MLFB (First 8)	Pole-center distance (mm)	Width across flats (mm)	Lower pole to circuit breaker (mm)	Rated short-circuit making current (kA)	Rated short-circuit breaking current (kA)	Duration of rated short circuit (S)	Rated current (A)	Rated power-frequency withstand voltage (kV)	Rated lightning impulse withstand voltage (kV)
3AE8424-2	300	328	505.5	63	25	4	1250	95	185
3AE8434-2	300	400	552						
3AE8444-2	440	400	552						
3AE8424-3	300	328	505.5	63	25	4	1600	95	185
3AE8434-3	300	400	552						
3AE8444-3	440	400	552						
3AE8424-4	300	328	505.5	63	25	4	2000	95	185
3AE8434-4	300	400	552						
3AE8444-4	440	400	552						
3AE8424-6	300	328	505.5	63	25	4	2500	95	185
3AE8434-6	300	400	552						
3AE8444-6	440	400	552						
3AE8425-2	300	328	505.5	82	31.5	4	1250	95	185
3AE8435-2	300	400	552						
3AE8445-2	440	400	552						
3AE8425-3	300	328	505.5	82	31.5	4	1600	95	185
3AE8435-3	300	400	552						
3AE8445-3	440	400	552						
3AE8425-4	300	328	505.5	82	31.5	4	2000	95	185
3AE8435-4	300	400	552						
3AE8445-4	440	400	552						
3AE8425-6	300	328	505.5	82	31.5	4	2500	95	185
3AE8435-6	300	400	552						
3AE8445-6	440	400	552						
3AE8425-7	300	328	505.5	82	31.5	4	3150	95	185
3AE8435-7	300	400	552						
3AE8445-7	440	400	552						

[1] Forced air cooling for OEM switchgear.

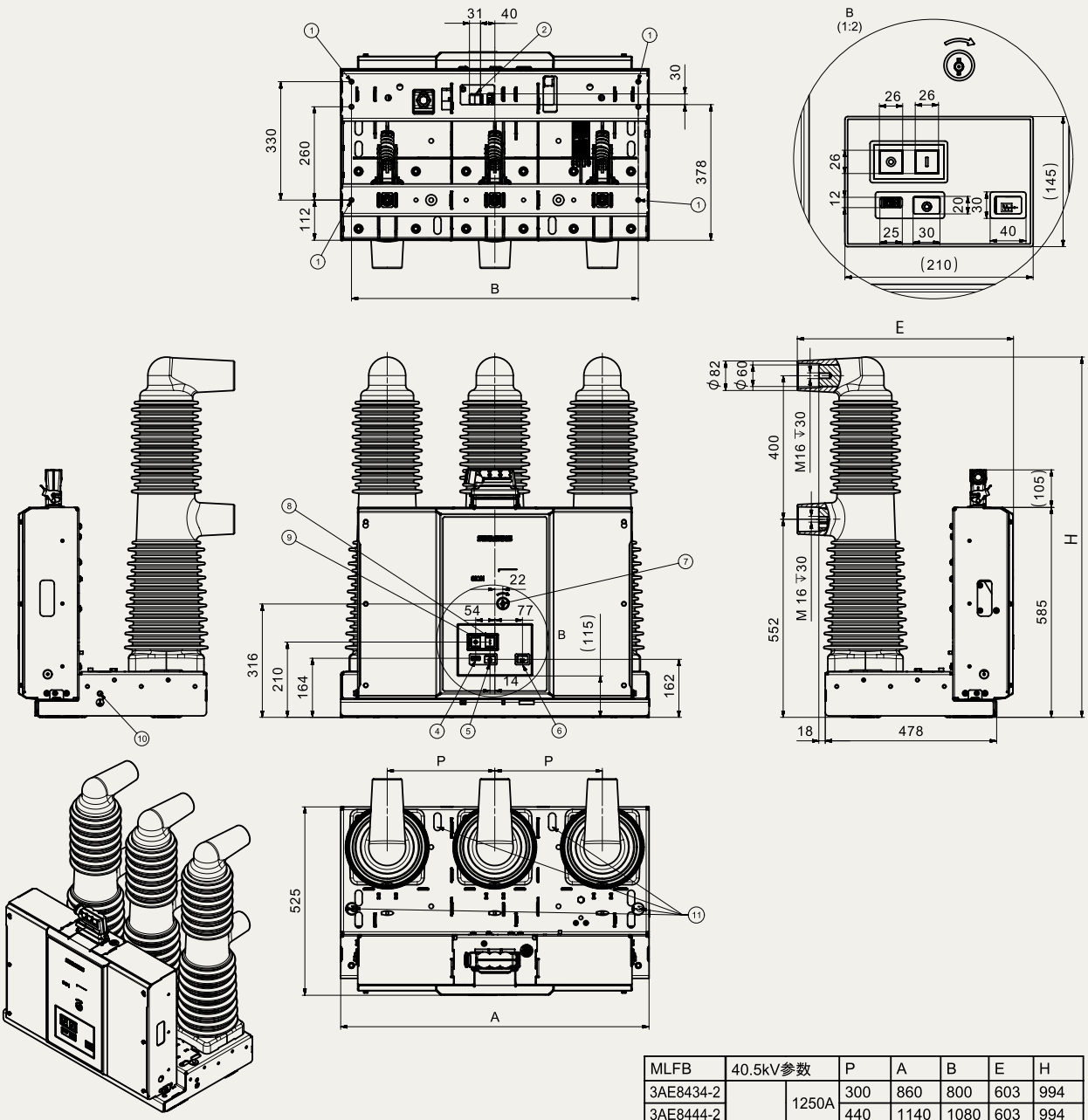
Design and Dimension Drawings of 3AE-SION (3AE8, 40.5kV)

Scope of Supply

Truck Type

MLFB (First 8)	Pole-center distance (mm)	Width across flats (mm)	Lower pole to circuit breaker (mm)	Rated short circuit making current (kA)	Rated short circuit breaking current (kA)	Duration of rated short circuit (S)	Rated current (A)	Rated power frequency withstand voltage (kV)	Rated lightning impulse withstand voltage (kV)	Note
3AE8434-2	300	400	1101	63	25	4	1250	95	185	
3AE8434-3	300	400	1101	63	25	4	1 600	95	185	
3AE8434-4	300	400	1101	63	25	4	2000	95	185	
3AE8434-6	300	400	1101	63	25	4	2500	95	185	
3AE8435-2	300	400	1101	82	31.5	4	1250	95	185	For panel width 1200mm
3AE8435-3	300	400	1101	82	31.5	4	1 600	95	185	
3AE8435-4	300	400	1101	82	31.5	4	2000	95	185	
3AE8435-6	300	400	1101	82	31.5	4	2500	95	185	
3AE8435-7	300	400	1101	82	31.5	4	3150	95	185	
3AE8434-2	300	400	1101	63	25	4	1250	95	185	
3AE8434-3	300	400	1101	63	25	4	1 600	95	185	
3AE8434-4	300	400	1101	63	25	4	2000	95	185	
3AE8434-6	300	400	1101	63	25	4	2500	95	185	
3AE8435-2	300	400	1101	82	31.5	4	1250	95	1 85	For panel width 1400mm, option code C44 is mandatory
3AE8435-3	300	400	1101	82	31.5	4	1 600	95	185	
3AE8435-4	300	400	1101	82	31.5	4	2000	95	185	
3AE8435-6	300	400	1101	82	31.5	4	2500	95	185	
3AE8435-7	300	400	1101	82	31.5	4	3150	95	185	
3AE8444-2	440	400	1101	63	25	4	1250	95	185	
3AE8444-3	440	400	1101	63	25	4	1 600	95	185	
3AE8444-4	440	400	1101	63	25	4	2000	95	185	
3AE8444-6	440	400	1101	63	25	4	2500	95	185	
3AE8445-2	440	400	1101	82	31.5	4	1250	95	1 85	For panel width 1680mm
3AE8445-3	440	400	1101	82	31.5	4	1 600	95	185	
3AE8445-4	440	400	1101	82	31.5	4	2000	95	185	
3AE8445-6	440	400	1101	82	31.5	4	2500	95	185	
3AE8445-7	440	400	1101	82	31.5	4	3150	95	185	

Fixed type



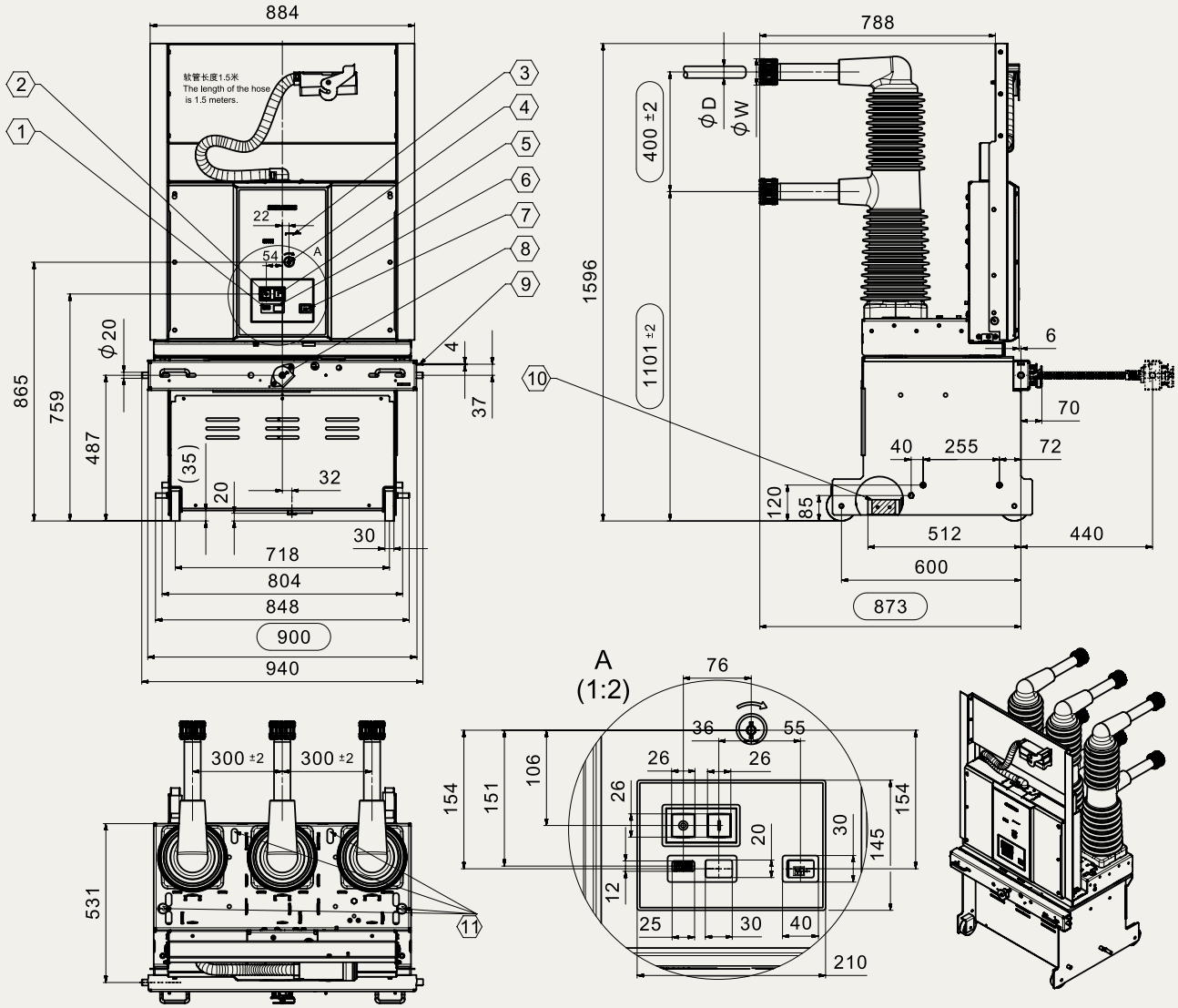
MLFB	40.5kV参数		P	A	B	E	H
3AE8434-2	25kA	1250A	300	860	800	603	994
3AE8444-2			440	1140	1080	603	994
3AE8434-3		1600A	300	860	800	593	1036
3AE8444-3			440	1140	1080	593	1036
3AE8434-4		2000A	300	860	800	593	1036
3AE8444-4			440	1140	1080	593	1036
3AE8434-6		2500	300	860	800	593	1036
3AE8444-6			440	1140	1080	593	1036
3AE8435-2	31.5kA	1250A	300	860	800	603	1004
3AE8445-2			440	1140	1080	603	1004
3AE8435-3		1600A	300	860	800	593	1036
3AE8445-3			440	1140	1080	593	1036
3AE8435-4		2000A	300	860	800	593	1036
3AE8445-4			440	1140	1080	593	1036
3AE8435-6		2500A	300	860	800	593	1036
3AE8445-6			440	1140	1080	593	1036

说明 /general date:

① 断路器固定螺母M10/VCB fixed installation screw hole M10
② 联锁引出孔/position for interlock
④ 计数器 /operation counter
⑤ 分合闸指示 on/off instruction
⑥ 储能指示/charging instruction
⑦ 储能操作孔/position for charging
⑧ 合闸按钮/closing button
⑨ 分闸按钮/opening button
⑩ 接地M12/M12 earth-terminal screw
⑪ 起吊标贴（共4处）/lifting signs (4 in total)

Design and Dimension Drawings of 3AE-SION (3AE8, 40.5kV)

Truck Type

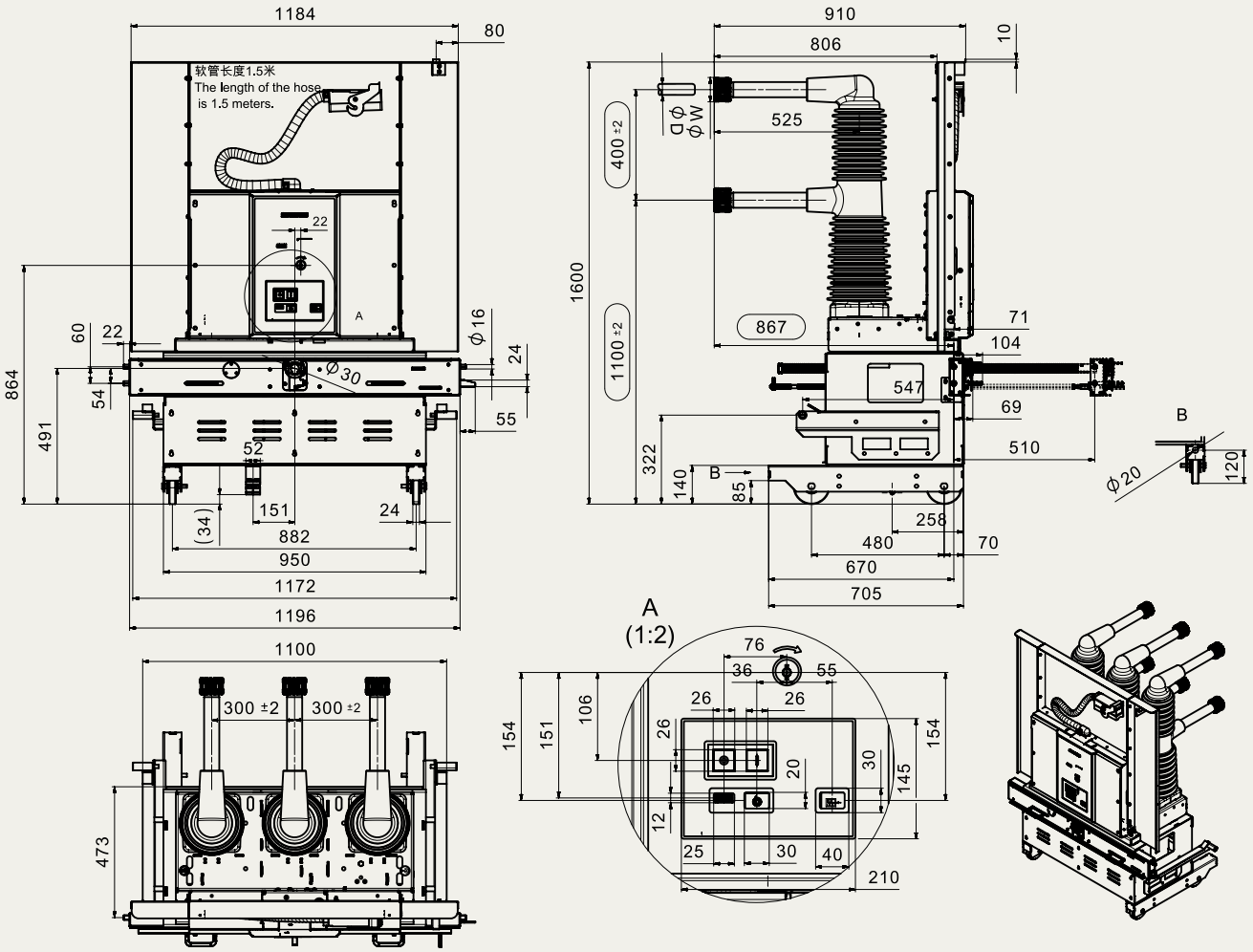


标注说明/general date：

1. 1 计数器/counter
2. 2 分闸按钮/opening button
3. 3 铭牌/nameplate
4. 4 储能操作孔/stored energy operate hole
5. 5 合闸按钮/closing button
6. 6 合分闸指示/I &O mark
7. 7储能指示/stored energy mark
8. 8 落地式底盘车操作孔/truck operate hole
   推进行程为440mm/pushing distance 440
9. 9 接地联锁片/earth interlock plate
10. 10 接地刀/earth interlock
11. 11 起吊标识/lifting sign

MLFB中标注*：开关柜强制风冷
*in MLFB:forced air cooling for switchgear

MLFB	40.5kV		D(mm)	W(mm)
3AE8434-2	25kA	1250A	49	88
3AE8434-3		1600A	79	128
3AE8434-4		2000A	79	128
3AE8434-6		2500A	109	160
3AE8434-7*		3150A	109	160
3AE8435-2	31.5kA	1250A	49	88
3AE8435-3		1600A	79	128
3AE8435-4		2000A	79	128
3AE8435-6		2500A	109	160
3AE8435-7*		3150A	109	160



标注说明/general date：

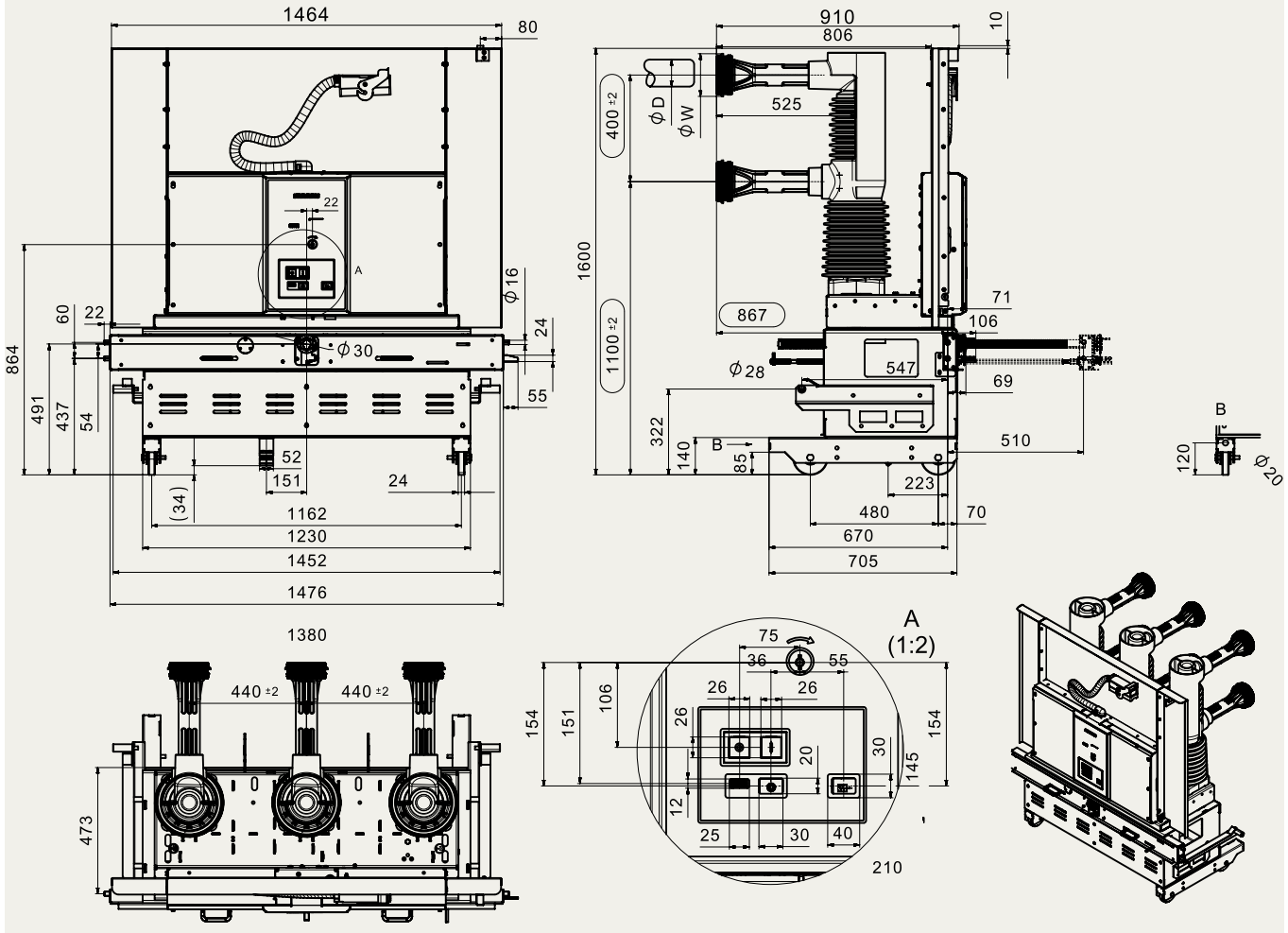
1. 1 计数器/counter
2. 2 分闸按钮/opening button
3. 3 铭牌/nameplate
4. 4 储能操作孔/stored energy operate hole
5. 5 合闸按钮/closing button
6. 6 合分闸指示/I &O mark
7. 7储能指示/stored energy mark
8. 8 落地式底盘车操作孔/truck operate hole
   推进行程为510mm/pushing distance
9. 9 接地联锁片/earth interlock plate
10. 10 接地刀/earth interlock
11. 11 起吊标识/lifting sign

MLFB中标注*：开关柜强制风冷

*in MLFB:forced air cooling for switchgear

MLFB+option code订货号	40.5kV		D(mm)	W(mm)
3AE8434-2 CC4	25kA	1250A	49	88
3AE8434-3 CC4		1600A	79	128
3AE8434-4 CC4		2000A	79	128
3AE8434-6 CC4		2500A	109	160
3AE8434-7* CC4		3150A	109	160
3AE8435-2 CC4	31.5kA	1250A	49	88
3AE8435-3 CC4		1600A	79	128
3AE8435-4 CC4		2000A	79	128
3AE8435-6 CC4		2500A	109	160
3AE8435-7* CC4		3150A	109	160

Design and Dimension Drawings of 3AE-SION (3AE8, 40.5kV)



标注说明/general date：

1. 1 计数器/counter
2. 2 分闸按钮/opening button
3. 3 铭牌/nameplate
4. 4 储能操作孔/stored energy operate hole
5. 5 合闸按钮/closing button
6. 6 合分闸指示/I &O mark
7. 7储能指示/stored energy mark
8. 8 落地式底盘车操作孔/truck operate hole
   推进行程为510mm/pushing distance
9. 9 接地联锁片/earth interlock plate
10. 10 接地刀/earth interlock
11. 11 起吊标识/lifting sign

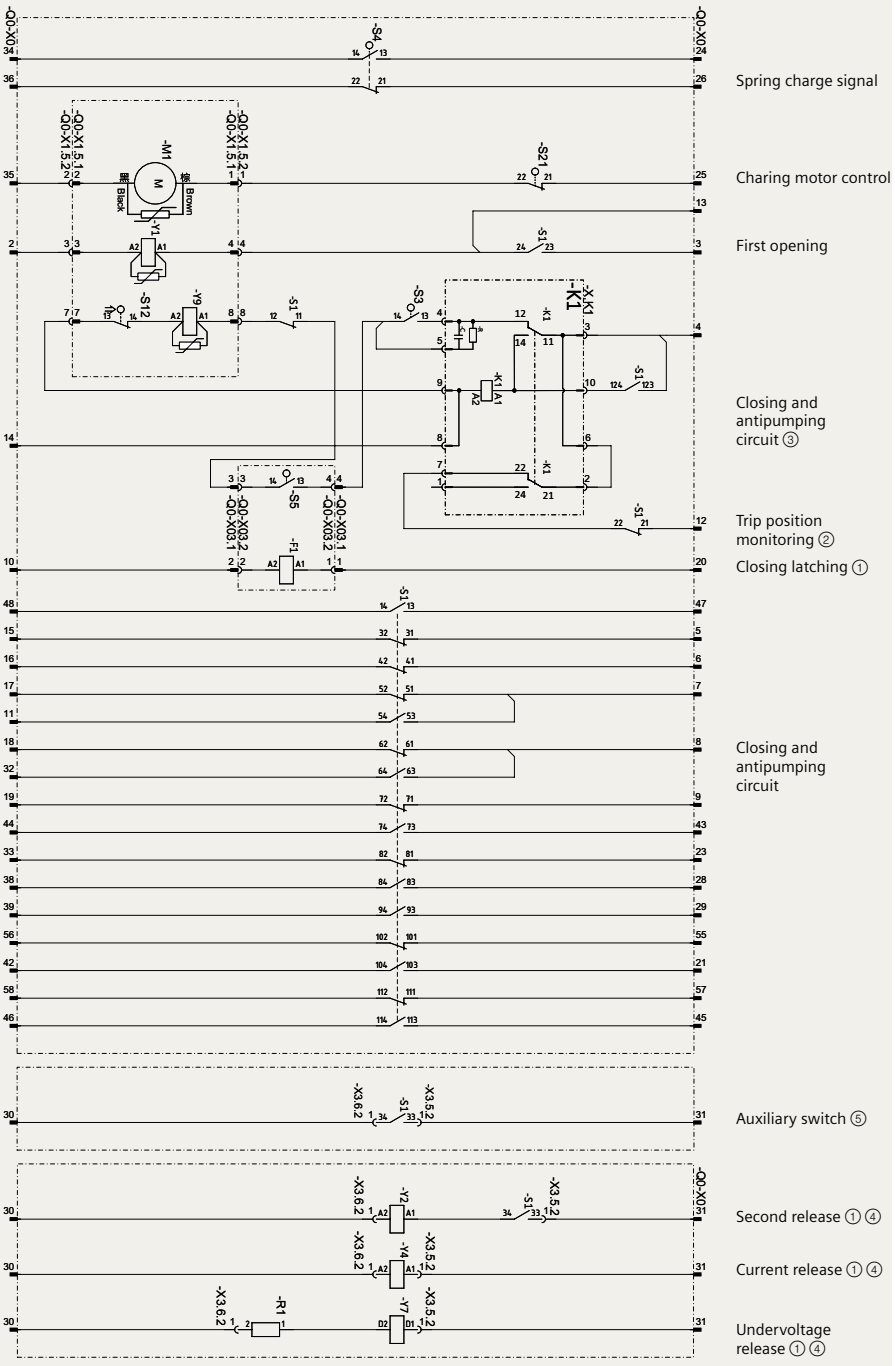
MLFB中标注*：开关柜强制风冷
*in MLFB:forced air cooling for switchgear

MLFB	40.5kV		D(mm)	W(mm)
3AE8444-2	25kA	1250A	49	88
3AE8444-3		1600A	79	128
3AE8444-4		2000A	79	128
3AE8444-6		2500A	109	160
3AE8444-7*		3150A	109	160
3AE8445-2	31.5kA	1250A	49	88
3AE8445-3		1600A	79	128
3AE8445-4		2000A	79	128
3AE8445-6		2500A	109	160
3AE8445-7*		3150A	109	160

for 3AE8: 12kV (up to 40kA), 24 kV

Fixed type

Designation	
M1	Charging motor
Y1, Y9	Opening coil, closing coil
K1	Anti-pumping relay module
S1	Auxiliary switch
S3, S4, S5, S6, S12, S21	Position switch
F1	Closing latching solenoid
X1.5.1, X1.5.2, X01, X02, X.K1	10-pin terminal
X0, X03.1, X03.2	58-. 4-, 4-pin terminal
Q0	Circuit breaker
Y2, Y4, Y7, R1	Second release, current release, undervoltage release, resistor
X3.5.2, X3.6.2	Terminals – push-in



Notes:

1) The circuit breaker is in the OFF and Not Charged status.

2) Optional for parts marked with ① . If necessary, please specify individual requirements in the order.

3) Only one of the second release, undervoltage release and current release can be configured.

4) Part marked with ② is the anti-pumping position monitoring circuit. If necessary, the trip position relay of the relay protection device can be connected at -X0:12.

5) Part marked with ③ is the anti-pumping function wiring. If the anti-pumping function is not required, -S1:123/124 do not need to be wired.

6) -S12 is the mechanical interlock position switch to prevent electrical closing.

7) NO contacts of ④ additional release and ⑤ auxiliary switch can not be selected simultaneously. NO contacts of ⑤ auxiliary switch are selected by default.

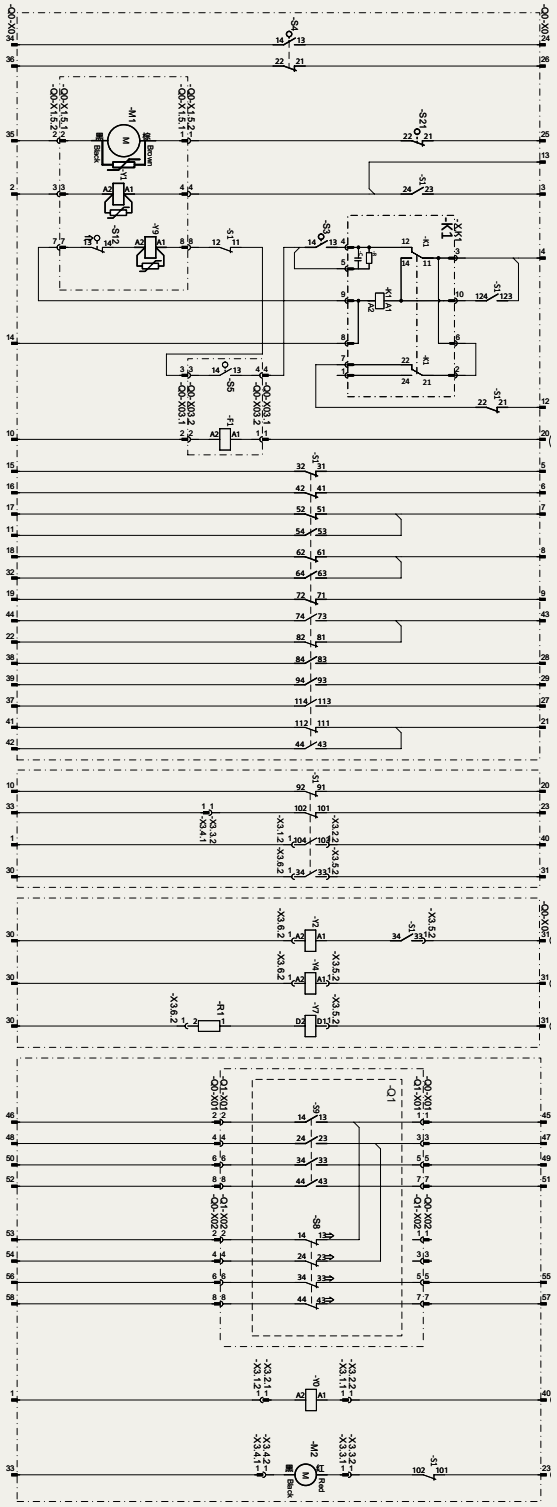
The secondary diagram in the brochure is only for reference, and the actual order drawings shall prevail.

Secondary Wiring Diagram

for 3AE8 12kV up to 40kA),24kv,40.5kV

Withdrawable type

Designation	
M1, M2	Charging motor, chassis motor
Y1, Y9	Opening coil, closing coil
K1	Anti-pumping relay module
S8, S9	Truck position switch
S1	Auxiliary switch
S3, S4, S5, S12, S21	Position switch
F1, Y0	Closing latching solenoid, truck latching solenoid
X1.5.1, X1.5.2, X01, X02, X.K1	10-pin terminal
X0, X03.1, X03.2	58-. 4-, 4-pin terminal
Q0, Q1	Circuit breaker, chassis
Y2, Y4, Y7, R1	Second release, current release, undervoltage release, resistor
X.1/2/3/4.1, X.1/2/3/5/6.2	Terminals – plug-in, Terminals – push-in



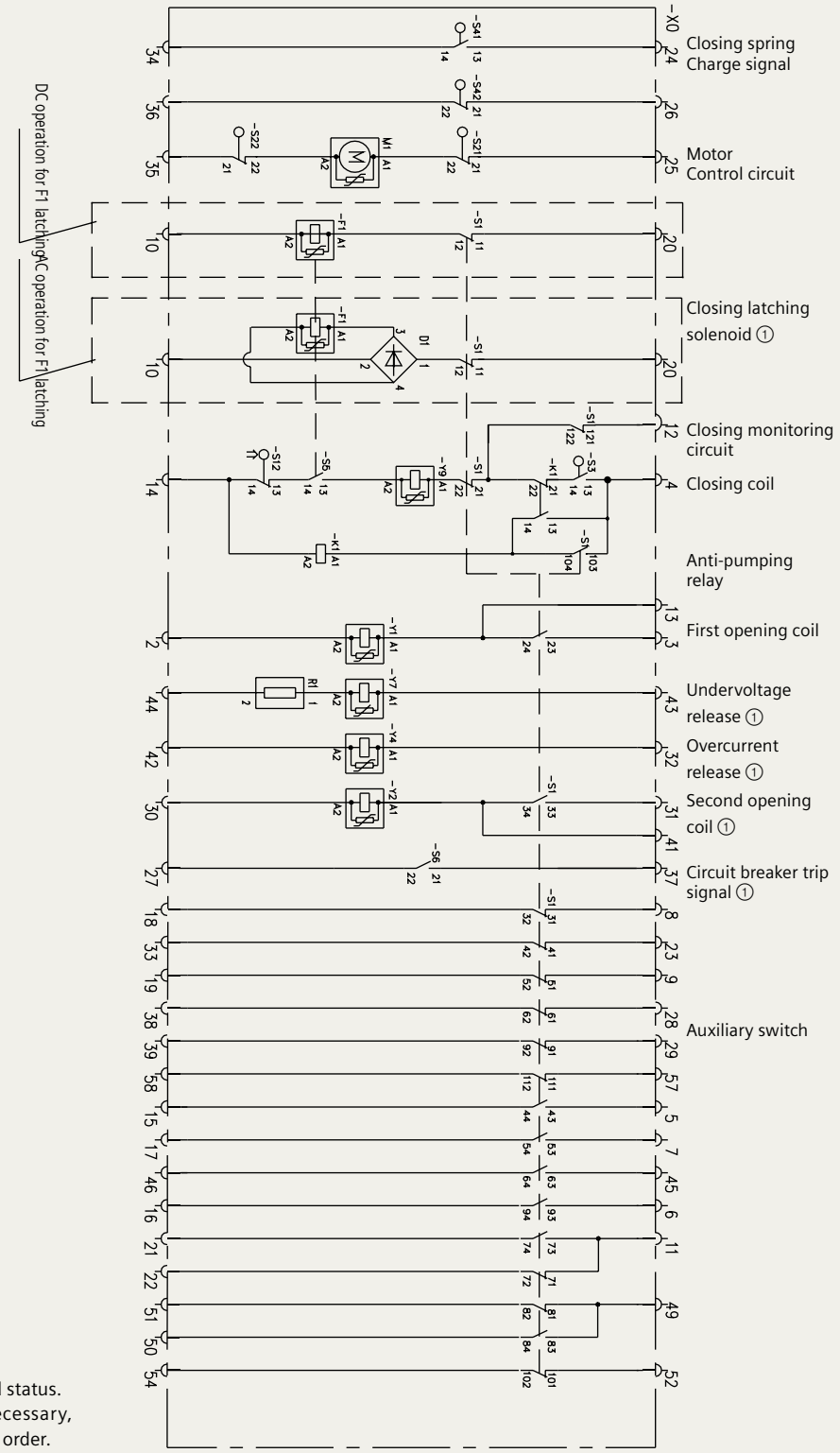
Notes:

1) Circuit breaker status: testing position, opening position, no charged position.
2) Marked ① are options, it should be clarified if needed.
3) Only one can be selected form 2nd shunt release, undervoltage shunt release, C.T. shunt release.
4) Marked ② is tripping monitoring, please connect -X0:12 to trip position relay of relay protection device if need.
5) Marked ③ is anti-pumping function, -S1:123/124 do not connected if don't need this function
6) -S12 is test position/Work position signal of circuit breaker.
7) Marked ⑦⑧⑨⑩ auxiliary contact exists only when the corresponding marked ④⑤⑥⑪ is not selected, and is installed by default when corresponding marked ④⑤⑥⑪ is not selected.
8) Marked ⑫ is only used for 12kV and 24kV cassette.

Secondary Wiring Diagram for 3AE8: 12kV/50kA

Fixed type

Designation	
M1	Charging motor
Y1, Y2, Y9	Opening coil, closing coil
K1	Anti-trip relay module
S1	Auxiliary switch
S3, S5, S6, S41, S42, S12, S21, S22	Position switch
F1	Closing latching solenoid
Y7	Undervoltage trip solenoid
Y4	Overcurrent trip solenoid
X0	Aviation plug
D1	Rectifier



Notes:

1) The circuit breaker is in OFF and Not Charged status.
2) Optional for parts marked with ① . If necessary, please specify individual requirements in the order.

Detailed Description of Circuit Breaker Configuration

Configuration Table

Basic Configuration	Motor-driven operating mechanism (M1)	*
	Closing coil (Y9)	*
	Opening coil (Y1)	*
	Closing spring charging signal switch (S41, S42)	*
	Closing spring position signal switch (S21, S22)	*
	Closing spring position signal switch (S3)	*
	Operating counter	*
	Mechanical interlocking	*
	Terminals for secondary wiring (58-pin plug and socket)	*
	Auxiliary switch 12 NO+12 NC	*

*: available
For any special requirements, please specify in the order.

Mechanical Parameters

Motor-driven (M1) operating mechanism with energy storage mechanism (with varistor module *)
Energy storage mechanism of circuit breaker can be driven by motor, including closing coil to replace manual operating mechanism. In case of power ON and the energy of closing spring released, motor will start energy storage automatically, and power will be OFF upon the completion of energy storage.
The motor is in overload status during part of spring energy storage period.

To protect the motor, we recommend low-voltage switch with C characteristics. Operating voltage can vary between -15% and +10% of rated voltage.
Manual energy storage is also available for circuit breaker, and the handle is used for closing spring energy storage of circuit breaker until “Spring Charged” appears, and a clear sound heard means the closing pawl has been locked. The circuit breaker now can be closed manually or electrically. After closing, restart manual energy storage for closing spring.

Opening/Closing Coil

Closing coil (Y9) (with varistor module *)
Closing coil is energized to make the closing spring release energy, i.e. electrical closing. AC/DC operation can be selected.
Operating voltage can vary between -15% and +10% of rated voltage.
Power consumption: 300 to 370 W according to different voltage levels.
550W for DC24V

Opening coil (Y1) (with varistor module *)
Opening coil is the basic component of circuit breaker, which can “open” locking mechanism with iron core of the coil to open circuit breaker directly. Operating voltage can vary between -35% and +10% (DC) or -15% and +10% (AC) of rated voltage.
Power consumption: 300 to 370 W according to different voltage levels.
550W for DC24V

Second opening coil (Y2) (optional)
If several opening coilsare required, 3AY1410 second opening coil shall be provided. In this case, the tripping pulse is transmitted from the direct-acting armature to the OFF latch, thereby turning the vacuum circuit breaker OFF.
Power consumption: 300 to 370 W according to different voltage levels.

Detailed Description of Circuit Breaker Configuration

Overcurrent release (Y4) 3AX1102 (optional)
Overcurrent release is composed of a set of energy storage mechanism, unlocking mechanism and electromagnetic system. When the tripping current exceeds 90% of rated tripping current of the release, unlocking device of energy storage mechanism will be released, and circuit breaker is OFF. Except for current transformer, such release must be provided with a coupling transformer.
When tripping current is 90% of rated tripping current, and the release is provided with opening iron core, the power consumed is about 10VA.

Undervoltage release (Y7) 3AX1103 (optional)
Undervoltage release is composed of a set of energy storage mechanism, unlocking mechanism and electromagnetic system. When circuit breaker is in Closed status, the electromagnetic system is connected to power supply. When power voltage drops to a certain value, unlocking mechanism will release, and circuit breaker is opened by spring energy storage mechanism.
Undervoltage release can also be installed on the current transformer. When the operating voltage drops below 35% or the control voltage is directly lost, the circuit breaker will be automatically opened.
Power consumption: about 20W.

Auxiliary switch (S1)
12 NO + 12 NC auxiliary switch is provided.

Insulation Class : Class C (DIN VDE 0110); Load current: 10A
Rated making current: 50A; Breaking capacity: refer to the table below.

Voltage	Breaking Capacity [A]	
	Resistive load	Inductive load
up to AC 230V	10	10
DC 110V	5	4
DC 220V	2.5	2

Tripping signal of circuit breaker (S6) (optional)
For electrical opening, position switch S6 will be closed for a short time, which can be used as electrical tripping signal of protection system.
For local operation, position switch S6 is not closed.

Mechanical/electrical interlocking
Energy storage mechanism of 3AE circuit breaker can be provided with a mechanical/electrical interlocking device to interlock the circuit breaker truck at a certain position.
The user must use a sensor component which can judge the ON/OFF status of circuit breaker. When circuit breaker is in OFF status, circuit breaker can be closed mechanically or electrically.
The sensor component shall be designed to ensure that the disconnecter switch, the removable part of the circuit breaker or the truck can not be operated when the circuit breaker is in ON status. For details of sensor component, please refer to user manual.

Secondary wiring
The control leads ares connected to each electrical unit directly, and led to plugs/sockets.
For the adjustment of secondary wiring, it is recommended to refer to secondary wiring diagram supplied with circuit breaker. (For details, please contact Siemens).

Closing latching solenoid (F1) (12kV/24kV optional)
Operating mechanism can be closed only when the closing latching solenoid is energized and remained.

Truck latching solenoid (Y0) (optional)
The truck can be rack in /out only when the truck latching solenoid is energized and remained.

Scan for additional information

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