



# SPS2 Circuit Breaker (15kV-245kV)

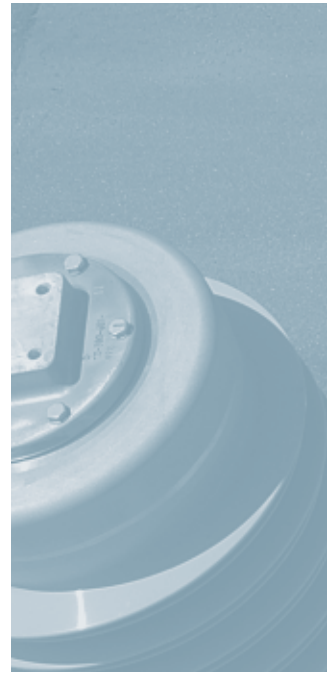
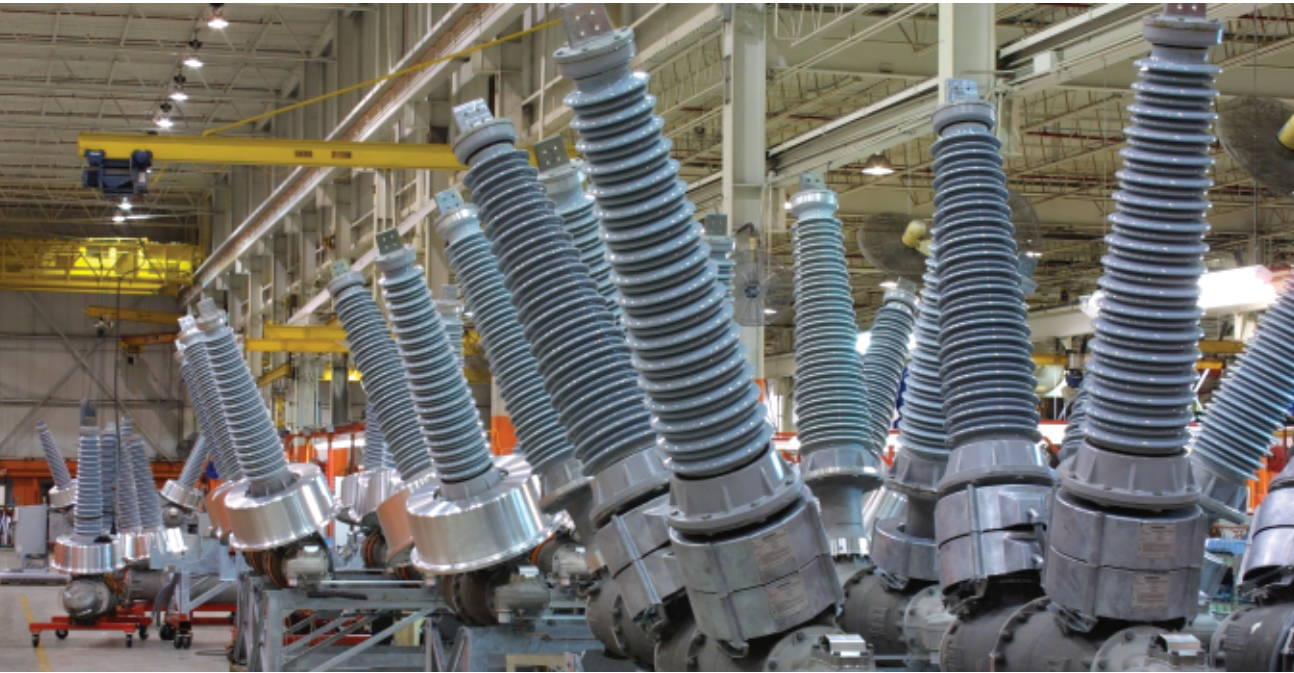
Longer Operating Life - Lower Maintenance Costs

Power Transmission & Distribution

**SIEMENS**

# SPS2 Dead Tank Breakers

A new generation of Circuit Breakers



The new SPS2 is not just another circuit breaker, it's a better circuit breaker. With the ability to handle 63kA at 145kV and 50kA at 245kV without capacitors, three-cycle interruption, -40°C/F without tank heaters at 69kV and no adjustments—SPS2 is the result of combined global engineering and major product improvements.

## **A family of circuit breakers designed to your specifications**

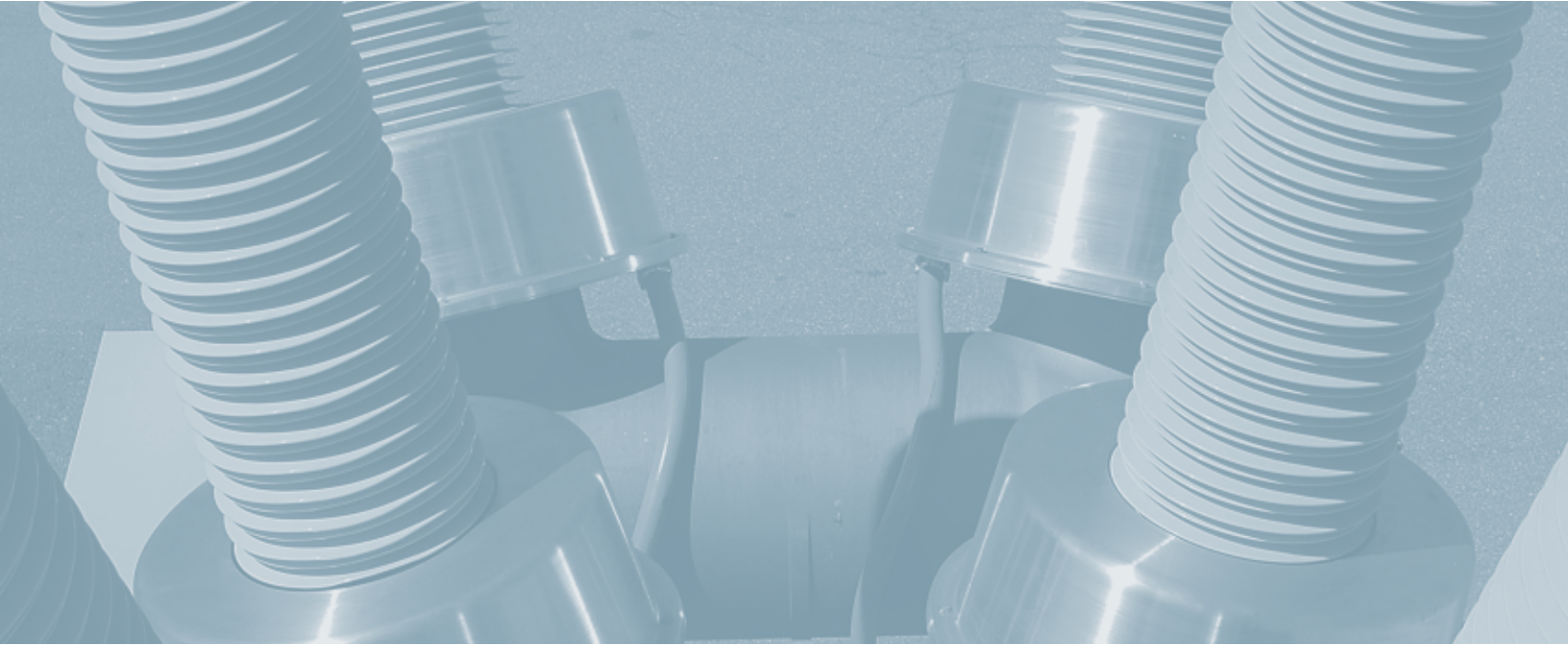
Siemens took the best of what breaker technology has to offer and brought them together into one circuit breaker to offer reliable performance for a wide range of voltage requirements. From 15kV right up through 245kV. The SPS2 can meet your requirements.

Each component of the SPS2 is made in our state-of-the-art manufacturing facility, which is quality certified to ISO 9001-2000 standards. This precision manufacturing allows Siemens to make quality products, which are used in thousands of installations worldwide.

Siemens combines the latest in circuit breaker technology with the economies of a streamlined, closely monitored production process at the Siemens Power Transmission & Distribution plant in Jackson, Mississippi, to ensure both measurable quality improvements and cost containment. And to ensure product performance and customer satisfaction, the SPS2 is tested to ANSI and IEC standards in the world's largest laboratory.

# SPS2 Dead Tank Breakers

## A new generation of Circuit Breakers



### **Siemens quality inside and out**

The durable dead-tank construction of the SPS2 circuit breaker means reliable, long-lasting performance in demanding operating conditions. Seismically qualified with a leak rate of less than 1% annually, the SPS2 has been tested to 6,000 mechanical operations and 3,000 operations at 6kA. Global components include:

- the FA2/4 mechanism
- 3AP arc-assist interrupter
- rupture disks for each interrupter
- porcelain or composite bushings with standard provision for two CTs per bushing

All of these components are factory assembled and tested with no field adjustments necessary.

### **Why SPS2 outperforms the rest**

The SPS2 circuit breaker uses arc-assist interrupter technology—the second generation of this latest technology developed as a result of the successful arc-assist interrupters used in Siemens circuit breakers worldwide. Instead of the standard puffer mechanism that utilizes compression only, arc-assist also uses temperature build-up to quench the arc. With fewer moving parts, your maintenance costs are reduced while increasing the operational life of your circuit breaker.

### **The SPS2 – Circuit breaker technology to see you through the future**

Siemens is investing in research and development in order to manufacture the products you need now and will want in years to come. The SPS2 is more than just a better breaker. It's designed to perform more reliably under the most demanding specifications—yours; and to see you through the future needs of system growth and expansion.



# Ratings and Specifications

## SPS2 15-72kV

Identification	Ratings								Related Capabilities		
Type	Nominal kV Class	Voltage		Insulation		Current		Interrupting Time (Cycles)	Current Values — Amperes		
		Rated Max kV	Rated Voltage Range Factor	Rated Withstand Test Voltage		Rated Continuous Current (Amps, rms)	Rated Short Circuit Current at Rated Max kV		Maximum Symmet- rical Interrupting Capability	3-Sec. Short Time Current Carrying Capability	Closing and Latching Capability
				Low Freq. (kV, rms)	Impulse (kV, Crest)						
SPS2 – 15.5-31.5	14.4	15.5	1.0	50	110	1200/4000	31,500	3	31,500	31,500	85,000
SPS2 – 15.5-40	14.4	15.5	1.0	50	110	1200/4000	40,000	3	40,000	40,000	108,000
SPS2 – 25.8-20	23.0	25.8	1.0	60	150	1200/4000	20,000	3	20,000	20,000	54,000
SPS2 – 25.8-31.5	23.0	25.8	1.0	60	150	1200/4000	31,500	3	31,500	31,500	85,000
SPS2 – 25.8-40	23.0	25.8	1.0	60	150	1200/4000	40,000	3	40,000	40,000	108,000
SPS2 – 38-20	34.5	38.0	1.0	80	200	1200/4000	20,000	3	20,000	20,000	54,000
SPS2 – 38-31.5	34.5	38.0	1.0	80	200	1200/4000	31,500	3	31,500	31,500	85,000
SPS2 – 38-40	34.5	38.0	1.0	80	200	1200/4000	40,000	3	40,000	40,000	108,000
SPS2 – 48.3-20	46.0	48.3	1.0	105	250	1200/4000	20,000	3	20,000	20,000	54,000
SPS2 – 48.3-31.5	46.0	48.3	1.0	105	250	1200/4000	31,500	3	31,500	31,500	85,000
SPS2 – 48.3-40	46.0	48.3	1.0	105	250	1200/4000	40,000	3	40,000	40,000	108,000
SPS2 – 72.5-20	69.0	72.5	1.0	160	350	1200/4000	20,000	3	20,000	20,000	54,000
SPS2 – 72.5-31.5	69.0	72.5	1.0	160	350	1200/4000	31,500	3	31,500	31,500	85,000
SPS2 – 72.5-40	69.0	72.5	1.0	160	350	1200/4000	40,000	3	40,000	40,000	108,000

### Supplementary Specifications Voltage

DESCRIPTION	UNIT	SPS2 15.5	SPS2 25.8	SPS2 38	SPS2 48.3	SPS2 72.5
Lightning Impulse Withstand Voltage						
Chopped Wave 2 $\mu$ s	kV	142	194	258	322	452
Chopped Wave 3 $\mu$ s	kV	126	172	230	288	402
Rated Normal Current (10 <sup>3</sup> )	A	12/20/31.5/40	12/20/31.5/40	12/20/31.5/40	12/20/31.5/40	12/20/31.5/40
Normal Frequency	Hz	60	60	60	60	60
Optional Frequency	Hz	50	50	50	50	50
Rated Permissible Tripping Delay (Y)	s	2	2	2	2	2
Auxiliary Voltage	Vac	115/230				
Operating Mechanism	—	Spring ("OCO")				
Trip Coils		Single (standard) — Dual (optional)				
Trip and Close Coil Rating	Vdc	48/125/250				
Breaks Per Phase	—	1				
Contact Gap	in	3.5				
Phase Spacing	in	37.0				
Seismic Withstand Standard	g	0.3 Dynamic				
Optional	g	0.5 Dynamic				
Rated Voltage Range Factor	(k)	1.0				
RIV at 1000 kHz	$\mu$ V	<<500				

### Supplementary Specifications Current

DESCRIPTION	UNIT	20kA	31.5kA	40kA
Rated Short Circuit Current	kA	20	31.5	40
Rated Making Current	kA	20	31.5	40
Closing and Latching Capability rms peak	kA kA	32 54	50 85	64 108
Capacitance Switching General Purpose	A	100		
Overhead Line Isolated Current	A	250		
Definite Purpose Overhead Line Isolated Current	A A	100 630		
Asymmetrical Int. Capability Ratio (S)	—	1.2		
Normal Operating Temperature Range	°C °C	-40°C to 55°C -50°C to 55°C		
Standard Special	°C	-50°C to 55°C		
Closing Time (total)	ms	100		
Rated Reclosing Time	Cycles	12		
Rated Duty Cycle	—	OCO-10S-CO (No derating)		
External Creep Standard	in	73	73	73
Special	in	114	114	114
External Strike To Ground Standard	in	23	23	23
Special	in	27	27	27
Qty. SF <sub>6</sub>	lbs	33		
SF <sub>6</sub> Pressure	psig	65 @ 68° F/20°C		

# Ratings and Specifications

## SPS2 123-145-170kV

Identification		Ratings							Related Capabilities		
Type	Nominal kV Class	Voltage		Insulation		Current		Interrupting Time (Cycles)	Current Values — Amperes		
		Rated Max kV	Rated Voltage Range Factor	Rated Withstand Test Voltage		Rated Continuous Current (Amps, rms)	Rated Short Circuit Current at Rated Max. kV		Maximum Symmet- rical Interrupting Capability	3-Sec. Short Time Current Carrying Capability	Closing and Latching Capability
				Low Freq. (kV, rms)	Impulse (kV, Crest)						
SPS2 – 123-20	115	123	1.0	260	550	1200/4000	20,000	3	20,000	20,000	54,000
SPS2 – 123-31.5	115	123	1.0	260	550	1200/4000	31,500	3	31,500	31,500	85,000
SPS2 – 123-40	115	123	1.0	260	550	1200/4000	40,000	3	40,000	40,000	108,000
SPS2 – 123-50	115	123	1.0	260	550	1200/4000	50,000	3	50,000	50,000	135,000
SPS2 – 123-63	115	123	1.0	260	550	1200/4000	63,000	3	63,000	63,000	170,000
SPS2 – 145-20	138	145	1.0	310	650	1200/4000	20,000	3	20,000	20,000	54,000
SPS2 – 145-31.5	138	145	1.0	310	650	1200/4000	31,500	3	31,500	31,500	85,000
SPS2 – 145-40	138	145	1.0	310	650	1200/4000	40,000	3	40,000	40,000	108,000
SPS2 – 145-50	138	145	1.0	310	650	1200/4000	50,000	3	50,000	50,000	135,000
SPS2 – 145-63	138	145	1.0	310	650	1200/4000	63,000	3	63,000	63,000	170,000
SPS2 – 170-20	161	170	1.0	365	750	1200/4000	20,000	3	20,000	20,000	54,000
SPS2 – 170-31.5	161	170	1.0	365	750	1200/4000	31,500	3	31,500	31,500	85,000
SPS2 – 170-40	161	170	1.0	365	750	1200/4000	40,000	3	40,000	40,000	108,000
SPS2 – 170-50	161	170	1.0	365	750	1200/4000	50,000	3	50,000	50,000	135,000
SPS2 – 170-63	161	170	1.0	365	750	1200/4000	63,000	3	63,000	63,000	170,000

### Supplementary Specifications Voltage

DESCRIPTION	UNIT	SPS2 123	SPS2 145	SPS2 170
Lightning Impulse Withstand Voltage				
Chopped Wave 2 $\mu$ s	kV	710	838	968
Chopped Wave 3 $\mu$ s	kV	632	748	862
Rated Normal Current (10 <sup>3</sup> )	A	12/20/31.5/40	12/20/31.5/40	12/20/31.5/40
Normal Frequency	Hz	60	60	60
Optional Frequency	Hz	50	50	50
Rated Permissible Tripping Delay (Y)	s	1	1	1
Auxiliary Voltage	Vac	115/230		
Operating Mechanism	—	Spring ("OCO")		
Trip Coils		Single (standard) — Dual (optional)		
Trip and Close Coil Rating	Vdc	48/125/250		
Breaks Per Phase	—	1		
Contact Gap	in	3.5/4.5		
Phase Spacing	in	69.9		
Seismic Withstand Standard	g	0.3 Dynamic		
Optional	g	0.5 Dynamic		
Rated Voltage Range Factor	(k)	1.0		
RIV at 1000 kHz	$\mu$ V	<<500		

### Supplementary Specifications Current

DESCRIPTION	UNIT	20kA	31.5kA	40kA	50kA	63kA
Rated Short Circuit Current	kA	20	31.5	40	50	63
Rated Making Current	kA	20	31.5	40	50	63
Closing and Latching Capability rms peak	kA	32	50	64	80	101
	kA	54	85	108	135	170
Capacitance Switching General Purpose	A	100				
Overhead Line Isolated Current	A	250				
Definite Purpose Overhead Line Isolated Current	A	100				
	A	315				
Asymmetrical Int. Capability Ratio (S)	—	1.2				
Normal Operating Temperature Range	°C	-30°C to 55°C				
Standard	°C	-40°C/-50°C to 55°C				
Special						
Closing Time (total)	ms	100				
Rated Reclosing Time	Cycles	12				
Rated Duty Cycle	—	OCO-10S-CO (No derating)				
External Creep Standard	in	131	131	131	131	131
Special	in	144	144	144	144	144
External Strike To Ground Standard	in	46	46	46	46	46
Special	in	53	53	53	53	53
Qty. SF <sub>6</sub>	lbs	58	58	58	128	128
SF <sub>6</sub> Pressure	psig	87 @ 68° F/20°C				

# Ratings and Specifications

## SPS2 245kV

Identification	Ratings								Related Capabilities		
Type	Nominal kV Class	Voltage		Insulation		Current		Interrupting Time (Cycles)	Current Values — Amperes		
		Rated Max kV	Rated Voltage Range Factor	Rated Withstand Test Voltage		Rated Continuous Current (Amps, rms)	Rated Short Circuit Current at Rated Max. kV		Maximum Symmetrical Interrupting Capability	3-Sec. Short Time Current Carrying Capability	Closing and Latching Capability
				Low Freq. (kV, rms)	Impulse (kV, Crest)						
SPS2 – 245-20	230	245	1.0	425	900	1200/4000	20,000	3	20,000	20,000	54,000
SPS2 – 245-31.5	230	245	1.0	425	900	1200/4000	31,500	3	31,500	31,500	85,000
SPS2 – 245-40	230	245	1.0	425	900	1200/4000	40,000	3	40,000	40,000	108,000
SPS2 – 245-50	230	245	1.0	425	900	1200/4000	50,000	3	50,000	50,000	135,000
SPS2 – 245-63	230	245	1.0	425	900	1200/4000	63,000	3	63,000	63,000	170,000
SPS2 – 245-20	230	245	1.0	460	1050	1200/4000	20,000	3	20,000	20,000	54,000
SPS2 – 245-31.5	230	245	1.0	460	1050	1200/4000	31,500	3	31,500	31,500	85,000
SPS2 – 245-40	230	245	1.0	460	1050	1200/4000	40,000	3	40,000	40,000	108,000
SPS2 – 245-50	230	245	1.0	460	1050	1200/4000	50,000	3	50,000	50,000	135,000
SPS2 – 245-63	230	245	1.0	460	1050	1200/4000	63,000	3	63,000	63,000	170,000

### Supplementary Specifications

#### Voltage

DESCRIPTION	UNIT	SPS2 900 kV	SPS2 1050 kV	
Lightning Impulse Withstand Voltage				
Chopped Wave 2 $\mu$ s	kV	1160	1160	
Chopped Wave 3 $\mu$ s	kV	1040	1040	
Rated Normal Current (10")	A	12/20/31.5/40	12/20/31.5/40	
Normal Frequency	Hz	60	60	
Optional Frequency	Hz	50	50	
Rated Permissible Tripping Delay (Y)	s	1	1	
Auxiliary Voltage	Vac	115/230		
Operating Mechanism	—	Spring ("OCO")		
Trip Coils		Single (standard) – Dual (optional)		
Trip and Close Coil Rating	Vdc	48/125/250		
Breaks Per Phase	—	1		
Contact Gap	in	4.5		
Phase Spacing	in	85.3		
Seismic Withstand Standard	g	0.3 Dynamic		
Optional	g	0.5 Dynamic		
Rated Voltage Range Factor	(k)	1.0		
RIV at 1000 kHz	$\mu$ V	<<500		

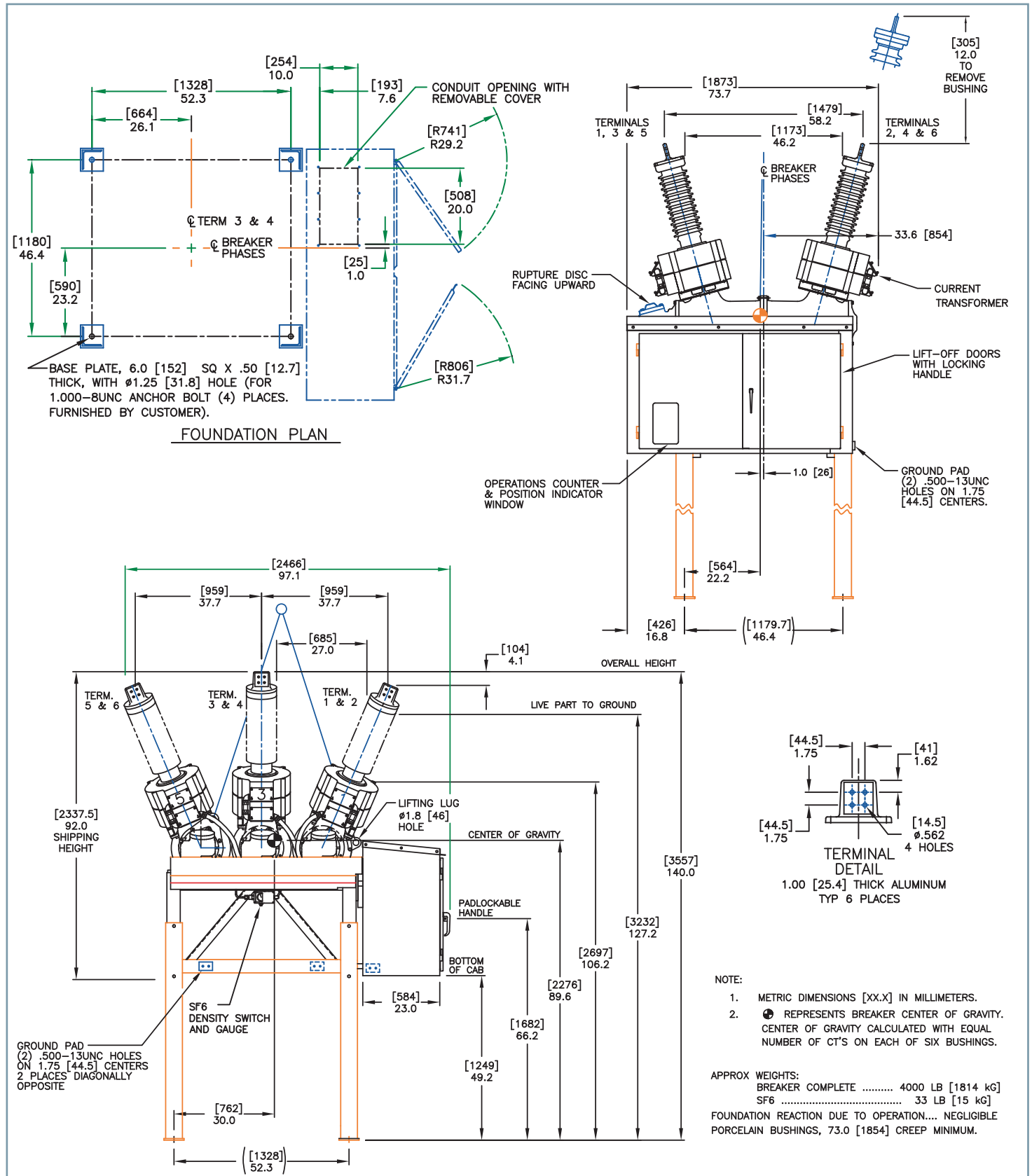
### Supplementary Specifications

#### Current

DESCRIPTION	UNIT	20kA	31.5kA	40kA	50kA	63kA
Rated Short Circuit Current	kA	20	31.5	40	50	63
Rated Making Current	kA	20	31.5	40	50	63
Closing and Latching Capability rms peak	kA kA	32 54	50 85	64 108	80 135	101 170
Capacitance Switching						
General Purpose	A			160		
Overhead Line	A			160		
Isolated Current	A					
Definite Purpose	A			200		
Overhead Line	A			400		
Isolated Current						
Asymmetrical Int. Capability Ratio (S)	—			1.2		
Normal Operating Temperature Range						
Standard	°C			-30°C to 55°C		
Special	°C			-40°C/-50°C to 55°C		
Closing Time (total)	ms			100		
Rated Reclosing Time	Cycles			12		
Rated Duty Cycle	—	OCO-15S-CO (No derating)				
External Creep						
Standard	in	140	140	140	140	140
Special	in	205	205	205	205	205
External Strike To Ground						
Standard	in	60	60	60	60	60
Special	in	62	62	62	62	62
Qty. SF <sub>6</sub>	lbs	161				
SF <sub>6</sub> Pressure	psig	87 @ 68° F/20°C				

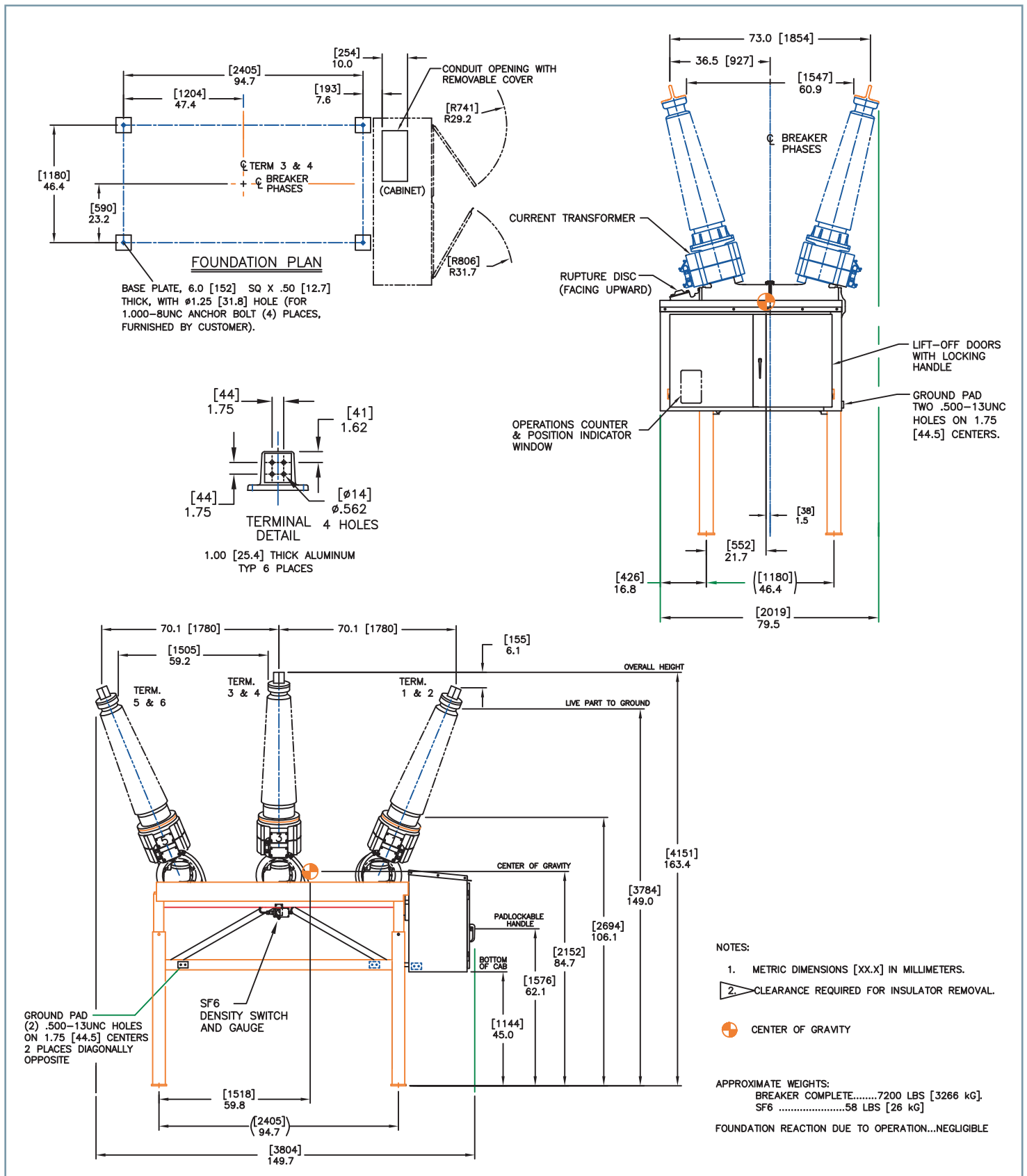
# Dimension Data

## SPS2 15-72kV



# Dimension Data

SPS2 123, 145, 170kV-40kA



## NOTES:

1. METRIC DIMENSIONS [XX.X] IN MILLIMETERS.
2. CLEARANCE REQUIRED FOR INSULATOR REMOVAL.

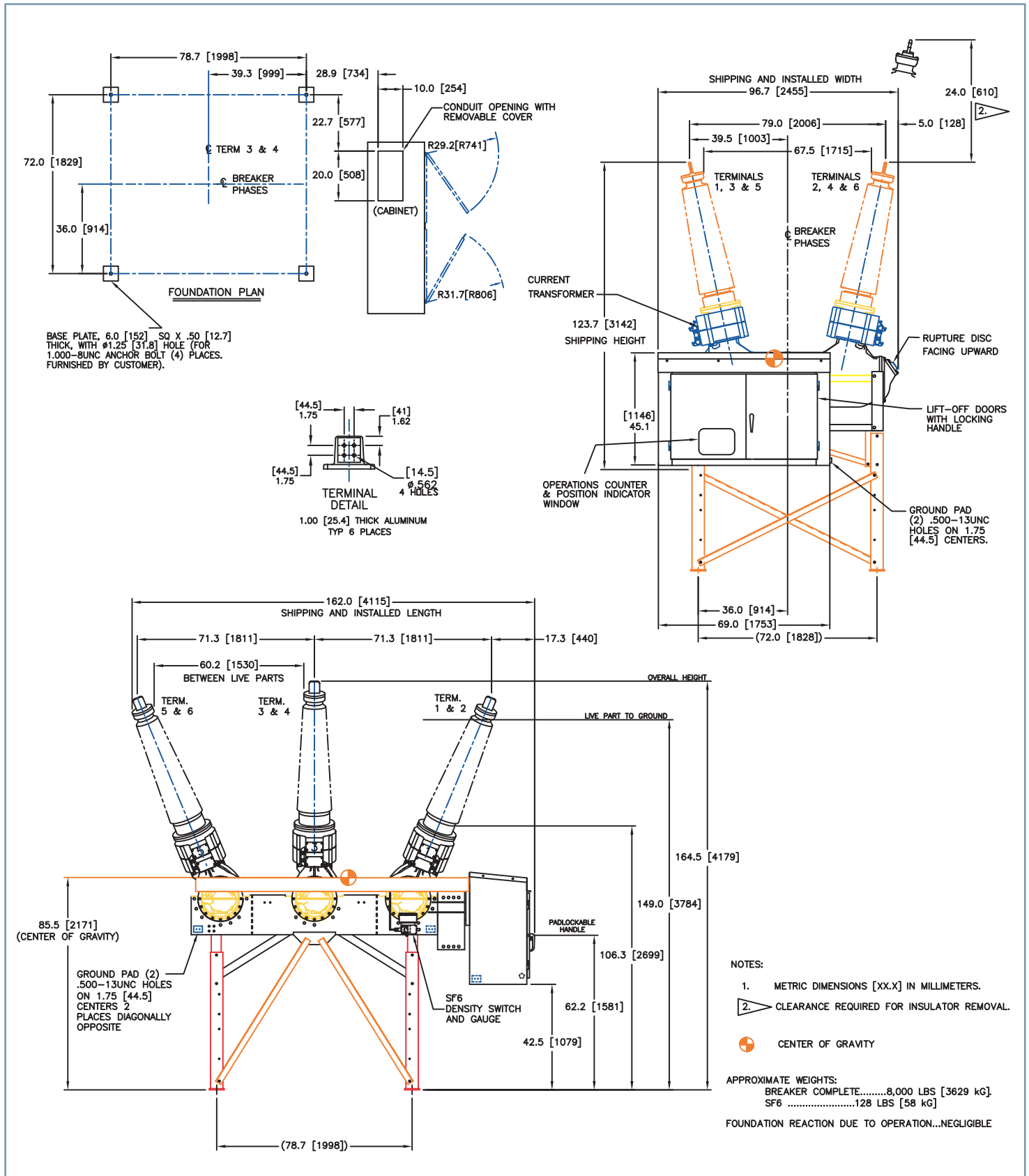
⊕ CENTER OF GRAVITY

APPROXIMATE WEIGHTS:  
 BREAKER COMPLETE.....7200 LBS [3266 kg].  
 SF6 .....58 LBS [26 kg]  
 FOUNDATION REACTION DUE TO OPERATION...NEGLECTIBLE



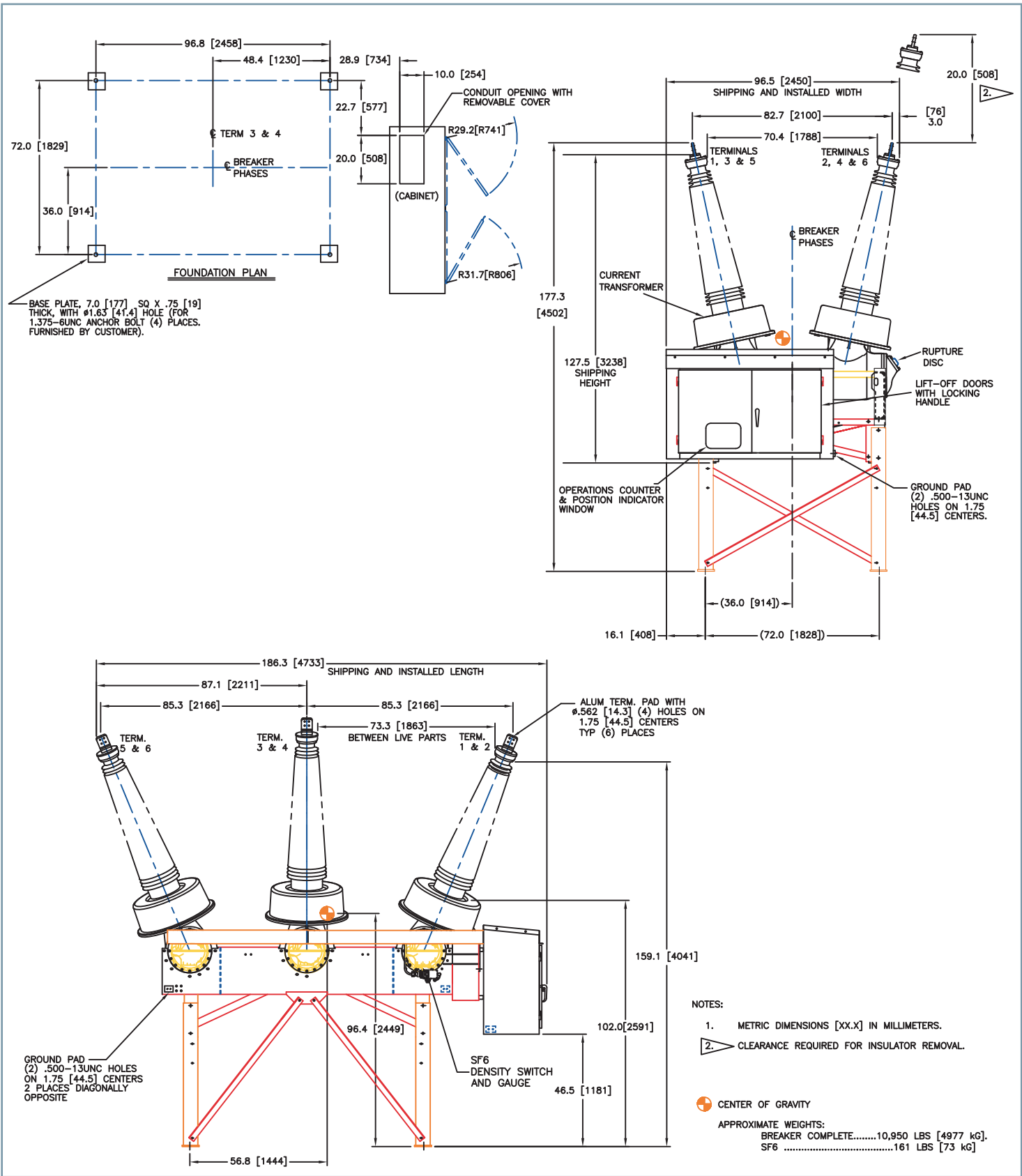
# Dimension Data

SPS2 123, 145, 170kV-50/63kA



# Dimension Data

## SPS2 245kV-40/50/63kA

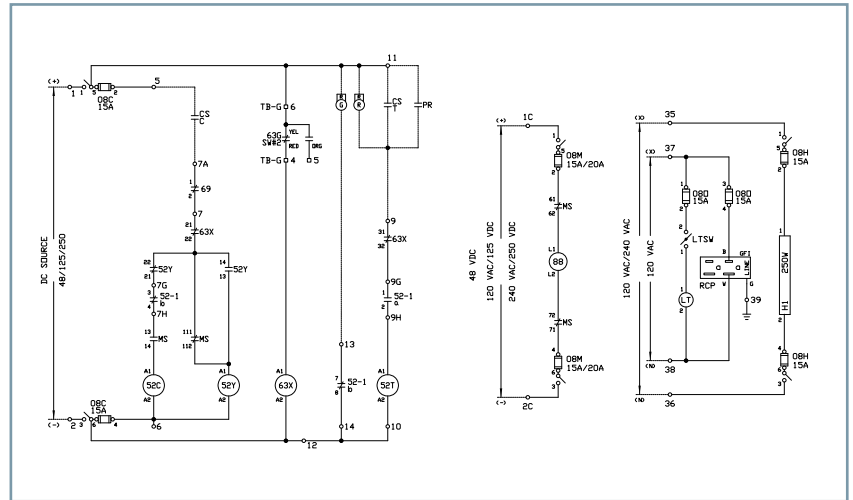


# Spring Charged Operating Mechanism

More than 20,000 worldwide installations are up and running testimonies to the reliability of the spring-stored energy FA2/4 mechanism. This mechanism is fully equipped with a closing and opening spring fitted inside a common housing.

The operating mechanism incorporates roller bearings that allow wear-free transmission of forces and thus ensures a long service life. The charging gear, with its long-wearing spur wheels and its principle of no-load decoupling, is another component that ensures maintenance-free operation. Low operating mechanism force assures that the transmission elements are subjected to less stress resulting in optimal operating reliability.

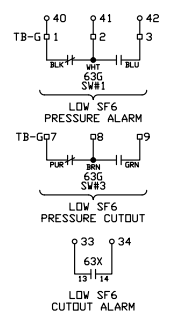
The SPS2 is the product of tried and proven performance in the field. Our reputation for quality and extensive global experience are captured in the design principles of this circuit breaker.



DEVICE	DESCRIPTION	LEGEND
01	BREAKER CONTROL SWITCH	
08C	CLOSE POWER DISCONNECT	
08H	HEATER POWER DISCONNECT	
08M	MOTOR POWER DISCONNECT	
08T	RECEPTACLE & LIGHT POWER DISCONNECT	
08T	TRIP POWER DISCONNECT	
23	CONTROL HOUSING THERMOSTAT	
52-a, b	BREAKER AUXILIARY SWITCHES (a=OPEN/BKR OPEN b=CLOSED/BKR OPEN)	
52C	BREAKER CLOSE COIL	
52T	BREAKER TRIP COIL	
52T	BREAKER CLOSING CUTOFF RELAY (ANTI-PUMP)	
63G	GAS PRESSURE SWITCH (SF6)	
	SW#1 LOW PRESSURE ALARM	
	SW#2 LOW PRESSURE CUTOFF	
	SW#3 LOW PRESSURE CUTOFF	
63X	INTERRUPTER SF6 LOW PRESSURE CUTOFF AUXILIARY RELAY	
88	MOTOR (MECHANISM)	

DEVICE	DESCRIPTION
G	GREEN INDICATOR LIGHT
H1	CABINET HEATER
H2	CABINET HEATER
LT	HOUSING LIGHT
LTSW	HOUSING LIGHT TOGGLE SWITCH
MS	SPRING CHARGE MOTOR SWITCH
PR	REMOTE PROTECTIVE RELAYS
R	RED INDICATOR LIGHT
RCP	DUPLEX RECEPTACLE (GFCI)

NOTES:  
1. ALL EQUIPMENT SHOWN WITH: CIRCUIT BREAKER OPEN, CONTROL VOLTAGE OFF, SF6 PRESSURE LOW, SPRING DISCHARGED, TEMPERATURE LOW.

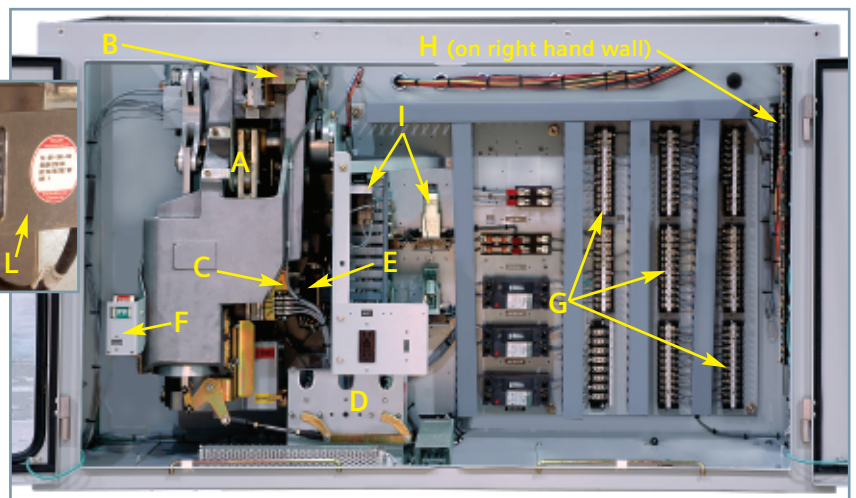
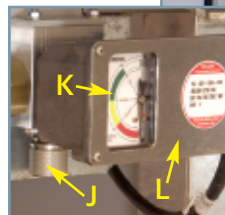


## Control Power Requirements

	48 VDC	125 VDC	250 VDC	115 VAC	230 VAC
Rated Voltage	48 VDC	125 VDC	250 VDC	115 VAC	230 VAC
Trip Coil Current (amps)	16	12.0	6.7	12.0	6.7
Close Coil Current (amps)	4.6	1.9	6.7	2.5	6.7
Motor Run Current (amps)					
FA2	17.4	9.8	4.6	12.3	6.3
FA4	29.0	16.0	8.0	23.0	11.0

## Spring charged operating mechanism

- A. Spring Operating Mechanism (FA2)
- B. Close Coil
- C. Trip Coil
- D. Auxiliary Switches
- E. Motor (125VDC/120VAC)
- F. Open/Close Indicator
- G. Control Terminal Blocks
- H. Bushing Current Transformer Terminal Blocks (on right hand wall)
- I. Control Relay (on back panel)
- J. SF<sub>6</sub> Fill Connection (outside left side)
- K. SF<sub>6</sub> Pressure Gauge (outside left side)
- L. SF<sub>6</sub> Density Switch (outside left side)



# Live-tank and Dead-tank SF6 Circuit Breakers

**Same technology for every application in two designs. Both designs possess their own special features, and each design has its own particular advantages.**

## Special technical features of live-tank design

On live-tank circuit breakers, the interrupter chamber is arranged in the insulator, which can be either porcelain or of a composite material, and is at high potential with the voltage level determining the length of the insulators for the interrupter chamber and the insulator column.

For higher voltage levels, several interrupter chambers series-connected on live-tank circuit breakers and installed on the insulator column. The current transformers are arranged separately either in front of or behind the live-tank circuit breakers. As in live-tank circuit breakers, no fault currents can occur between the interrupter unit and the housing; only one current transformer per pole assembly is necessary.

A further feature of live-tank circuit breakers are the comparatively small gas compartments. The advantage of the low gas volume is that there is a reduction in the amount of gas maintenance work.

To ensure the safe operation of live-tank circuit breakers in seismic regions, the breakers can be mounted on anti-seismic dampers, a solution that has been tested up to 800kV and has proved its worth many times.

## Special technical features of dead-tank design

The distinguishing feature of dead-tank technology is that the interrupter chamber is accommodated in an earthed metal housing. With this arrangement, the SF<sub>6</sub> gas filling insulates the high voltage live parts of the contact assembly from the housing. The connection to the high voltage is via a SF<sub>6</sub> outdoor bushing.

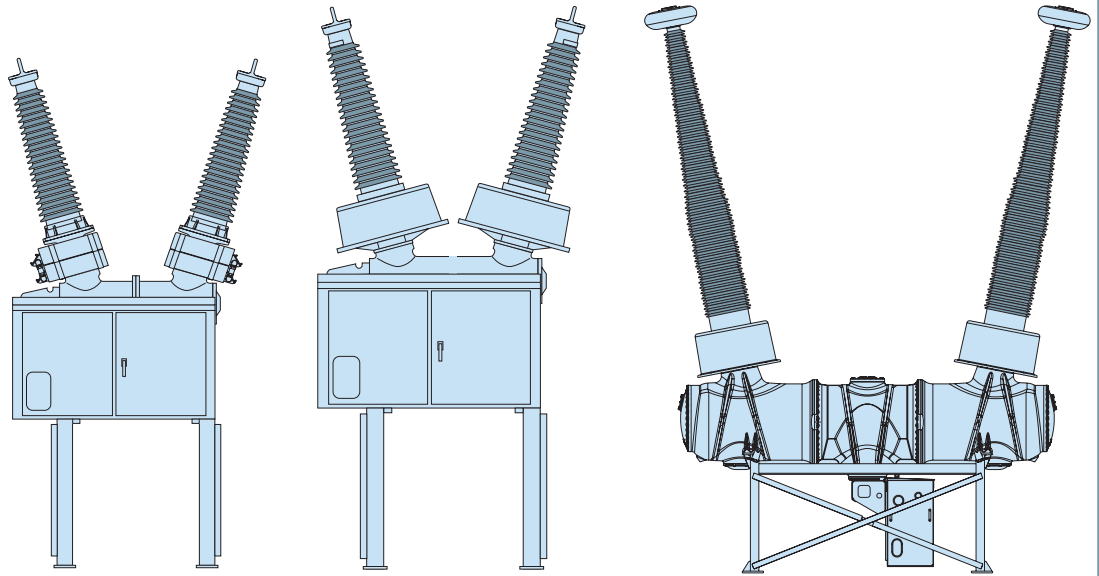
The current transformers are mounted directly on the bushing, which eliminates the fastening devices and cabling required in the case of exterior mounting.

Dead-tank circuit breakers offer particular advantages if the protection design requires the use of several current transformers per pole assembly, such as for a typical American system. The possibility of being able to arrange current transformers in front of and behind the circuit breaker enables protection schemes to be met in a particularly cost-saving manner. Furthermore, it is relatively simple to retrofit the current transformers in the field.

As an additional advantage, dead-tank circuit breakers are particularly resistant to earthquakes due to their compact design and low center of gravity.

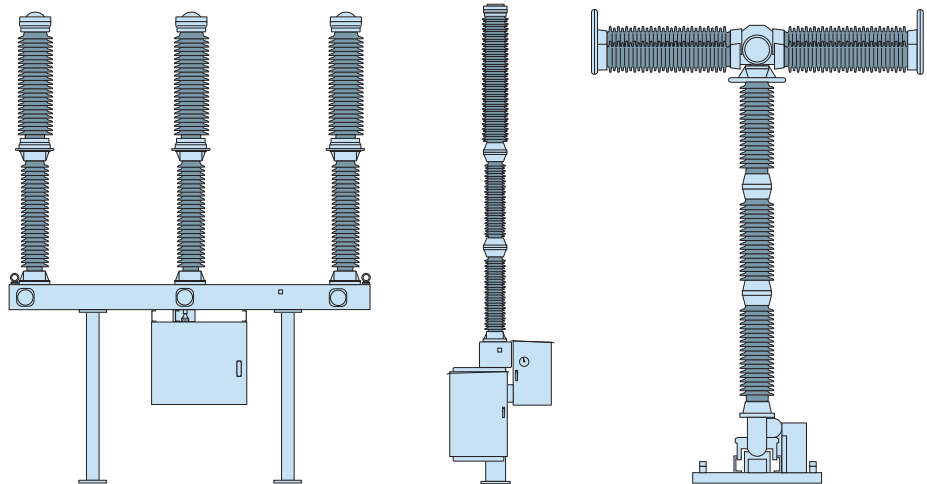


## Dead-Tank



Type		SPS2							
Electrical data		3 cycle							2 cycle
Rated voltage	kV	38	48.3	72.5	123	145	170	245	550
Rated power-frequency withstand voltage	kV	80	105	160	260	310	365	425/460	860
Rated lightning impulse withstand voltage	kV	200	250	350	550	650	750	900/1050	1800
Rated nominal current up to	A	4000	4000	4000	4000	4000	4000	4000	4000
Rated breaking current up to	kA	40	40	40	63	63	63	63	63

## Live-Tank



Type		3AP1					3AT2/3			
Electrical data		3 cycle					2 cycle			
Rated voltage	kV	72.5	123	145	170	245/300	145	245	362	550
Rated power-frequency withstand voltage	kV	160	260	310	365	460	310	460	555	860
Rated lightning impulse withstand voltage	kV	325	550	650	750	1050	650	1050	1300	1800
Rated nominal current up to	A	4000	4000	4000	4000	4000	4000	4000	4000	4000
Rated breaking current up to	kA	40	40	40	40	50	80	80	63	63



# Interrupter Unit

## Arc-assist interrupter

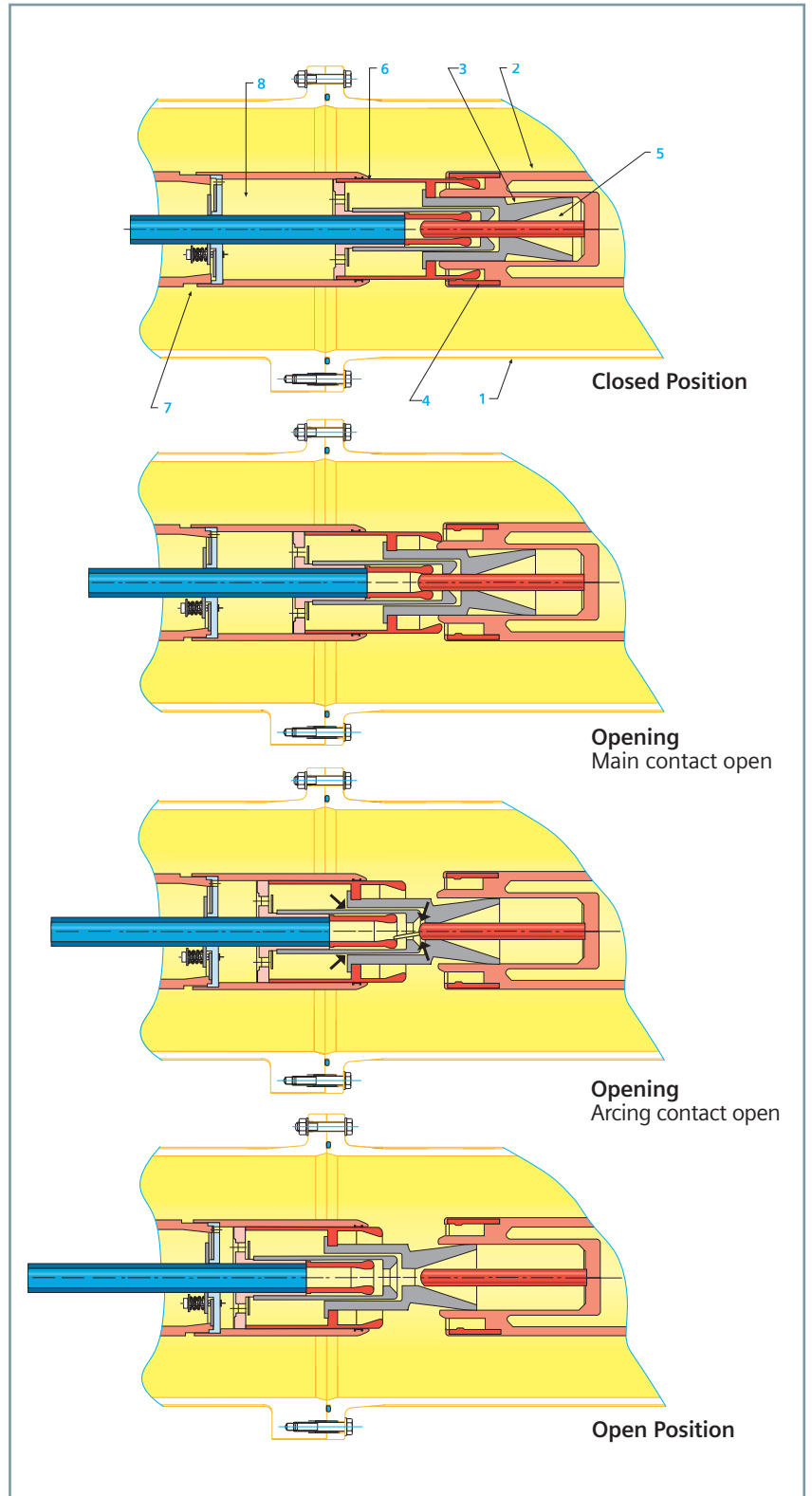
The durable construction of the SPS2 circuit breaker includes the field proven 3AP arc-assist interrupter. Each interrupter consists of a stationary contact assembly and a moving contact assembly mounted inside a pole unit housing.

During the opening operation, the puffer action in the compression cylinder of the 3AP interrupter is sufficient for low current faults and switching operations. During high current interruptions, heat from the arc causes the pressure to rise in the heating volume chamber. The resulting high pressure gas from the heating volume extinguishes the arc.

This arc-assist technology, coupled with our FA family of spring mechanisms used from 72.5kV up to 55kV, assures that the components are subjected to less stress which results in optimal operating reliability.

### KEY:

1. Aluminum Housing
2. Stationary Contact Support
3. Nozzle
4. Main Contact
5. Arcing Contact
6. Heating Volume
7. Moving Contact Support Base
8. Compression Cylinder



# SPS2 Specification

## Longer operating life – Lower maintenance costs

In considering any circuit breaker, today's utilities must be concerned not only with initial price and installation, but also with the ongoing costs of ownership. The Siemens SPS2 wins in every category. Its relatively low price tag, simple installation and easy maintenance will continue to pay dividends decades into the future.

In addition to the reliable performance you can expect from your SPS2 breaker, you'll also find it can handle a number of special requirements, such as:

- Switching capacitors, cables and reactors
- Environmentally restricted sites requiring oil sumps
- System stability problems requiring three-cycle interrupting
- Reclosing duty without derating interrupting capability
- High contamination zones that require extra creep and low contamination weather shields
- High altitude application up to 10,000 feet without derating

### Getting the Best Breaker for your Needs

#### How to Order

When ordering a Type SPS2 breaker, specify the following:

1. Breaker type and rating
2. Trip voltage (see Ratings Section)
3. Close voltage (see Ratings Section)
4. Motor voltage: 120VAC/125VDC, 240VAC/250VDC, 48VDC
5. Heater voltage: 115, 230 VAC
6. BCTs: type, ratio, number, location
7. Terminals: specify in detail if desired
8. Include customer specifications covering special equipment, accessories, test, etc.

#### Basic Breaker

The Standard basic breaker includes:

1. Three-pole SF<sub>6</sub>-filled outdoor power circuit breaker with three SF<sub>6</sub> interrupters
2. Galvanized frame with four galvanized steel legs
3. Light gray standard color
4. Six light gray SF<sub>6</sub>-filled bushings
5. Six relaying accuracy bushing current transformers
6. Trip-free spring operating mechanism
7. Instrumentation to monitor SF<sub>6</sub> gas pressure and provide low pressure alarm
8. Twelve stage auxiliary switch; Eight stages for customer use
9. Trip coil and close coil
10. Cabinet heater to prevent condensation
11. Necessary terminal blocks and wiring
12. Operations counter
13. Fused knife switches (3)
14. Grounding pads (3)
15. Mechanical position indicator
16. Provision for travel recorder attachment
17. SF<sub>6</sub> gas for initial filling
18. Set of tools required for installation

#### Operational modifications

1. Extra BCTs
2. Metering accuracy BCTs
3. Extra creepage bushings
4. Capacitor trip
5. Relays for reclosing or non-reclosing breaker application
6. External pull to trip handle
7. Cabinet light and convenience outlet
8. Special heaters and cabinet insulation for operation down to -50°C
9. Two additional 12-pole auxiliary switches
10. Dual trip coils
11. Control switch
12. Local/remote switch
13. Thermostat for cabinet heater
14. Composite bushings

#### Bushing current transformers

External bushing current transformers are mounted in weatherproof housings on both sides of the breaker. Their leads terminate in the control cabinet at short circulating type terminal blocks. Space is available for mounting two current transformers per bushing. Up to three CTs can be supplied if required.

Ratio ①,③	Accuracy ②	
	ANSI	IEC
600:5 MR	C-200	5P10@15VA
600:5 MR	C-400	10P20@50VA
1200:5 MR	C-400	CLASS0.5@30VA
1200:5 MR	C-800	CLASSX
2000:5 MR	C-400	10P20@50VA
2000:5 MR	C-800	CLASS0.5@30VA
3000:5 MR	C-800	CLASS0.5@30VA
300:5 SR	0.6B-0.5	CLASS0.25@20VA
600:5 SR	0.3B-0.5	5P20@20VA
600/1200:5 DR	0.3B-0.5/0.3B-1.0	10P20@50VA
1200:5 SR	0.3B-1.0	CLASS0.2@15VA
2000:5 SR	0.3B-1.8	CLASS0.2@15VA

#### 1 Ratio

MR = Multiple Ratio  
SR = Single Ratio  
DR = Dual Ratio

#### 2 Accuracy

C = Relay Accuracy  
B = Meter Accuracy

#### 3 Typical Ratios

Special Ratios Available  
Upon Request

All statements, technical information and recommendations contained herein are based on information and tests we believe to be reliable. The accuracy or completeness hereof is not guaranteed. Since conditions of use are outside our control, the user should determine the suitability of the product for its intended use and assumes all risk and liability whatsoever in connection herewith.

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