

DATA SHEETS - HP Series

169kV/40kA - 2000A

1. Voltage Rating

1.1	Normal System Voltage	161kV
1.2	Rated Maximum Voltage	169kV
1.3	Voltage Range Factor	1.0

2. Interrupting Current Rating

2.1	Symmetrical Short Circuit Capability	40kA
2.2	Three second short-time current carrying capability	40kA
2.3	Close and Latching Capability	108kA
2.5	Capacitance Switching	
2.5.1	Line Charging Current	1000A
2.5.2	Isolated Shunt Capacitor Bank Current	1000A
2.5.3	Back to Back Shunt Capacitor Bank Current	1000A
2.6	Out of Phase Switching	10kA
2.7	Percent interrupting capability after 0-0 sec-CO-15 sec-CO duty cycle	100%

3. Continuous Current Rating 2000A

4. Operating Time (60 Hz basis)

4.1	Permissible Tripping Delay	1 sec.
4.2	Interrupting Time	3 cycles
4.3	Opening Time	1.8 cycles
4.4	Closing time	7 cycles
4.5	Minimum allowable reclosing time	20 cycles
4.6	Reclosing range	20-120 cycles

5. Temperature Range

5.1	Maximum Ambient	40°C
5.2	Minimum Ambient	
5.2.1	Without Tank Heaters	-30°C
5.2.2	With Tank Heaters	-40°C
5.3	Contact temperature rise (max.)	65°C

6.	Insulation Level	
6.1	One minute dry withstand (60 HZ)	365kV
6.2	Ten second wet withstand	315kV
6.3	Full wave lightning impulse (BIL)	750kV
6.4	2 μsec chopped wave withstand	968kV
6.5	3 μsec chopped wave withstand	862kV
7.	Dielectric Strength at Atmospheric Pressure	1.2 times
8.	Pre-insertion Resistor	None
9.	Voltage Grading Capacitors	None
10.	TRV Control Capacitors	None
11.	Breaks per Phase	1
12.	Operating Mechanism	
12.1	Type	Pneumatic
12.2	Individual or common mechanism	Common
13.	Air System	
13.1	Operating range of air pressure	198 - 235 psig
13.2	Low air pressure alarm	206 psig
13.3	Low air pressure lockout	198 psig
13.4	Overpressure relief valve open at	270 psig
13.5	Compressor	
3.5.1	Manufacturer	EMGLO
3.5.2	Horsepower	1.5
13.6	Number of close-open operations stored in air receiver	4
13.7	Pump up from atmospheric to operating pressure	60 min.
13.8	Pump up from lockout to operating pressure	15 min.
13.9	Compressor motor	
13.9.1	Manufacturer	Dayton
13.9.2	Voltage	240 VAC single phase
13.9.3	Speed	1725 rpm
13.9.4	Class of insulation	B
13.10	Air storage volume	17.9 cu. ft.

14.	SF6 System	
14.1	Normal operating pressure at 20°C	75 psig
14.2	Minimum operating pressure with full rating	64 psig
14.3	Temperature compensated gas density alarm	69 psig
14.4	Temperature compensated gas density lockout	64 psig
14.5	Overpressure relief valve	105 psig
14.6	Weight of SF6 gas	150 lbs.
15.	Trip Coil	
15.1	Voltage	125V DC
15.2	Allowable Voltage Range	70-140V DC
15.3	Current	5A
15.4	Number of trip coils	2
16.	Close Coil	
16.1	Voltage	125V DC
16.2	Voltage Range	90-140V DC
16.3	Current	1.6A
16.4	Number of close coils	1
17.	Bushings	
17.1	Manufacturer	Locke
17.2	Insulation Medium	SF6
17.3	Creepage distance	133 inches
17.4	Additional Height required to remove bushing	3.5 feet
17.5	Insulation Class (BIL)	750kV
17.6	Permissible safe cantilever strength of installed bushing	300 lbs.
17.7	Strike distance	60"
18.	Control Cabinet Heaters	
18.1	KW of heaters	.64kW
18.2	Location	1-mechanism 2-compressor
18.3	Voltage	1-control cabinet 208V AC
19.	Total KW required per breaker	1.8kW

20. Breaker Dimensions

20.1	Height of breaker to top of terminal	13' 10"
20.2	Total length	17' 3/4"
20.3	Width	5' 11-1/4"
20.4	Weight	18,500 lbs.
20.5	Impact loading for foundation design	None
20.6	Phase spacing	6'

21. BCT Ratings - Item 1

21.1	Max. number available per bushing	3
21.2	Number proposed per bushing	per spec
21.3	Accuracy (relaying)	C800
21.4	Ratio	per spec
21.5	Thermal Rating Factor	1.5

22. Maintenance Requirements

22.1	Arcing contact material	Copper-Tungsten
22.2	Number of short circuits before internal maintenance check	10
22.3	Number of rated continuous current interruptions before internal maintenance check recommended	2000

23. Applicable Standards

23.1	ANSI	C37
23.2	NEMA	SG4
23.3	IEC	56