

## Generator Surge Protector

### Medium Voltage Surge Pack Introduction

The Lake Shore Electric Corporation Generator Surge Protectors (GSP) provides surge protection for Medium Voltage rotating machines operating at voltages from 2400 VAC to 24,000VAC. They are typically installed directly at the generator output terminals.

Overvoltage conditions in electrical systems can reduce the useful life of insulation, which will appear as insulation failures, resulting in circuit faults. In rotating electrical machines such as generators, insulation space is limited. This creates a design balance and conflict between voltage stress and size which has an acute impact on useful life. To help reduce the electrical stress on a medium voltage generator caused by overvoltage, lightning, ground faults, switching surges, static, etc., Lake Shore Electric Corporation recommends that the use of Generator Surge Protection, as outlined in IEEE Standard 142, be considered.

The GSP integrates the combination of a station class arrester with a protective capacitor to limit voltage peaks which can commonly stress the generator beyond its impulse rating. The arrester helps protect the generator insulation by limiting the amplitude of applied impulse waves or reflections within the machine windings, shunting these high voltages to ground. The protective capacitors reduce the slope of the voltage peak by shunting the high rate of voltage change, (dv/dt), to ground.

It has been shown that the protection of rotating machinery from overvoltage conditions has resulted in increased reliability and decreased downtime.

### Product Features

- NEMA 3R Enclosures
- Suitable for Indoor & Outdoor Applications
- Protection from Damaging Overvoltage Conditions
- Includes Station Class Arrester to Shunt High Voltage to Ground
- Includes Protective Capacitor to Shunt the High Rate of Voltage Change, (dv/dt), to Ground
- Increased Reliability of Rotating Machinery
- Decreases Down Time of Rotating Machinery
- All cabinets feature 100% rated Copper Bus

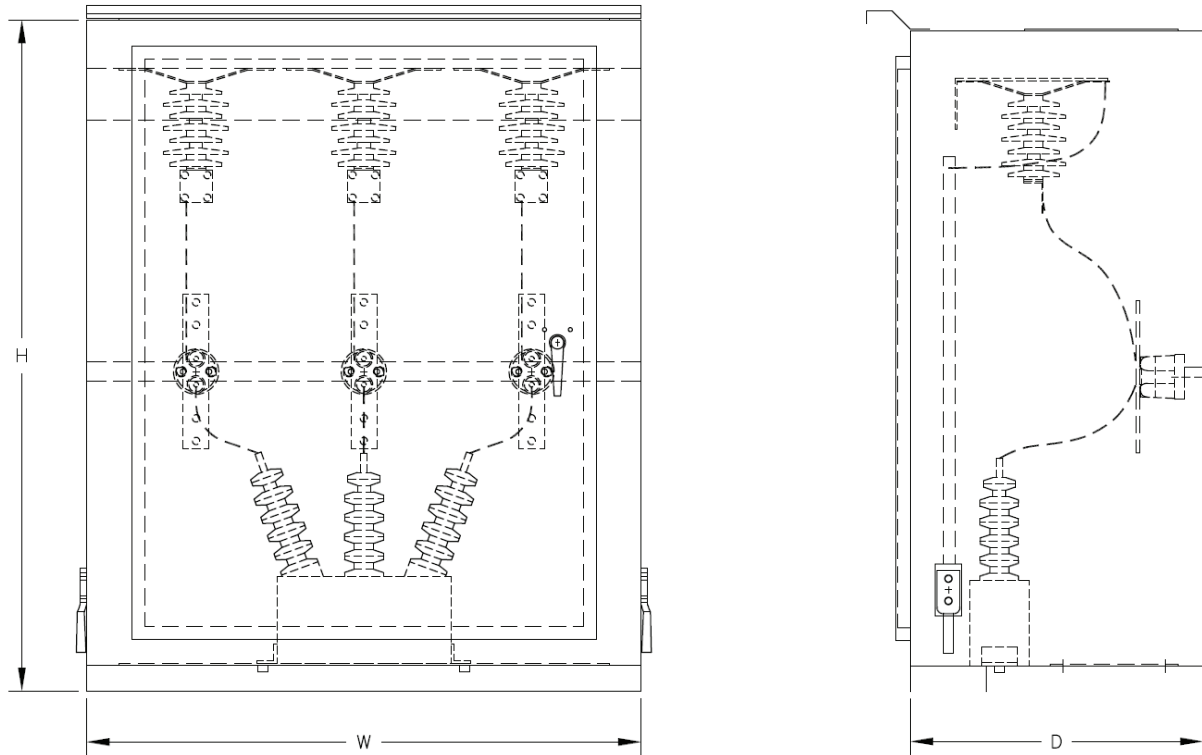


### Generator Surge Protector Order Guide

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<b>SYSTEM TYPE</b>		
F = Delta or Ungrounded Neutral System		
G = Grounded Neutral Systems		
<b>SYSTEM VOLTAGE IN RMS (L-to-L)</b>		
2400		
4160		
4800		
6900		
7200		
12800		
13800		
24000		

**Part Number Example:** 60F4160 (Generator Surge Protector for a Delta or Ungrounded Neutral System, System Voltage is 4160V (L-to-L))

**NOTES:** Determine the configuration of the generator output connections (i.e. delta or wye, grounded or ungrounded) and then select the model number from the table above based on the line to line voltage. Also reference the tables on the next page for standard part numbers and enclosure sizes.



### DELTA & UNGROUNDED NEUTRAL SYSTEMS (STANDARD PART NUMBERS)

VOLTAGE RATING VOLTS RMS (L-L)	MODEL NUMBER	ARRESTER RATING KV RMS	ARRESTER MCOV KV RMS	CAPACITOR MICROFARADS PER POLE	"H"	"W"	"D"
					HEIGHT	WIDTH	DEPTH
2400	60F2400	3.00	2.55	0.50	53	42	23
4160	60F4160	5.10	4.20	0.50	52	43	23
4800	60F4800	6.00	5.10	0.50	53	43	36
6900	60F6900	8.50	6.90	0.50	53	43	36
7200	60F7200	9.00	7.85	0.50	53	43	23
13800	60F13800	18.00	15.30	0.25	53	43	23
24000	60F24000	30.00	24.40	0.125	53	43	36

### GROUNDED NEUTRAL SYSTEM (STANDARD PART NUMBERS)

VOLTAGE RATING VOLTS RMS (L-L)	MODEL NUMBER	ARRESTER RATING KV RMS	ARRESTER MCOV KV RMS	CAPACITOR MICROFARADS PER POLE	"H"	"W"	"D"
					HEIGHT	WIDTH	DEPTH
4160	60G4160	3.00	2.55	0.50	52	43	23
13800	60G13800	12.00	10.20	0.25	53	43	23
24000	60G24000	21.00	17.00	0.125	53	43	36