

**Medium Voltage  
Load-Break Switchgear  
Type MS**



# APPLICATION

Increased demand for electrical energy in industrial and commercial power systems has resulted in significantly broader use of medium voltage power by a wide variety of industrial and commercial facilities. M&I type MS switchgear provides an affordable and reliable answer to the challenge of protecting and controlling circuits from 2.4 kV to 34.5 kV.

Type MS switchgear can be supplied either fused or unfused. When fused, type MS switchgear provides a method to switch and/or isolate loads, and also provides overload and short circuit protection. When supplied unfused, type MS switchgear provides a method to reliably and safely switch and/or isolate loads. Type MS switchgear generally employs the proven air-break interruptor technology are available for special applications.

Type MS medium voltage load-break switches are

usually rated for either 600 or 1200 Amperes (continuous) duty, with indoor or outdoor BIL ratings, and are available either manually or electrically operated. Finally, a variety of accessories are available to simplify the integration of type MS switchgear into a comprehensive electrical system control scheme.

Type MS switchgear is commonly used for:

- Transformer primary control and protection
- Isolation, selection, and protection of multi-circuit systems
- Isolation and protection of single-circuit systems
- Automatic transfer schemes

# RATINGS

Voltage Ratings 50/60 Hz				Current Ratings				
Nominal Voltage kV RMS	Max. Design Voltage kV Ratings	1 Min. Power Freq. Withstand kV RMS	Impulse Withstand 1.2 X 50ms. kV BIL	Continuous Current Amperes RMS	Interrupting Rating Amperes RMS	Momentary Rating Amperes RMS ASYM.	Short Time (3 sec.) Amperes RMS	Fault Close Amperes RMS ASYM.
4.16	4.76	19	60	600 1,200	600 1,200	40,000 61,000	25,000 38,000	40,000 61,000
7.2	8.25	26	75	600 1,200	600 1,200	40,000 61,000	25,000 38,000	40,000 61,000
13.8	15.0	36	95	600 1,200	600 1,200	40,000 61,000	25,000 38,000	40,000 61,000
14.4	15.0	50	110	600 1,200	600 1,200	40,000 61,000	25,000 38,000	40,000 61,000
23.0	25.8	60	125	600 1,200	600 1,200	40,000 40,000	25,000 25,000	40,000 40,000
34.5	38.0	80	150	600 1,200	600	40,000 40,000	25,000 25,000	40,000 40,000
34.5	38.0	95	200	600 1,200	600	40,000 40,000	25,000 25,000	40,000 40,000

**Note:** The ratings shown above are typical ratings in accordance with ANSI standards. Actual ratings may vary, based upon application and switch component selected. Higher ratings and special application equipment is available. Contact the M&I factory for further information.

# STANDARD FEATURES

## INDOOR SWITCHGEAR - TYPE MS

- Fully rated Lifting Eyes or Angles in installation
- Sturdy steel channel base eases handling and installation
- Code gauge steel enclosure, per ANSI C37.20.3. All ferrous metal parts are finished with acrylic enamel or corrosion resistant plating
- Shatter-resistant window provides visible air break for safety
- Positive mechanical interlock prevents opening front door while switch is closed (manual override included).
- Fuse access door (where applicable) interlocked to switch mechanism to limit access to fuses while switch is closed.
- Main bus (where applicable) constructed of fully rated, plated, electrolytic copper
- Continuous plated, electrolytic copper ground bus bonded to enclosure
- Corrosion resistant nameplate
- Provisions for future expansion and/or extension



NEMA 3R Outdoor Switchgear



NEMA 1 Indoor Switchgear

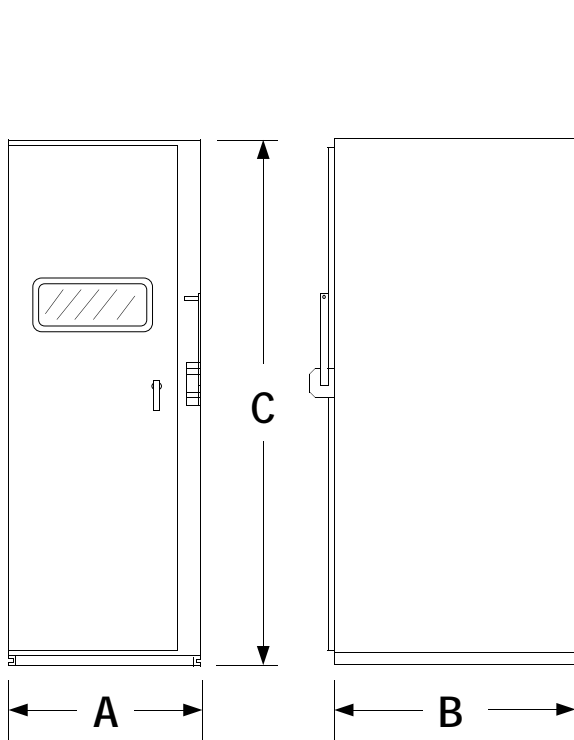
## OUTDOOR SWITCHGEAR - TYPE MSR

- Sloped roof for precipitation control
- Fully rated lifting angles assist in handling and installation
- Sturdy steel channel base eases handling and installation
- External enclosure metal parts are constructed from zinc plated steel and are finished with outdoor acrylic enamel or corrosion resistant plating
- Gasketed front door with 3-point vault-type latch and lockable handle
- Automatic door hold-open device
- Electric space heaters included (thermostats control optional)
- Positive interlocking of outer and inner (where applicable) doors prevents opening doors when switch is closed

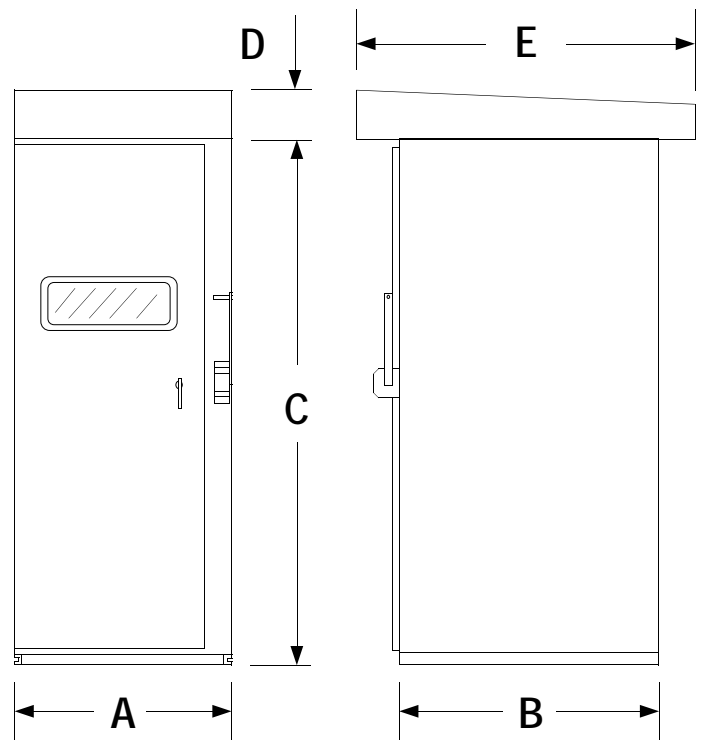
# ACCESSORIES

**A wide range of accessories are available with M&I type MS medium voltage load-break switchgear. These accessories are intended to assist in the integration of type MS switchgear into a comprehensive electrical system distribution and control scheme. Among the accessories available from M&I are the following:**

- Electrical Operators, including Automatic Transfer systems.
- Electrical Interlock systems and Auxiliary Switches
- Manual and Electrical Key Interlock systems
- Blown fuse Detection and Anti-Single-Phasing system
- Protective Relaying
- Data Collection and Remote Control Systems
- Surge Arrestors and/or Capacitors
- Roof Bushings, Potheads, and Line Terminal Chambers
- Fuses—Current Limiting or Boric Acid Expulsion
- Dual Bus Line Selector configuration



**Type MS Indoor Switchgear**



**Type MSR Indoor Switchgear**

## Typical Dimensions

Unit Rating	A	B	C	D	E	Weight
5 kV (95 kV BIL)	36"	44"	93"	7"	66"	600 #
15 kV (95 kV BIL)	36"	44"	93"	7"	66"	600 #
25 kV (150 kV BIL)	60"	70"	135"	7"	82"	900 #
25 kV (200 kV BIL)	70"	84"	170"	7"	96"	1,000 #
38 kV (150 kV BIL)	60"	70"	135"	7"	82"	900 #
38 kV (200 kV BIL)	70"	84"	170"	7"	96"	1,000 #

The above dimensions are typical, and are provided for reference only. Actual dimensions depend upon the application. Contact the M&I factory for details.

Specifications of equipment and the design thereof are subject to change without notice or obligation to incorporate same in existing equipment under construction. The above sales information is for informational purposes only and there are NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A SPECIFIC PURPOSE contained herein. For details of presently available equipment, designs, and specifications, please contact your local representative for M&I Electric Industries, Inc. to obtain specific application of M&I equipment and services to your needs.



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