

NOARK

Assembled Products: Low Voltage Switchboards Product Selection Guide



UL891, CSA C22.2 No. 244



Mx Series Switchboards

UL891 Switchboard

Overview

Noark Electric's MxS series distribution switchboards provide an efficient and cost-effective electrical power distribution assembly for commercial and industrial facilities. Its modular, space-saving design and comprehensive ratings allow electrical system designers and contractors maximum flexibility to meet today's challenging building construction environment.

Features

- 5000A maximum main bus rating
- 600 Vac and below
- Optional 847Vac Rating
- Front or rear accessible
- Indoor or outdoor enclosures
- ANSI-61 gray powder coat paint finish
- Metering, monitoring and communication devices
- Utility metering provisions
- Surge protective devices (SPD)
- Ground fault protection
- Busway and transformer connections
- 65 kAIC standard bus bracing
- Copper bus
- Meets NEMA Standard PB-2 and UL891



Ratings

- 480Vac, 600Vac, 3 Phase 3 Wire
- 480Y/277Vac, 3 Phase 4 Wire
- 600Y/347Vac, 3 Phase 4 Wire
- NEMA Type 1 or Type 3R Enclosure

Incoming Type

- MLO up to 5000A
- Main Breaker up to 4000A

Options

- Cable In/Cable Out Main Breaker
- ELMS; Energy Limiting Maintenance Switch
- LI, LSI, LSIG Protection on ACB Mains
- 100kAIC bus bracing
- 200% Rated Neutral

Main Breaker:

- 600A to 1200A MCCB
- 600A to 4000A ACB
- 3P3W or 3P4W
- Fixed or Drawout ACB (600A to 4000A)
- Bus Material: Tin Plated CU
- Bus Bracing: 65kA or 100kA

Main Lug Only:

- 600A to 5000A
- Phase: 3P3W or 3P4W
- Bus Material: Tin Plated CU
- Bus Bracing: 100kA



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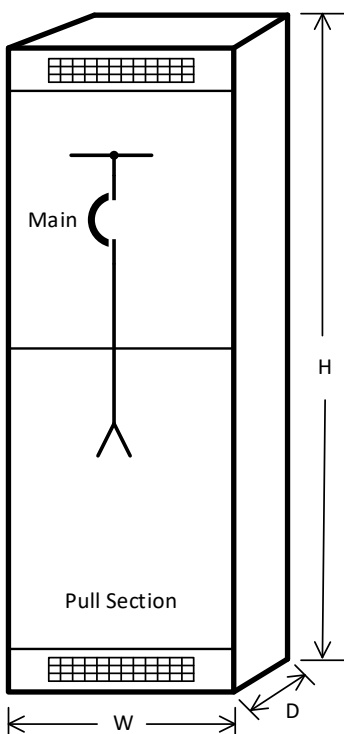
Main Incoming Sections

Structure Type 1: Main Breaker Sections, Top or Bottom Entry & Horizontal-Bus

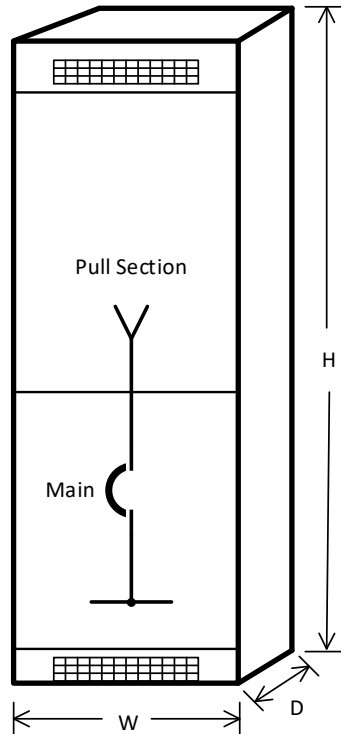
Type	Amps	Standard Lugs	Dimensions (W x D x H)	Floor Clear Area (W x D)	Top Clear Area (W x D)
1a & 1b	600	#2/0AWG to 500kcmil (2)	30 x 35 x 90	24 x 29	24 x 20
1a & 1b	800	250kcmil to 500kcmil (3)	30 x 35 x 90	24 x 29	24 x 20
1a & 1b	1200	#3/0AWG to 500kcmil (4)	30 x 35 x 90	24 x 29	24 x 20
1a & 1b	1600	#2AWG to 600kcmil (5)	30 x 35 x 90	24 x 29	24 x 15
1a & 1b	2000	#2AWG to 600kcmil (6)	30 x 40 x 90	24 x 29	24 x 15
1a & 1b	2500	#1/0AWG to 750kcmil (8)	40 x 40 x 90	34 x 29	34 x 15
1a & 1b	3200	#1/0AWG to 750kcmil (10)	40 x 40 x 90	34 x 29	34 x 15
1a & 1b	4000	#1/0AWG to 750kcmil (10)	40 x 40 x 90	34 x 34	34 x 15
1c	Optional Top Box to extend incoming wiring space. Available in 18"H and 24"H.				

Note: Drawout Main Breaker available, 800A to 3200A. Minimum Depth 45".

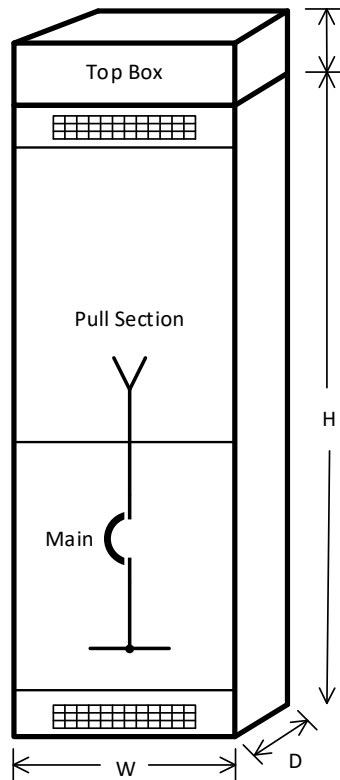
1a: Bottom Incoming



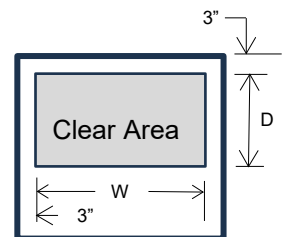
1b: Top Incoming



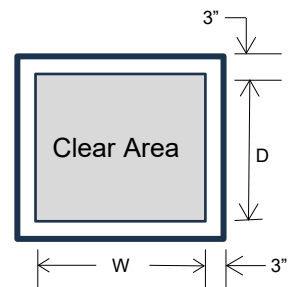
1c: Top Incoming w Top Box



Top View



Floor Plan





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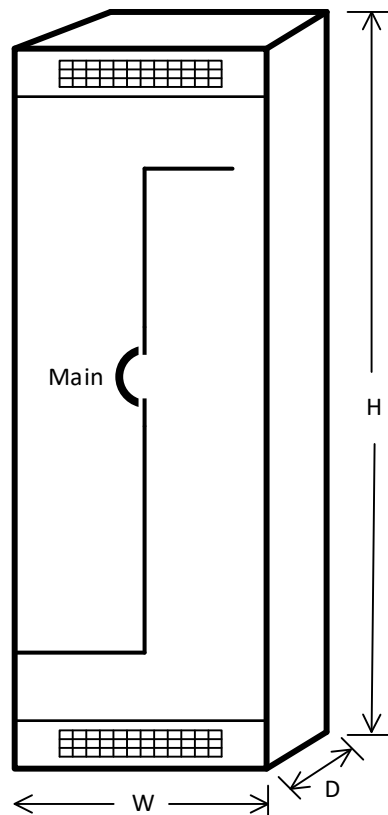
Main Incoming Sections

Structure Type 1: Main Breaker Sections, Horizontal-Bus

Type	Amps	Standard Lugs	Dimensions (W x D x H)	Floor Clear Area (W x D)	Top Clear Area (W x D)
1d	600	#2/0AWG to 500kcmil (2)	30 x 35 x 90	na	na
1d	800	250kcmil to 500kcmil (3)	30 x 35 x 90	na	na
1d	1200	#3/0AWG to 500kcmil (4)	30 x 35 x 90	na	na
1d	1600	#2AWG to 600kcmil (5)	30 x 35 x 90	na	na
1d	2000	#2AWG to 600kcmil (6)	30 x 40 x 90	na	na
1d	2500	#1/0AWG to 750kcmil (8)	40 x 40 x 90	na	na
1d	3200	#1/0AWG to 750kcmil (10)	40 x 40 x 90	na	na
1d	4000	#1/0AWG to 750kcmil (10)	40 x 40 x 90	na	na

Note: Drawout Main Breaker available, 800A to 3200A. Minimum Depth 45".

1d: Horizontal Bus Connection





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Main Incoming Sections

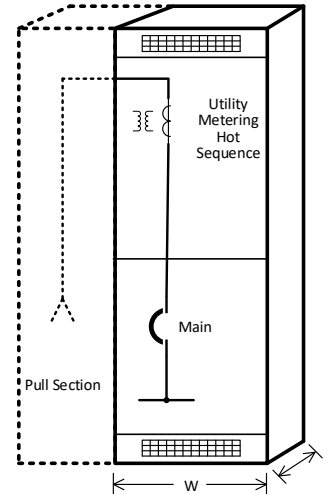
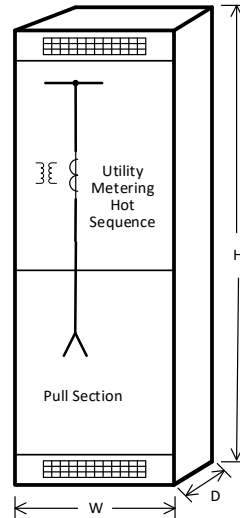
Structure Type 2: Utility Metering Sections, Hot Sequence with Horizontal-Bus

Bottom Entry				
Type	Amps	Standard Lugs	Dimensions (W x D x H)	Type 2a Floor Clear Area (W x D)
2a/2b	600	#2/0AWG to 500kcmil (2)	30 x 35 x 90	24 x 29
2a/2b	800	250kcmil to 500kcmil (3)	30 x 35 x 90	24 x 29
2a/2b	1200	#3/0AWG to 500kcmil (4)	30 x 35 x 90	24 x 29
2a/2b	1600	#2AWG to 600kcmil (5)	30 x 35 x 90	24 x 29
2a/2b	2000	#2AWG to 600kcmil (6)	30 x 40 x 90	24 x 34
2a	2500	#1/0AWG to 750kcmil (8)	40 x 40 x 90	34 x 34
2a	3200	#2AWG to 600kcmil (7)	40 x 40 x 90	34 x 34
2a	4000	#2AWG to 600kcmil (7)	40 x 40 x 90	34 x 34

- See structure Type 4 for clear cable entry area of Type 2b and 2d incoming.
- L-R orientation shown. Side pull section may be mounted either side.

2a: Bottom Incoming

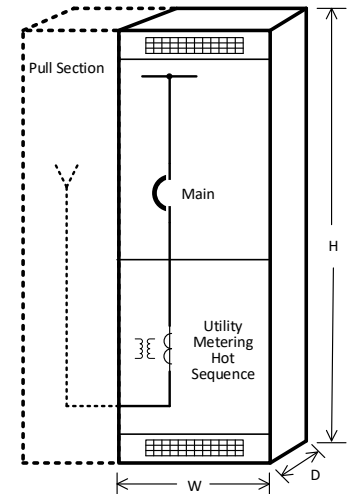
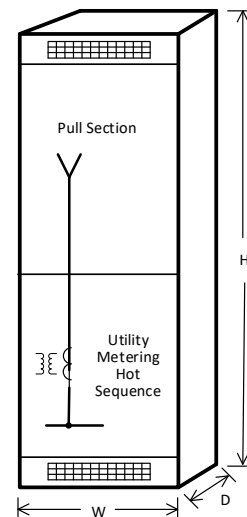
2b: Side Pull Section^(1, 2)



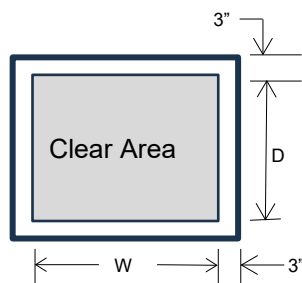
Top Entry				
Type	Amps	Standard Lugs	Dimensions (W x D x H)	Type 2cTop Clear Area (W x D)
2c/2d	600	#2/0AWG to 500kcmil (2)	30 x 35 x 90	24 x 29
2c/2d	800	250kcmil to 500kcmil (3)	30 x 35 x 90	24 x 29
2c/2d	1200	#3/0AWG to 500kcmil (4)	30 x 35 x 90	24 x 29
2c/2d	1600	#2AWG to 600kcmil (5)	30 x 35 x 90	24 x 29
2c/2d	2000	#2AWG to 600kcmil (6)	30 x 40 x 90	24 x 34
2c	2500	#1/0AWG to 750kcmil (8)	40 x 40 x 90	34 x 34
2c	3200	#2AWG to 600kcmil (7)	40 x 40 x 90	34 x 34
2c	4000	#2AWG to 600kcmil (7)	40 x 40 x 90	34 x 34

2c: Top Incoming

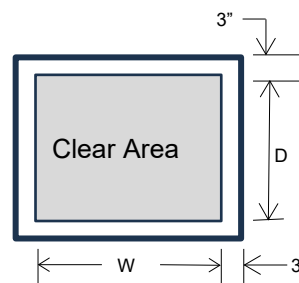
2d: Side Pull Section^(1, 2)



Floor Plan



Top View





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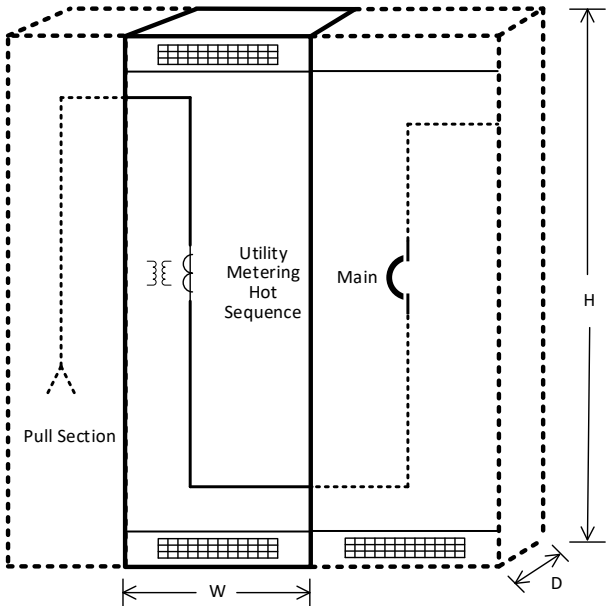
Main Incoming Sections

Structure Type 2: Utility Metering Sections, Hot Sequence with Horizontal-Bus

Bottom Entry				
Type	Amps	Standard Lugs	Dimensions (W x D x H)	Type 2a Floor Clear Area (W x D)
2e	2500	#1/0AWG to 750kcmil (8)	40 x 40 x 90	Per Pull Section
2e	3200	#2AWG to 600kcmil (7)	40 x 40 x 90	Per Pull Section
2e	4000	#2AWG to 600kcmil (7)	40 x 40 x 90	Per Pull Section

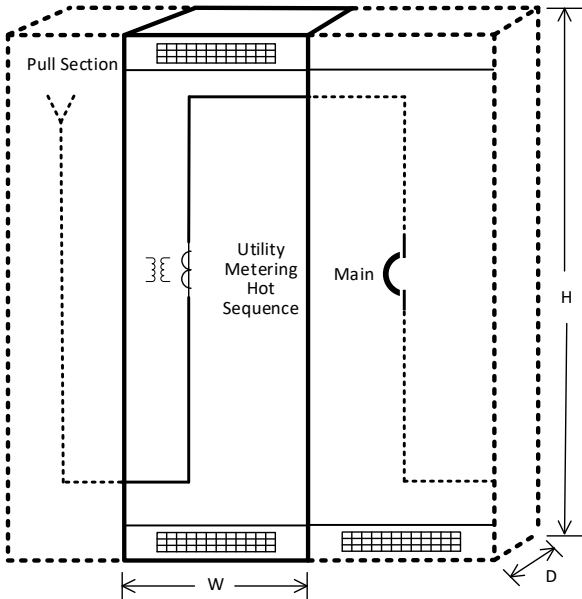
- 1. See structure Type 4 for clear cable entry area of Type 2e and 2f incoming.
- 2. L-R orientation shown. Side pull section may be mounted either side.

2e: Bottom Incoming

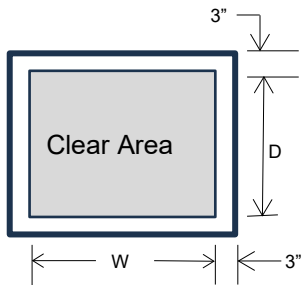


Top Entry				
Type	Amps	Standard Lugs	Dimensions (W x D x H)	Type 2cTop Clear Area (W x D)
2f	2500	#1/0AWG to 750kcmil (8)	40 x 40 x 90	Per Pull Section
2f	3200	#2AWG to 600kcmil (7)	40 x 40 x 90	Per Pull Section
2f	4000	#2AWG to 600kcmil (7)	40 x 40 x 90	Per Pull Section

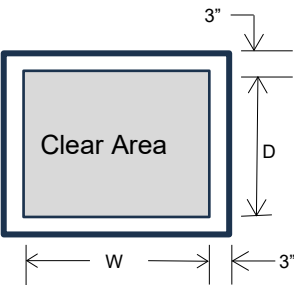
2f: Top Incoming



Floor Plan



Top View





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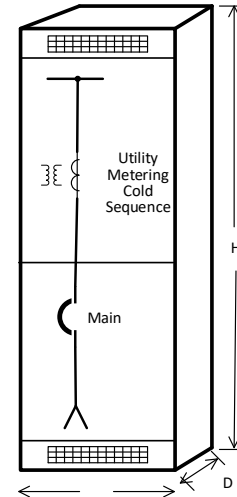
Main Incoming Sections

Structure Type 3: Utility Metering Sections, Cold Sequence with Horizontal-Bus

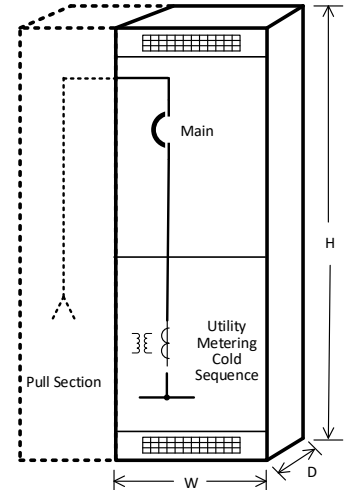
Bottom Entry				
Type	Amps	Standard Lugs	Dimensions (W x D x H)	Type 3a Floor Clear Area (W x D)
3a/3b	600	#2/0AWG to 500kcmil (2)	30 x 35 x 90	24 x 29
3a/3b	800	250kcmil to 500kcmil (3)	30 x 35 x 90	24 x 29
3a/3b	1200	#3/0AWG to 500kcmil (4)	30 x 35 x 90	24 x 29
3a/3b	1600	#2AWG to 600kcmil (5)	30 x 35 x 90	24 x 29
3b	2000	#2AWG to 600kcmil (6)	30 x 40 x 90	Per Pull Section

1. See structure Type 4 for clear cable entry area of Type 3b and 3d incoming.
2. L-R orientation shown. Side pull section may be mounted either side of main.

3a: Bottom Incoming

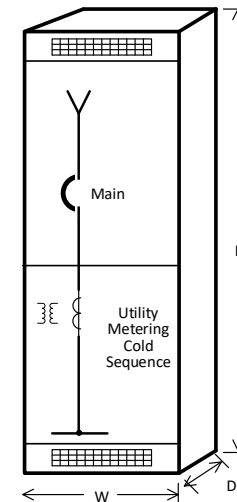


3b: Side Pull Section (1, 2)

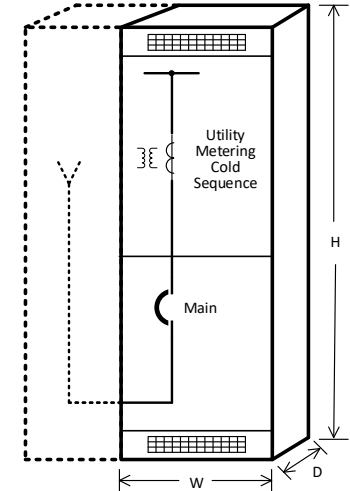


Top Entry				
Type	Amps	Standard Lugs	Dimensions (W x D x H)	Type 3c Top Clear Area (W x D)
3c/3d	600	#2/0AWG to 500kcmil (2)	30 x 35 x 90	24 x 29
3c/3d	800	250kcmil to 500kcmil (3)	30 x 35 x 90	24 x 29
3c/3d	1200	#3/0AWG to 500kcmil (4)	30 x 35 x 90	24 x 29
3c/3d	1600	#2AWG to 600kcmil (5)	30 x 35 x 90	24 x 29
3d	2000	#2AWG to 600kcmil (6)	30 x 40 x 90	Per Pull Section

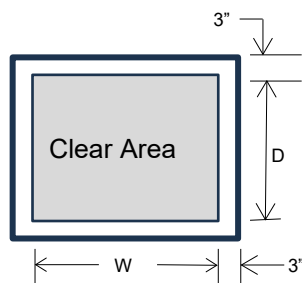
3c: Top Incoming



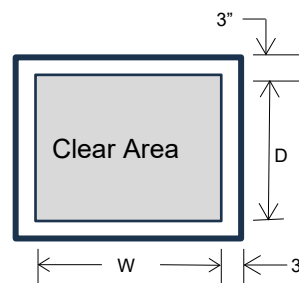
3d: Side Pull Section (1, 2)



Floor Plan



Top View





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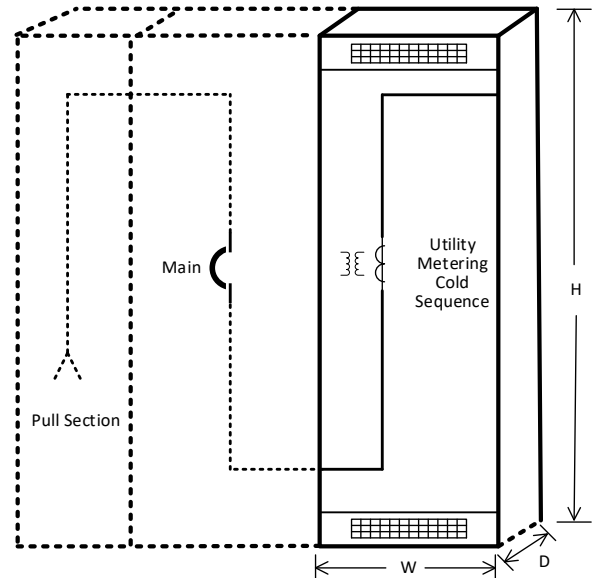
Main Incoming Sections

Structure Type 3: Utility Metering Sections, Cold Sequence with Horizontal-Bus

Bottom Entry				
Type	Amps	Standard Lugs	Dimensions (W x D x H)	Floor Clear Area (W x D)
3e	2500	#1/0AWG to 750kcmil (8)	40 x 40 x 90	Per Pull Section
3e	3200	#2AWG to 600kcmil (7)	40 x 40 x 90	Per Pull Section
3e	4000	#2AWG to 600kcmil (7)	40 x 40 x 90	Per Pull Section

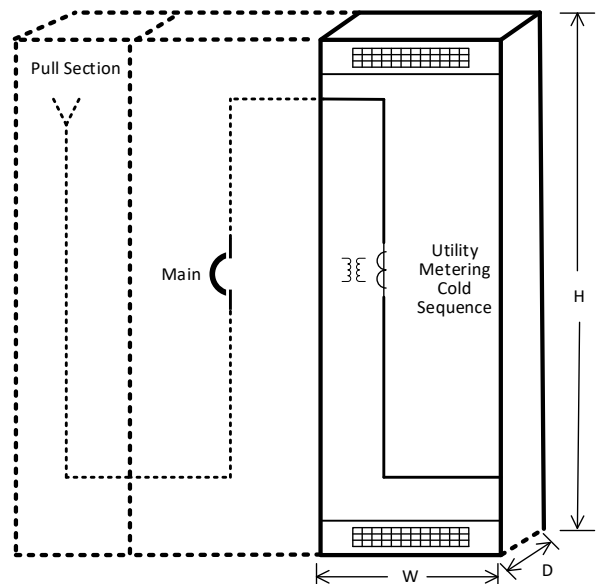
1. See structure Type 4 for clear cable entry area of Type 3b and 3d incoming.
2. L-R orientation shown. Side pull section may be mounted either side of main.

3e: Bottom Incoming



Top Entry				
Type	Amps	Standard Lugs	Dimensions (W x D x H)	Top Clear Area (W x D)
3f	2500	#1/0AWG to 750kcmil (8)	40 x 40 x 90	Per Pull Section
3f	3200	#2AWG to 600kcmil (7)	40 x 40 x 90	Per Pull Section
3f	4000	#2AWG to 600kcmil (7)	40 x 40 x 90	Per Pull Section

3f: Top Incoming





Mx Series Switchboards

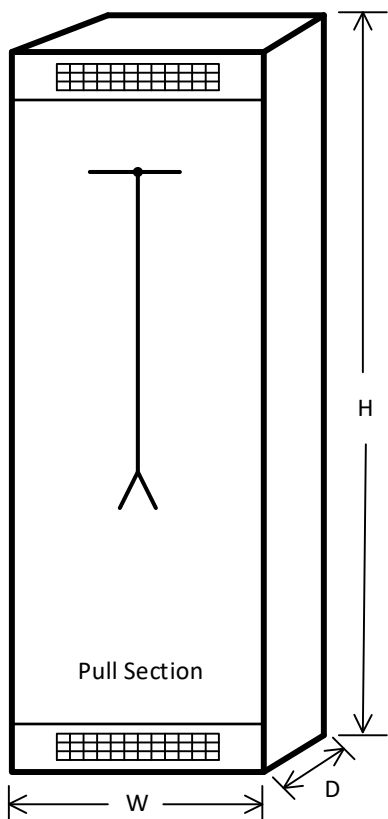
UL891 Switchboard

Main Incoming Sections

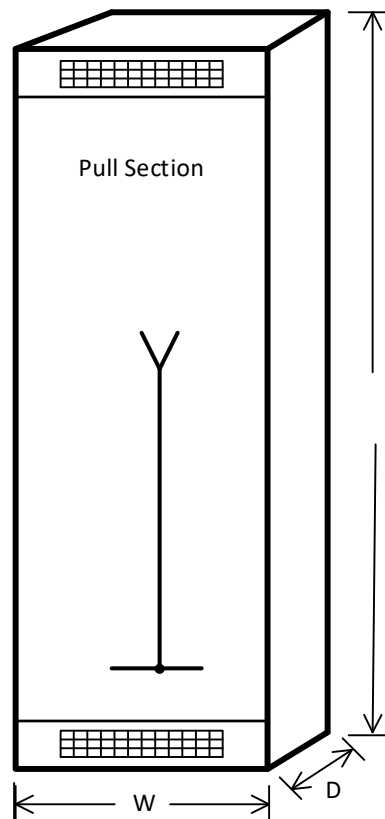
Structure Type 4: Bussted Side Pull Section

Type	Amps	Standard Lugs	Pull Section Width (W)	Dimensions (W x D x H)	Floor Clear Area (W x D)	Top Clear Area (W x D)
4a & 4b	600	#2/0AWG to 500kcmil (2)	15 or 30	15 (30) x 35 x 90	11 (24) x 29	11 (24) x 29
4a & 4b	800	250kcmil to 500kcmil (3)	15 or 30	15 (30) x 35 x 90	11 (24) x 29	11 (24) x 29
4a & 4b	1200	#3/0AWG to 500kcmil (4)	15 or 30	15 (30) x 35 x 90	11 (24) x 29	11 (24) x 29
4a & 4b	1600	#2AWG to 600kcmil (5)	15 or 30	15 (30) x 35 x 90	11 (24) x 29	11 (24) x 29
4a & 4b	2000	#2AWG to 600kcmil (6)	30	30 x 35 x 90	24 x 29	24 x 29
4a & 4b	2500	#2AWG to 600kcmil (7)	30	30 x 35 x 90	24 x 29	34 x 29
4a & 4b	3200	#2AWG to 600kcmil (8)	30	30 x 35 x 90	24 x 29	34 x 29
4a & 4b	4000	#2AWG to 800kcmil (10)	30	30 x 40 x 90	24 x 34	34 x 34

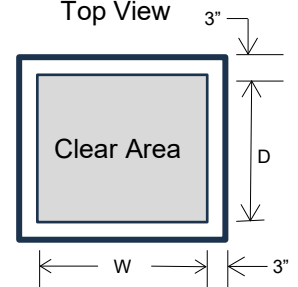
4a: Bottom Incoming



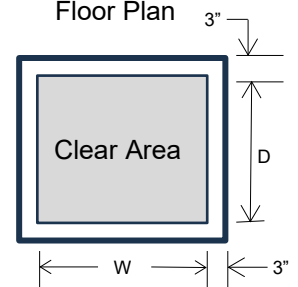
4b: Top Incoming



Pull Section
Top View



Pull Section
Floor Plan





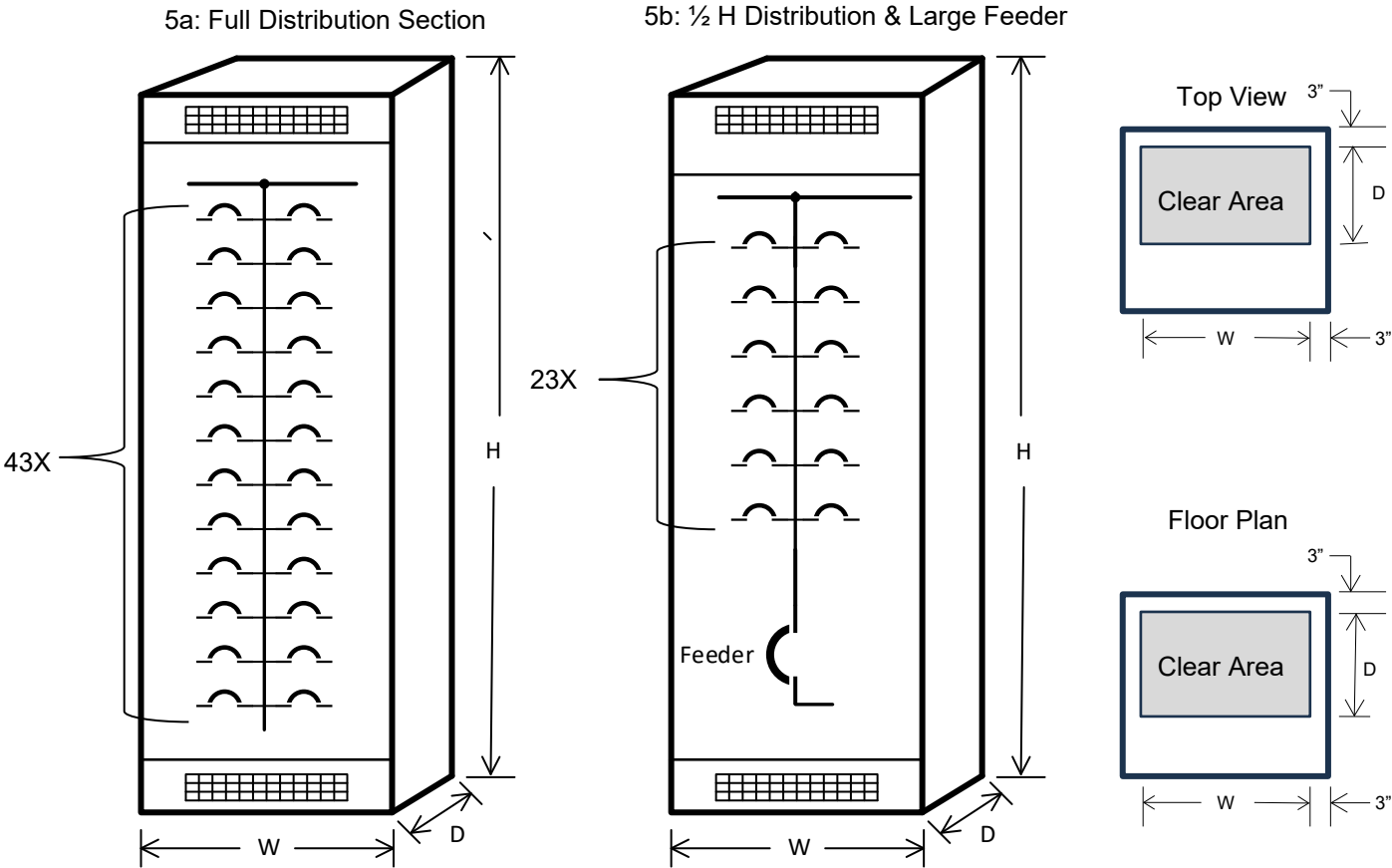
Mx Series Switchboards

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Group Mounted Distribution Sections

Structure Type 5: Full Height (43x) Distribution Section

Type	Maximum Group-Mounted Breaker	Circuit Space (X)	Breaker Amps	Dimensions (W x D x H)	Clear Area (W x D)
5a/5b	M1 Twin Mount	3X	15A – 150A	40 x 35 x 90	34 x 24
5a/5b	M2 Twin Mount	4X	175A – 250A	40 x 35 x 90	34 x 24
5a/5b	M3 Single Mount (4/0 – 750kcmil Lugs)	5X	300A – 400A	40 x 35 x 90	34 x 24
5a/5b	M3 Twin Mount (2/0 – 500kcmil Lugs)	5X	300A – 400A	40 x 35 x 90	34 x 24
5a/5b	M4 Single Mount	7X	500A – 600A	40 x 35 x 90	34 x 24
5a/5b	M5 Single Mount	7X	700A – 800A	40 x 35 x 90	34 x 24
5a/5b	M6 Single Mount	7X	800A – 1200A	40 x 35 x 90	34 x 24
5b	A25 Single Mount	20X	1600A – 2500A	40 x 35 x 90	34 x 24





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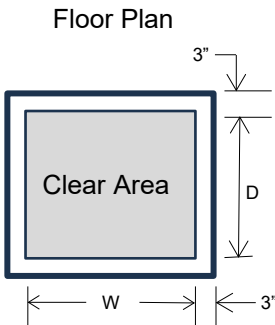
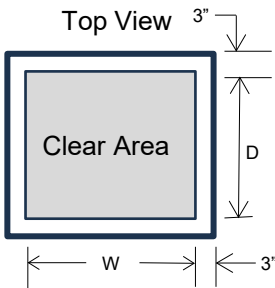
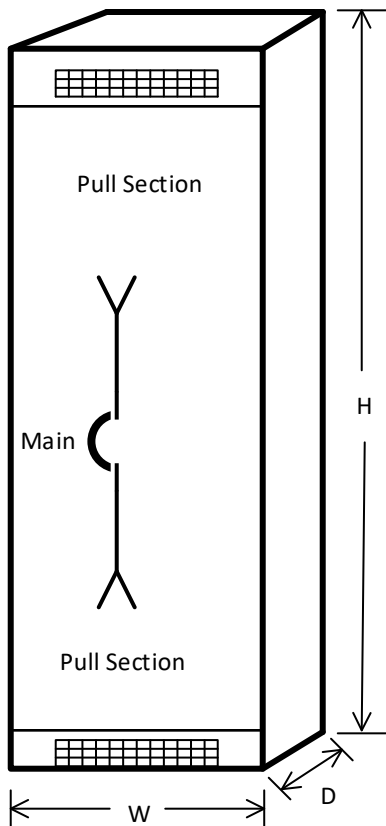
Main Incoming Sections

Structure Type 6: Free Standing Enclosed Breaker

Type	Amps	Standard Lugs	Dimensions (W x D x H)	Floor Clear Area (W x D)	Top Clear Area (W x D)
6a	600	#2AWG to 600kcmil (2)	30 x 35 x 90	24 x 29	24 x 29
6a	800	#2AWG to 600kcmil (3)	30 x 35 x 90	24 x 29	24 x 29
6a	1200	#2AWG to 600kcmil (4)	30 x 35 x 90	24 x 29	24 x 29
6a	1600	#2AWG to 600kcmil (5)	30 x 40 x 90	24 x 29	24 x 29
6a	2000	#2AWG to 600kcmil (6)	30 x 40 x 90	24 x 29	24 x 29
6a	2500	#2AWG to 600kcmil (7)	40 x 40 x 90	34 x 29	34 x 29
6a	3200	#1/0AWG to 750kcmil (8)	40 x 40 x 90	34 x 29	34 x 29
6a	4000	#1/0AWG to 750kcmil (12)	40 x 40 x 90	34 x 34	34 x 34

Note: Drawout Main Breaker available, 600A to 3200A. Minimum Depth 45".

6a: Top or Bottom Incoming



All cables may enter from Top, Bottom or both.



Mx Series Switchboards

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UL 1066 Power Circuit Breakers

Ratings

- 600A through 4000A
- IC ratings up to 100kA at 635Vac
- IC ratings up to 85kA at 847Vac
- Short-Time Withstand, 100kA at 635Vac
- 50 or 60 HZ operation
- 3 Pole and 4 Pole designs
- 10,000 Operations, before maintenance (Mechanical)
- 6000 Operations, before maintenance (Electrical)
- Meets ANSI C37.13, C37.16, C37.17 and C37.50

Design Features

- UL/CSA field-installable accessories
- Rear horizontal or vertical connections
- Through-the-door design
- 3 Pole and 4 Pole designs
- Phase barriers (optional)
- Available as Disconnect Switch

Approvals

- UL 1066, LV AC and DC Power Circuit Breakers
- CSA C22.2 No. 31
- ANSI C37.13 Low Voltage Power Circuit Breakers
- ANSI C37.16 Low Voltage Power Circuit Breakers Ratings, Related Requirements and Applications
- ANSI C37.17 – IEEE Standard for Trip Systems
- ANSI C37.50 – Low Voltage AC Power Circuit Breakers, Test Procedure



Protection & Control Options

- LI, LSI, or LSI²G Protection
- Standard LED display
- Color LCD display available
- Optional multi-metering trip unit with total harmonic distortion analysis and waveform capture
- Stored energy operating mechanism
- AC and DC rated motor operator, shunt trip and undervoltage release accessories
- Arc Flash Reduction Maintenance Mode
- Zone Selective Interlocking
- RS-485 Modbus Communication available

Rating	A25			A32			A40		
Amps @40° C	600-2500			800-3200			3200-4000		
Poles	3, 4			3, 4			3, 4		
Frame Type	Q	R	H	Q	R	H	Q	R	H
Interrupting Capacity/Short Time Withstand (kA)									
240 Vac	65	85	100	65	85	100	65	85	100
480 Vac	65	85	100	65	85	100	65	85	100
600 Vac	65	75	85	65	85	100	65	75	85
800Vac	65	75	85	-	-	-	65	75	85



Mx Series Switchboards

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M-Series Molded Case Circuit Breakers

Molded Case Circuit Breakers, 15-1200 Amperes

Noark Electric offers a complete range of Molded Case Circuit Breakers in six frame sizes: M1 -150A, M2 -250A, M3 -400A, M4 - 600A, M5 - 800A, AND M6 - 1200A.

Each frame size offers a range of interrupting capacities



Ratings:

- 240Vac, 480Vac & 600Vac
- Up to 1000Vdc

Operating Mechanism

- High Quality Compact Modular Design
- Fixed And Adjustable Trip Unit Settings
- Line And Load Lugs Installed Standard
- High-Breaking Capacity; patented arc extinguishing design
- Bearing-Type spindle reduces handle operating force
- 5-Year Limited Warranty

Wide Range of Accessories

- Alarm Switch And Auxiliary Contact
- Shunt And Under-Voltage Trip
- Motor Operator
- Mechanical Interlock

Certifications

- UL 489 listed and certified to CSA C22.2 No. 5

Rating	M1							M2							M3			M4			M5			M6	
Amps @40° C	15-150							100-250							225-400			400-600			600-800			800-1200	
Poles	1	2		3				1	2		3				2*,3			2*,3			2*,3			3	
Frame Type	N	S	N	H	S	N	H	N	S	N	H	S	N	H	S	N	H	S	N	H	S	N	H	S	N
Interrupting Capacity (kA)																									
240 Vac	50	50	100	150	50	100	150	50	50	100	150	50	100	150	65	100	150	65	100	150	65	100	150	65	100
480 Vac (277Vac 1 Pole)	10	35	65	100	35	65	100	10	35	65	100	35	65	100	42	65	100	42	65	100	42	65	100	42	65
600 Vac (347Vac 1 Pole)	10	14	20	25	14	20	25	10	14	20	25	14	20	25	18	25	30	22	30	50	22	30	50	22	42

* 2 pole in a 3 pole case