ADVANCED POWER TECHNOLOGIES

5kV-15kV Metal Enclosed Generator Output Protection Circuit Breaker Switchgear

GenProtect-M
Metal Enclosed Switchgear
Solutions Brochure

www.apt-power.com
433 N. 36th Street
Lafayette, IN 47905
(765) 446-2343

SAFE SMART SERVICEABLE SWITCHGEAR & ENGINEERED POWER SYSTEM SOLUTIONS

MADE IN THE USA

ALN: 538 Rev. 02

Features and Benefits

Air insulated SF6-free Vacuum Medium Voltage Switchgear

Figure 1: Indoor NEMA 1 Metal Enclosed Generator Output Protection Switchgear

Figure 2: Outdoor NEMA 3R Metal Enclosed Generator Output Protection Switchgear with Optional In-Line Visible Disconnect

Indoor Generator Protection Switchgear

- System Ratings:
  - Voltage: 5kV-15kV (3Ø)
  - Current: 200A-3000A (3Ø)
  - BIL: 60, 95 kV
- Increased operator safety:
  - Remote controllable design
  - Completely metal enclosed dead front
  - Provision for connection of field grounding cables
- Easy to maintain & environmentally friendly:
  - 100% Air insulated, no SF6 gas used
- Silver-plated copper phase bus bar for permanent connection to the facility
- Phase barriers physically isolate each phase to minimize the possibility of phase-to-phase contact
- No need to tape or boot field cable terminations.
- Fixed mounted vacuum circuit breakers
- High-speed operation – complete fault clearing in less than 3 cycles
- Hermetically sealed vacuum interrupters protect contacts from corroding elements and contamination
- Optional: Fixed Mount or Drawout Voltage Sensing
- Your choice of generator protective relay functions
- Optional: Slide out circuit breaker removal design, installed on rollers
  - Rollers are provided to simplify the field removal of the circuit breakers
  - Modular, slide-out design of the major power switching components to minimize the down time, should component replacement or repair be needed
- Optional: Inline visible air-disconnect switch, pad-lockable in open and/or closed position, to ensure personnel safety during power system service, maintenance, and repairs

*Due to continued product improvement, products delivered may differ from what is pictured.
*Optional Equipment Features Are Often Shown in Most Figures.
*Option Availability Subject to Product Series.

Optional Auxiliary Drawers

Figure 3: Carbon Steel NEMA 1 Metal Enclosed Type Drawout Auxiliary Drawer

Accommodates Drawout:

- Fuses
- Control Power Transformers
- Voltage Transformers

Figure 4: Carbon Steel NEMA 1 Metal Clad Type Drawout Auxiliary Drawer

For operator safety, these devices are automatically grounded during movement to disconnected position

*Due to continued product improvement, products delivered may differ from what is pictured.
*Optional Equipment Features Are Often Shown in Most Figures.
*Option Availability Subject to Product Series.

Circuit Breaker Ratings

Table 1: Available Circuit Breaker Ratings												
			Voltage		Dielectric Ratings		Short Circuit Current					Mechanical Endurance
MVA Rating (reference only)	Actual MVA @ Operating Voltage	Rated Continuous Current	Max Rated Voltage	Range Factor	Power Frequency	Impulse 1.2 x 50µs	System Interrupting	Close and Latch Rating	Short-Time Current Rating	Short-Time Current Duration	Interrupting Time	No Load Mechanical Operations
		A RMS	kV RMS	K	kV RMS	kV peak	kA RMS	kA peak	kA RMS	s	Cycles	
250	330	1200	4.76	1.0	19	60	40	104	40	2	3	10,000
250	330	2000	4.76	1.0	19	60	40	104	40	2	3	10,000
250	330	3000	4.76	1.0	19	60	40	104	40	2	3	5000
350	412	1200	4.76	1.0	19	60	50	130	50	2	3	5000
350	412	2000	4.76	1.0	19	60	50	130	50	2	3	5000
350	412	3000	4.76	1.0	19	60	50	130	50	2	3	5000
500	572	1200	8.25	1.0	36	95	40	104	40	2	3	10,000
500	572	2000	8.25	1.0	36	95	40	104	40	2	3	10,000
500	572	3000	8.25	1.0	36	95	40	104	40	2	3	5000
500	650	1200	15	1.0	36	95	25	65	25	2	3	10,000
500	650	2000	15	1.0	36	95	25	65	25	2	3	10,000
500	650	3000	15	1.0	36	95	25	65	25	2	3	5000
750	1039	1200	15	1.0	36	95	40	104	40	2	3	10,000
750	1039	2000	15	1.0	36	95	40	104	40	2	3	10,000
750	1039	3000	15	1.0	36	95	40	104	40	2	3	5000
1000	1299	1200	15	1.0	36	95	50	130	50	2	3	5000
1000	1299	2000	15	1.0	36	95	50	130	50	2	3	5000
1000	1299	3000	15	1.0	36	95	50	130	50	2	3	5000

Standard NEMA 1 Weights & Dimensions

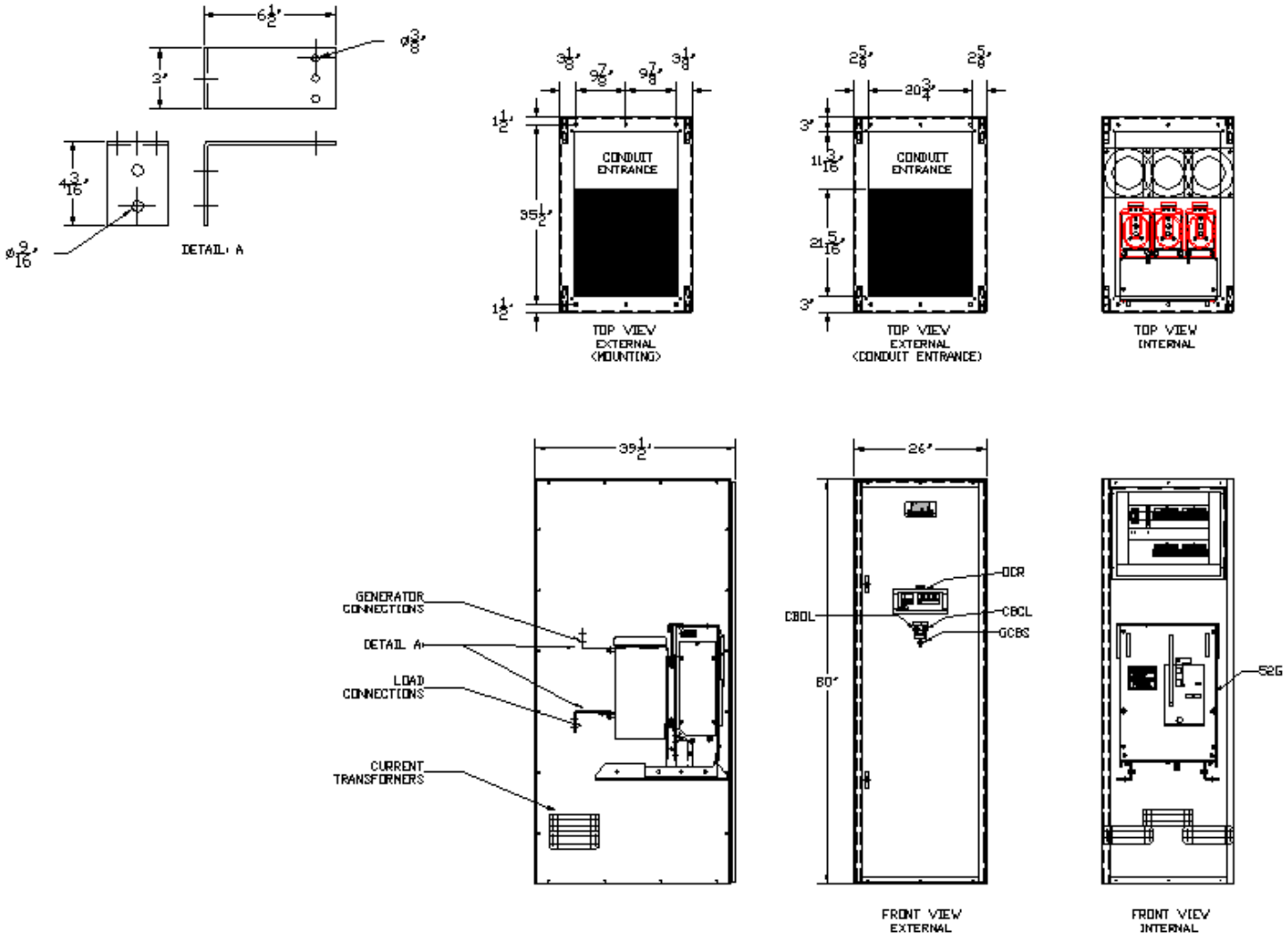

Figure 5: Single Section Dimensions

Single 1200 A section dimensions:

26” wide by 39.5” deep by 80” high

Table 2: Standard Section Weights	
Component	Weight Per
NEMA 1 Section (Less Breakers)	900 lbs.
1200A Circuit Breaker	380 lbs.
2000A Circuit Breaker	410 lbs.

XL NEMA 1 Weights & Dimensions

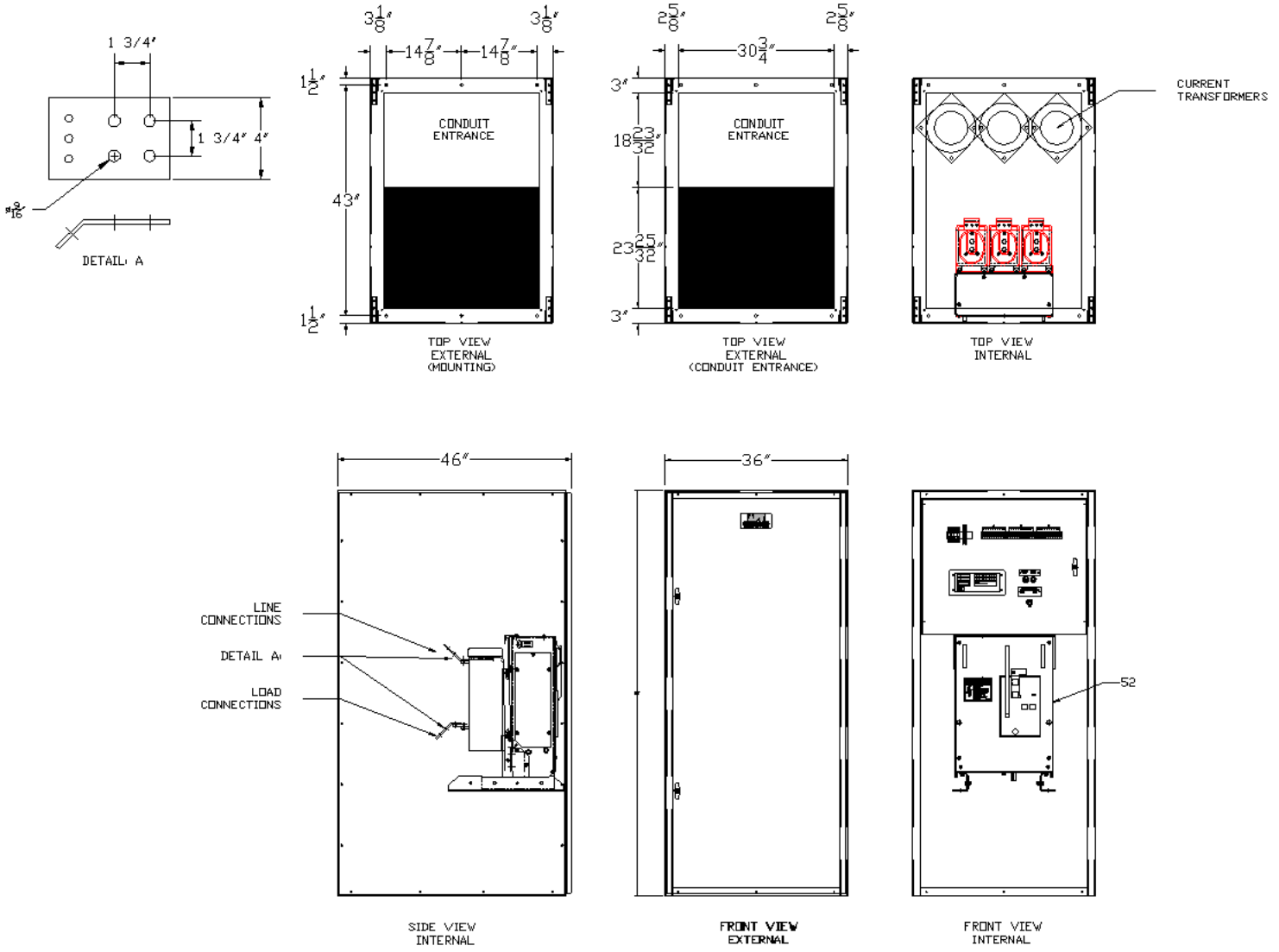

Figure 6: Single Section Dimensions

Single 1200 A section dimensions:

36” wide by 46” deep by 80” high

Table 3: XL Section Weights	
Component	Weight Per
NEMA 1 Section (Less Breakers)	1000 lbs.
1200A Circuit Breaker	380 lbs.
2000A Circuit Breaker	410 lbs.

NEMA 3R Weights & Dimensions

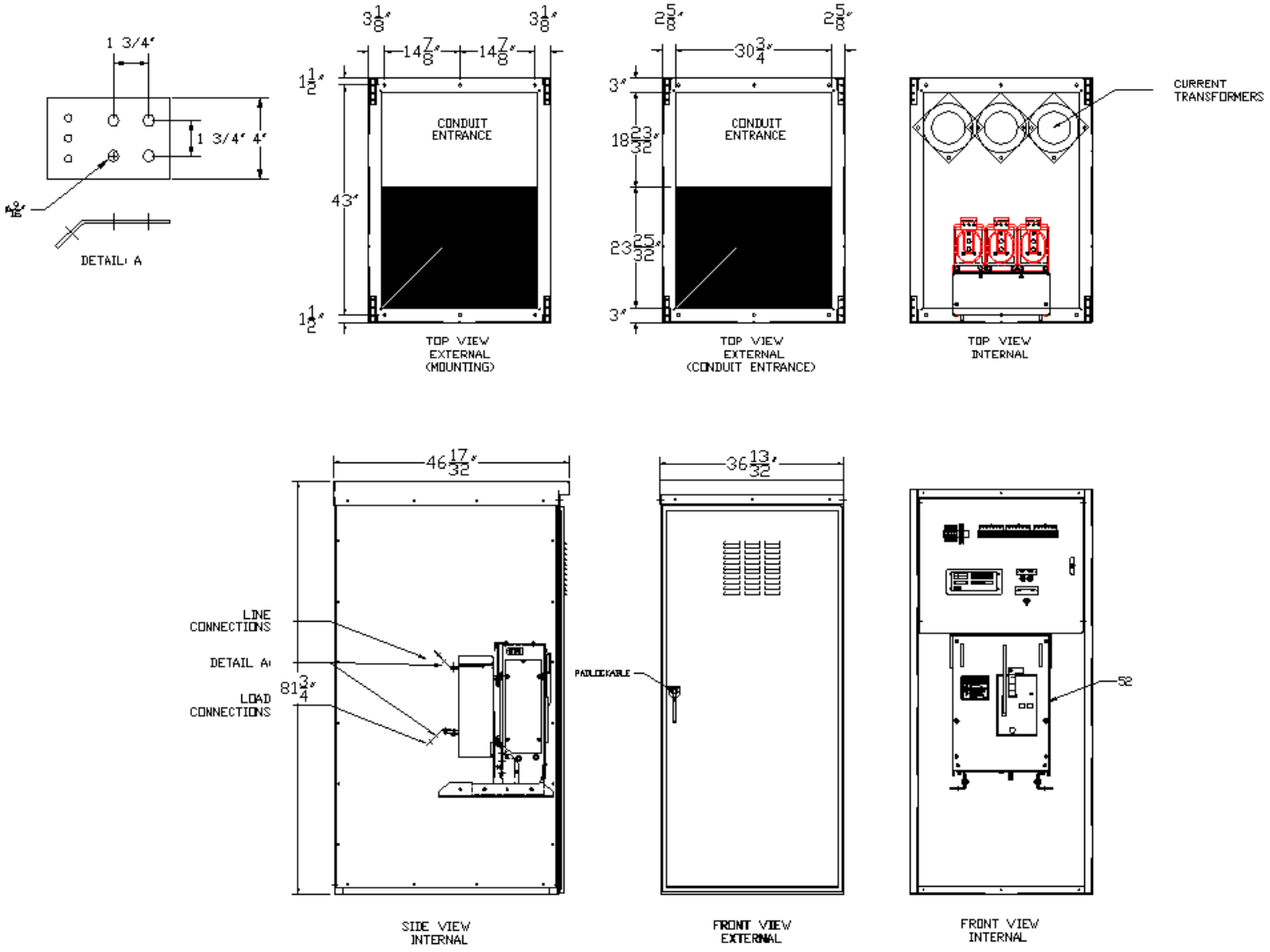

Figure 7: NEMA 3R Single Section Dimensions

Single 1200 A section dimensions:

36” wide by 46” deep by 80” high

Table 4: Outdoor Section Weights	
Component	Weight Per
NEMA 3R Section (Less Breakers)	1300 lbs.
1200A Circuit Breaker	380 lbs.
2000A Circuit Breaker	410 lbs.

NEMA 3R with Switch Dimensions

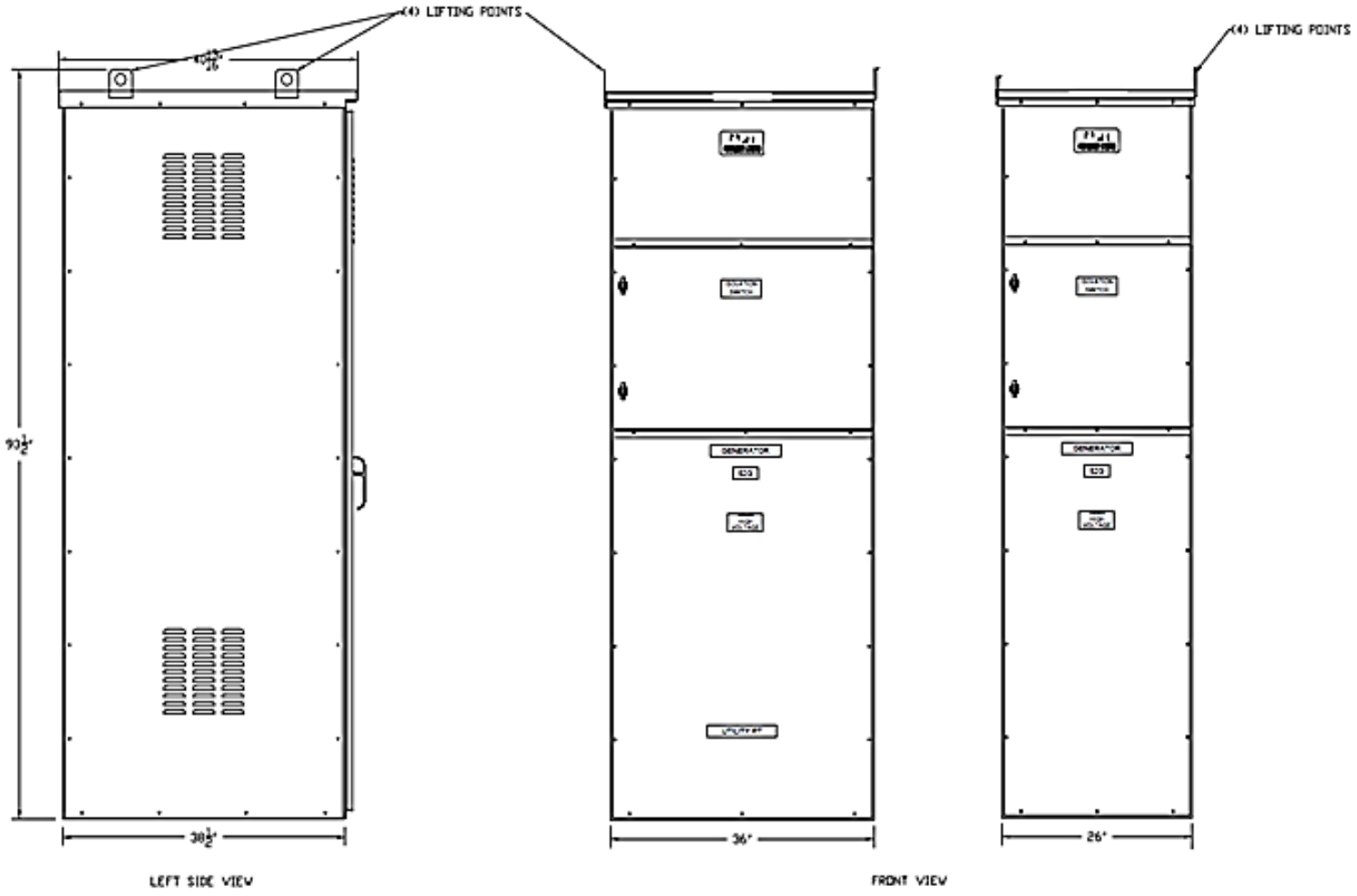

Figure 8: NEMA 3R 26” W & 36” W Section Size Options with Optional In-Line Visible Disconnect Dimensions (Depth Dimension subject to up to 62” D)

About Advanced Power Technologies



Advanced Power Technologies (APT) is on the cutting edge of the latest engineered power system smart technologies, as it relates to microgrid & storage management, renewable & conventional energy source deployment, demand peak shaving, and facility back-up and co-generation power systems. Located in the central United States and headquartered in Lafayette, Indiana with solutions development engineers around the country, APT provides domestic and international products and services to industry leading companies from around the world. APT engineers have decades of power system experience from working with some of the largest companies in industry. Over the last two decades, we have produced successful solutions for hundreds of large-scale electric power projects involving utility/generator paralleling, transfer, peak shaving, and distribution. We pride ourselves in providing electrical power systems that are engineered and custom built, utilizing state-of-the-art technologies to fit our customer's exact needs. The core of our business is low & medium voltage engineered power systems for a wide range of indoor & outdoor applications, such as:

- Utility(ies) and Generator(s) Paralleling/Transfer/Peak Shaving/Distribution Switchgear
- Microgrids, Microgrid Master Control Panels, SCADA systems
- Containerized Battery Energy Storage Systems (BESS)
- Photovoltaic (PV) Solar Power Collection/Distribution & Renewable Energy Storage Systems
- Low & High Resistance Grounding Systems, Grounding Systems for Photovoltaic Effective Grounding
- High Efficiency Combined Heat and Power Switchgear & Control Systems (CHP, Co-generation)
- Outdoor Walk-In Electrical Houses (E-Houses) & Skid-Mounted Switchgear
- Motor Control Centers & Motor Control Switchgear
- Automatic & Manual Load Transfer Switchgear
- Bypass/Isolation & Power Distribution Circuit Breaker Switchboards
- Generator/Loadbank Quick Connection Switchgear, Switchboards, & Tap Boxes
- Industrial Control Panels

Please see our product webpages on www.apt-power.com for product brochures and relevant information. Actual products may look different from images shown on the website and in brochures, based on actual specifications.
APT cares and understands that each power system is different. We will evaluate various solutions to develop the best solution for a site. APT focuses on our ability to a combine several traditional pieces of equipment/functionality into as little of a footprint possible. This saves on space, the cost of equipment, cost of installation, and accomplishes the most optimal/state-of-the-art design your facilities. APT's desires to foster and grow a culture of continued open communication with each customer. Let APT be your source to provide fully engineered power system equipment solutions for the full customer facility on time, on or under budget, and in the smallest footprint possible. We are always available to assist customers and engineers representing customers in the development of complex power solutions for all facility types.