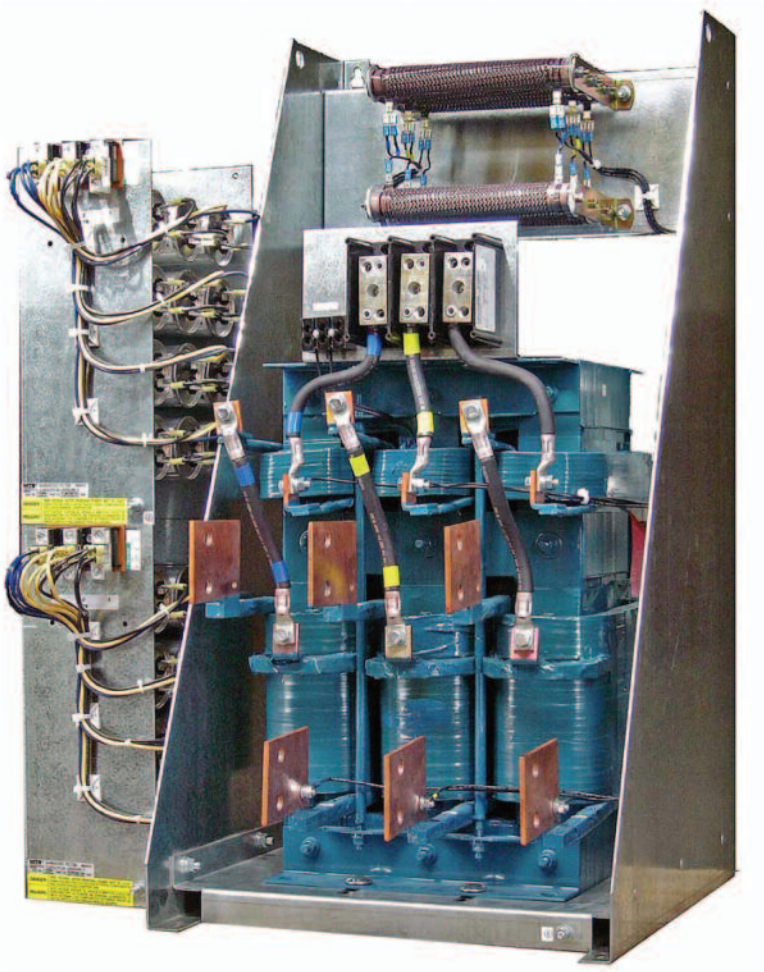
GE
Energy

Matrix Harmonic Filter

Series D



Matrix Harmonic Filter

GE Matrix Harmonic Filters provide broadband reduction of harmonics. Matrix Harmonic Filters not only offer better performance over other broadband filtering and 12-pulse and 18-pulse harmonic reduction techniques, but they are also suitable for a wider range of applications. Matrix Harmonic Filters can be installed in either variable or constant torque drive applications and can be applied on either diode or SCR rectifiers. For any application other than variable torque applications, it is suggested that you contact the factory for filter selection.

Typical Applications

Use GE Matrix Harmonic filters to minimize harmonic current distortion in these and other 6-pulse rectifier applications:

- Fans and Pumps
- Water Treatment Facilities
- HVAC Systems
- AC or DC Motor Drives
- Rectifier Type Welders
- Induction Heating Equipment
- UPS Equipment
- Elevators
- IEEE 519 Compliance

GE Matrix Filters enable most AC drive systems to comply with the voltage and current distortion limits outlined in IEEE 519. A complete harmonic analysis and product selection tool is available on the internet. Go to *GEIndustrial.com -> Products -> Capacitors -> Matrix Harmonic Filter -> Energy Savings Calculator and Harmonic Estimator.*

GE Matrix Harmonic Filters are multi-stage low pass filters that are specially configured to avoid the attraction of harmonics from other sources on a shared power system. However, the configuration of the filter requires that only drives or equivalent loads be loaded on the output of a Matrix Harmonic Filter. One filter can be used with multiple drives. However, if there is a drive bypass circuit, there must be one filter per drive and the filter and drive combination must be bypassed.

GE Matrix Harmonic Filters are available in a NEMA 1, NEMA 3R, or as a modular design pre-assembled onto panels for subsequent assembly into customer supplied cabinet. The standard units offer 5% THID.

Product Specifications

- Input voltage 480 Volts ± 10%
- Ambient temperature:
  - Storage –40°C to 90°C
  - Operating -40°C to 50°C
- Attitude: 1000 meters maximum
- UL approved – File E191686 for both USA and Canada.

Mimimum System Requirements to Achieve Performance Levels

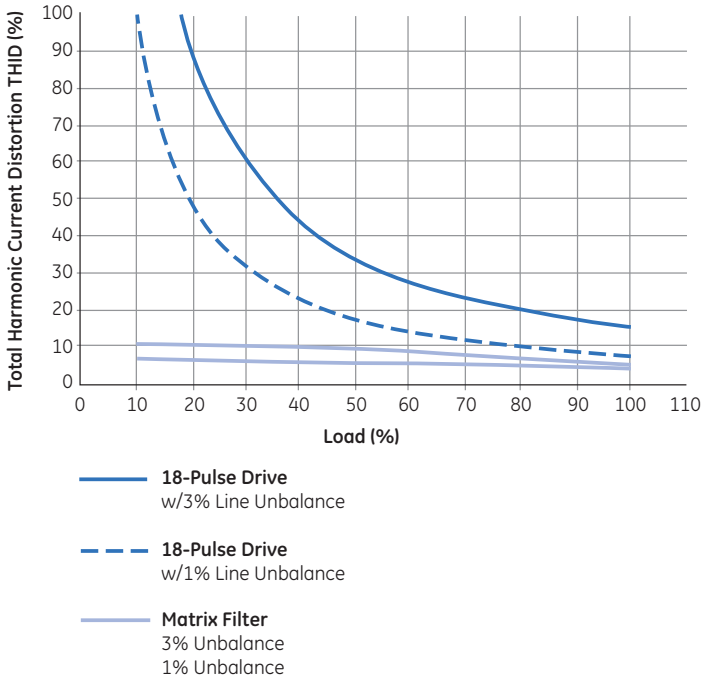
- Source impedance: 1.5% minimum to 5% maximum
- System voltage: 480 volts (line to line) ± 10%
- Frequency: 60 Hz ± .75 Hz
- Balanced line voltage: within 1%
- Background voltage distortion: 0% THVD

Matrix Harmonic Filter

The Matrix Filter typically achieves 5% THID at full load — and guarantees that the worst case current distortion at any load between 0% and 100% will be 8% THID or less at the filter input terminals. The Matrix Filter is typically used in applications requiring harmonic mitigation associated with 18-pulse rectifiers. The chart on the right compares the performance of Matrix Filters to 18-pulse rectifiers in real world applications, which include line voltage unbalance of 1% to 3% and loading conditions from 0% to 100%.

Matrix Filter performs better than 18-pulse in normal operating conditions.

18-Pulse Drive vs. 6-Pulse VFD with Matrix Filter



Performance Guarantee

Select and install the appropriate Matrix Filter in a variable torque AC variable frequency drive application, within our published system limits, and we guarantee that the input current distortion will be less than or equal to 8% THID. This performance guarantee applies for loading conditions ranging from 0% to 100% load. If a properly sized and installed filter fails to meet its specified THID level, GE will provide the necessary modifications or replacement filter at no charge. TDD will typically be even lower than THID.

Minimum system requirements

The guaranteed performance levels of this filter will be achieved when the following system conditions are met: *Source Impedance:* 1.5% minimum to 6.0% max; *Frequency:* 60 Hz +/- 0.75 Hz; *System Voltage:* nominal system voltage (line to line) +/- 10%; *Balanced Line Voltage:* within 1%; *Background Voltage Distortion:* 0% THVD

The presence of background voltage distortion will cause motors and other linear loads to draw harmonic currents. Likewise, additional harmonic currents may flow into the Matrix Filter if there is harmonic voltage distortion already on the system.

Matrix Filter Series D Selection

480 Volts, 60 Hz

		GENERAL PURPOSE ENCLOSURE STYLE						
AMPS	HP	NEMA 1 & NEMA 2 Drip Proof	Enclosure	Weight (Pounds)	NEMA 3R Weather Resistant	Enclosure	Weight (Pounds)	Figure
6	3	37GMDG0006D	CAB-12C2	76	37GMDW0006D	CAB-12C3	86	Figure 10
8	5	37GMDG0008D	CAB-12C2	79	37GMDW0008D	CAB-12C3	89	Figure 10
11	7.5	37GMDG0011D	CAB-12C2	83	37GMDW0011D	CAB-12C3	93	Figure 10
14	10	37GMDG0014D	CAB-12C2	89	37GMDW0014D	CAB-12C3	99	Figure 10
21	15	37GMDG0021D	CAB-12C2	100	37GMDW0021D	CAB-12C3	110	Figure 10
27	20	37GMDG0027D	CAB-12C2	115	37GMDW0027D	CAB-12C3	125	Figure 10
34	25	37GMDG0034D	CAB-12C2	126	37GMDW0034D	CAB-12C3	136	Figure 10
44	30	37GMDG0044D	CAB-12C2	138	37GMDW0044D	CAB-12C3	148	Figure 10
52	40	37GMDG0052D	CAB-17C2	190	37GMDW0052D	CAB-17C3	199	Figure 11
66	50	37GMDG0066D	CAB-17C2	219	37GMDW0066D	CAB-17C3	228	Figure 11
83	60	37GMDG0083D	CAB-17C2	241	37GMDW0083D	CAB-17C3	250	Figure 11
103	75	37GMDG0103D	CAB-17C2	244	37GMDW0103D	CAB-17C3	253	Figure 11
128	100	37GMDG0128D	CAB-26C2	385	37GMDW0128D	CAB-26C3	406	Figure 12
165	125	37GMDG0165D	CAB-26C2	441	37GMDW0165D	CAB-26C3	462	Figure 12
208	150	37GMDG0208D	CAB-26C2	461	37GMDW0208D	CAB-26C3	482	Figure 12
240	200	37GMDG0240D	CAB-26C2	467	37GMDW0240D	CAB-26C3	488	Figure 12
320	250	37GMDG0320D	CAB-26D2	663	37GMDW0320D	CAB-26D3	794	Figure 13
403	300	37GMDG0403D	CAB-26D2	706	37GMDW0403D	CAB-26D3	838	Figure 13
482	400	37GMDG0482D	CAB-26D2	800	37GMDW0482D	CAB-26D3	931	Figure13
636	500	37GMDG0636D	CAB-30D2	1205	37GMDW0636D	CAB-30D3	1247	Figure 14
786	600	37GMDG0786D	CAB-30D2	1416	37GMDW0786D	CAB-30D3	1458	Figure 14

Matrix Harmonic Filter Series D

Open Style Component Dimensions

480 Volts, 60 Hz

AMPS rating	HP	Catalog Part Number	Weight Lbs	HMR Size Inches	HMR Ref. Figure	Capacitor assemblies size Inches	Capacitor Ref. Figure
6	3	37GMDP0006D	22	11.3"H X 6"W X 6.2"D	Figure 1	4.8"H x 4.8"W x 7.3"D	Figure 6
8	5	37GMDP0008D	24	11.3"H X 6"W X 6.3"D	Figure 1	4.8"H x 4.8"W x 7.3"D	Figure 6
11	7.5	37GMDP0011D	29	12.4"H x 7.2"W x 5.7"D	Figure 1	4.8"H x 4.8"W x 8.2"D	Figure 6
14	10	37GMDP0014D	35	12.4"H x 7.3"W x 6.3"D	Figure 1	4.8"H x 4.8"W x 8.2"D	Figure 6
21	15	37GMDP0021D	46	15.8"H x 9"W x 6.5"D	Figure 1	5.6"H x 5.6"W x 7.3"D	Figure 6
27	20	37GMDP0027D	61	15.8"H x 9"W x 7"D	Figure 1	5.6"H x 5.6"W x 8.2"D	Figure 6
34	25	37GMDP0034D	72	15.8"H x 9"W x 7.5"D	Figure 1	5.6"H x 5.6"W x 8.7"D	Figure 6
44	30	37GMDP0044D	84	15.8"H x 9"W x 8"D	Figure 1	5.6"H x 5.6"W x 7.3"D	Figure 6
52	40	37GMDP0052D	125	16.5"H x 12.3"W x 9.6"D	Figure 2	5.6"H x 5.6"W x 7.3"D	Figure 6
66	50	37GMDP0066D	154	16.5"H x 12.3"W x 10.7"D	Figure 2	8"H x 7.3"W x 12"D	Figure 7
83	60	37GMDP0083D	176	16.5"H x 12.3"W x 11.3"D	Figure 2	8"H x 7.3"W x 12"D	Figure 7
103	75	37GMDP0103D	180	16.5"H x 12.3"W x 11"D	Figure 2	8"H x 7.3"W x 12"D	Figure 7
128	100	37GMDP0128D	217	23"H x 15.3"W x 11.3"D	Figure 3	12"H x 7.3"W x 12"D	Figure 8
165	125	37GMDP0165D	273	23"H x 15.3"W x 11.5"D	Figure 3	12"H x 7.3"W x 12"D	Figure 8
208	150	37GMDP0208D	292	23"H x 15.3"W x 12"D	Figure 3	15"H x 7.3"W x 12"D	Figure 9
240	200	37GMDP0240D	298	23"H x 15.3"W x 12.4"D	Figure 3	15"H x 7.3"W x 12"D	Figure 9
320	250	37GMDP0320D	464	35.5"H x 18"W x 20.2"D	Figure 4	15"H x 7.3"W x 12"D	Figure 9
						8"H x 7.3"W x 12"D	Figure 7
403	300	37GMDP0403D	508	35.5"H x 18"W x 22.5"D	Figure 4	12"H x 7.3"W x 12"D	Figure 9
						15"H x 7.3"W x 12"D	Figure 8
482	400	37GMDP0482D	602	35.5"H x 18"W x 23"D	Figure 4	15"H x 7.3"W x 12"D	Figure 9
						15"H x 7.3"W x 12"D	Figure 9
636	500	37GMDP0636D	873	35.5"H x 24"W x 23.5"D	Figure 5	12"H x 8.1"W x 12"D	Figure 8
						15"H x 7.3"W x 12"D	Figure 9
						15"H x 7.3"W x 12"D	Figure 9
786	600	37GMDP0786D	1082	35.5"H x 24"W x 24"D	Figure 5	15"H x 7.3"W x 12"D	Figure 9
						15"H x 7.3"W x 12"D	Figure 9
						15"H x 7.3"W x 12"D	Figure 9
						5.6"H x 5.6"W x 7.3"D	Figure 6

Hmr Mounting & Terminal Locations

HMR 6-44 AMPS

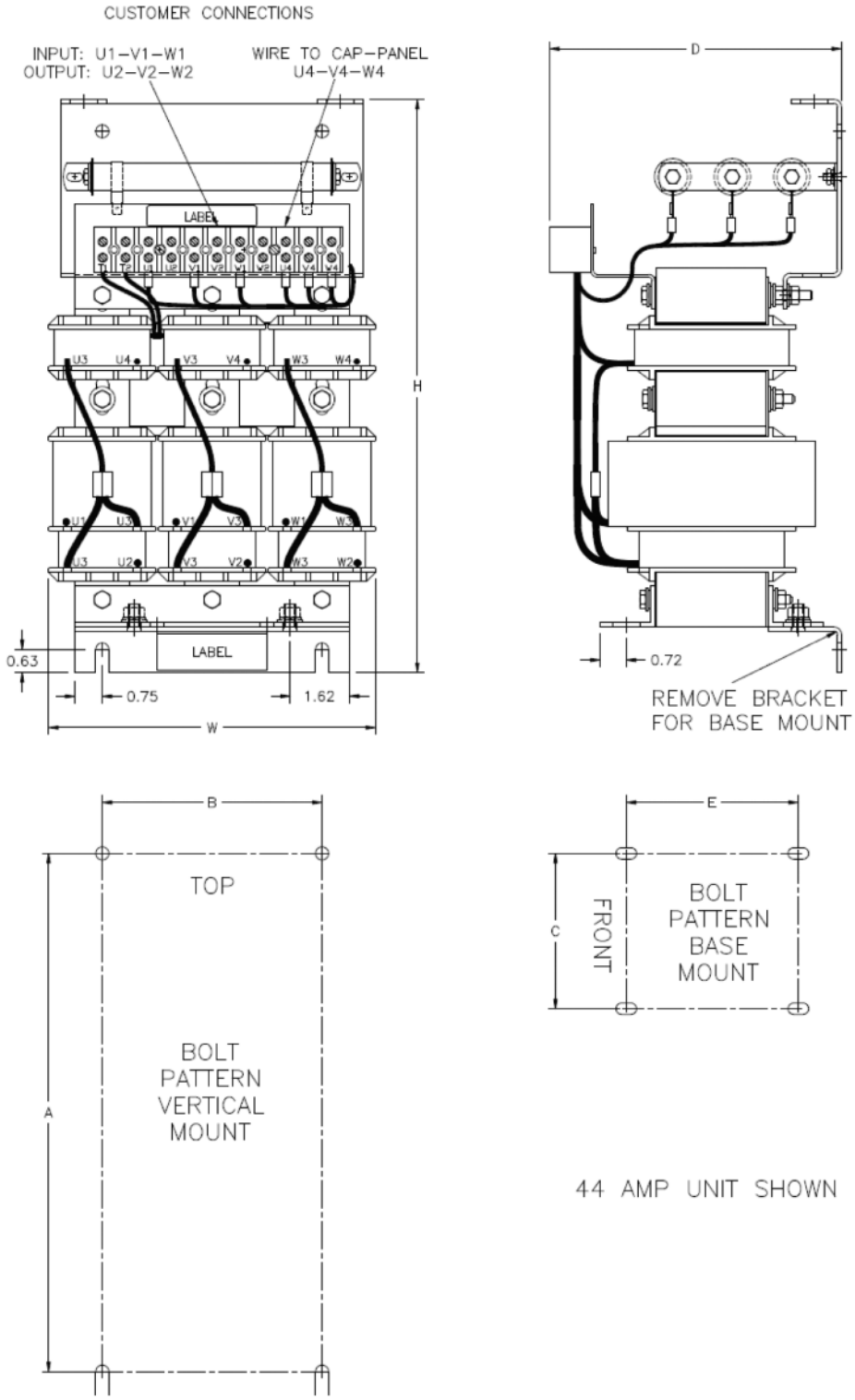


Figure 1. 6-44 AMPS

Hmr Mounting & Terminal Locations

HMR 52-103 AMPS

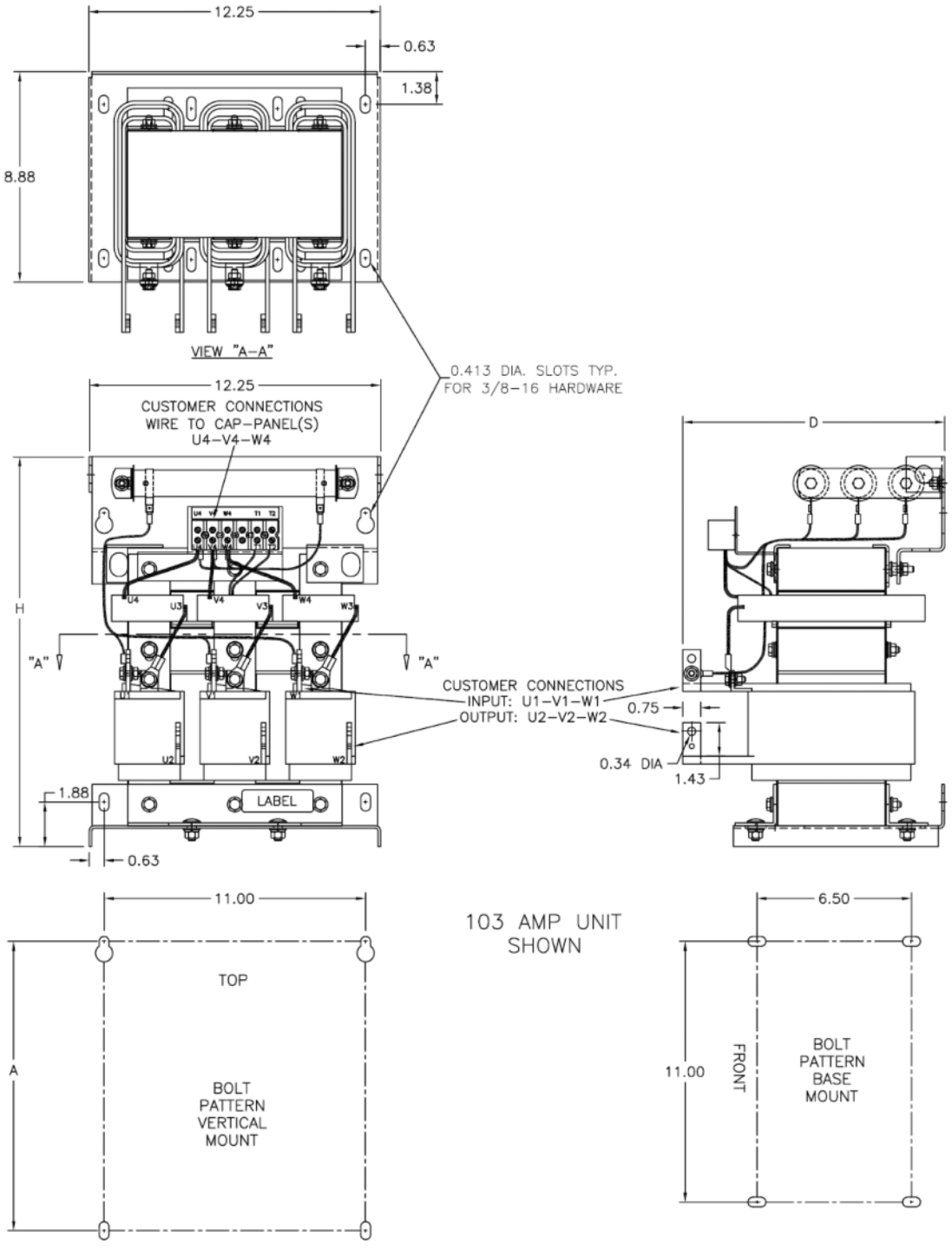


Figure 2. 52-103 AMPS

Hmr Mounting & Terminal Locations

HMR 128-240 AMPS

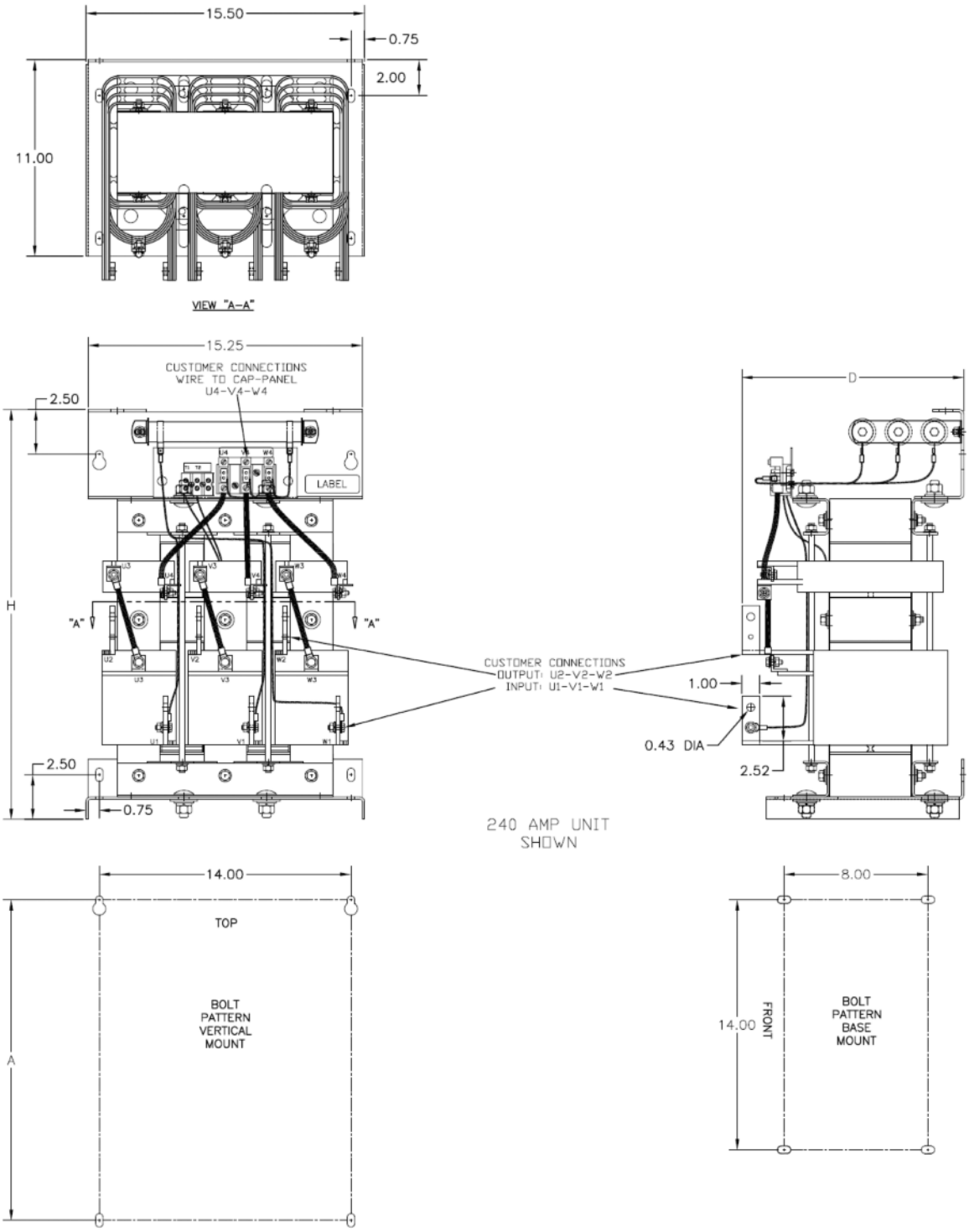


Figure 3. 128-240 AMPS

Hmr Mounting & Terminal Locations

HMR 320-482 AMPS

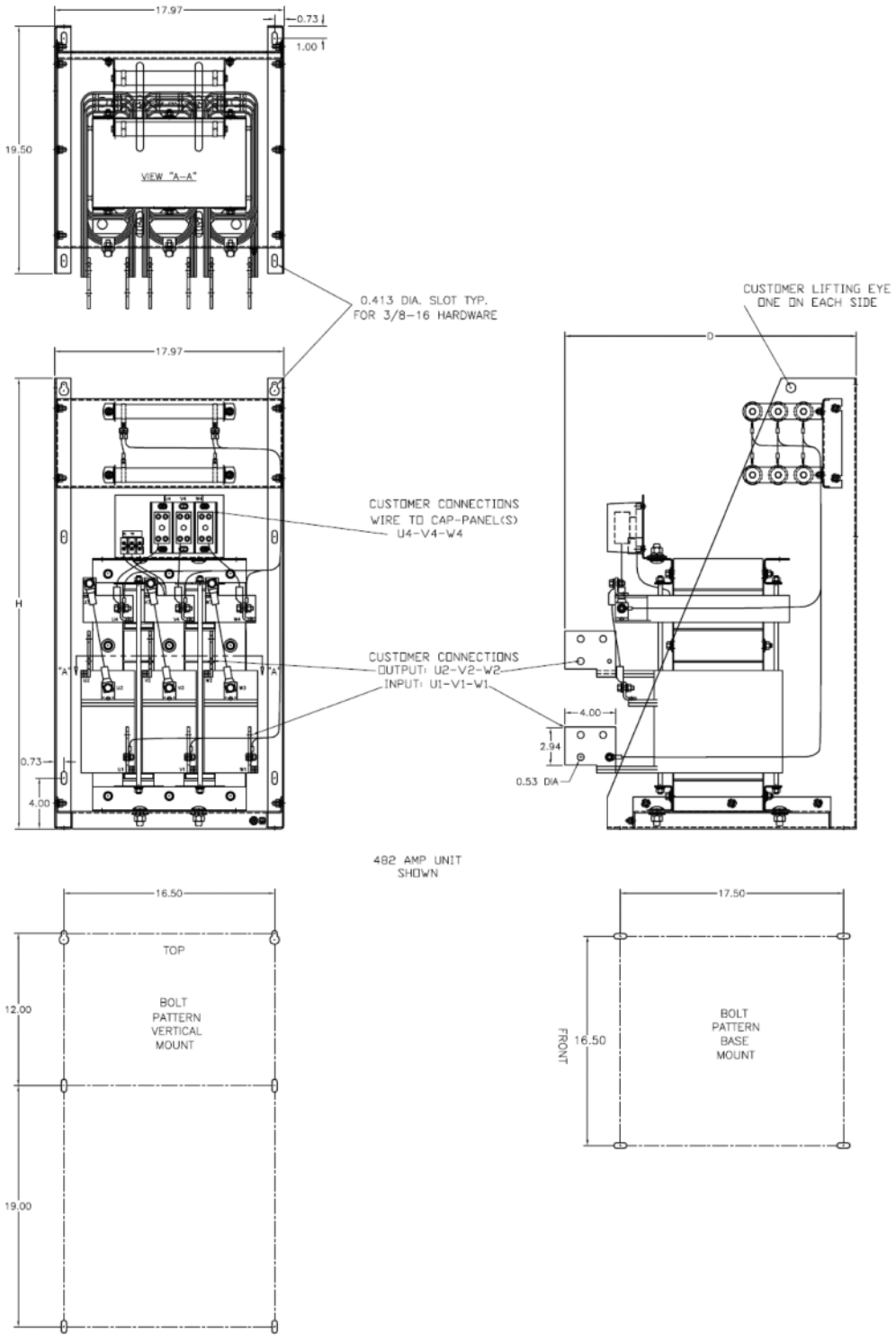


Figure 4. 320-482 AMPS

Hmr Mounting & Terminal Locations

HMR 636-786 AMPS

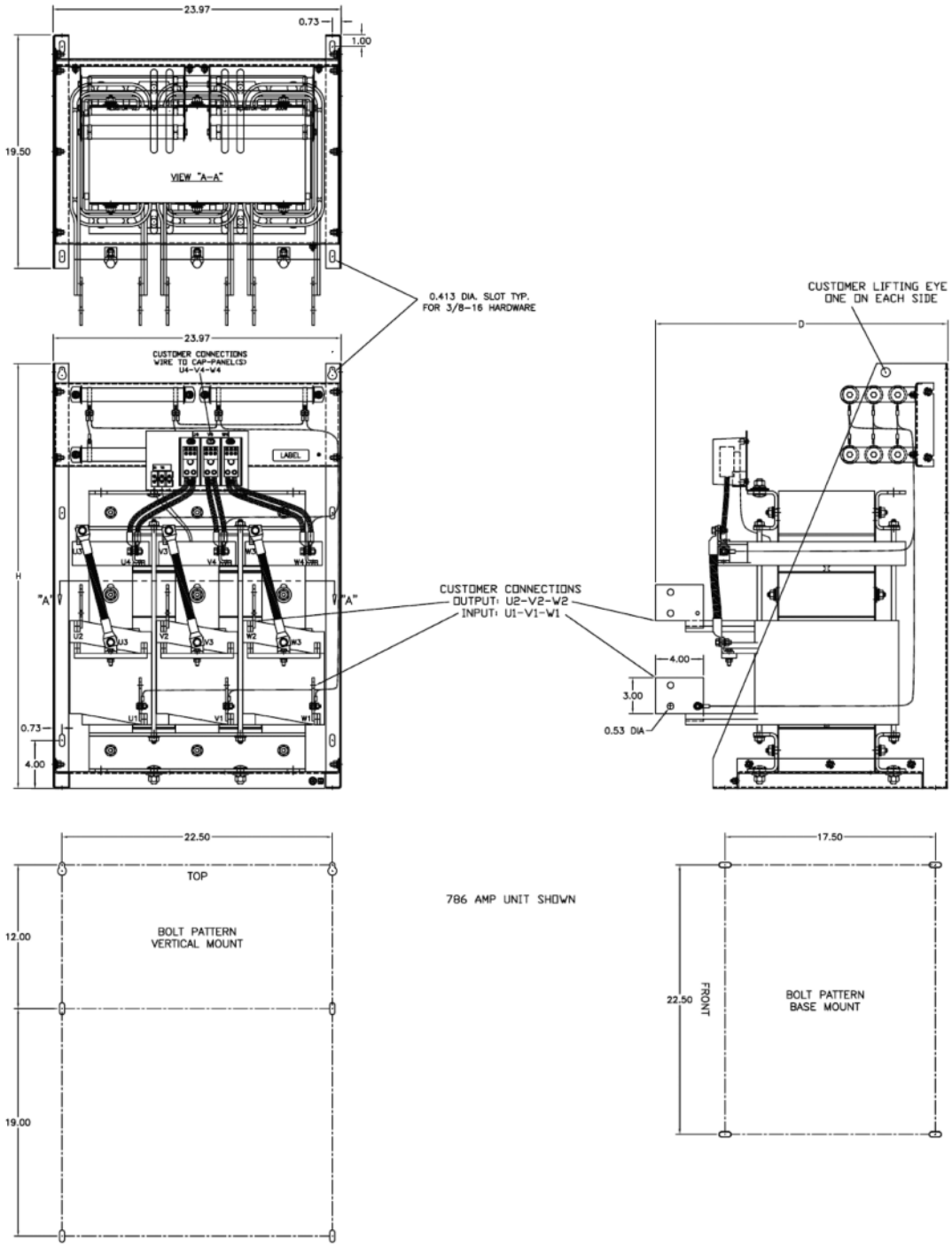


Figure 5. 636-786 AMPS

Cap-Assembly Mounting & Terminal Locations

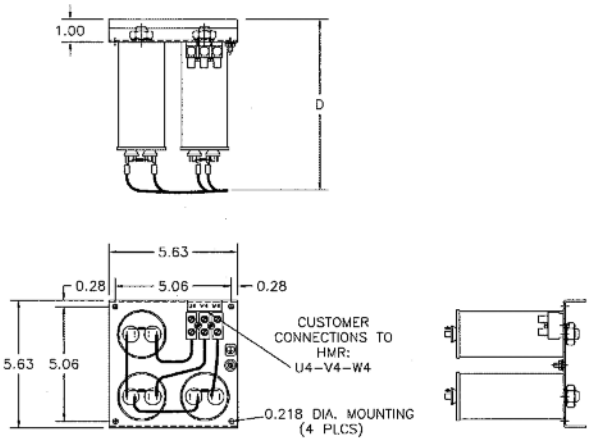


Figure 6. 3 Caps

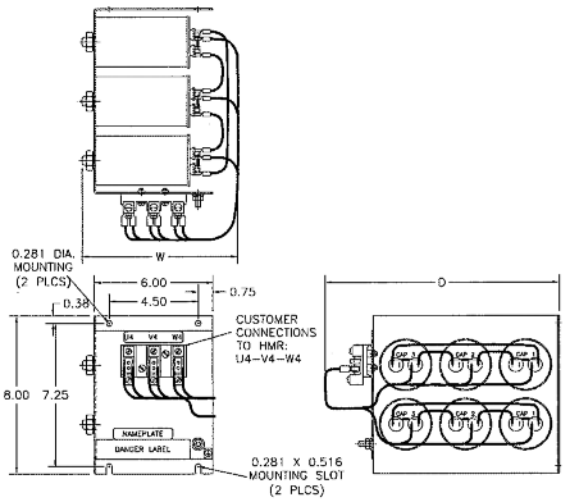


Figure 7. 6 Caps

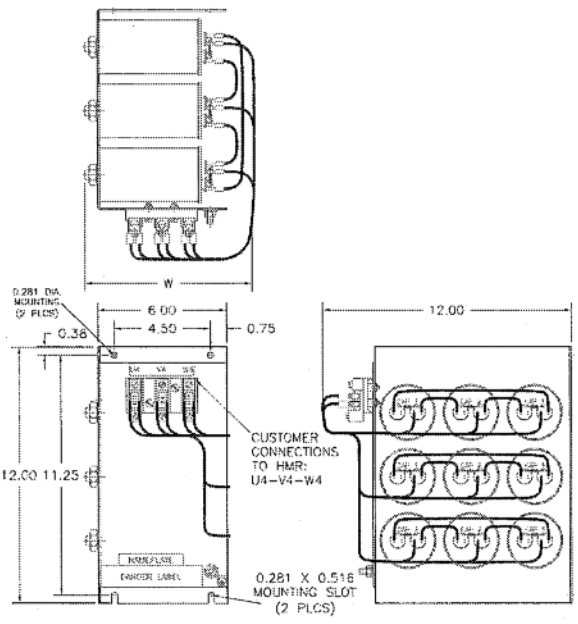


Figure 8. 9 Caps

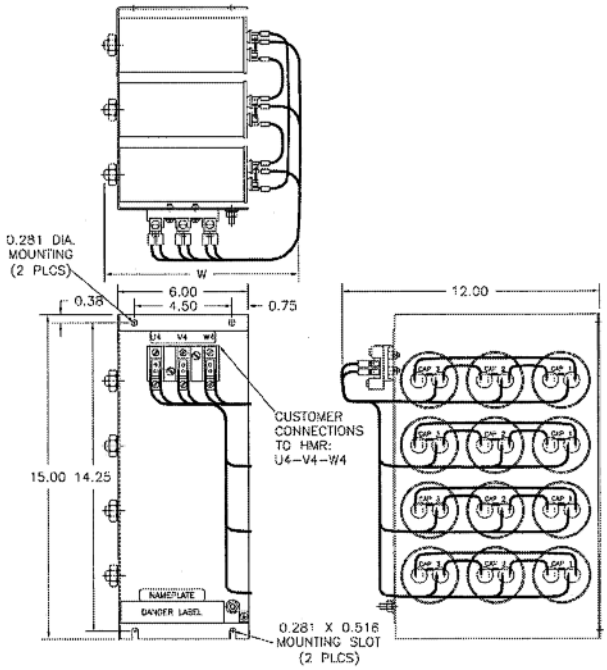


Figure 9. 12 Caps

Enclosed Unit Internal Details & Terminal Locations

CAB-12C: 6-44 AMPS

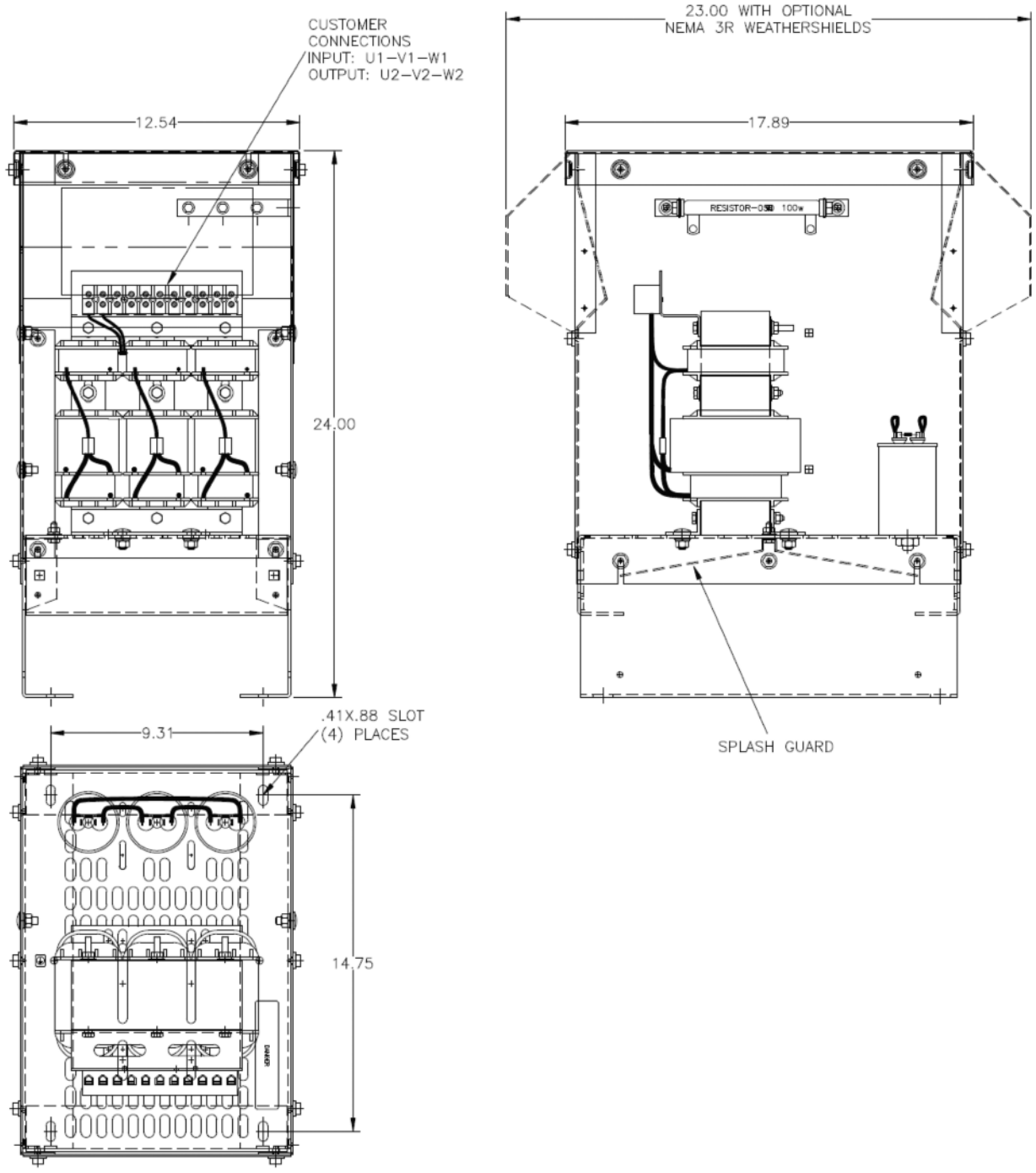


Figure 10. 6-44 AMPS

Enclosed Unit Internal Details & Terminal Locations

CAB-17C: 52-103 AMPS

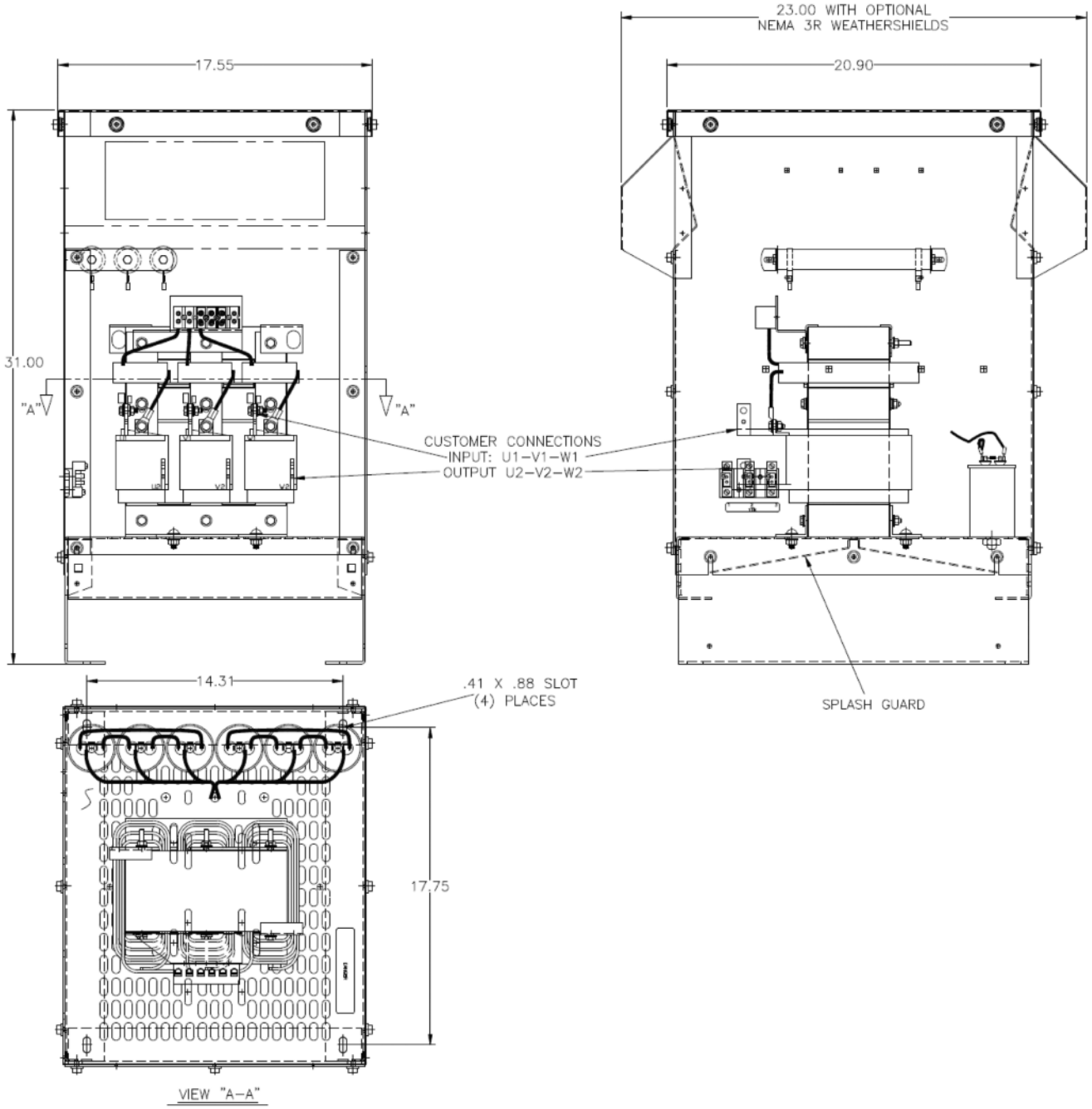


Figure 11. 52-103 AMPS

Enclosed Unit Internal Details & Terminal Locations

CAB-26C: 128-240 AMPS

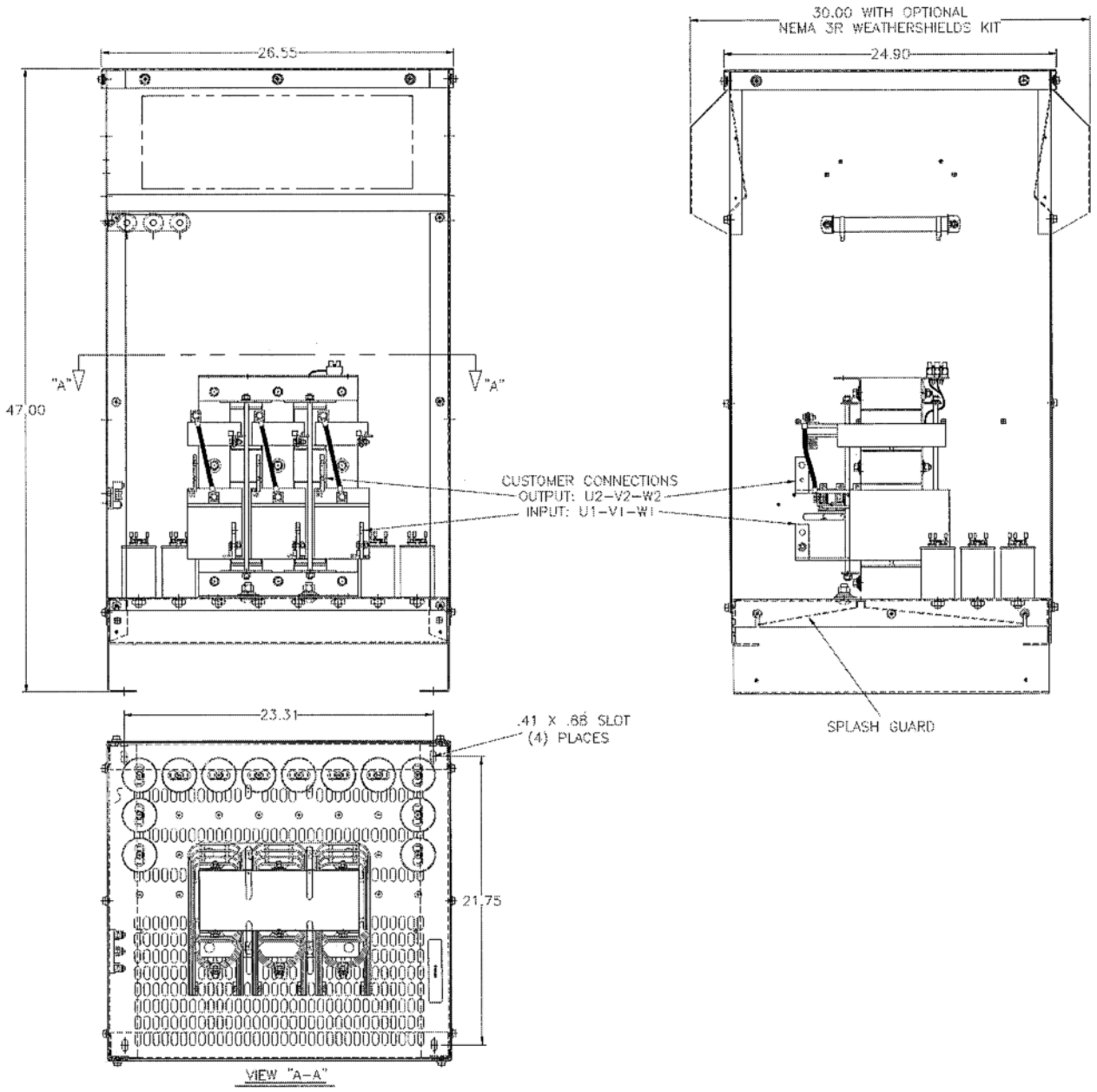


Figure 12. 128-240 AMPS

Enclosed Unit Internal Details & Terminal Locations

CAB-26D: 320-482 AMPS

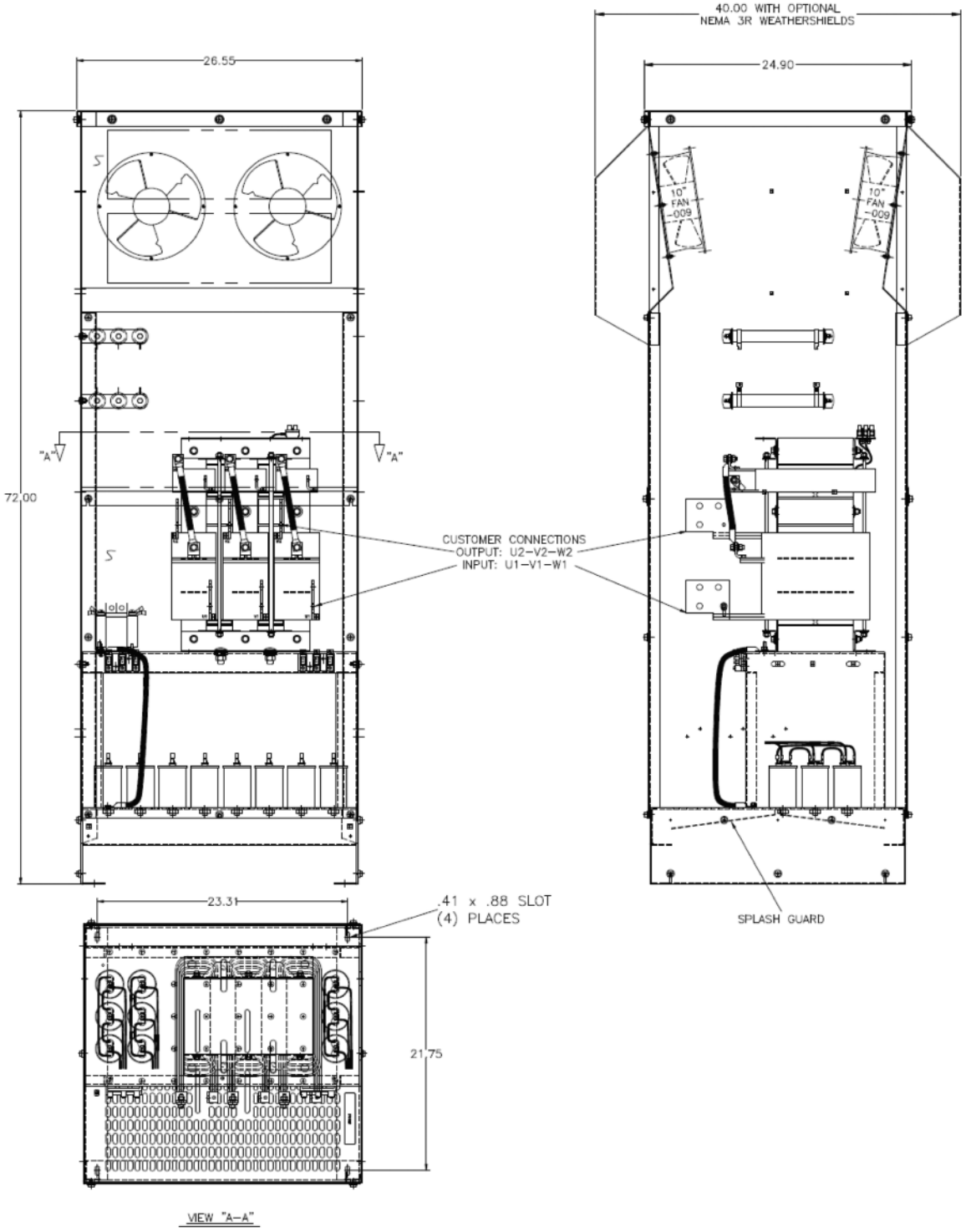


Figure 13. 320-482 AMPS

Enclosed Unit Internal Details & Terminal Locations

CAB-30D: 636-786 AMPS

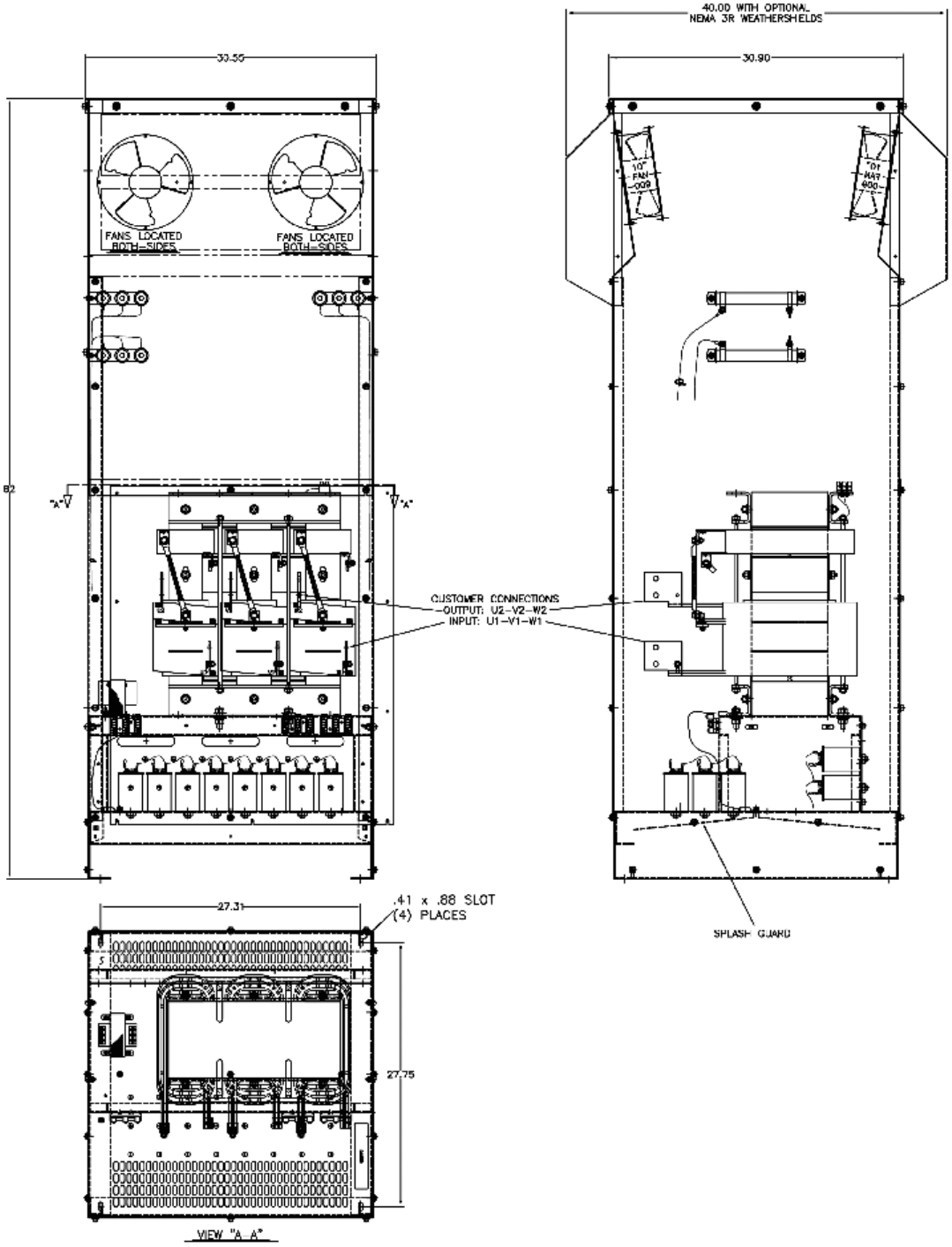


Figure 14. 636-786 AMPS

GE Capacitor and Power Quality Products
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www.geindustrial.com, choose Products > Capacitor

GEH-7256 (07/07)