

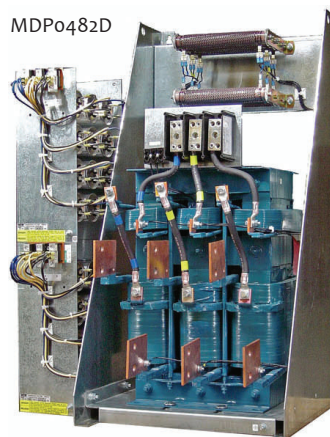
## Matrix® Harmonic Filters

### Series D - Selection Table & Technical Specifications Guide

**IEEE-519** - The Series D Matrix® Harmonics Filter uses patented Harmonics Mitigating Reactor (HMR) technology to limit full load current distortion to less than 5% THID on virtually any kind of six pulse rectifier supply. Six pulse rectifiers are commonly found in three phase electronic equipment such as adjustable speed motor drives, welders, battery chargers, servo drives and other electronic equipment. Matrix® Filters enable your system to meet the voltage and current distortion limits of IEEE-519, EN61000, AS2279 and G5/4.

**Reliability** - Harmonic currents reduce equipment life, electrical system reliability, system efficiency and equipment productivity. Matrix® Filters reduce the burden on electrical equipment by reducing TRUE RMS current, peak current and harmonic frequency distortion. The series impedance included in the Matrix® Filter also absorbs transient over-voltages just like a line reactor, to prevent over-voltage trips and rectifier damage. Matrix® Filters also reduce the TRUE RMS current that flows through equipment feeding non-linear loads. This reduces the amount of heat generated by upstream equipment (such as transformers, disconnects, fuses, circuit breakers and conductors), extending their life expectancy. Increased system reliability leads to higher productivity for your overall system.

**Performance, Guaranteed!** - Matrix® Harmonic Filters can meet or exceed the harmonic mitigation performance of other common filtration methods. Unlike alternative solutions, Matrix® Filters come with a performance guarantee. The Series D Matrix® Filter allows users to achieve superior attenuation of harmonics when used with 6 pulse drives and will outperform techniques using 12-pulse or 18-pulse rectification methods. The new patented HMR (Harmonic Mitigating Reactor) optimizes the technology for smaller packaging requiring less floor or panel space than other filter schemes. On AC variable frequency, variable torque drive applications (fans & pumps), Matrix filters will meet the guaranteed maximum levels of THID (total harmonic current distortion) at full load. Unlike other harmonic filter technologies, the performance of MTE Matrix Harmonic Filters is guaranteed!



**Installation Options** - Matrix Harmonic Filters are available in a variety of enclosure options. The standard enclosure meets the requirements of both Nema 1 & Nema 2. The Nema 3R enclosure provides weather protection and is available in optional stainless or galvanized steel construction. Optional Serpent/Rodent screens can be added to block small animals from entering enclosures.

For maximum flexibility, Matrix filters are also offered as open modular construction for integration into customer enclosures and panels.

**Electrical Options** - Various contactor options may be added to provide for filter bypass and leading KVAR cancellation to enhance compatibility with standby power and support service requirements.



#### Typical Uses Include:

- Mission Critical Facilities
- AC Variable Frequency Drives
- DC Adjustable Speed Drives
- Electronic Welders
- Battery Chargers
- Fans and Pumps
- Water Treatment Facilities
- Induction Heating Equipment
- Elevator Drives
- Any 6 Pulse Rectifier Supply



The Matrix Filter is designed to be installed on the line side of a drive and deliver guaranteed IEEE-519 performance.

## Selection Table Series D Matrix® Harmonic Filter Technical Data - 208, 240, & 400VAC

Note: replace “\_” with P for open panel, “G” General NEMA 1-2 and “W” weather NEMA type 3R in Base part number

208 60hz	240 60hz	Base Part Number	Amps rating	Watts	Open Weight Lbs	Combined Magnetics Size	HMR Ref. Figure	Capacitor assembly size Inches	Capacitor Ref. Figure	Cab Type
1hp	1.5hp	MD_0006A	6	99	38	consult factory	Fig 2	consult factory	Fig 3	CAB-12C
2hp	2hp	MD_0008A	8	121	40	consult factory	Fig 2	consult factory	Fig 3	CAB-12C
3hp	3hp	MD_0011A	11	144	45	consult factory	Fig 2	consult factory	Fig 3	CAB-12C
		MD_0014A	14	169	45	consult factory	Fig 2	consult factory	Fig 3	CAB-12C
5hp	5hp	MD_0021A	21	214	60	consult factory	Fig 2	consult factory	Fig 3	CAB-12C
7.5hp	7.5hp	MD_0027A	27	254	65	consult factory	Fig 2	consult factory	Fig 3	CAB-12C
10hp	10hp	MD_0034A	34	286	85	consult factory	Fig 2	consult factory	Fig 3	CAB-12C
	15hp	MD_0044A	44	338	85	consult factory	Fig 2	consult factory	Fig 3	CAB-12C
15hp		MD_0052A	52	373	135	consult factory	Fig 2	consult factory	Fig 3	CAB-17C
20hp	20hp	MD_0066A	66	439	155	consult factory	Fig 2	consult factory	Fig 3	CAB-17C
25hp	30hp	MD_0083A	83	506	250	consult factory	Fig 2	consult factory	Fig 3	CAB-17C
30hp		MD_0103A	103	591	250	consult factory	Fig 2	consult factory	Fig 3	CAB-17C
40hp	40hp	MD_0128A	128	664	275	consult factory	Fig 2	consult factory	Fig 3	CAB-26C
50hp	60hp	MD_0165A	165	763	325	consult factory	Fig 2	consult factory	Fig 3	CAB-26C
60hp	75hp	MD_0208A	208	905	325	consult factory	Fig 2	consult factory	Fig 3	CAB-26C
75hp		MD_0240A	240	997	400	consult factory	Fig 2	consult factory	Fig 3	CAB-26C

Refer to Page 4 for Figures, Cabinet information, and Option details

Matrix® Filters for **Variable Torque AC Drives** rated 7.5 Hp and above should be selected for a filter output current rating greater than or equal to the motor current rating. If the motor current rating is not available, use the NEC motor current rating. AC drives rated 2 – 5 Hp should be selected for a filter output current rating greater than or equal to 105% of the motor current rating. If the motor current rating is not available, select on the basis of 105% of the NEC motor current rating. For those AC drives rated less than 1.5 Hp selection should be based on an output current rating greater than or equal to 110% of the motor current rating or 110% of the NEC motor current rating.

For **Constant Torque AC and DC Drive** applications operating from six pulse rectifier front ends, select a filter current rating according to application engineering note “Matrix Filter Operation in Constant Torque Applications with Six Pulse Rectifiers” or consult MTE engineering. For phase controlled DC drive applications, select filter current rating per application note “Matrix Filter with Phase Controlled DC Driver.”

The **Capacitor Contactor Option** is recommended for generator applications where the kVA rating of the generator is less than 1.20 times the kVA rating of the Matrix® Filter. Calculate the kVA rating of the Matrix® Filter based on the input voltage rating and the output current rating. Contactor is sized to the filter capacitor current as listed in the user manual.

Where a single Matrix® Filter is used to feed multiple drives, the output current rating of the filter should be selected to equal the total current rating of the individual drives when calculated according to the instructions above.

400 50hz	Base Part Number	Amps rating	Watts	Open Weight Lbs	Open Magnetics Size	HMR Ref. Figure	Open Capacitor assembly size	Cap PNL Ref. Figure	Cab Type
1.5KW	MD_0006C	6	132	22	11.3"H x 6"W x 6.2"D	Fig 2	4.8"H x 4.8"W x 7.3"D	Fig 3	CAB-12C
2.2KW	MD_0008C	8	161	24	11.3"H x 6"W x 6.3"D	Fig 2	4.8"H x 4.8"W x 8.2"D	Fig 3	CAB-12C
3.7KW	MD_0011C	11	197	29	12.4"H x 7.2"W x 5.7"D	Fig 2	5.6"H x 5.6"W x 7.3"D	Fig 3	CAB-12C
5.5KW	MD_0014C	14	232	35	12.4"H x 7.3"W x 6.3"D	Fig 2	5.6"H x 5.6"W x 7.3"D	Fig 3	CAB-12C
7.5KW	MD_0021C	21	294	46	15.8"H x 9"W x 6.5"D	Fig 2	5.6"H x 5.6"W x 6.3"D	Fig 3	CAB-12C
11KW	MD_0027C	27	343	61	15.8"H x 9"W x 7"D	Fig 2	5.6"H x 5.6"W x 7.3"D	Fig 3	CAB-12C
15KW	MD_0034C	34	399	72	15.8"H x 9"W x 7.5"D	Fig 2	5.6"H x 5.6"W x 7.3"D	Fig 3	CAB-12C
18.5KW	MD_0044C	44	472	84	15.8"H x 9"W x 8"D	Fig 2	5.6"H x 5.6"W x 7.3"D	Fig 3	CAB-12C
22KW	MD_0052C	52	533	125	16.5"H x 12.3"W x 9.6"D	Fig 2	5.6"H x 5.6"W x 8.2"D	Fig 3	CAB-17C
30KW	MD_0066C	66	621	150	16.5"H x 12.3"W x 10.7"D	Fig 2	5.6"H x 5.6"W x 8.2"D	Fig 3	CAB-17C
37.5KW	MD_0083C	83	735	176	16.5"H x 12.3"W x 11.3"D	Fig 2	8"H x 7.3"W x 12"D	Fig 3	CAB-17C
45KW	MD_0103C	103	844	180	16.5"H x 12.3"W x 11"D	Fig 2	8"H x 8.1"W x 12"D	Fig 3	CAB-17C
55KW	MD_0128C	128	959	213	23"H x 15.3"W x 11.3"D	Fig 2	8"H x 9.1"W x 12"D	Fig 3	CAB-26C
75KW	MD_0165C	165	1143	278	23"H x 15.3"W x 11.5"D	Fig 2	12"H x 8.1"W x 12"D	Fig 3	CAB-26C
93KW	MD_0208C	208	1355	289	23"H x 15.3"W x 12"D	Fig 2	12"H x 9.1"W x 12"D	Fig 3	CAB-26C
112KW	MD_0240C	240	1493	298	23"H x 15.3"W x 12.4"D	Fig 2	15"H x 8.1"W x 12"D	Fig 3	CAB-26C
150KW	MD_0320C	320	1829	460	35.5"H x 18"W x 20.2"D	Fig 2	15"H x 8.1"W x 12"D 5.6"H x 5.6"W x 9.3"D	Fig 3 Fig 3	CAB-26D
225KW	MD_0403C	403	2098	504	35.5"H x 18"W x 22.5"D	Fig 2	15"H x 8.1"W x 12"D 8"H x 9.1"W x 12"D	Fig 3 Fig 3	CAB-26D
262KW	MD_0482C	482	2371	598	35.5"H x 18"W x 23"D	Fig 2	15"H x 9.1"W x 12"D 12"H x 9.1"W x 12"D	Fig 3 Fig 3	CAB-26D
300KW	MD_0636C	636	2929	866	35.5"H x 24"W x 23.5"D	Fig 2	15"H x 9.1"W x 12"D 5.6"H x 5.6"W x 8.2"D	Fig 3 Fig 3	CAB-30D
375KW	MD_0786C	786	3402	1087	35.5"H x 24"W x 24"D	Fig 2	15"H x 9.1"W x 12"D 12"H x 9.1"W x 12"D	Fig 3 Fig 3	CAB-30D

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## Selection Table Series D Matrix® Harmonic Filter Technical Data - 480 & 600VAC

Note: replace “\_” with P for open panel, “G” General NEMA 1-2 and “W” weather NEMA type 3R in Base part number

480 60hz	Base Part Number	Amps rating	Watts	Open Weight Lbs	Open Magnetics Size	HMR Ref. Figure	Open Capacitor assembly size	Cap PNL Ref. Figure	Cab Type
3hp	MD_0006D	6	132	22	11.3"H x 6"W x 6.2"D	Fig 2	4.8"H x 4.8"W x 7.3"D	Fig 3	CAB-12C
5hp	MD_0008D	8	161	24	11.3"H x 6"W x 6.3"D	Fig 2	4.8"H x 4.8"W x 7.3"D	Fig 3	CAB-12C
7.5hp	MD_0011D	11	197	29	12.4"H x 7.2"W x 5.7"D	Fig 2	4.8"H x 4.8"W x 8.2"D	Fig 3	CAB-12C
10hp	MD_0014D	14	232	35	12.4"H x 7.3"W x 6.3"D	Fig 2	4.8"H x 4.8"W x 8.2"D	Fig 3	CAB-12C
15hp	MD_0021D	21	294	46	15.8"H x 9"W x 6.5"D	Fig 2	5.6"H x 5.6"W x 7.3"D	Fig 3	CAB-12C
20hp	MD_0027D	27	343	61	15.8"H x 9"W x 7"D	Fig 2	5.6"H x 5.6"W x 8.2"D	Fig 3	CAB-12C
25hp	MD_0034D	34	399	72	15.8"H x 9"W x 7.5"D	Fig 2	5.6"H x 5.6"W x 8.7"D	Fig 3	CAB-12C
30hp	MD_0044D	44	472	84	15.8"H x 9"W x 8"D	Fig 2	5.6"H x 5.6"W x 7.3"D	Fig 3	CAB-12C
40hp	MD_0052D	52	533	125	16.5"H x 12.3"W x 9.6"D	Fig 2	5.6"H x 5.6"W x 7.3"D	Fig 3	CAB-17C
50hp	MD_0066D	66	621	154	16.5"H x 12.3"W x 10.7"D	Fig 2	8"H x 7.3"W x 12"D	Fig 3	CAB-17C
60hp	MD_0083D	83	735	176	16.5"H x 12.3"W x 11.3"D	Fig 2	8"H x 7.3"W x 12"D	Fig 3	CAB-17C
75hp	MD_0103D	103	844	180	16.5"H x 12.3"W x 11"D	Fig 2	8"H x 7.3"W x 12"D	Fig 3	CAB-17C
100hp	MD_0128D	128	959	217	23"H x 15.3"W x 11.3"D	Fig 2	12"H x 7.3"W x 12"D	Fig 3	CAB-26C
125hp	MD_0165D	165	1143	273	23"H x 15.3"W x 11.5"D	Fig 2	12"H x 7.3"W x 12"D	Fig 3	CAB-26C
150hp	MD_0208D	208	1355	292	23"H x 15.3"W x 12"D	Fig 2	15"H x 7.3"W x 12"D	Fig 3	CAB-26C
200hp	MD_0240D	240	1493	298	23"H x 15.3"W x 12.4"D	Fig 2	15"H x 7.3"W x 12"D	Fig 3	CAB-26C
250hp	MD_0320D	320	1829	464	35.5"H x 18"W x 20.2"D	Fig 2	15"H x 7.3"W x 12"D 8"H x 7.3"W x 12"D	Fig 3 Fig 3	CAB-26D
300hp	MD_0403D	403	2098	508	35.5"H x 18"W x 22.5"D	Fig 2	12"H x 7.3"W x 12"D 15"H x 7.3"W x 12"D	Fig 3 Fig 3	CAB-26D
400hp	MD_0482D	482	2371	602	35.5"H x 18"W x 23"D	Fig 2	15"H x 7.3"W x 12"D 15"H x 7.3"W x 12"D	Fig 3 Fig 3	CAB-26D
500hp	MD_0636D	636	2929	873	35.5"H x 24"W x 23.5"D	Fig 2	12"H x 8.1"W x 12"D 15"H x 7.3"W x 12"D	Fig 3 Fig 3	CAB-30D
600hp	MD_0786D	786	3402	1082	35.5"H x 24"W x 24"D	Fig 2	15"H x 7.3"W x 12"D 15"H x 7.3"W x 12"D 15"H x 7.3"W x 12"D	Fig 3 Fig 3 Fig 3	CAB-30D
700hp	MD_0850D	850	3750	1163			5.6"H x 5.6"W x 7.3"D	Fig 3	CAB-48D
800hp	MD_0980D	980	4150	1346					CAB-48D
900hp	MD_1050D	1050	4527	1444					CAB-48D
1000hp	MD_1200D	1200	5107	1656					CAB-48D

600 60hz	Base Part Number	Amps rating	Watts	Open Weight Lbs	Open Magnetics Size	HMR Ref. Figure	Open Capacitor assembly size	Cap PNL Ref. Figure	Cab Type
5hp	MD_0006E	6	142	18	11.3"H x 6"W x 6.2"D	Fig 2	5.6"H x 5.6"W x 9.3"D	Fig. 3	CAB-12C
	MD_0008E	8	173	20	12.3"H x 7.3"W x 5.8"D	Fig 2	5.6"H x 5.6"W x 9.3"D	Fig. 3	CAB-12C
10hp	MD_0011E	11	215	25	12.3"H x 7.3"W x 6.1"D	Fig 2	5.6"H x 5.6"W x 7.3"D	Fig. 3	CAB-12C
	MD_0014E	14	253	32	15.8"H x 9"W x 6.5"D	Fig 2	5.6"H x 5.6"W x 8.2"D	Fig. 3	CAB-12C
15hp	MD_0021E	21	328	42	15.8"H x 9"W x 7"D	Fig 2	5.6"H x 5.6"W x 9.3"D	Fig. 3	CAB-12C
25hp	MD_0027E	27	387	59	15.8"H x 9"W x 7.5"D	Fig 2	5.6"H x 5.6"W x 7.3"D	Fig. 3	CAB-12C
30hp	MD_0034E	34	449	70	15.8"H x 9"W x 8"D	Fig 2	5.6"H x 5.6"W x 8.2"D	Fig. 3	CAB-12C
40hp	MD_0044E	44	542	80	16.5"H x 12.3"W x 9.4"D	Fig 2	8"H x 9.1"W x 12"D	Fig. 3	CAB-12C
50hp	MD_0052E	52	611	124	16.5"H x 12.3"W x 10.4"D	Fig 2	8"H x 9.1"W x 12"D	Fig. 3	CAB-17C
60hp	MD_0066E	66	718	149	16.5"H x 12.3"W x 11.3"D	Fig 2	8"H x 9.1"W x 12"D	Fig. 3	CAB-17C
75hp	MD_0083E	83	843	173	16.5"H x 12.3"W x 11.6"D	Fig 2	12"H x 9.1"W x 12"D	Fig. 3	CAB-26C
100hp	MD_0103E	103	977	178	22.9"H x 15.5"W x 11.5"D	Fig 2	12"H x 9.1"W x 12"D	Fig. 3	CAB-26C
125hp	MD_0128E	128	1136	210	22.9"H x 15.5"W x 11.9"D	Fig 2	15"H x 9.1"W x 12"D	Fig. 3	CAB-26C
150hp	MD_0165E	165	1349	289	27.4"H x 15.5"W x 13.4"D	Fig 2	15"H x 9.1"W x 12"D	Fig. 3	CAB-26C
200hp	MD_0208E	208	1614	278	27.4"H x 15.5"W x 12.3"D	Fig 2	15"H x 9.1"W x 12"D	Fig. 3	CAB-26C
250hp	MD_0240E	240	1821	296	35.5"H x 16.5"W x 24"D	Fig 2	15"H x 9.1"W x 12"D	Fig. 3	CAB-26D
300hp	MD_0320E	320	2184	453	35.5"H x 22.5"W x 24"D	Fig 2	15"H x 9.1"W x 12"D 5.6"H x 5.6"W x 9.3"D	Fig. 3 Fig. 3	CAB-26D
400hp	MD_0403E	403	2529	494	35.5"H x 22.5"W x 24"D	Fig 2	15"H x 9.1"W x 12"D 15"H x 9.1"W x 12"D	Fig. 3 Fig. 3	CAB-26D
500hp	MD_0482E	482	2915	583	35.5"H x 22.5"W x 24"D	Fig 2	15"H x 9.1"W x 12"D 12"H x 9.1"W x 12"D	Fig. 3 Fig. 3	CAB-30D
600hp	MD_0636E	636	3621	834	35.5"H x 22.5"W x 25"D	Fig 2	8"H x 9.1"W x 12"D 12"H x 9.1"W x 12"D	Fig. 3 Fig. 3	CAB-30D
800hp	MD_0786E	786	4267	1072	35.5"H x 22.5"W x 25.3"D	Fig 2	15"H x 9.1"W x 12"D 8"H x 9.1"W x 12"D	Fig. 3 Fig. 3	CAB-42D

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## Enclosure & Electrical Options Series D Matrix® Harmonic Filters

Type	Size inches	3R Depth	Weight
CAB-12C	24"H x 13"W x 18"D	23"	74#
CAB-17C	31"H x 18"W x 21"D	26"	96#
CAB-26C	47"H x 27"W x 25"D	30"	180#
CAB-26D	72"H x 27"W x 25"D	35"	256#
CAB-30D	82"H x 31"W x 32"D	40"	319#
CAB-42D	82"H x 43"W x 31"D	40"	393#
CAB-48D	82"H x 49"W x 37"D	46"	518#

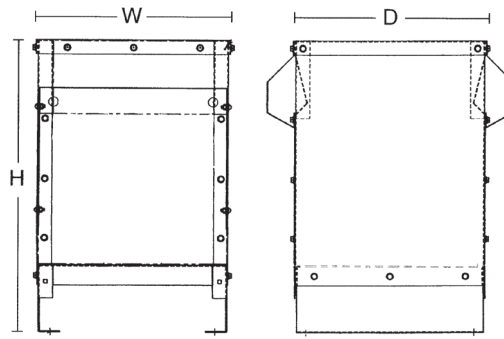


Figure 1 - General Purpose Enclosure  
NEMA 1, 2, & 3R



### Enclosure Options - Series D Matrix® Harmonic Filters

**Option -100 - NEMA 3R enclosure with high endurance white paint:** These galvanized enclosures are supplied with continuous welds on the top cover and weather shields. Exterior hardware is supplied with gaskets.

**Option -200 - NEMA 3R STAINLESS STEEL enclosure with high endurance white paint:** These enclosures are constructed from 316L stainless alloy using stainless steel hardware. Gaskets are applied to weather proof exterior components. The exterior surfaces of the enclosure are finished in high endurance white polyester powder coat.

**Option -300 - Standard Grey enclosure with optional Serpent/Rodent screens:** Provides intake exhaust air screens with (1/4in X 1/4in) mesh openings.

**Option -400 - NEMA 3R enclosure with high endurance white paint plus Serpent/Rodent screens:** This option incorporates air intake screens with 1/4in X 1/4in mesh openings with the white painted NEMA 3R enclosure of Option -100.

**Option -500 - NEMA 3R STAINLESS STEEL enclosure with high endurance white paint plus Serpent/Rodent screens:** This option incorporates air intake screens with 1/4in X 1/4in mesh openings with the white painted NEMA 3R enclosure of Option -200.

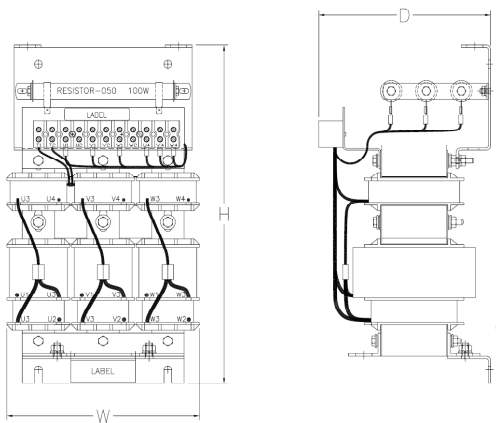


Figure 2 -  
Open Magnetics

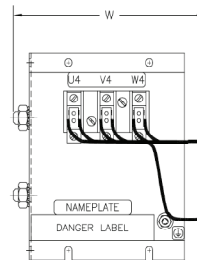
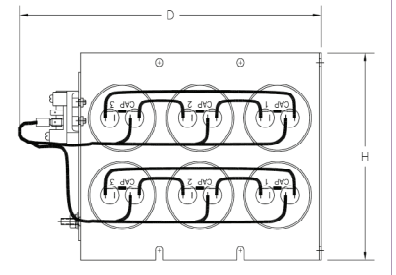


Figure 3 -  
Capacitor Assemblies



### Electrical Options - Series D Matrix® Harmonic Filters

**Option -002 - Capacitor Contactor:** This option provides a contactor to disconnect the filter capacitor bank (KVAR current becomes zero) when the drive is not running. The contactor is supplied with NO/NC auxiliary contacts. The contactor coil and auxiliary contacts are wired to a customer terminal block. A 120Volt 60Hz power source is required for this option.

**Option -012** is a self powered version.

**Option -009 - Capacitor Contactor with adjustable pick-up and drop-out:** This option provides a contactor to disconnect the filter capacitor bank based on the motor load current. Two current operated switches provide independent adjustment of the pick-up and drop-out current levels. The switches are preset at the factory for pick-up at 50% and drop-out at 20% of the filter output current rating. The switches are field adjustable over a 0% to 100% current range. This option includes a 120VAC control transformer.

**Option -010 - Filter Bypass:** The filter bypass option is designed to provide filter bypass for drives that have an integrated bypass option as typically found in HVAC applications. Filter bypass is initiated by a contact closure when the motor is switched to operate directly from the AC line instead of the drive. A 120VAC control power source is required.

**Option -011** is a self powered version.

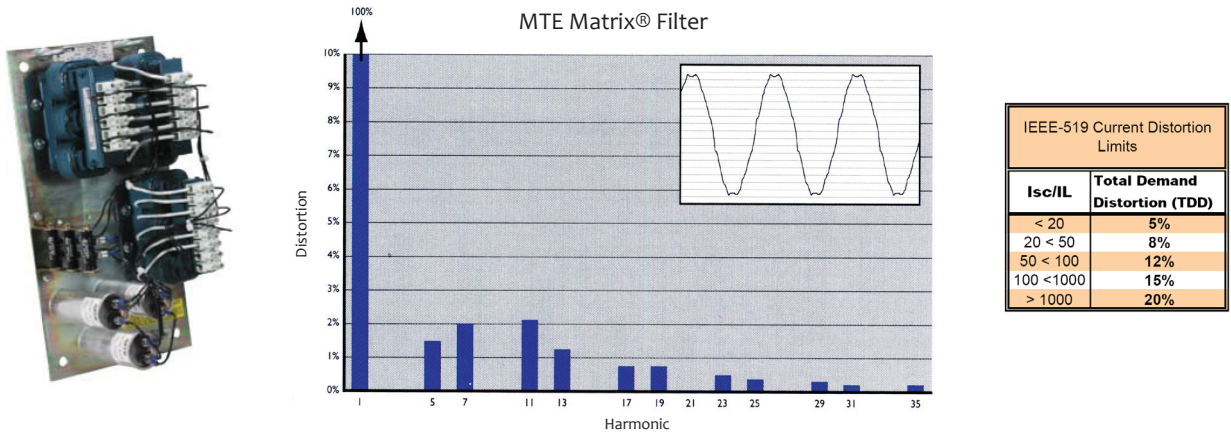
**Option -013 - Filter bypass and capacitor contactor with control transformer:** This option combines the filter bypass (Option -010) with a self-powered customer controlled capacitor disconnect contactor (Option -012). A jumper selection provides single contact switching for normal bypass control with capacitor removal.

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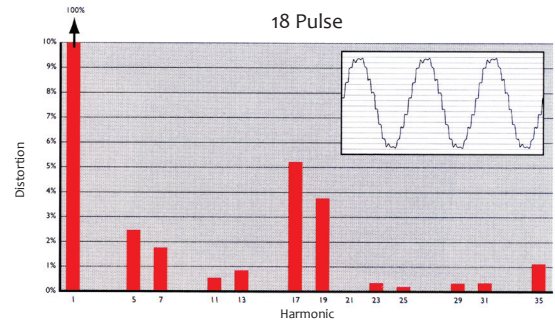
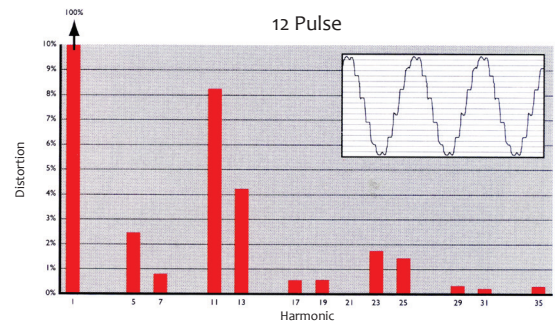
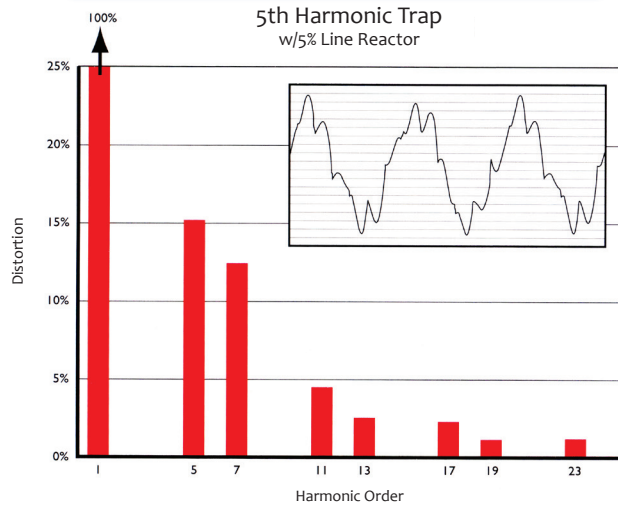
# See the Matrix® Filter difference for yourself!

Compare the difference in waveform and harmonic spectrum for real life tests performed at full load conditions for various harmonic mitigation techniques.



IEEE-519 Current Distortion Limits	
Isc/IL	Total Demand Distortion (TDD)
< 20	5%
20 < 50	8%
50 < 100	12%
100 < 1000	15%
> 1000	20%

Matrix® Filters attenuate harmonics better than these alternative filtering techniques. Data based on actual tests at full load power.



Part Number Code: MD X - - X - - -

Product Code Matrix Series D \_\_\_\_\_

Type \_\_\_\_\_

P<sub>Panel Mnt</sub> G<sub>General Purpose NEMA2</sub> W<sub>Weather NEMA3R</sub>

Current Rating \_\_\_\_\_

0006<sub>6 amps</sub> 0786<sub>786 amps</sub>

Voltage Frequency Code \_\_\_\_\_

C<sub>380VAC - 415VAC 50Hz</sub> D<sub>480VAC 60Hz</sub>

Enclosure Options \_\_\_\_\_

Contactor Options \_\_\_\_\_



**THE GLOBAL POWER QUALITY RESOURCE**

MTE Corporation - Menomonee Falls, WI - 1-800-455-4MTE - www.mtecorp.com

# Product Specifications - Matrix® Harmonic Filters

Refer to the MTE SERIES D MATRIX® HARMONIC FILTER User Manual for Detailed Specifications

Matrix Filters are designed to operate and will achieve guaranteed performance under the follow conditions:

**Load:** 6 pulse rectifier, operating in variable torque mode and chosen from the standard selection table. For constant torque application select filter rating based on appropriate application note: **AN-0106**

**Input voltage:** Nominal voltage VAC +/- 10%, 3 Phase

**Frequency:** Nominal Frequency + .75 Hz

**Input voltage line unbalance:** 1% maximum

**Maximum source impedance:** 6.00%

**Minimum source impedance:** 1.5%

**Service Factor:** 1.00

**Ambient Temperature (Operating)**

**Enclosed Filters:** -40 to +40 degrees C

**Open Panel Filters:** -40 to +50 degrees C

**Storage Temperature:** -40 to +90 degrees C

**Altitude:** 0 to 3300 Feet above sea level without derating

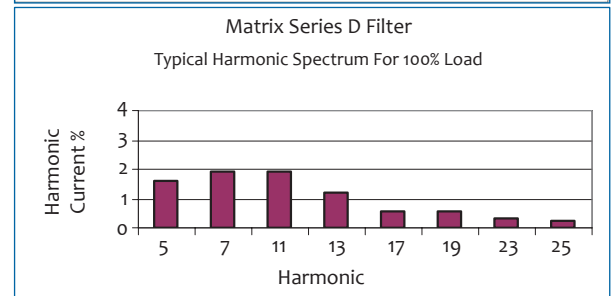
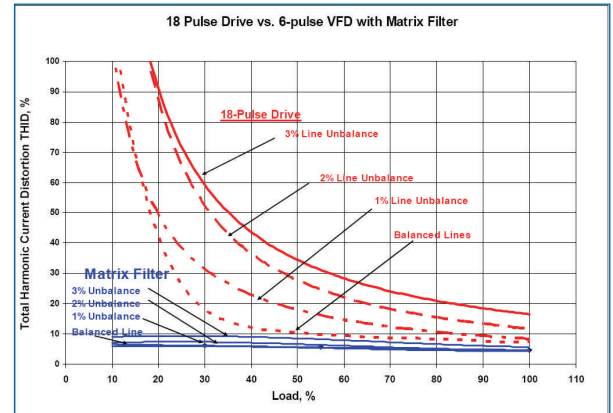
**Relative Humidity:** 0 to 95% non-condensing

**Agency Approvals**

UL and cUL listed : UL508 and CSA-C22.2 No 14-95 File E180243 (3HP to 1000HP, 120VAC to 600VAC, 50Hz, 50/60Hz, & 60Hz Three Phase)

**Performance**

**Total Harmonic Current Distortion:** 5% MAX at FULL LOAD



## Performance Guarantee

Select & install the appropriate Matrix Harmonic Filter in a variable torque AC variable frequency drive application, within our published system limits & we guarantee that the input current distortion will be less than or equal to 5% THID for MD Series filters at full load. If a properly sized & installed filter fails to meet its specified THID level, MTE will provide the necessary modifications or replacement filter at no charge. TDD will typically be even lower than THID.

Matrix filters can also provide similar performance in other drive applications such as constant torque, DC drives & other phase controlled rectifiers, but actual THID levels can vary by load and/or speed & therefore cannot be guaranteed. Consult factory for assistance when applying Matrix filters on these types of equipment

### 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:** 60Hz ± 0.75Hz

**System Voltage:** Nominal System Voltage (line to line) ±10%

**Balanced Line Voltage:** within 1%,

**Background Voltage Distortion:** 0% THVD.

NOTE: The presence of background voltage distortion will cause motors & other linear loads to draw harmonic currents. Additional harmonic currents may flow into the Matrix filter if there is harmonic voltage distortion already on the system.

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