

Sine Wave Filters

Series A - Selection Table & Technical Specifications Guide

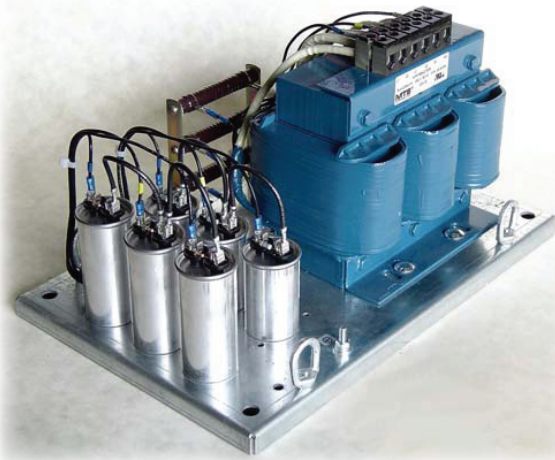
MTE SERIES A SINE WAVE FILTERS are designed to provide a Sine Wave output voltage when driven from Variable Frequency Drives or other types of PWM inverters with switching frequencies from 2kHz to 8kHz. For Variable Frequency Drive (VFD) applications, MTE Sine Wave Filters eliminate the problem of motor/cable insulation failures, heating, and audible noise. Sine Wave Filters also reduce electromagnetic interference (EMI) by eliminating the high dV/dt associated with inverter output waveforms.

APPLICATIONS - For alternative energy applications, such as wind driven generators, where an inverter is used to return power to the utility distribution system through a step-up transformer, these filters meet the requirements of IEEE-519 and permit the use of standard transformers.

Added cable protection and the economy of using standard grade electrical wire is a significant benefit of using the MTE Sine Wave Filter to protect against long lead drive to motor excess voltage problems.

SINE WAVE FILTER SELECTION - For variable and constant torque applications, select filters based on the current rating of the motor. Filter current ratings have been designed to meet the NEC requirements. For applications that use motors with current ratings that exceed NEC values, select a filter with a current rating equal to or greater than that of the load. Where a single filter feeds multiple motors select the filter based on the total motor current.

For inverters feeding isolation transformers select a filter with a current rating equal to or greater than that of the transformer primary current. Power and frequency converter applications which use PWM inverters to supply a wide range of loads require that the output of the Sine Wave Filter must feed a Delta-Wye isolation transformer with the primary sized to the Sine Wave Filter full load current.



PRODUCT SELECTION: See [MTE Sine Wave Filter Selection Brochure](#) or visit the MTE website at www.mtecorp.com for complete product selection. **Please note that Series A Sine Wave Filters can only be used with PWM inverters with switching frequencies between 2kHz and 8kHz.**

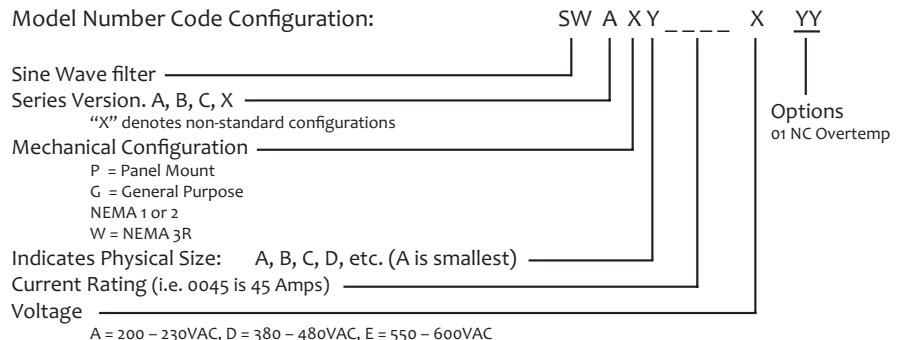
BASIC SPECIFICATION RANGES - The Sine Wave Filter is available in voltage ranges of 200–230VAC, 380-480VAC, or 550-600VAC & for motor sizes from 1.5 Hp to 700 Hp. The Sine Wave Filter has a continuous current rating of 100% RMS & an intermittent current of 150% for 1 minute. Harmonic voltage distortion feeding a transformer at full load & at 60Hz is 5% maximum. Harmonic voltage distortion feeding a motor at full load & at 60Hz is 5% typical.

INSTALLATION OPTIONS: Panel-mount or NEMA 1, 2 and 3R enclosures are available.

Typical applications include:

- HVAC Fans
- Deep Well Pumps on VFDs
- Multi Motor Common Drive Conveyor Systems
- Variable Frequency Power
- Linear Drive Motors
- Old Non Inverter Duty Motors used with Modern VFDs
- Underground Ventilation
- Critical Process Controls Systems

Model Number Code Configuration:



Selection Table Series A Sine Wave Filter Technical Data - 200 & 230VAC

200 V Motor HP	230 V Motor HP	Filter Amps	Open Panel Design					NEMA 1-2		NEMA 3R		Watts
			Cat. PN.	weight #	Magnetics Size	RC Panel Size	Fig.	Cat. PN.	Cab Type	Cat. PN.	Cab Type	
0.5	0.5	3	SWAP0003A	16	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0003A	CAB-13V	SWAWA0003A	CAB-12C	124
.75 - 1	.75 - 1	5	SWAP0005A	21	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0005A	CAB-13V	SWAWA0005A	CAB-12C	149
1.5	1.5	7	SWAP0007A	24	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0007A	CAB-13V	SWAWA0007A	CAB-12C	191
2	2	9	SWAP0009A	24	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0009A	CAB-13V	SWAWA0009A	CAB-12C	125
3	3	12	SWAP0012A	27	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0012A	CAB-13V	SWAWA0012A	CAB-12C	206
-	5	17	SWAP0017A	31	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0017A	CAB-13V	SWAWA0017A	CAB-12C	279
5	7.5	22	SWAP0022A	32	12.5"H x 9.8"W x 7.5"D	-	1	SWAGB0022A	CAB-17V	SWAWB0022A	CAB-17C	362
7.5	10	30	SWAP0030A	38	12.5"H x 9.8"W x 7.5"D	-	1	SWAGB0030A	CAB-17V	SWAWB0030A	CAB-17C	329
10	15	45	SWAP0045A	47	17"H x 11"W x 9"D	-	1	SWAGB0045A	CAB-17V	SWAWB0045A	CAB-17C	476
15	20	55	SWAP0055A	55	17"H x 11"W x 9"D	-	1	SWAGB0055A	CAB-17V	SWAWB0055A	CAB-17C	520
20	25	70	SWAP0070A	60	17"H x 11"W x 9"D	-	1	SWAGC0070A	CAB-17V	SWAWC0070A	CAB-17C	606
25	30	85	SWAP0085A	73	6.9"H x 9"W x 8.1"D	20"H x 11"W x 7.6"D	2	SWAGC0085A	CAB-26C	SWAWC0085A	CAB-26C	752
30	40	110	SWAP0110A	92	8.8"H x 11"W x 9.8"D	20"H x 11"W x 7.6"D	2	SWAGC0110A	CAB-26C	SWAWC0110A	CAB-26C	788
40	50	135	SWAP0135A	100	8.8"H x 11"W x 9.8"D	20"H x 11"W x 7.6"D	2	SWAGC0135A	CAB-26C	SWAWC0135A	CAB-26C	989
50	60	160	SWAP0160A	121	8.8"H x 11"W x 9.8"D	20"H x 11"W x 7.6"D	2	SWAGC0160A	CAB-26C	SWAWC0160A	CAB-26C	1062
60	75	200	SWAP0200A	167	13"H x 14.4"W x 10.8"D	27"H x 17"W x 7.6"D	2	SWAGC0200A	CAB-30C	SWAWC0200A	CAB-30C	1377
75	100	250	SWAP0250A	196	13"H x 14.4"W x 11.3"D	27"H x 17"W x 7.6"D	2	SWAGD0250A	CAB-30C	SWAWD0250A	CAB-30C	1617
100	125	320	SWAP0320A	228	13"H x 14.4"W x 11.5"D	27"H x 17"W x 7.6"D	2	SWAGD0320A	CAB-30C	SWAWD0320A	CAB-30C	1991

Sine Wave Filter Selection:

Select filters based on the current rating of the motor for both variable and constant torque applications. These filters have been designed to meet motor current requirements based on the NEC motor ratings. For applications that exceed NEC current ratings, use the next larger filter. Series A Sine Wave Filters are available as open panel and with enclosed ratings including NEMA 1, NEMA 2, and NEMA 3R.

Multiple Motors On One Filter:

Where a single filter is used to feed multiple motors, the filter current rating should be selected equal to the total current ratings of all motors.

Variable Frequency Power Source:

For inverter power applications, use a Delta-Wye isolation transformer or step-up transformer on the Sine Wave Filter output. The filter current rating should be equal to or greater than that of the loaded primary current.

Type	Size inches	3R Depth	Weight
CAB-13V	13"H x 13"W x 13"D	-"	18#
CAB-17V	24"H x 17"W x 18"D	-"	27#
CAB-12C	24"H x 13"W x 18"D	23"	68#
CAB-17C	31"H x 18"W x 21"D	26"	84#
CAB-26C	47"H x 27"W x 25"D	30"	180#
CAB-30C	72"H x 31"W x 31"D	40"	319#
CAB-42C	72"H x 43"W x 31"D	40"	393#

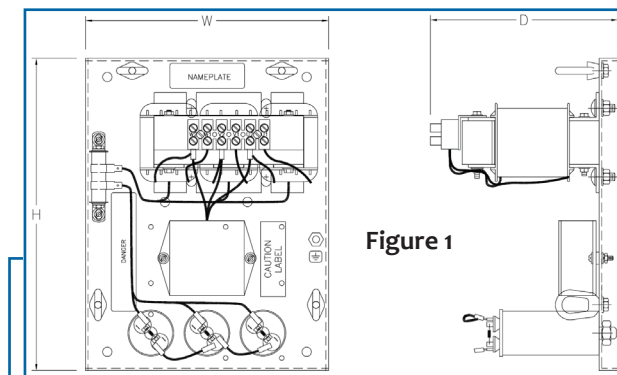


Figure 1

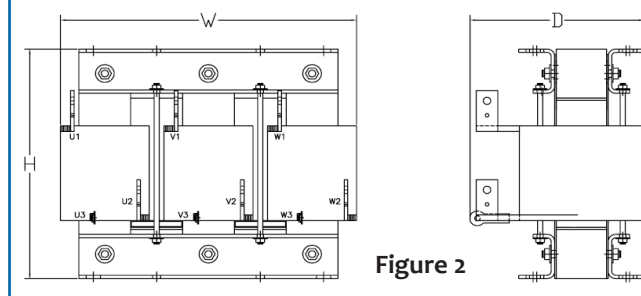
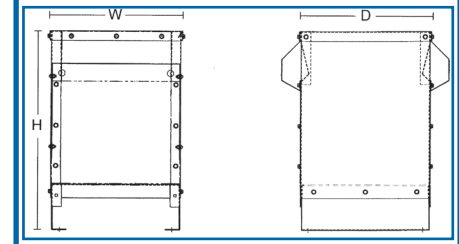
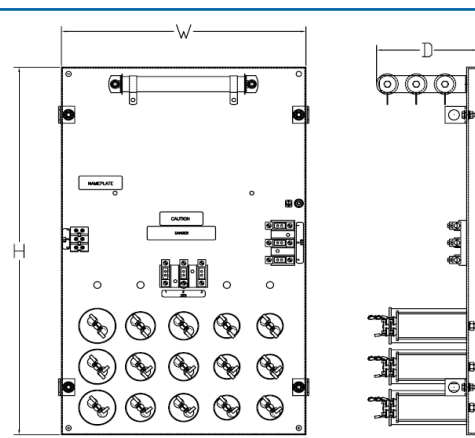


Figure 2



Selection Table Series A Sine Wave Filter Technical Data - 380, 480, & 600VAC

380 V Motor KW	480 V Motor HP	Filter Amps	Open Panel Design					NEMA 1-2		NEMA 3R		Watts
			Cat. PN.	weight #	Magnetics Size	RC Panel Size	Fig.	Cat. PN.	Cab Type	Cat. PN.	Cab Type	
0.75	1	2	SWAP0002D	16	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0002D	CAB-13V	SWAWA0002D	CAB-12C	40
1.1	1.5	3	SWAP0003D	18	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0003D	CAB-13V	SWAWA0003D	CAB-12C	53
1.5 - 2.2	2 - 3	5	SWAP0005D	22	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0005D	CAB-13V	SWAWA0005D	CAB-12C	93
3	-	7	SWAP0007D	25	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0007D	CAB-13V	SWAWA0007D	CAB-12C	110
4	5	9	SWAP0009D	27	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0009D	CAB-13V	SWAWA0009D	CAB-12C	128
5.5	7.5	12	SWAP0012D	27	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0012D	CAB-13V	SWAWA0012D	CAB-12C	162
7.5	10	17	SWAP0017D	30	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0017D	CAB-13V	SWAWA0017D	CAB-12C	151
11	15	22	SWAP0022D	37	17"H x 11"W x 9"D	-	1	SWAGB0022D	CAB-17V	SWAWB0022D	CAB-17C	229
-	20	27	SWAP0027D	38	17"H x 11"W x 9"D	-	1	SWAGB0027D	CAB-17V	SWAWB0027D	CAB-17C	216
15	25	35	SWAP0035D	51	17"H x 11"W x 9"D	-	1	SWAGB0035D	CAB-17V	SWAWB0035D	CAB-17C	262
18.5-22	30	45	SWAP0045D	57	17"H x 11"W x 9"D	-	1	SWAGB0045D	CAB-17V	SWAWB0045D	CAB-17C	360
-	40	55	SWAP0055D	67	17"H x 11"W x 9"D	-	1	SWAGB0055D	CAB-17V	SWAWB0055D	CAB-17C	457
30	50	65	SWAP0065D	77	17"H x 13"W x 9"D	-	1	SWAGB0065D	CAB-17V	SWAWB0065D	CAB-17C	454
37	60	80	SWAP0080D	86	17"H x 13"W x 9"D	-	1	SWAGC0080D	CAB-26C	SWAWC0080D	CAB-26C	596
45-55	75	110	SWAP0110D	117	13"H x 14.4"W x 10.5"D	20"H x 11"W x 7.6"D	2	SWAGC0110D	CAB-26C	SWAWC0110D	CAB-26C	878
-	100	130	SWAP0130D	134	13"H x 14.4"W x 10.8"D	20"H x 11"W x 7.6"D	2	SWAGC0130D	CAB-26C	SWAWC0130D	CAB-26C	836
75-90	125	160	SWAP0160D	163	13"H x 14.4"W x 11.3"D	20"H x 11"W x 7.6"D	2	SWAGC0160D	CAB-26C	SWAWC0160D	CAB-26C	996
110	150	200	SWAP0200D	188	13"H x 14.4"W x 11.5"D	27"H x 17"W x 7.6"D	2	SWAGD0200D	CAB-30C	SWAWD0200D	CAB-30C	1286
132	200	250	SWAP0250D	233	13"H x 14.4"W x 13.5"D	27"H x 17"W x 7.6"D	2	SWAGD0250D	CAB-30C	SWAWD0250D	CAB-30C	1424
160	250	305	SWAP0305D	266	13"H x 14.4"W x 15"D	27"H x 17"W x 7.6"D	2	SWAGD0305D	CAB-30C	SWAWD0305D	CAB-30C	1701
185-200	300	365	SWAP0365D	425	17"H x 22"W x 12.5"D	27"H x 17"W x 7.6"D	2	SWAGD0365D	CAB-30C	SWAWD0365D	CAB-30C	1841
-	350	415	SWAP0415D	500	17"H x 22"W x 15.5"D	27"H x 17"W x 7.6"D	2	SWAGD0415D	CAB-30C	SWAWD0415D	CAB-30C	2021
250	400-450	515	SWAP0515D	650	17"H x 22"W x 15.5"D	27"H x 17"W x 7.6"D	2	SWAGD0515D	CAB-30C	SWAWD0515D	CAB-30C	2944
315	500	600	SWAP0600D	825	17"H x 22"W x 22"D	38"H x 17"W x 7.3"D	2	SWAGE0600D	CAB-42C	SWAWE0600D	CAB-42C	3698
355-400	600	720	SWAP0720D	1125	28.5"H x 33.5"W x 19.5"D	38"H x 17"W x 7.3"D	2	SWAGE0720D	CAB-42C	SWAWE0720D	CAB-42C	4133

600 V Motor HP	Filter Amps	Open Panel Design					NEMA 1-2		NEMA 3R		Watts
		Cat. PN.	weight #	Magnetics Size	RC Panel Size	Fig.	Cat. PN.	Cab Type	Cat. PN.	Cab Type	
1.5	2	SWAP0002E	18	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0002E	CAB-13V	SWAWA0002E	CAB-12C	57
2	3	SWAP0003E	21	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0003E	CAB-13V	SWAWA0003E	CAB-12C	67
3	5	SWAP0005E	24	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0005E	CAB-13V	SWAWA0005E	CAB-12C	95
5	7	SWAP0007E	26	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0007E	CAB-13V	SWAWA0007E	CAB-12C	120
7.5	9	SWAP0009E	27	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0009E	CAB-13V	SWAWA0009E	CAB-12C	155
10	12	SWAP0012E	27	12.5"H x 9.8"W x 7.5"D	-	1	SWAGA0012E	CAB-13V	SWAWA0012E	CAB-12C	177
15	17	SWAP0017E	37	17"H x 11"W x 9"D	-	1	SWAGB0017E	CAB-17V	SWAWB0017E	CAB-17C	219
20	22	SWAP0022E	38	17"H x 11"W x 9"D	-	1	SWAGB0022E	CAB-17V	SWAWB0022E	CAB-17C	253
25	27	SWAP0027E	45	17"H x 11"W x 9"D	-	1	SWAGB0027E	CAB-17V	SWAWB0027E	CAB-17C	295
30	35	SWAP0035E	58	17"H x 11"W x 9"D	-	1	SWAGB0035E	CAB-17V	SWAWB0035E	CAB-17C	323
40	45	SWAP0045E	63	17"H x 11"W x 9"D	-	1	SWAGB0045E	CAB-17V	SWAWB0045E	CAB-17C	489
50	55	SWAP0055E	75	17"H x 13"W x 9"D	-	1	SWAGB0055E	CAB-17V	SWAWB0055E	CAB-17C	535
60	65	SWAP0065E	86	17"H x 13"W x 9"D	-	1	SWAGB0065E	CAB-17V	SWAWB0065E	CAB-17C	650
75	80	SWAP0080E	117	13"H x 14.4"W x 10.5"D	20"H x 11"W x 7.6"D	2	SWAGC0080E	CAB-26C	SWAWC0080E	CAB-26C	806
100	110	SWAP0110E	146	13"H x 14.4"W x 10.8"D	20"H x 11"W x 7.6"D	2	SWAGC0110E	CAB-26C	SWAWC0110E	CAB-26C	1014
125	130	SWAP0130E	166	13"H x 14.4"W x 11.3"D	20"H x 11"W x 7.6"D	2	SWAGC0130E	CAB-26C	SWAWC0130E	CAB-26C	1157
150	160	SWAP0160E	194	13"H x 14.4"W x 12.3"D	20"H x 11"W x 7.6"D	2	SWAGC0160E	CAB-26C	SWAWC0160E	CAB-26C	1589
200	200	SWAP0200E	236	13"H x 14.4"W x 13.5"D	20"H x 11"W x 7.6"D	2	SWAGD0200E	CAB-30C	SWAWD0200E	CAB-30C	1315
250	250	SWAP0250E	280	13"H x 14.4"W x 13.5"D	20"H x 11"W x 7.6"D	2	SWAGD0250E	CAB-30C	SWAWD0250E	CAB-30C	1655
300	305	SWAP0305E	425	17"H x 22"W x 12.5"D	27"H x 17"W x 7.6"D	2	SWAGD0305E	CAB-30C	SWAWD0305E	CAB-30C	2237
350	365	SWAP0365E	490	17"H x 22"W x 13.5"D	27"H x 17"W x 7.6"D	2	SWAGD0365E	CAB-30C	SWAWD0365E	CAB-30C	2489
400	415	SWAP0415E	726	17"H x 22"W x 17"D	38"H x 17"W x 7.3"D	2	SWAGD0415E	CAB-30C	SWAWD0415E	CAB-30C	3098
450-500	515	SWAP0515E	750	17"H x 22"W x 17.8"D	27"H x 17"W x 7.6"D	2	SWAGD0515E	CAB-30C	SWAWD0515E	CAB-30C	3229
600	600	SWAP0600E	1225	28.5"H x 33.5"W x 19.5"D	38"H x 17"W x 7.3"D	2	SWAGE0600E	CAB-42C	SWAWE0600E	CAB-42C	3406
700	720	SWAP0720E	1375	28.5"H x 33.5"W x 20"D	38"H x 17"W x 7.3"D	2	SWAGE0720E	CAB-42C	SWAWE0720E	CAB-42C	3935

THE GLOBAL POWER QUALITY RESOURCE

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

Product Specifications - 2kHz-8kHz Sine Wave Filters

Refer to the Series A Sine Wave Filter User Manual for Detailed Specifications

Performance:

Harmonic Voltage Distortion when feeding a:

Transformer at full load and at 60Hz: 5% maximum
 Motor at full load and at 60Hz: 5% typical

Ratings:

Continuous Current Rating: 100% RMS
Intermittent Current Ratings: 150 % for 1 minute
Minimum Inverter Switching Frequency: 2kHz
Maximum Inverter Switching Frequency: 8kHz
Nominal Inverter Operating Frequency: 60Hz
 Minimum: 0Hz
 Maximum with de-rating: 90Hz
Altitude without de-rating: 1000 meters
Maximum Motor Lead Length: 15,000 feet
Maximum ambient temperature: 50° C open filters
 40° C enclosed filters
Insertion Loss: 10% of rated voltage maximum

Insertion Loss:

Audible Noise:

Maximum Audible Noise Level at
 Two Meters for Standard Configuration: 76dB-A

Output Compatibility/Loading:

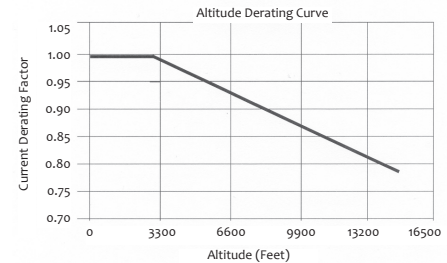
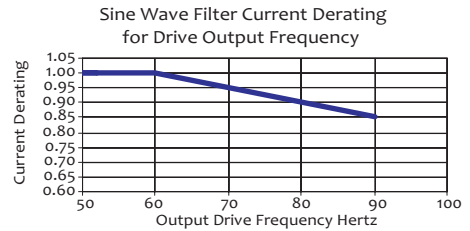
Conventional 3 phase motors. Standard step-up transformer with 4% minimum output impedance, "No load" continuous operation

Agency Approvals, UL& cUL:

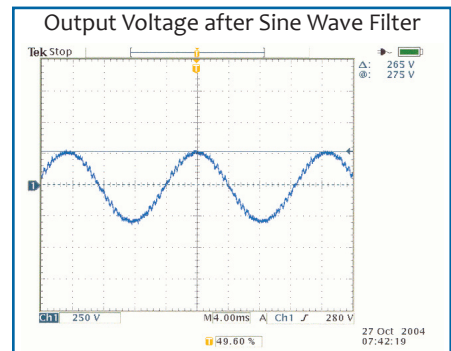
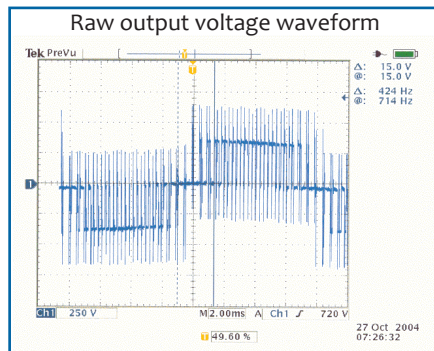
Listed to UL508 type MX and CSA-C22.2 No 14-95, File E180243
 3HP to 1000HP, 120VAC to 600VAC, 50/60Hz Three Phase

Note: Short Circuit rating not required under Exception No.1 of UL508A SB4.2.1

Data subject to change without notice.



MTE Sine Wave Filters help eliminate the high dV/dt associated with inverter output waveforms in applications where the distance between the motor and the inverter is up to 15,000 feet.



For Technical Support: appengrg@mtcorp.com

For Sales Support: sales@mtcorp.com

World Headquarters
 N83 W13330 Leon Road
 Menomonee Falls
 Wisconsin 53052
 Toll Free 1-800-455-4MTE
 Phone: (262) 253-8200
 Fax: (262) 253-8222

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