hammond
POWER SOLUTIONS

PASSIVE HARMONIC FILTER

Passive Harmonic Filter

HPS passive harmonic filter improves power quality by simultaneously reducing harmonics and improving true power factor.

The advanced HPS design delivers superior performance compared to traditional harmonic filters by reducing harmonic current distortion by 80% (typically to 5% or less at full load), corrects true power factor to over 95%, and meets IEEE 519 harmonic requirements when operated within designed parameters.

The passive harmonic filter consists of reactors and capacitors in an LCL arrangement designed to reduce a broad range of harmonics associated with VFD's and other three phase rectifiers.

Power Quality & Harmonic Distortion

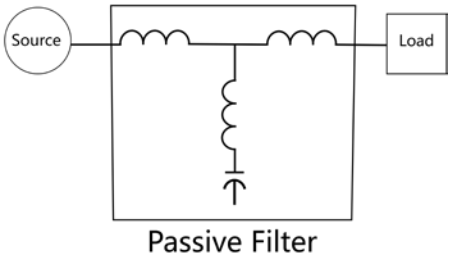
Causes

Harmonic current and voltage distortion are major causes of unscheduled down time, equipment malfunction and damage.

Current and voltage harmonics are caused by non-linear loads such as variable frequency drives (VFD's), DC drives, chargers, rectifiers, and induction heating systems.

Consequences

- Overheating of electrical equipment
- Loss of efficiency
- Nuisance tripping
- Premature equipment failure
- Interference with communication systems



Passive Filter

One Power Solution

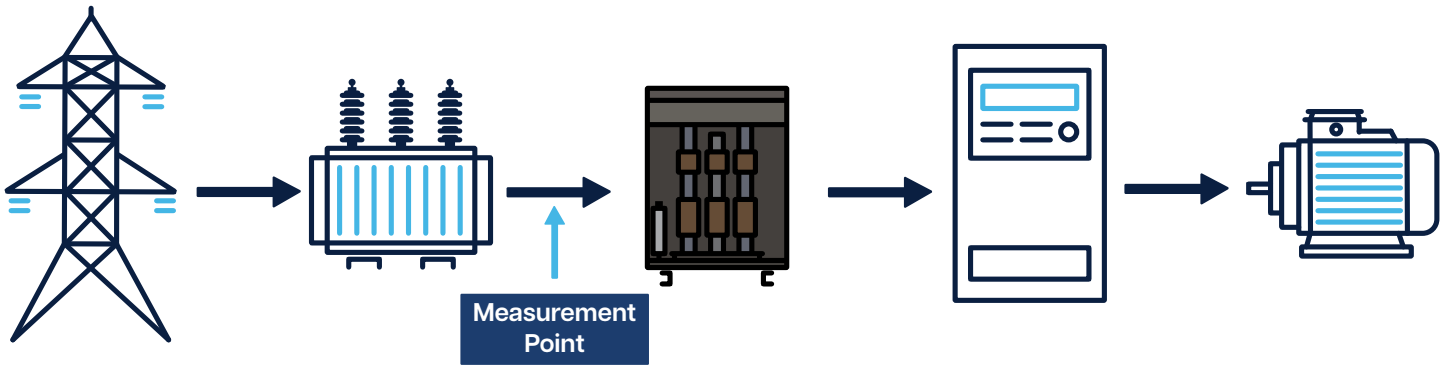
To maximize the harmonic mitigation and true power factor correction, each HPS passive harmonic filter unit is specifically engineered to mitigate harmonic currents created by non-linear loads such as variable frequency drives and is available from 5 to 1500 horsepower.

- Proven mitigation technology
- Patented design
- Suitable with varying power loads
- Meets IEEE 519 standard when operated within designed parameters
- Generator compatible without capacitor contactor

HPS Passive Harmonic Filter Operation Principle

By using an unique series/parallel arrangement of inductance and capacitance, harmonic currents produced by non-linear loads including VFD's are reduced. The HPS passive harmonic filter achieves compliance with IEEE 519-2014 (when operated within designed parameters) for both current and voltage distortion at the input to the filter.

Example Installation



Industries

Critical applications require IEEE-519 compliant power systems. Below are some examples of industries with critical applications:

- Chemical Processing
- Data Centers
- HVAC Systems
- Material Handling
- Mining
- Oil & Gas
- Pulp & Paper
- Hospitals
- Wastewater Treatment Plants
- EV Charging

What You Gain

Compared to other power quality technologies HPS passive harmonic filter provides the most efficient and reliable solution.

Profitability

Passive harmonic filters are a cost effective solution for power quality issues.

Improved Reliability

Increased electrical power quality results in increased uptime and reduces nuisance tripping events.

Energy Savings

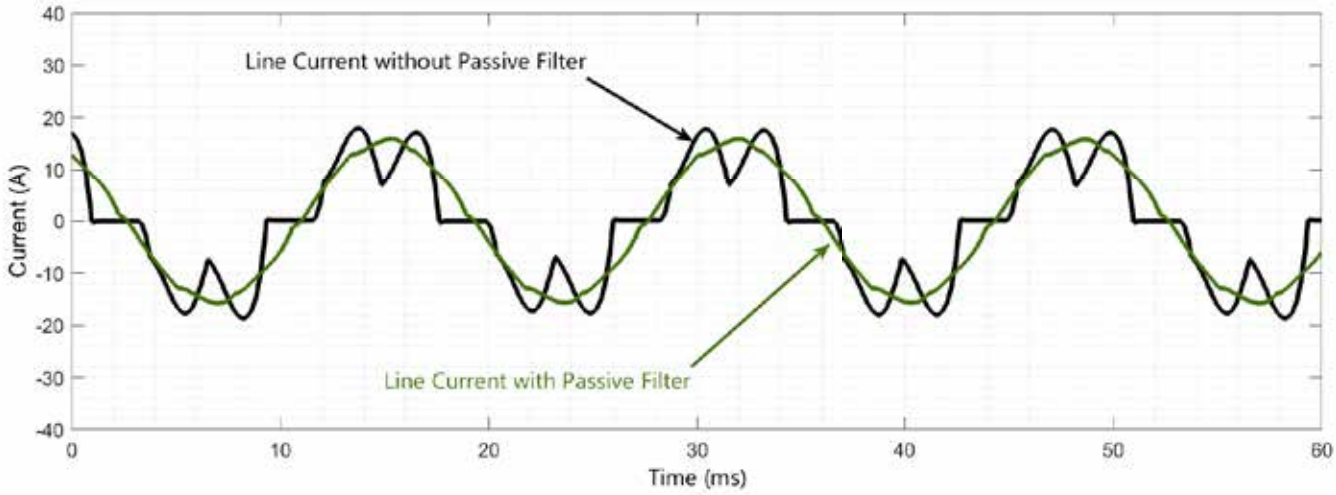
Combine the most efficient passive harmonic filters with proven system efficiency gains.

Passive Harmonic Filter

How Passive Filters Mitigate Harmonics

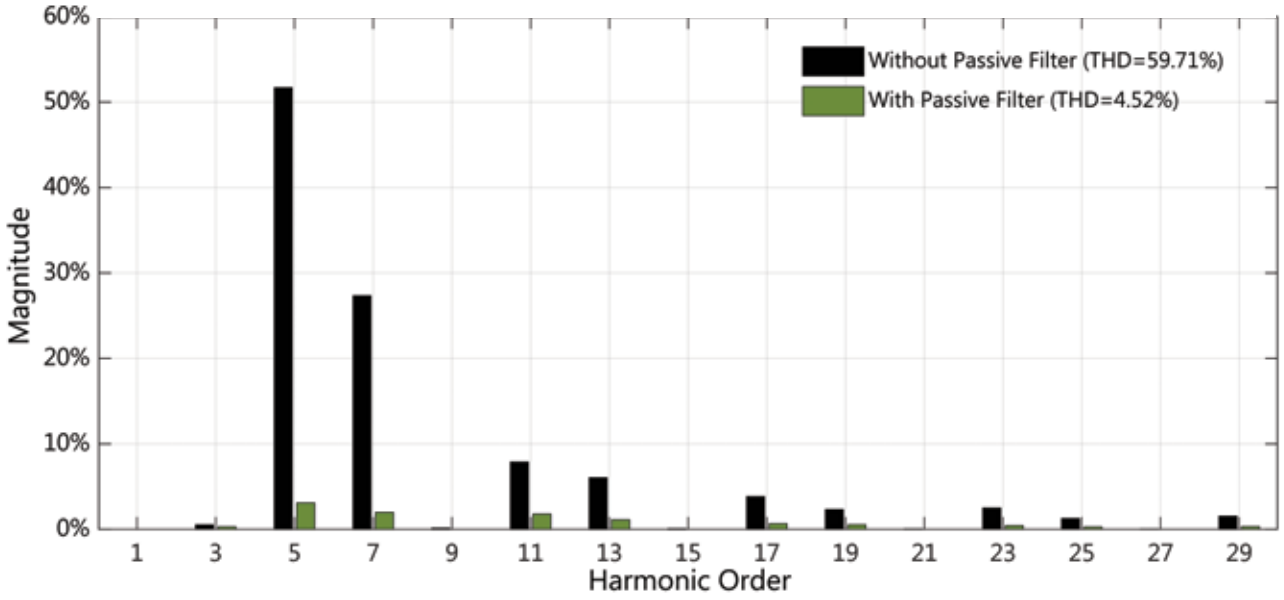
Variable frequency drives (VFD's) are power electronic devices designed to control the speed of motors by changing the frequency of the power supplied to the motor. VFD's, among other non-linear devices, create harmonics when converting AC to DC voltage. The current drawn by the 6-pulse rectifiers on the input of the VFD is non-linear, which distorts the utility's sine wave. This non-linear current is the source of harmonics. These harmonic currents flowing upstream from the VFD can cause inefficiency and overheating of transformers and motors, misoperation of equipment, and interference with telephone and other communication equipment.

Typical Line Current With And Without Passive Filter



The HPS passive harmonic filter is engineered to reduce the 5th, 7th, 11th, and 13th harmonics and higher orders in three phase power systems. The HPS passive harmonic filter improves the power quality by mitigating harmonics caused by non-linear loads.

Typical Current Harmonic Distortion (THD)



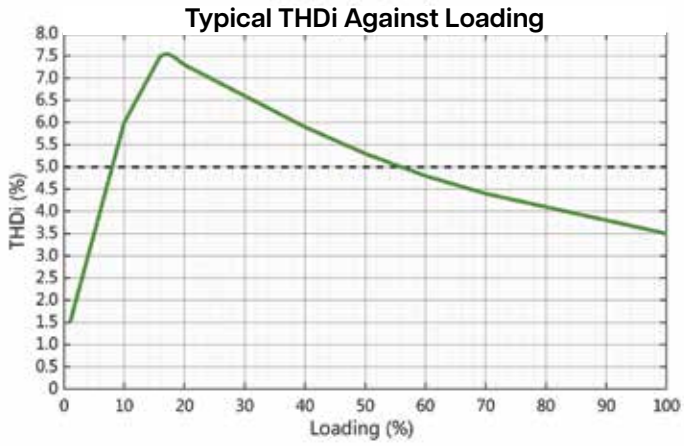
Results are typical and actual results may vary with unit specifications and design parameters.

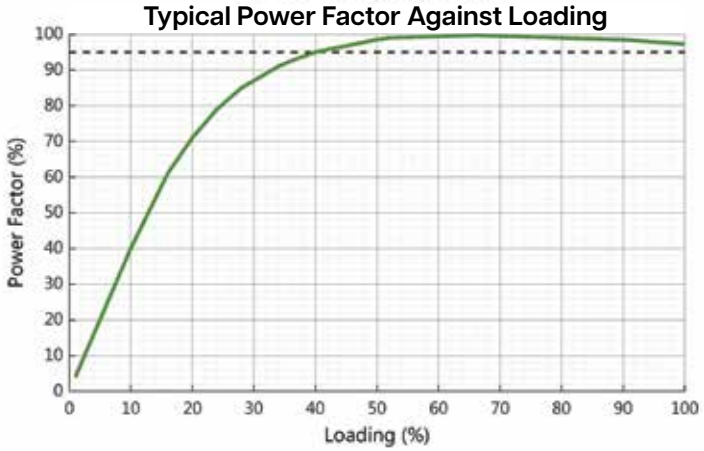
Energy Savings - Lower kW & kVA

The mitigation of harmonics (THDi) and correction of power factor produces efficiencies in the electrical system, which lowers kW and kVA. This is an important benefit and one of the compelling reasons for installing HPS passive harmonic filters.

A 6-pulse VFD (without a harmonic filter) will typically create 30% to 60% total harmonic distortion and will result in a true power factor of less than 90%.

The real data measurements below demonstrate a reduction of THDi and power factor improvement against VFD loading.

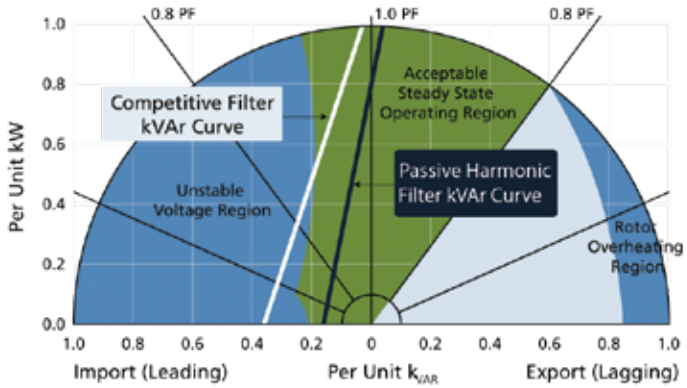




Generator Capability

HPS passive harmonic filter's kVAr ratings are limited to no more than 20% of the filter's kVA, which ensures compatibility with a generator fed system as well as utility grid fed systems. This low kVAr rating helps to avoid a leading power factor from occurring when the VFD or other harmonic producing loads are operating lightly loaded.

The low kVAr ratings also negates the need for load monitoring and a contactor to disconnect the filter's capacitors during low loads.



Generator Reactive Power Capability Curve

Capacitor Contactor Option

The capacitor contactor option allows the user to open and close a contact that will remove the capacitors from the circuit. The user can control the contactor by providing configurable contact output from the VFD which opens at light load.

The capacitor contactor option includes a contactor and an auxiliary contact. Switching out the capacitor mitigates the possibility of a leading power factor.

The low kVAr ratings also negates the need for load monitoring and a contactor to disconnect the filter's capacitors during low loads.

Passive Harmonic Filter

Specifications

Electrical Product Characteristics

Voltage Rating:	480VAC or 600VAC +/-10%
Input Power Rating:	480VAC: 8 – 2000A (5 – 1500HP) 600VAC: 6 – 505A (5 – 500HP)

Environmental Conditions

Ambient Operating Temperature:	Up to 50°C
Humidity:	95% maximum non-condensating
Altitude:	≤ 1000m, (de-rated at higher altitudes)
Storage Temperature:	-20°C to +60°C
Cooling Method:	Natural Convection
Enclosure Type:	Open or Type 3R

Technical Product Characteristics

Harmonic Attenuation:	Total harmonic current distortion is reduced by 80% (typically to 5% or less at full load) and meets IEEE 519-2014 harmonic requirements when operated within designed parameters
Harmonic Mitigation:	5th, 7th, 11th, 13th, etc.
(major 6-pulse rectifier harmonics)	130°C (2A - 54A), 180°C (>55A)
Typical Power Factor:	>95%
Efficiency:	No less than 99% at full load
Overload Capability:	150% of rated current for 1 minute
Resonance:	Engineered not to cause resonance
Capacitance:	Low kVAr design
Approval:	cUL Listed (E61431)
Warranty:	3 years
Contactor:	Optional

Part Number Guide

	Family Type	Generation	Voltage	Frequency	Thermal Characteristics	Rating	Enclosure	Contactor
Example	**CP**	**1**	**K**	**6**	**G**	**0 0 2 5**	**F**	**C**

Family Type		**Voltage**		**Thermal Characteristics**	**Current**		**Enclosure**	
CP = Passive Harmonic Filter	1 = current designs	K = 480 V P = 600 V	6 = 60Hz	Temperature Rise at 220°C Insulation Class G = 130°C	6A to 2000A 6A = 0006 69A = 0069 632A = 0632		F = Open Frame C = Type 3R	C = Contactor S = No contactor* (Default)

Please contact HPS for other available options.
** Default options - ignore if all following characteristics are default values.*
[1] 600V amperage is limited to 505.

SELECTION TABLES

PASSIVE HARMONIC FILTER

Motor horsepower and FLA values are provided for reference only. Listed current ratings represent the filter current at the drive input, which is typically lower than motor full-load current.

480 V 60 HZ

Motor Rating - REFERENCE ONLY		Part Number	Filter Rated Current (A)	Encl. Style	Filter Dimensions in Inches [Millimeter]				Capacitor Dimensions in Inches [Millimeter][1]		Cap. Qty[2]	Weight Lbs. [kg]	Watts Loss
HP	Motor FLA (A)*				Dimens. Fig.	A	B	C	H	D			
5	8	CP1K6G0008F	8	Open (Wall)	A	7.5 [191]	7.7 [196]	12.5 [318]	4.4 [112]	2.6 [66]	1	45 [20]	175
				Open (Floor)	C	7.2 [183]]	7.6 [193]	11.3 [87]					
		CP1K6G0008C		Type 3R	DH1	21.5 [546]	20.1 [510]	22.0 [559]	Pre-installed in Enclosure			110 [50]	
7.5	11	CP1K6G0011F	11	Open (Wall)	A	7.5 [191]	7.7 [196]	12.5 [318]	5.5 [140]	2.6 [66]	1	50 [23]	190
				Open (Floor)	C	7.2 [183]	7.7 [196]	11.3 [287]					
		CP1K6G0011C		Type 3R	DH1	21.5 [546]	20.1 [510]	22 [559]	Pre-installed in Enclosure			120 [54]	
10	14	CP1K6G0014F	14	Open (Wall)	A	9.8 [249]	8.9 [226]	15.2 [386]	5.5 [140]	2.6 [66]	1	70 [32]	210
				Open (Floor)	C	9.0 [229]	7.9 [201]	13.8 [351]					
		CP1K6G0014C		Type 3R	DH1	21.5 [546]	20.1 [510]	22.0 [559]	Pre-Installed in Enclosure			130 [59]	
15	21	CP1K6G0019F	19	Open (Wall)	A	9.8 [249]	8.8 [224]	15.2 [386]	7.5 [191]	2.6 [66]	1	70 [32]	230
				Open (Floor)	C	9.0 [229]	8.0 [203]	13.8 [351]					
		CP1K6G0019C		Type 3R	DH1	21.5 [546]	20.1 [510]	22.0 [559]	Pre-installed in Enclosure			150 [68]	
20	27	CP1K6G0025F	25	Open (Wall)	A	9.8 [249]	9.7 [246]	15.2 [386]	7.4 [188]	2.6 [66]	1	95 [43]	300
				Open (Floor)	C	9.0 [229]	8.8 [224]	13.8 [351]					
		CP1K6G0025C		Type 3R	DH1	21.5 [546]	20.1 [510]	22.0 [559]	Pre-Installed in Enclosure			155 [70]	
25	34	CP1K6G0032F	32	Open (Wall)	A	9.8 [249]	10.7 [272]	15.2 [386]	8.5 [216]	3.5 [66]	1	100 [45]	320
				Open (Floor)	C	9.0 [229]	10.5 [267]	13.8 [351]					
		CP1K6G0032C		Type 3R	DH1	21.5 [546]	20.1 [510]	22.0 [559]	Pre-installed in Enclosure			160 [73]	
30	40	CP1K6G0037F	37	Open (Wall)	A	11.5 [292]	10.1 [257]	17.6 [447]	8.5 [216]	3.5 [89]	1	135 [61]	480
				Open (Floor)	C	10.8 [274]	9.8 [249]	16.3 [414]					
		CP1K6G0037C		Type 3R	DH2	25.8 [655]	23.8 [604]	28.8 [731]	Pre-Installed in Enclosure			180 [82]	
40	52	CP1K6G0050F	50	Open (Wall)	A	11.5 [292]	10.3 [262]	17.6 [447]	9.1 [231]	3.5 [89]	1	150 [68]	525
				Open (Floor)	C	10.8 [274]	9.8 [249]	16.3 [414]					
		CP1K6G0050C		Type 3R	DH2	25.8 [655]	23.8 [604]	28.8 [731]	Pre-installed in Enclosure			220 [100]	
50	65	CP1K6G0061F	61	Open (Wall)	A	11.5 [292]	11.8 [300]	17.6 [447]	9.1 [231]	3.5 [89]	1	175 [79]	600
				Open (Floor)	D	10.8 [274]	12.6 [320]	16.3 [414]					
		CP1K6G0061C		Type 3R	DH2	25.8 [655]	23.8 [604]	28.8 [731]	Pre-Installed in Enclosure			260 [118]	
60	77	CP1K6G0074F	74	Open (Wall)	B	14.8 [376]	11.3 [287]	25.5 [648]	9.1 [231]	3.5 [89]	1	275 [125]	675
				Open (Floor)	D	14.3 [363]	9.8 [249]	23.5 [597]					
		CP1K6G0074C		Type 3R	DH3	28.3 [719]	27.0 [687]	36.0 [914]	Pre-installed in Enclosure			400 [180]	
75	96	CP1K6G0091F	91	Open (Wall)	B	14.8 [376]	12.5 [318]	25.5 [648]	10.3 [262]	3.5 [89]	1	350 [159]	725
				Open (Floor)	D	14.3 [363]	9.7 [246]	23.5 [597]					
		CP1K6G0091C		Type 3R	DH3	28.3 [719]	27.0 [687]	36.0 [914]	Pre-Installed in Enclosure			530 [240]	
100	124	CP1K6G0121F	121	Open (Wall)	B	14.8 [376]	12.9 [328]	25.5 [648]	12.1 [307]	3.5 [89]	1	375 [170]	1000
				Open (Floor)	D	13.5 [343]	11.7 [297]	23.5 [597]					
		CP1K6G0121C		Type 3R	DH3	28.3 [719]	27.0 [687]	36.0 [914]	Pre-Installed in Enclosure			600 [272]	
125	156	CP1K6G0151F	151	Open (Wall)	B	14.8 [376]	12.3 [312]	25.5 [648]	10.3 262]	3.5 [89]	1	390 [177]	1025
				Open (Floor)	D	15.8 [401]	13.3 [338]	23.5 [597]	9.1 [231]	3.5 [89]	1		
		CP1K6G0151C		Type 3R	DH3	28.3 [719]	27.0 [687]	36.0 [914]	Pre-Installed in Enclosure			700 [318]	
150	180	CP1K6G0180F	180	Open (F)	D	15.8 [401]	14.9 [378]	23.5 [597]	11.5 [292]	4.6 [117]	1	430 [195]	1300
		CP1K6G0180C		DH3	DH3	28.3 [719]	27.0 [687]	36.0 [914]	Pre-Installed in Enclosure			800 [363]	
200	240	CP1K6G0241F	241	Open (F)	D	18 [457]	15.8 [401]	23.5 [597]	12.1 [307]	3.5 [89]	1	625 [283]	1400
									11.5 [292]	4.6 [117]	1		
		CP1K6G0241C		Type 3R	DH4	31.5 [800]	29.5 [749]	44.5 [1130]	Pre-Installed in Enclosure			1000 [454]	
250	302	CP1K6G0299F	299	Open (F)	E	19.0 [483]	17.0 [432]	32.0 [813]	12.1 [307]	3.5 [89]	1	755 [352]	1700
									10.3 262]	3.5 [89]	2		
		CP1K6G0299C		Type 3R	DH4	31.5 [800]	29.5 [749]	44.5 [1130]	Pre-Installed in Enclosure			1200 [544]	

**Weight & dimensions are approximate*
[1]Capacitors are pre-installed in enclosed style parts
[2]Please refer to figure G for capacitor drawing

SELECTION TABLES

PASSIVE HARMONIC FILTER

Motor horsepower and FLA values are provided for reference only. Listed current ratings represent the filter current at the drive input, which is typically lower than motor full-load current.

480 V — 60 HZ

Motor Rating - REFERENCE ONLY HP	Motor FLA (A)*	Part Number	Filter Rated Current (A)	Encl. Style	Filter Dimensions in Inches [Millimeter] Dimens. Fig.	A	B	C	Capacitor Dimensions in Inches [Millimeter][1] H	D	Cap. Qty[2]	Weight Lbs. [kg]	Watts Loss
300	361	CP1K6G0358F	358	Open (F)	E	21 [533]	17 [432]	34 [864]	11.5 [292]	4.6 [117]	2	1200 [544]	2150
		CP1K6G0358C		Type 3R	DH5	38 [965]	34 [864]	52 [1321]	Pre-Installed in Enclosure			1400 [635]	
350	414	CP1K6G0420F	420	Open (F)	E	21 [533]	17 [432]	35 [889]	11.5 [292]	4.6 [117]	3	1300 [590]	2300
		CP1K6G0420C		Type 3R	DH5	38 [965]	34 [864]	52 [1321]	Pre-Installed in Enclosure			1650 [748]	
400	477	CP1K6G0499F	499	Open (F)	F	30 [762]	20 [508]	37 [940]	11.5 [292]	4.6 [117]	3	1750 [794]	2700
		CP1K6G0499C		Type 3R	DH5	38 [965]	34 [864]	52 [1321]	Pre-Installed in Enclosure			1850 [839]	
500	590	CP1K6G0632F	632	Open (F)	F	32 [813]	21 [533]	39 [991]	11.5 [292]	4.6 [117]	4	1900 [862]	2900
		CP1K6G0632C		Type 3R	DH5	38 [965]	34 [864]	52 [1321]	Pre-Installed in Enclosure			2300[1043]	
600	790	CP1K6G0790F	790	Open (F)	F	34 [864]	21 [533]	43 [1092]	11.5 [292]	4.6 [117]	4	2600 [1179]	5600
		CP1K6G0790C		Type 3R	DH6	49 [1245]	42 [1067]	64 [1626]	Pre-Installed in Enclosure			3200 [1452]	
700	850	CP1K6G0850F	850	Open (F)	F	34 [864]	21 [533]	45 [1143]	11.5 [292]	4.6 [117]	4	2700 [1225]	5900
		CP1K6G0850C		Type 3R	DH6	49 [1245]	42 [1067]	64 [1626]	Pre-Installed in Enclosure			3300 [1497]	
900	1000	CP1K6G1000F	1000	Open (F)	F	35 [889]	22 [559]	45 [1143]	11.5 [292]	4.6 [117]	5	2900 [1315]	6700
		CP1K6G1000C		Type 3R	DH6	49 [1245]	42 [1067]	64 [1626]	Pre-Installed in Enclosure			3600 [1633]	
1000	1200	CP1K6G1200F	1200	Open (F)	F	35 [889]	23 [584]	48 [1219]	11.5 [292]	4.6 [117]	5	3100 [1406]	7200
		CP1K6G1200C		Type 3R	DH7	54 [1372]	47 [1194]	72 [1829]	Pre-Installed in Enclosure			3800 [1724]	
1300	1600	CP1K6G1600F	1600	Open (F)	F	36 [914]	24 [610]	52 [1321]	11.5 [292]	4.6 [117]	7	3500 [1588]	8500
		CP1K6G1600C		Type 3R	DH7	54 [1372]	47 [1194]	72 [1829]	Pre-Installed in Enclosure			4300 [1950]	
1500	2000	CP1K6G2000F	2000	Open (F)	F	38 [956]	25 [635]	52 [1321]	11.5 [292]	4.6 [117]	7	4000 [1814]	9800
		CP1K6G2000C		Type 3R	DH7	54 [1372]	47 [1194]	72 [1829]	Pre-Installed in Enclosure			4800 [2177]	

**Weight & dimensions are approximate*
[1]Capacitors are pre-installed in enclosed style parts
[2]Please refer to figure G for capacitor drawing

600 V — 60 HZ

Motor Rating - REFERENCE ONLY HP	Motor FLA (A)*	Part Number	Filter Rated Current (A)	Encl. Style	Filter Dimensions in Inches [Millimeter] Dimens. Fig.	A	B	C	Capacitor Dimensions in Inches [Millimeter][1] H	D	Cap. Qty[2]	Weight Lbs. [kg]	Watts Loss
5	6.1	CP1P6G0006F	6	Open (Wall)	A	7.5 [191]	6 .0[152]	12.5 [318]	4.4 [112]	2.6 [66]	1	-	-
				Open (Floor)	C	7.2 [183]	5.7 [145]	11.3 [287]					
		CP1P6G0006C		Type 3R	DH1	21.5 [546]	20.1 [510]	22.0 [559]	Pre-installed in Enclosure			120 [54]	
7.5	9	CP1P6G0008F	8	Open (Wall)	A	7.5 [191]	6.0 [152]	12.5 [318]	4.4 [112]	2.6 [66]	1	-	-
				Open (Floor)	C	7.2 [183]	5.8 [147]	11.3 [287]					
		CP1P6G0008C		Type 3R	DH1	21.5 [546]	20.1 [510]	22.0 [559]	Pre-installed in Enclosure			130 [59]	
10	11	CP1P6G0012F	12	Open (Wall)	A	10.0 [254]	8.5 [216]	15.2 [386]	4.4 [112]	2.6 [66]	1	-	-
				Open (Floor)	C	9.0 [229]	7.5 [191]	13.8 [351]					
		CP1P6G0012C		Type 3R	DH1	21.5 [546]	20.1 [510]	22.0 [559]	Pre-installed in Enclosure			140 [64]	
15	17	CP1P6G0016F	16	Open (Wall)	A	10.0 [254]	8.5 [216]	15.2 [386]	5.5 [140]	2.6 [66]	1	-	-
				Open (Floor)	C	9.0 [229]	7.5 [191]	13.8 [351]					
		CP1P6G0016C		Type 3R	DH1	21.5 [546]	20.1 [510]	22 [559]	Pre-installed in Enclosure			160 [73]	
20	22	CP1P6G0020F	20	Open (Wall)	A	10.0 [254]	9.5 [229]	15.2 [386]	7.5 [191]	2.6 [66]	1	-	-
				Open (Floor)	C	9.0 [229]	8.3 [211]	13.8 [351]					
		CP1P6G0020C		Type 3R	DH1	21.5 [546]	20.1 [510]	22.0 [559]	Pre-installed in Enclosure			165 [75]	
25	27	CP1P6G0025F	25	Open (Wall)	A	10.0 [254]	10.8 [274]	15.2 [386]	7.4 [188]	3.5 [89]	1	-	-
				Open (Floor)	C	9.0 [229]	10.0 [254]	13.8 [351]					
		CP1P6G0025C		Type 3R	DH1	21.5 [546]	20.1 [510]	22.0 [559]	Pre-installed in Enclosure			170 [77]	

**Weight & dimensions are approximate*
[1]Capacitors are pre-installed in enclosed style parts
[2]Please refer to figure G for capacitor drawing

SELECTION TABLES

PASSIVE HARMONIC FILTER

Motor horsepower and FLA values are provided for reference only. Listed current ratings represent the filter current at the drive input, which is typically lower than motor full-load current.

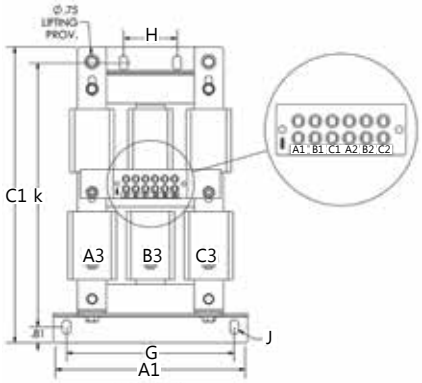
600 V 60 HZ

Motor Rating - REFERENCE ONLY		Part Number	Filter Rated Current (A)	Encl. Style	Filter Dimensions in Inches [Millimeter]				Capacitor Dimensions in Inches [Millimeter][1]		Cap. Qty[2]	Weight Lbs. [kg]	Watts Loss
HP	Motor FLA (A)*				Dimens. Fig.	A	B	C	H	D			
30	32	CP1P6G0031F	31	Open (Wall)	A	11.5 [292]	10.5 [267]	17.6 [447]	7.4 [188]	3.5 [89]	1	-	-
				Open (Floor)	C	10.8 [274]	9.5 [229]	16.3 [414]					
		CP1P6G0031C		Type 3R	DH2	25.8 [655]	23.8 [604]	28.8 [731]	Pre-installed in Enclosure			190 [86]	
40	41	CP1P6G0040F	40	Open (Wall)	A	11.5 [292]	10.5 [267]	17.6 [447]	8.7 [221]	2.6 [66]	1	-	-
				Open (Floor)	C	10.8 [274]	9.5 [229]	16.3 [414]					
		CP1P6G0040C		Type 3R	DH2	25.8 [655]	23.8 [604]	28.8 [731]	Pre-installed in Enclosure			240 [109]	
50	52	CP1P6G0049F	49	Open (Wall)	B	11.5 [292]	11.8 [300]	17.6 [447]	8.5 [216]	3.5 [89]	1	-	-
				Open (Floor)	D	10.8 [274]	11.5 [292]	16.3 [414]					
		CP1P6G0049C		Type 3R	DH2	25.8 [655]	23.8 [604]	28.8 [731]	Pre-installed in Enclosure			290 [132]	
60	62	CP1P6G0059F	59	Open (Wall)	B	14.8 [376]	11.8 [300]	25.5 [648]	9.1 [231]	3.5 [89]	1	-	-
				Open (Floor)	D	14.3 [363]	11.0 [279]	23.5 [597]					
		CP1P6G0059C		Type 3R	DH3	28.3 [719]	27.0 [687]	36.0 [914]	Pre-installed in Enclosure			420 [191]	
75	77	CP1P6G0073F	73	Open (Wall)	B	14.8 [376]	12.5 [318]	25.5 [648]	9.1 [231]	3.5 [89]	1	-	-
				Open (Floor)	D	14.3 [363]	11.5 [292]	23.5 [597]					
		CP1P6G0073C		Type 3R	DH3	28.3 [719]	27.0 [687]	36.0 [914]	Pre-installed in Enclosure			540 [245]	
100	99	CP1P6G0096F	96	Open (Wall)	B	14.8 [376]	12.5 [318]	25.5 [648]	12.1 [307]	3.5 [89]	1	-	-
				Open (Floor)	D	16.5 [419]	11.0 [279]	23.5 [597]					
		CP1P6G0096C		Type 3R	DH3		27.0 [687]	36.0 [914]	Pre-installed in Enclosure			590 [268]	
125	125	CP1P6G0120F	120	Open (Wall)	B	14.8 [376]	13.5 [343]	25.5 [648]	8.5 [216]	3.5 [89]	1	-	-
				Open (Floor)	D	16.5 [419]	12.0 [305]	23.5 [597]	9.1 [231]	3.5 [89]	1		
		CP1P6G0120C		Type 3R	DH3	28.3 [719]	27.0 [687]	36.0 [914]	Pre-installed in Enclosure			730 [331]	
150	144	CP1P6G0144F	144	Open (F)	D	19.0 [483]	12.0 [305]	23.5 [597]	9.1 [231]	3.5 [89]	1	-	-
									11.5 [292]	3.5 [89]	1		
		CP1P6G0144C		DH3	DH4	31.5 [800]	29.5 [749]	44.5 [1130]	Pre-installed in Enclosure			850 [386]	
200	192	CP1P6G0192F	192	Open (F)	D	19.5 [495]	14.0 [356]	23.5 [597]	14.4 [366]	3.5 [89]	1	-	-
									11.5 [366]	3.5 [89]	1		
		CP1P6G0192C		Type 3R	DH4	31.5 [800]	29.5 [749]	44.5 [1130]	Pre-Installed in Enclosure			1050 [476]	
250	242	CP1P6G0240F	240	Open (F)	D	19.5 [495]	15.5 [394]	23.5 [597]	14.4 [366]	3.5 [89]	1	-	-
									14.4 [366]	4.6 [117]	1		
		CP1P6G0240C		Type 3R	DH4	31.5 [800]	29.5 [749]	44.5 [1130]	Pre-Installed in Enclosure			1200 [544]	
300	289	CP1P6G0287F	278	Open (F)	E	21.0 [633]	17.0 [432]	34.0 [864]	12.1 [307]	3.5 [89]	3	-	-
		CP1P6G0287C		Type 3R	DH4	31.5 [800]	29.5 [749]	44.5 [1130]	Pre-Installed in Enclosure			1450 [658]	
350	336	CP1P6G0335F	335	Open (F)	E	21.0 [633]	19.0 [483]	35.0 [889]	12.1 [307]	3.5 [89]	1	-	-
									14.4 [366]	3.5 [89]	1		
									14.4 [366]	4.6 [117]	1		
		CP1P6G0335C		Type 3R	DH5	38.0 [965]	34.0[864]	52.0 [1321]	Pre-Installed in Enclosure			1650 [748]	
400	382	CP1P6G0399F	399	Open (F)	F	26.0 [660]	19.0 [483]	39.0 [991]	14.4 [366]	4.6 [117]	3	-	-
		CP1P6G0399C		Type 3R	DH5	-	34.0 [864]	52.0 [1321]	Pre-installed in Enclosure			1900 [862]	
500	472	CP1P6G0505F	505	Open (F)	F	27.0 [686]	21.0 [533]	41.0 [1041]	14.4 [366]	3.5 [89]	2	-	-
		CP1P6G0505C		Type 3R	DH5	38.0 [965]	34.0 [864]	52.0 [1321]	14.4 [366]	4.6 [117]	2	2400 [1089]	

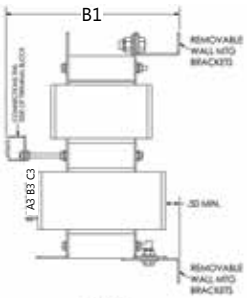
**Weight & dimensions are approximate*
[1]Capacitors are pre-installed in enclosed style parts
[2]Please refer to figure G for capacitor drawing

Wall Mount Mounting Dimensions & Figures

Figure A

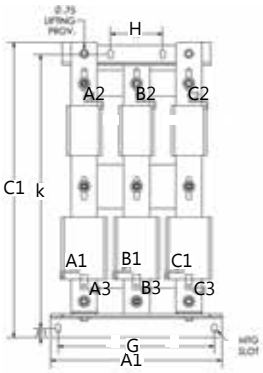


FRONT VIEW

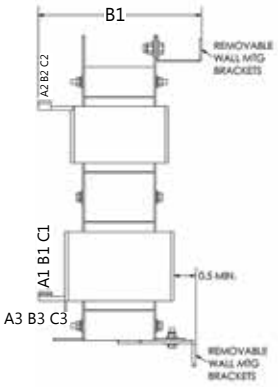


SIDE VIEW

Figure B



FRONT VIEW



SIDE VIEW

480V

Wall Mount Reactor Mounting Information					
Dimensions in Inches [Milimeter]					
Dim. Fig. #	**Amps at 480V**	**Mtg Width BOT [G]**	**Mtg Width TOP [H]**	**Mtg H (K)**	**Mtg Slot (J)**
A	8 - 11	6.6 [168]	2.8 [71]	12.5 [318]	.28 x .56 [7 x 14]
	14 - 32	8.6 [218]	2.8 [71]	15.2 [386]	.44 x .75 [11 x 19]
	37-61	10.2 [259]	4.5 [114]	17.6 [447]	.44 x .75 [11 x 19]
B	74-151	13.4 [340]	4.5 [114]	25.5 [648]	.44 x .75 [11 x 19]

600V

Wall Mount Reactor Mounting Information					
Dimensions in Inches [Milimeter]					
Dim. Fig. #	**Amps at 600V**	**Mtg Width BOT [G]**	**Mtg Width TOP [H]**	**Mtg H (K)**	**Mtg Slot (J)**
A	6 - 8	6.6 [168]	2.8 [71]	11.2 [284]	.28 x .56 [7 x 14]
	12 - 25	8.6 [218]	2.8 [71]	13.6 [345]	.44 x .75 [11 x 19]
	31 - 49	10.2 [259]	4.5 [114]	16 [406]	.44 x .75 [11 x 19]
B	59 - 120	13.4 [340]	4.5 [114]	23.6[599]	.44 x .75 [11 x 19]

Floor Mount Mounting Dimensions & Figures

Figure C

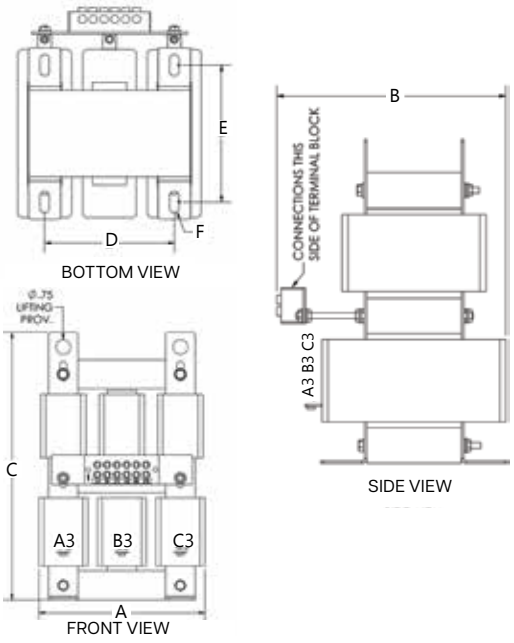


Figure D

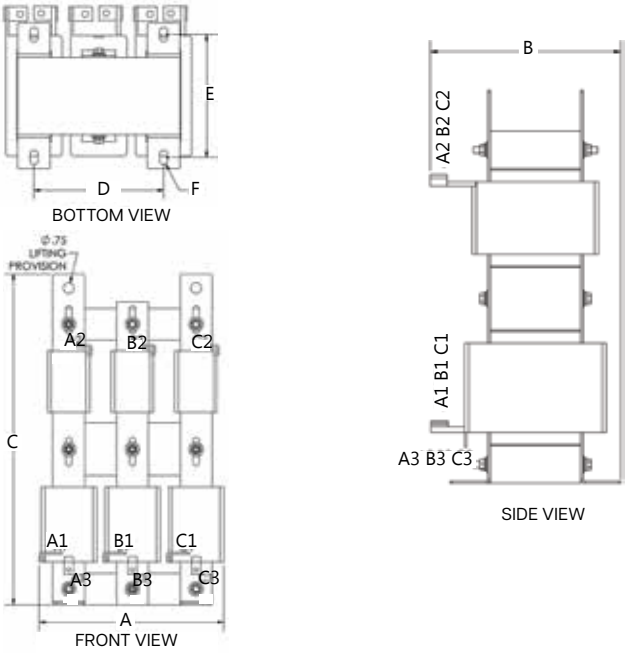


Figure E

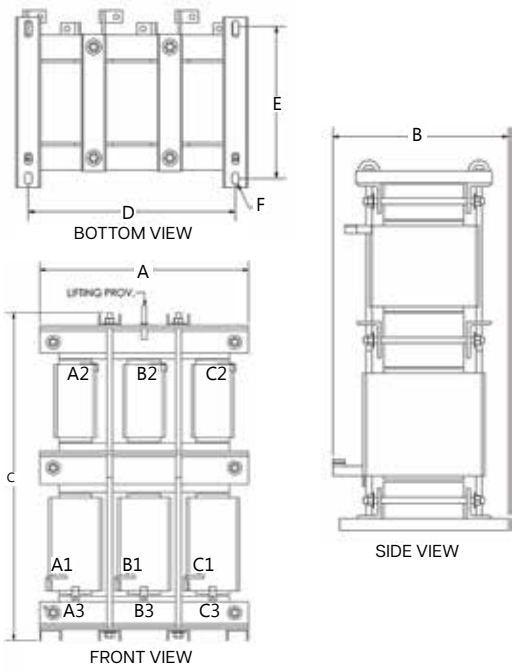
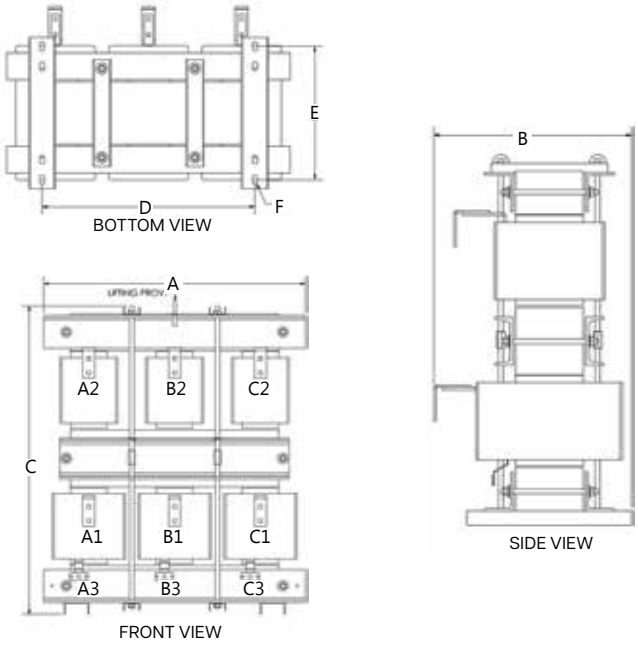


Figure F



Passive Harmonic Filter

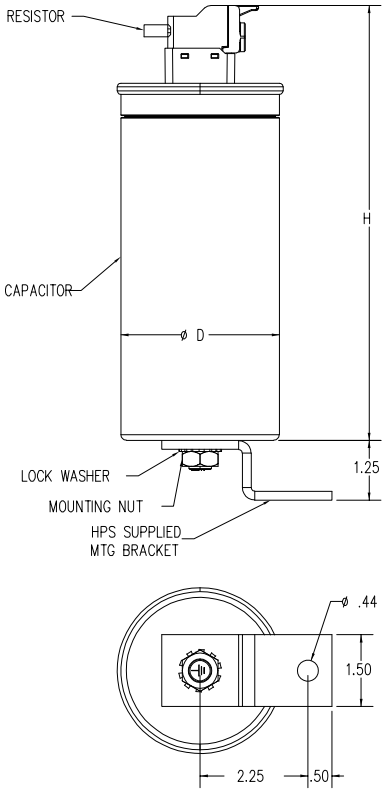
480V

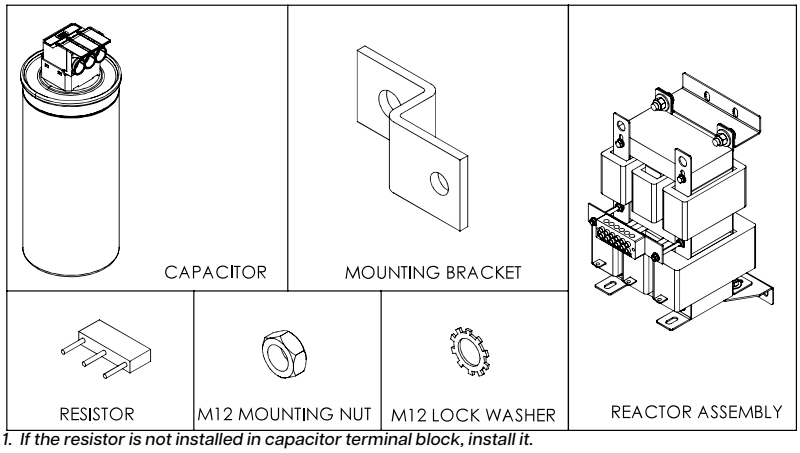
Floor Mount Reactor Mounting Information				
Dimensions in Inches [Milimeter]				
Dim. Fig. #	**Amps at 480V**	**Mtg Width [D]**	**Mtg Width [E]**	**Mtg Slot (J)**
C	8 - 11	4.8 [122]	3.6 [91]	.38 x .50 [10 x 13]
	14 - 19	6 [152]	4.5 [114]	.44 x 1.0 [11 x 25]
	25	6 [152]	5.3 [135]	.44 x 1.0 [11 x 25]
	32	6 [152]	6.3 [160]	.44 x 1.0 [11 x 25]
	37 - 50	7.2 [183]	5.5 [140]	.44 x 1.0 [11 x 25]
D	61	7.2 [183]	7.0 [178]	.44 x 1.0 [11 x 25]
	74	9.5 [241]	6.9 [175]	.44 x 1.0 [11 x 25]
	91	9.5 [241]	8.2 [208]	.44 x 1.0 [11 x 25]
	121	9 [229]	8.6 [218]	.44 x 1.0 [11 x 25]
	151	10.5 [267]	7.9 [201]	.44 x 1.0 [11 x 25]
	180	10.5 [267]	8.7 [221]	.44 x 1.0 [11 x 25]
	241	12 [305]	9.3 [236]	.44 x 1.0 [11 x 25]
E	299	17 [432]	12.5 [318]	.56 x 1.0 [14 x 25]
	358	19 [483]	15 [381]	.56 x 1.0 [14 x 25]
	420	19 [483]	14.8 [376]	.56 x 1.0 [14 x 25]
F	499 - 2000	24 [610]	15 [381]	.56 x 1.0 [14 x 25]

600V

Floor Mount Reactor Mounting Information				
Dimensions in Inches [Milimeter]				
Dim. Fig. #	**Amps at 600V**	**Mtg Width [D]**	**Mtg Width [E]**	**Mtg Slot (J)**
C	6 - 8	4.8 [122]	3.5 [89]	.38 x .50 [10 x 13]
	12 - 16	6 [152]	4.5 [114]	.44 x 1.0 [11 x 25]
	20	6 [152]	5.2 [132]	.44 x 1.0 [11 x 25]
	25	6 [152]	6.3 [160]	.44 x 1.0 [11 x 25]
	31 - 40	7.2 [183]	5.5 [140]	.44 x 1.0 [11 x 25]
D	49	7.2 [183]	7.1 [180]	.44 x 1.0 [11 x 25]
	59	9.5 [241]	6.8 [173]	.44 x 1.0 [11 x 25]
	73	9 [229]	8.6 [218]	.44 x 1.0 [11 x 25]
	96	10.5 [267]	7.7 [196]	.44 x 1.0 [11 x 25]
	120	10.5 [267]	8.7 [221]	.44 x 1.0 [11 x 25]
	144	12.5 [318]	9 [229]	.44 x 1.0 [11 x 25]
	192	13 [330]	9.3 [236]	.44 x 1.0 [11 x 25]
E	240	13 [330]	10.2 [259]	.44 x 1.0 [11 x 25]
	287	19 [483]	15 [381]	.56 x 1.0 [14 x 25]
	335	19 [483]	14.8 [376]	.56 x 1.0 [14 x 25]
F	399	24 [610]	17 [432]	.56 x 1.0 [14 x 25]
	505	24 [610]	16.5 [419]	.56 x 1.0 [14 x 25]

Capacitor Drawing - Figure G





1. If the resistor is not installed in capacitor terminal block, install it.
2. Mount the capacitor using the nut and lock washer provided. Please refer to installation manual for further details.

Optional Contactors

A contactor(s) can be provided as an option to disconnect the filter capacitor(s) as such load ratings if the capacitors is not required. These specific load ratings are determined by customer requirements. The contactor(s) are supplied with No?NC auxilary contacts.

Open Style Filter

Customer is responsible for mounting and wiring of capacitors(s) as well as contactor(s).

Enclosed

Both capacitors(s) and contactor(s) are pre-installed and wired in the enclosure.

Capacitors & Contactor Information - Continued

480V

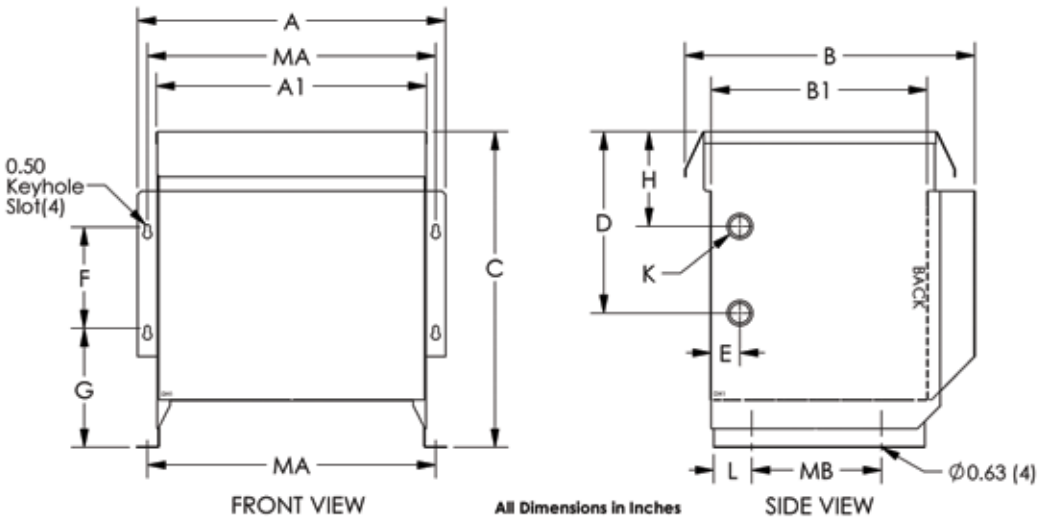
Dimensions in Inches [Milimeter]						
HP at 480V	**Cap**	**Replacement Cap Part Number**	**H**	**D**	**Qty**	**"Optional Contactor Current Rating"**
5	Cap #1	CP1K--06021	4.4 [112]	2.6 [66]	1	15
7.5	Cap #1	CP1K-06022	5.5 [140]	2.6 [66]	1	15
10	Cap #1	CP1K-06000	5.5 [140]	2.6 [66]	1	15
15	Cap #1	CP1K-06024	7.5 [191]	2.6 [66]	1	15
20	Cap #1	CP1K-06025	7.4 [188]	2.6 [66]	1	15
25	Cap #1	CP1K-06001	8.5 [216]	3.5 [89]	1	15
30	Cap #1	CP1K-06001	8.5 [216]	3.5 [89]	1	30
40	Cap #1	CP1K-06007	9.1 [231]	3.5 [89]	1	30
50	Cap #1	CP1K-06014	9.1 [231]	3.5 [89]	1	30
60	Cap #1	CP1K-06013	9.1 [231]	3.5 [89]	1	50
75	Cap #1	CP1K-06010	10.3 [262]	3.5 [89]	1	50
100	Cap #1	CP1K-06002	12.1 [307]	3.5 [89]	1	90
125	Cap #1	CP1K-06010	10.3 [262]	3.5 [89]	1	2 x 50
	Cap #2	CP1K-06014	9.1 [231]	3.5 [89]	1	
150	Cap #1	CP1K-06006	11.5 [292]	4.6 [117]	1	90
200	Cap #1	CP1K-06002	12.1 [307]	3.5 [89]	1	2 x 90
	Cap #2	CP1K-06005	11.5 [292]	4.6 [117]	1	
250	Cap #1	CP1K-06002	12.1 [307]	3.5 [89]	1	3 x 50
	Cap #2	CP1K-06011	10.3 [262]	3.5 [89]	2	
300	Cap #1	CP1K-06006	11.5 [292]	4.6 [117]	2	2 x 90
350	Cap #1	CP1K-06005	11.5 [292]	4.6 [117]	3	3 x 90
400	Cap #1	CP1K-06005	11.5 [292]	4.6 [117]	2	3 x 90
	Cap #2	CP1K-06006	11.5 [292]	4.6 [117]	1	
500	Cap #1	CP1K-06005	11.5 [292]	4.6 [117]	2	4 x 90
	Cap #2	CP1K-06006	11.5 [292]	4.6 [117]	2	

Capacitors & Contactor Information - Continued

600V

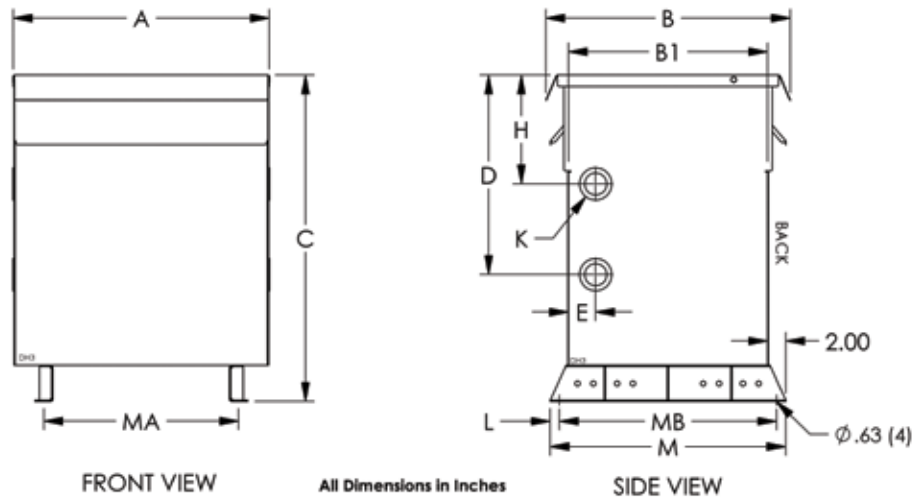
Dimensions in Inches [Milimeter]						
HP at 600V	**Cap**	**Replacement Cap Part Number**	**H**	**D**	**Qty**	**"Optional Contactor Current Rating"**
5	Cap #1	CP1P-06015	4.4 [112]	2.6 [66]	1	15
7.5	Cap #1	CP1P-06026	4.4 [112]	2.6 [66]	1	15
10	Cap #1	CP1P-06026	4.4 [112]	2.6 [66]	1	15
15	Cap #1		5.5 [140]	2.6 [66]	1	15
20	Cap #1	CP1P-06027	7.5 [191]	2.6 [66]	1	15
25	Cap #1	CP1P-06030	7.4 [188]	3.5 [89]	1	15
30	Cap #1	CP1P-06030	7.4 [188]	3.5 [89]	1	15
40	Cap #1	CP1P-06008	8.7 [221]	2.6 [66]	1	30
50	Cap #1	CP1P-06020	8.5 [216]	3.5 [89]	1	30
60	Cap #1	CP1P-06016	9.1 [231]	3.5 [89]	1	30
75	Cap #1	CP1P-06017	9.1 [231]	3.5 [89]	1	50
100	Cap #1	CP1P-06018	12.1 [307]	3.5 [89]	1	50
125	Cap #1	CP1P-06020	8.5 [216]	3.5 [89]	1	2 x 30
	Cap #2	CP1P-06017	9.1 [231]	3.5 [89]	1	
150	Cap #1	CP1P-06016	9.1 [231]	3.5 [89]	1	2 x 50
	Cap #2	CP1P-06003	11.5 [292]	3.5 [89]	1	
200	Cap #1	CP1P-06004	14.4 [366]	3.5 [89]	1	2 x 50
	Cap #2	CP1P-06003	11.5 [292]	3.5 [89]	1	
250	Cap #1	CP1P-06004	14.4 [366]	3.5 [89]	1	2 x 90
	Cap #2	CP1P-06019	14.4 [366]	4.6 [117]	1	
300	Cap #1	CP1P-06018	12.1 [307]	3.5 [89]	3	3 x 50
350	Cap #1	CP1P-06018	12.1 [307]	3.5 [89]	1	3 x 90
	Cap #2	CP1P-06004	14.4 [366]	3.5 [89]	1	
	Cap #3	CP1P-06019	14.4 [366]	4.6 [117]	1	
400	Cap #1	CP1P-06019	14.4 [366]	4.6 [117]	3	3 x 90
500	Cap #1	CP1P-06004	14.4 [366]	3.5 [89]	2	4 x 90
	Cap #2		14.4 [366]	4.6 [117]	2	

Enclosure Drawings



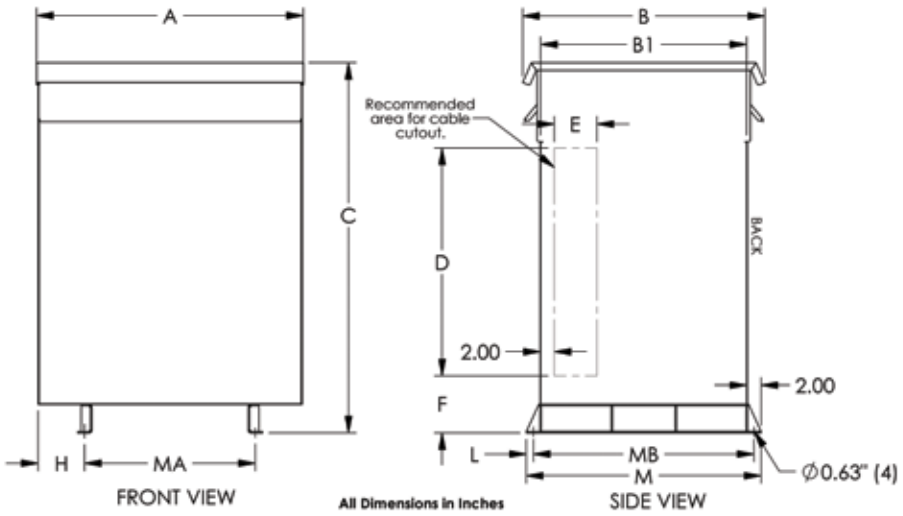
Case Style	Dimensions in Inches [Millimeter]													
	A	A1	B	B1	C	D	E	F	G	H	K	L	MA	MB
DH1	21.5 [546]	18.8 [477]	20.1 [510]	15 [381]	22 [559]	12.6 [320]	2 [51]	7 [178]	8.3 [211]	6.6 [168]	1.38 X 1.75 K.O. [35 x 44 K.O.]	2.6 [66]	20 [508]	9 [229]
DH2	25.8 [655]	23.3 [592]	23.8 [604]	18 [457]	28.8 [731]	17 [432]	2 [51]	8 [203]	10.3 [262]	8.6 [218]	1.75 X 2.50 K.O. [44 X 63 K.O.]	3.8 [96]	24.6 [625]	9 [229]

[1]Knockout (K) sizes are actual diameters of knockout, not conduit sizes.



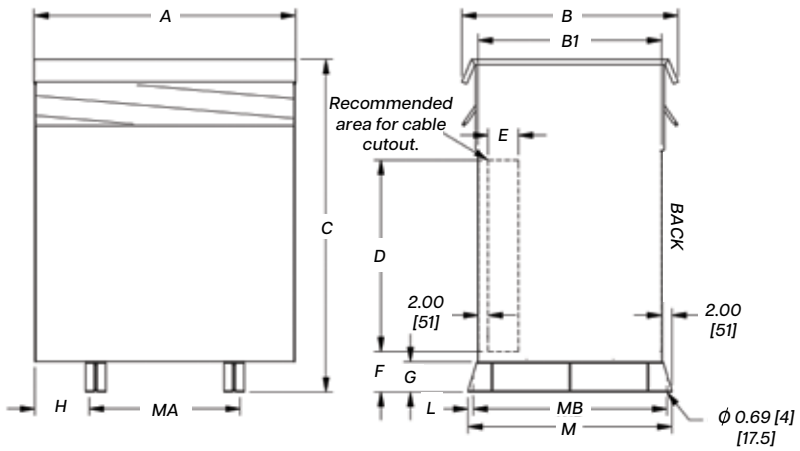
Case Style	Dimensions in Inches [Millimeter]											
	A	B	B1	C	D	E	H	K	L	M	MA	MB
DH3	28.3 [719]	27 [687]	22 [559]	36 [914]	22 [559]	3 [76]	12 [305]	2.00 X 3.00 K.O [50 X 76 K.O.]	1 [25]	26 [660]	21.5 [546]	24 [610]
DH4	31.5 [800]	29.5 [749]	24.5 [622]	44.5 [1130]	27.5 [698]	3 [76]	14.5 [368]	2.00 X 3.00 K.O. [50 X 76 K.O.]	1 [25]	28.5 [724]	23.5 [597]	26.5 [673]

[1]Knockout (K) sizes are actual diameters of knockout, not conduit sizes.



Case Style	Dimensions in Inches [Millimeter]											
	A	B	B1	C	D	E	F	H	L	M	MA	MB
DH5	38 [965]	34 [864]	29 [737]	52 [1321]	32 [813]	6 [152]	8 [203]	6.6 [168]	1 [25]	33 [838]	24 [610]	31 [787]

[1] *Knockout (K) sizes are actual diameters of knockout, not conduit sizes.*



FRONT VIEW *All dimensions in Inches [mm]* *SIDE VIEW*

Case Style	Dimensions in Inches [Millimeter]												
	A	B	B1	C	D	E	F	G	H	L	M	MA	MB
DH6	49 [1245]	42 [1067]	35 [889]	64 [1626]	32 [813]	6 [152]	10 [254]	6 [152]	9.3 [236]	1 [25]	39 [991]	30 [762]	37 [940]
DH7	54 [1372]	47 [1194]	40 [1016]	72 [1829]	40 [1016]	8 [203]	10 [254]	6 [152]	8.8 [223]	1 [25]	44 [1117]	36 [914]	42 [1067]

[1] *Knockout (K) sizes are actual diameters of knockout, not conduit sizes.*

Termination Details & Enclosure Mounting Kits

Termination Details

HP	480 V Current (A)	600 V Current (A)
5	18-14 AWG	18-14 AWG
7.5	18-14 AWG	18-14 AWG
10	13-10 AWG	13-10 AWG
15	8-14 AWG	13-10 AWG
20	8-14 AWG	8-14 AWG
25	8-14 AWG	8-14 AWG
30	Dia. 1A	Dia. 1A
40	Dia. 1A	Dia. 1A
50	Dia. 1A	Dia. 1A
60	Dia. 1A	Dia. 1A
75	Dia. 1A	Dia. 1A
100	Dia. 1b	Dia. 1A
125	Dia. 1b	Dia. 1b
150	Dia. 1b	Dia. 1b
200	Dia. 1b	Dia. 1b
250	Dia. 1b	Dia. 1b
300	Dia. 1b	Dia. 1b
350	Dia. 1b	Dia. 1b
400	Dia. 1b	Dia. 1b
500	Dia. 2	Dia. 2
600 - 1500	Dia. 3	N/A

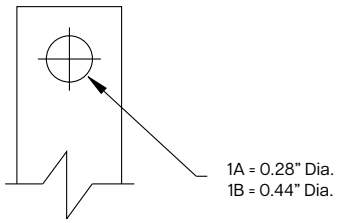


DIAGRAM 1

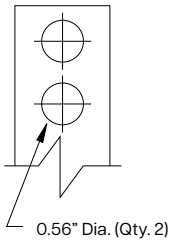


DIAGRAM 2

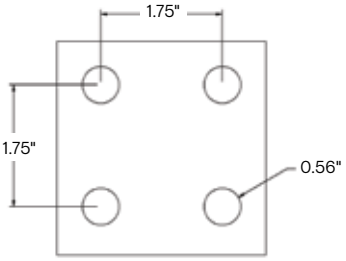


DIAGRAM 3

Terminal Information

Diagram	Terminal	Amps	Suitable for	Maximum tightening torque
3	Terminal Pad	>=600A	4 x 1/2 in hardware	70 ft-lbs

ENCLOSURE MOUNTING KITS

If wall and/or ceiling mounting is desired for a filter, optional mounting kits can be ordered separately. These mounting kits are NOT available for all enclosure case styles. Therefore, it is important that you confirm your enclosure case style, then use the selection table to the right to determine if A) a mounting kit is available and B) determine the correct HPS "Mounting Kit" part number that you must order. One kit is required for each filter.

Note: Some of the mounting kits can be used for both wall and ceiling mount, while others are for wall mounting only. The table indicates which mounting methods are available for each kit. The DW3 wall/ceiling mounting kit also includes a drip plate.

The DW3 wall/ceiling mounting kit is only designed for units up to 1000 pounds (453 kg) maximum.

If it is intended to wall and/or ceiling mount an enclosure that does not have a wall/ceiling mount kit available, considerations must be made to mechanically support the transformer safely and to install per the local building code. A drip plate must be provided beneath the enclosure per UL 1561 and CSA C22.2 No. 47.

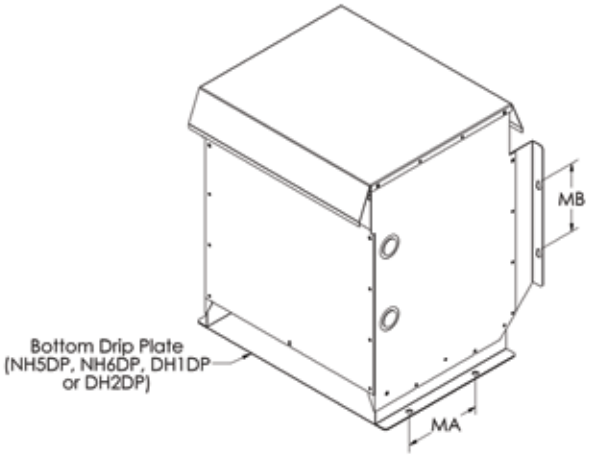
Enclosure Case Style	Wall Mount Available	Ceiling Mount Available	HPS Mounting Kit P/N
DH1	Yes	Yes	DH1DP
DH2	Yes	Yes	DH2DP
DH3	Yes	Yes	DW3
DH4	No	No	N/A
DH5	No	No	N/A

DH1DP and DH2DP Wall/Ceiling Mounting Kits

The DH1, DH1-1 and DH2 enclosures are designed with integral wall mounting capabilities. However, when you wall mount them, you must also install the bottom drip plate as shown below. The "MB" dimensions listed in the table below indicate the location for the wall mounting hardware.

For ceiling mounting of the DH1, DH1-1 and DH2, refer to the "MA" dimensions listed in the table below and hang the enclosure using appropriate sized ceiling hanger rods. However, you must be sure to install the bottom drip plate to the bottom of the enclosure, then bring the hanger rod down through both the enclosure bottom mounting holes, through the drip plate mounting holes, and install mounting hardware.

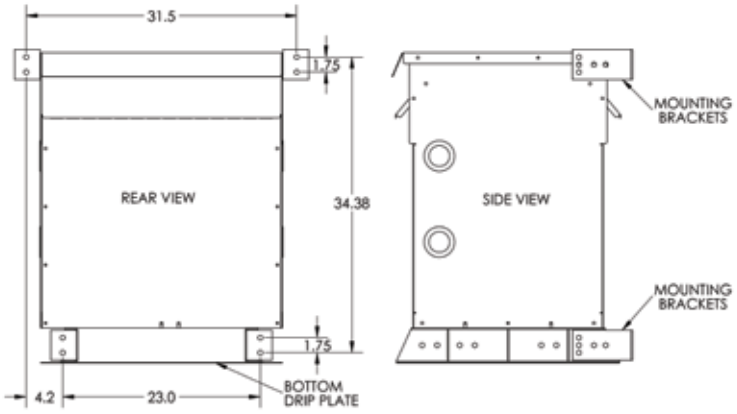
Note: Do not ceiling mount either the DH1, DH1-1 and DH2 enclosures without installing the bottom drip plate. All mounting hardware should be rated Grade 8 or higher.



Mounting Kit P/N	Enclosure Style	MA Dimension Inches [mm]	MB Dimension Inches [mm]
DH1DP	DH1	9.00 [228.6]	7.00 [177.8]
DH2DP	DH2	9.00 [228.6]	8.00 [203.2]

DW3 Wall Mounting Kit Dimensions

The following drawing details the wall mounting dimensions required and method by which the DW3 kit are installed on their respective DH3 enclosures. The DW3 wall mounting kit also includes a drip plate.



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