



OIL-FILLED CAPACITORS

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High Voltage

High Current

High Frequency



Sales@HighEnergyCorp.com

(610) 593-2800

FAX (610) 593-2985

Parquesburg Pennsylvania – a very special place where
21st Century technology converges with Old World ethics.



High Energy Corporation is housed in a modern factory at the edge of time. Historic Parkesburg stands at the eastern gateway to Pennsylvania's Lancaster County, a place where time sometimes seems to stand still. Our neighbors farm in centuries-old fashion. Come to visit us and your car may share the road with an Amish buggy or a horse-drawn farm wagon. Our people reflect the values of their surroundings; they are hard working, honest to a fault and loyal to their employer and to their customers. Parkesburg residents have been this way for over 200 years and will not change. While our technology advances at the pace of modern-world commerce, our values remain true to an older time and stricter code. We may be an anachronism, but we like it this way. Our customers have come to appreciate doing business in an old fashioned manner within the modern world.

Partner with us and enjoy the benefits of buying first-rate modern technology components from people who exalt old-world craftsmanship and view their word as a bond. Step back in time and forward in technology by choosing High Energy Corporation capacitors for your products.

<http://www.highenergycorp.com>

 **HIGH ENERGY CORP.**

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Contents

Custom Oil-Filled Capacitors and Special Designs <i>We will design and fabricate exactly what you need.</i>	2
Standard Parts for Custom Capacitors <i>Existing HEC designs for cans and cases.</i>	4
Standard DC Filter Oil-Filled Capacitors <i>Series CC - 1 to 20 μF, 2,000 to 5,000 V_{DC}, Drawn Plated Steel Case</i>	6
<i>Series LC - 1.0 to 20 μF, 5,000 to 40,000 V_{DC}, Welded Mild Steel Can</i>	8
<i>Series CP - 0.01 to 1.0 μF, 10,000 to 100,000 V_{DC}, Polypropylene Case</i>	10
Standard Snubber & Communication Oil-Filled Capacitors <i>Series SCR - 0.25 to 10 μF, 600 to 3000 V_{DC}, Drawn Plated Steel Cans</i>	12
Standard Water-Cooled Oil-Filled Capacitors <i>Series AR 6.0 to 1400 μF, 750 to 1250 V_{RMS}, 240 to 2000 A_{RMS}, Tapped Configurations</i>	14
Equations	16
Warranty Statement	17

High Energy Corporation oil-filled capacitors in conformity to RoHS Directive are optionally available upon request. Specifically, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium and specific bromine-based flame-retardants, PBB and PBDE, will not be used.

Note: Product specifications are subject to change without notice.

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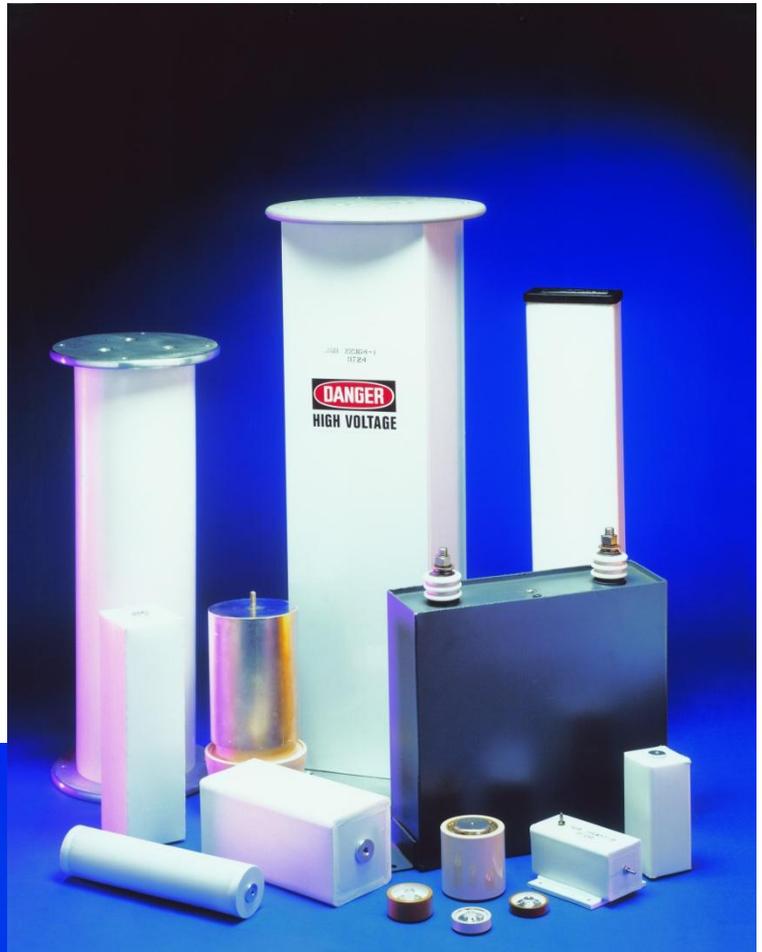
Lower Valley Road

Parkesburg, PA 19365

In today's 'modern' business climate, companies tend to provide products that fit the general needs of the industry they serve and to avoid deviating from these popular offerings. However, such 'blister-pack' solutions don't always serve the customer well. **High Energy Corporation** takes a different stance; we welcome the challenge of providing custom parts of the highest quality, rapidly and at a fair price.

We are an Engineering managed and driven enterprise and we welcome the chance to partner with our customers and to bring our unique capabilities to bear upon the development, refinement and evolution of state-of-the-art oil-filled capacitors. Whether your needs are for a simple custom value in one of our standard products, or for an entirely new packaging concept, we are ready to work with you in refining your high voltage, current, power or frequency application.

This catalog illustrates many standard **High Energy Corporation** products. Think of these as a launch point for your product planning and design thoughts. We will be delighted to produce *exactly* the 'right' component for your new design or for your mature product and you will be delighted with the result! Peruse some unique custom parts designed for others here.



Whether you need an oil-filled capacitor for High Voltage Power (above), for a Pulsed Laser (left) or for Induction Heating (overleaf), we can provide your component. We offer a broad range of standard packaging components and internals for oil-filled capacitors applied to energy storage, DC-power filtering, transient snubbing and high alternating current applications. If your application demands something new, we will be happy to design, fabricate and test it to your specifications.

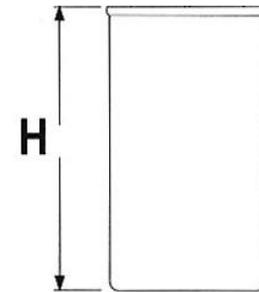
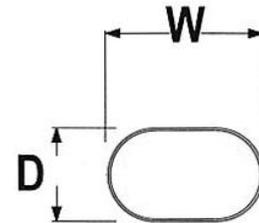
Please see our companion [Ceramic Capacitor](#) and [Metallized-Film Capacitor](#) catalogs for more quality components from High Energy Corporation.



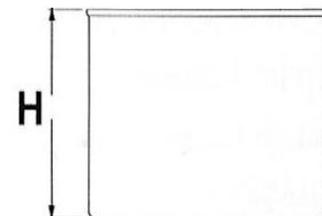
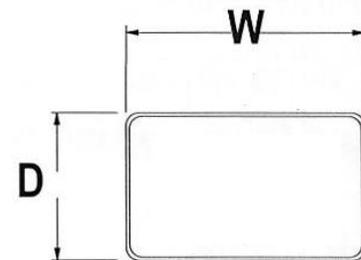
- Drawn or welded cans
- Polypropylene cases
- Mounting brackets & bushings
- Broad range of foils, oils & papers

DRAWN OVAL CANS

BASE	DIMENSIONS (IN)		
	D	W	H _{MAX}
A	1.31	2.19	6.00
C	1.91	2.91	8.00
D	1.97	3.66	8.00

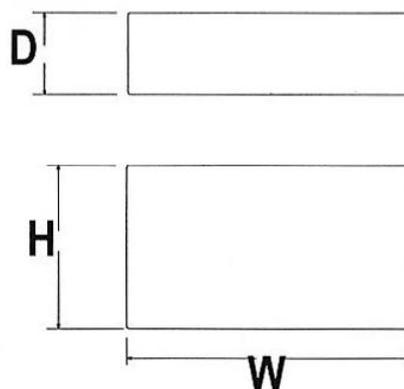

DRAWN RECTANGULAR CANS

BASE	DIMENSIONS (IN)		
	D	W	H _{MAX}
A	1.00	1.75	
B	1.19	2.50	
C	1.25	3.75	
D	1.75	3.75	
E	2.25	3.75	
F	2.50	3.75	
G	3.19	3.75	
K	2.84	4.56	10.00
J	3.75	4.56	10.50

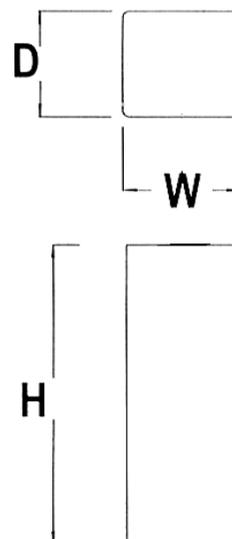


WELDED RECTANGULAR CANS

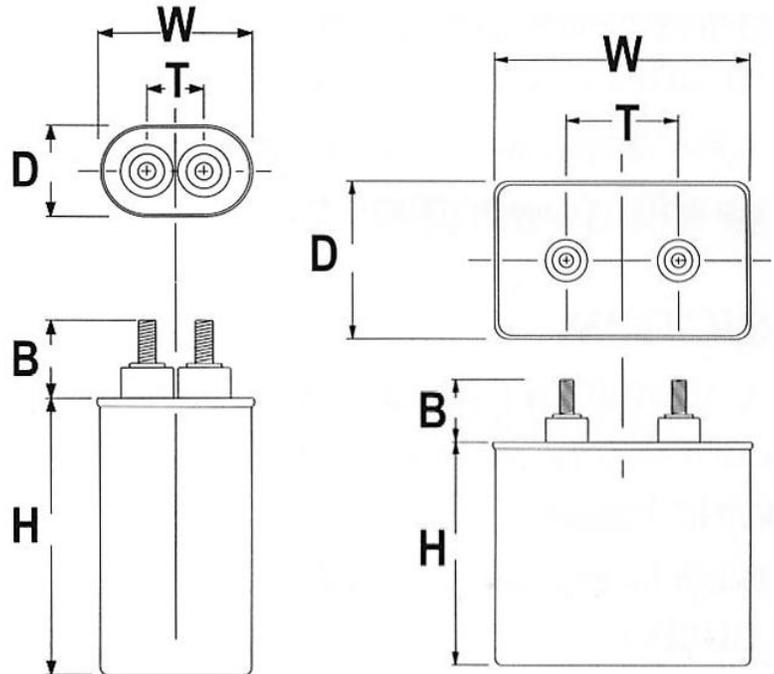
BASE	DIMENSIONS (IN)		
	D	W	H _{MAX}
W1	4.00	8.00	as required
W2	4.13	13.50	"
W3	5.13	13.50	"
W4	6.25	13.50	"
W5	7.00	14.00	"


POLYPROPYLENE CASES

BASE	DIMENSIONS (IN)		
	D	W	H _{MAX}
P1	2.38	2.38	As Required
P2	3.25	3.50	"
P3	4.25	4.25	"
P4	4.50	4.63	"
P5	5.00	7.88	"
P6	6.25	Round	"



- DC Filter Capacitors
- 1 to 20 μF capacitance
- Voltage 2,000 to 10,000 V_{DC}
- Plated drawn steel cans



GENERAL SPECIFICATIONS

Capacitance Range	1 to 20 μF
Capacitance Tolerance	$\pm 10\%$ standard, other tolerances available
Operating Temperature	-40°C to $+90^{\circ}\text{C}$
Insulation Resistance	25,000 $\text{M}\Omega \cdot \mu\text{F}$ at 25°C typical
AC Ripple Voltage	The sum of the DC voltage and peak AC ripple should not exceed the capacitor's V_{DC} rating. Additionally, the AC component should not exceed: <ul style="list-style-type: none"> 20 % of V_{DC} at 60 Hz 10 % of V_{DC} at 400Hz 5 % of V_{DC} at 1 kHz 1 % of V_{DC} at 10 kHz
Can Construction	Drawn plated steel, epoxy paint optional
Dielectric	Kraft paper and polypropylene with environmentally compatible impregnant

DRAWN OVAL CANS

CAPACITANCE		DIMENSIONS (IN)					PART NUMBER
(μ F)	(V _{DC})	D	W	H	B	T	
1	2,000	1.31	2.19	3.75	2	0.81	CC683
2	2,000	1.91	2.91	3.75	2	1.38	CC684
5	2,000	1.97	3.66	5.25	2	1.38	CC685
1	5,000	1.91	2.91	4	2	1.38	CC688
2	5,000	1.97	3.66	5	2	1.38	CC689

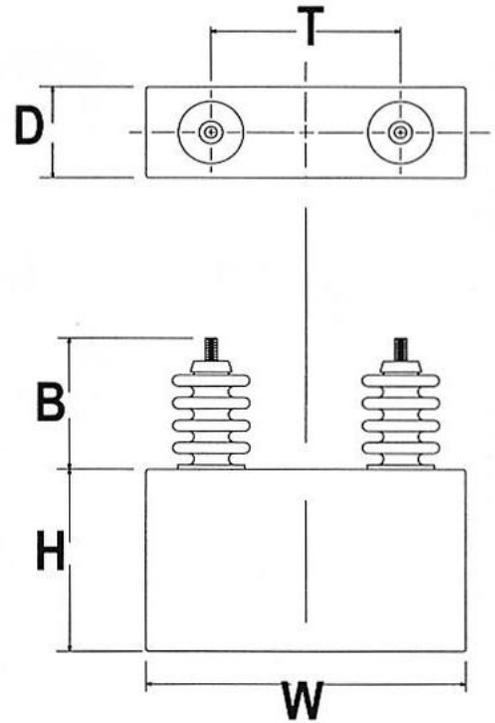
Custom capacitance values are available upon request.


DRAWN RECTANGULAR CANS

CAPACITANCE		DIMENSIONS (IN)					PART NUMBER
(μ F)	(V _{DC})	D	W	H	B	T	
10	2,000	3.19	3.75	5.25	2	2.00	CC686
20	2,000	3.75	4.56	7	2	2.00	CC687
5	5,000	3.19	3.75	6.25	2	2.00	CC690
10	5,000	3.75	4.56	7.25	2	2.00	CC691
1	10,000	3.19	3.75	5.5	2	2.00	CC692
2	10,000	3.75	4.56	7	2	2.00	CC693

Custom capacitance values are available upon request.

- **DC Filter capacitors**
- **1 to 20 μF capacitance**
- **Voltage 10,000 to 100,000 V_{DC}**
- **Welded cans**



GENERAL SPECIFICATIONS

Capacitance Range	1 to 20 μF
Capacitance Tolerance	$\pm 10\%$ standard, other tolerances available
Operating Temperature	-40°C to $+90^\circ\text{C}$
Insulation Resistance	25,000 $\text{M}\Omega \cdot \mu\text{F}$ at 25°C typical
AC Ripple Voltage	The sum of the DC voltage and peak AC ripple should not exceed the capacitor's V_{DC} rating. Additionally, the AC component should not exceed: <ul style="list-style-type: none"> 20 % of V_{DC} at 60 Hz 10 % of V_{DC} at 400Hz 5 % of V_{DC} at 1 kHz 1 % of V_{DC} at 10 kHz
Can Construction	Welded stainless steel or mild steel with epoxy finish
Dielectric	Kraft paper and polypropylene with environmentally compatible impregnant

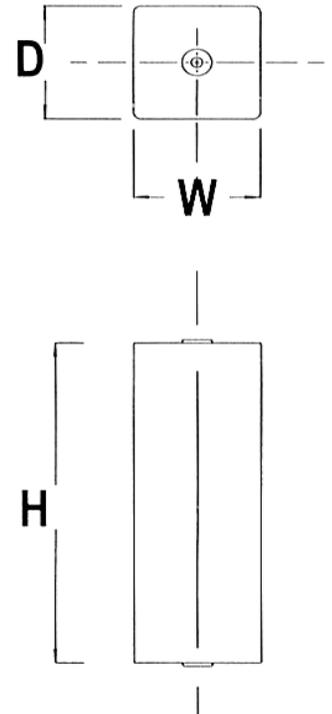
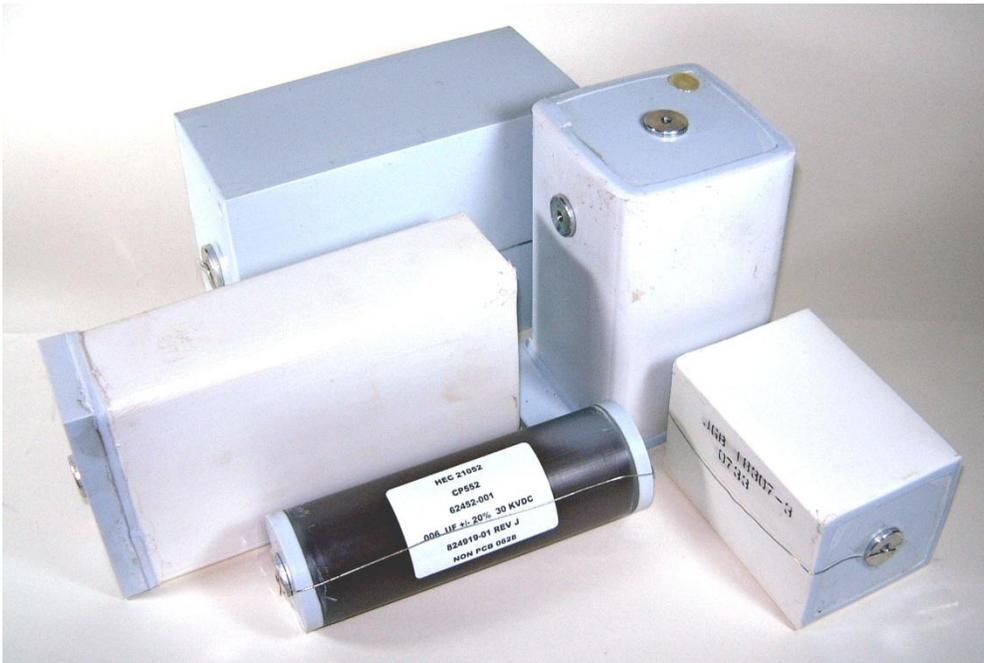
WELDED RECTANGULAR CANS

CAPACITANCE		DIMENSIONS (IN)					PART NUMBER
(μ F)	(V _{DC})	D	W	H	B	T	
5	10,000	4.0	8.0	10	3	5.00	LC322
10	10,000	4.13	13.5	10	3	5.00	LC330
1	20,000	4.0	8.0	8	3	5.00	LC323
2	20,000	4.13	13.5	9	3	9.00	LC324
5	20,000	5.13	13.5	15	3	9.00	LC325
10	20,000	6.25	13.5	22	3	9.00	LC326
1	40,000	5.13	13.5	11	5	9.00	LC327
2	40,000	5.13	13.5	18	5	9.00	LC328
4	40,000	6.25	13.5	24	5	9.00	LC329

Custom capacitance values are available upon request.



- DC Filter Capacitors
- 0.01 to 1 μF capacitance
- Voltage 10,000 to 100,000 V_{DC}
- Welded Polypropylene cases



GENERAL SPECIFICATIONS

Capacitance Range	0.01 to 1 μF
Capacitance Tolerance	$\pm 10\%$ standard, other tolerances available
Operating Temperature	-40°C to $+90^{\circ}\text{C}$
Insulation Resistance	25,000 $\text{M}\Omega \cdot \mu\text{F}$ at 25°C typical
AC Ripple Voltage	The sum of the DC voltage and peak AC ripple should not exceed the capacitor's V_{DC} rating. Additionally, the AC component should not exceed: <ul style="list-style-type: none"> 20 % of V_{DC} at 60 Hz 10 % of V_{DC} at 400Hz 5 % of V_{DC} at 1 kHz 1 % of V_{DC} at 10 kHz
Case Construction	Welded Polypropylene plastic
Dielectric	Kraft paper and polypropylene with environmentally compatible impregnant

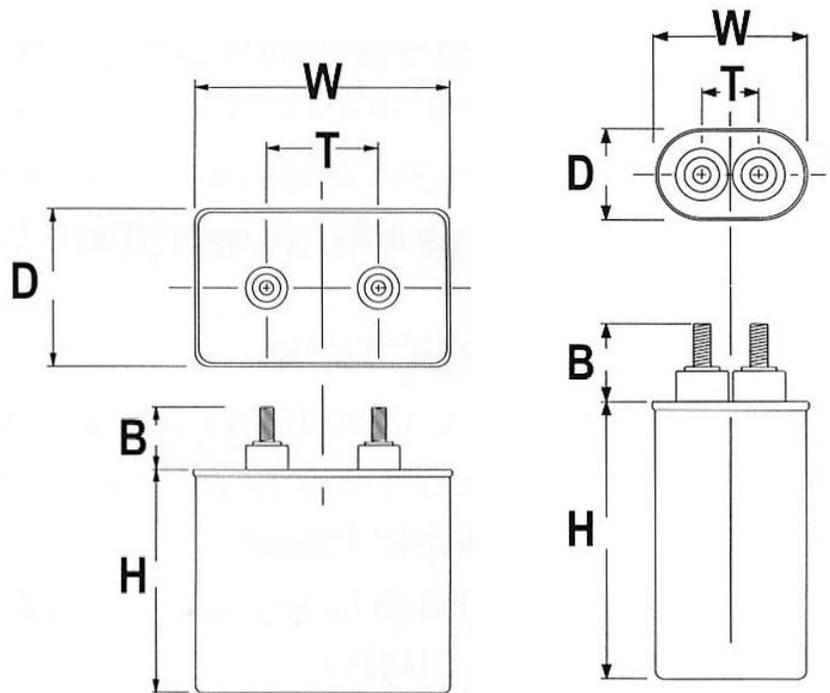
WELDED POLYPROPYLENE CASES

CAPACITANCE		DIMENSIONS (IN)					PART NUMBER
(μ F)	(V _{DC})	D	W	H	B	T	
0.1	10,000	2.38	2.38	7			CP513
0.2	10,000	2.38	2.38	12			CP514
0.5	10,000	3.25	3.50	8			CP515
1	10,000	4.25	4.25	8			CP516
0.1	20,000	3.25	3.5	6			CP518
0.2	20,000	3.25	3.5	9			CP519
0.5	20,000	4.25	4.25	12			CP520
1	20,000	5.00	7.88	9			CP521
0.01	40,000	2.38	2.38	8			CP522
0.025	40,000	3.25	3.5	8			CP523
0.05	40,000	3.25	3.5	9			CP524
0.1	40,000	4.25	4.25	10			CP525
0.25	40,000	5.00	7.88	10			CP526
0.01	75,000	2.38	2.38	18			CP527
0.025	75,000	3.25	3.5	15			CP528
0.05	75,000	4.50	4.63	15			CP529
0.1	75,000	4.50	4.63	22			CP530
0.01	100,000	3.25	3.5	15			CP531
0.025	100,000	4.5	4.63	15			CP532
0.05	100,000	4.5	4.63	22			CP533

Custom capacitance values are available upon request.



- Snubber & Communication caps
- 0.25 to 15 μF capacitance
- Voltage 600 to 3,000 V_{DC}
- Drawn plated steel cans



GENERAL SPECIFICATIONS

Capacitance Range	0.25 to 15 μF
Capacitance Tolerance	$\pm 10\%$ standard, other tolerances available
Operating Temperature	-40°C to $+90^{\circ}\text{C}$
Insulation Resistance	25,000 $\text{M}\Omega \cdot \mu\text{F}$ at 25°C typical
AC Ripple Voltage	The sum of the DC voltage and peak AC ripple should not exceed the capacitor's V_{DC} rating. Additionally, the AC component should not exceed: <ul style="list-style-type: none"> 20 % of V_{DC} at 60 Hz 10 % of V_{DC} at 400Hz 5 % of V_{DC} at 1 kHz 1 % of V_{DC} at 10 kHz
Can Construction	Drawn plated steel cans (welded steel, aluminum or stainless steel available), epoxy paint optional
Dielectric	Kraft paper and polypropylene with environmentally compatible impregnant

DRAWN OVAL CANS

CAPACITANCE		DIMENSIONS (IN)					PART NUMBER
(μ F)	(V _{DC})	D	W	H	B	T	
0.25	600	1.31	2.19	2.13	1.25	0.81	SCR541
0.5	600	1.31	2.19	2.38	1.25	0.81	SCR542
1	600	1.31	2.19	2.75	1.25	0.81	SCR543
2	600	1.31	2.19	3.50	1.25	0.81	SCR544
5	600	1.91	2.91	4.25	1.25	1.38	SCR545
10	600	1.97	3.66	5.00	1.25	1.38	SCR546
0.25	1,000	1.31	2.19	2.13	1.25	0.81	SCR548
0.5	1,000	1.31	2.19	2.13	1.25	0.81	SCR549
1	1,000	1.31	2.19	2.13	1.25	0.81	SCR550
2	1,000	1.31	2.19	2.13	1.25	0.81	SCR551
5	1,000	1.91	2.91	4.25	1.25	1.38	SCR552
10	1,000	1.97	3.66	5.00	1.25	1.38	SCR553
15	1,000	1.97	3.66	5.00	1.25	1.38	SCR554
0.25	2,000	1.31	2.19	2.13	1.25	0.81	SCR555
0.5	2,000	1.31	2.19	3.00	1.25	0.81	SCR556
1	2,000	1.31	2.19	4.00	1.25	0.81	SCR557
2	2,000	1.91	2.91	4.25	1.25	1.38	SCR558
5	2,000	1.97	3.66	5.50	1.25	1.38	SCR559
0.5	3,000	1.91	2.91	2.75	1.25	1.38	SCR562
1	3,000	1.91	2.91	3.50	1.25	1.38	SCR563
2	3,000	1.91	2.91	5.00	1.25	1.38	SCR564
5	3,000	1.97	3.66	7.00	1.25	1.38	SCR565

Custom capacitance values are available upon request.


DRAWN RECTANGULAR CANS

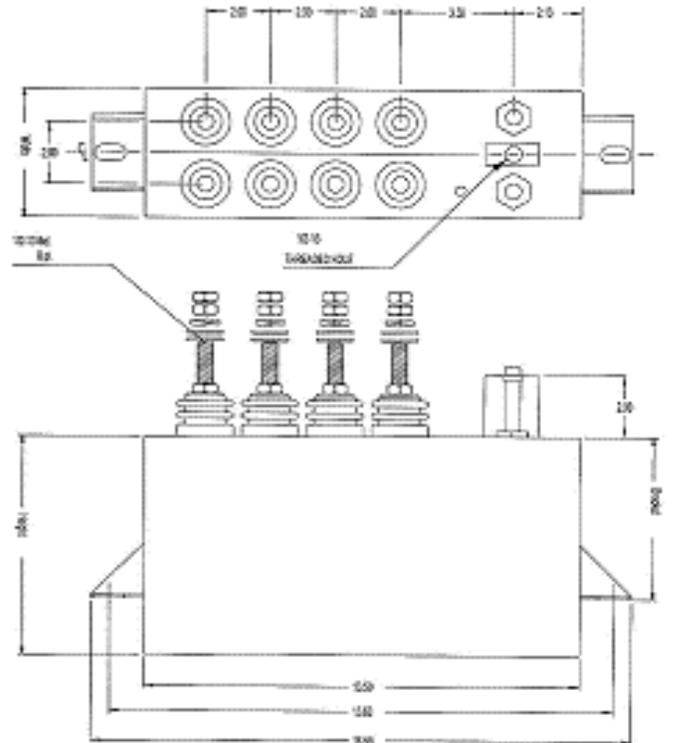
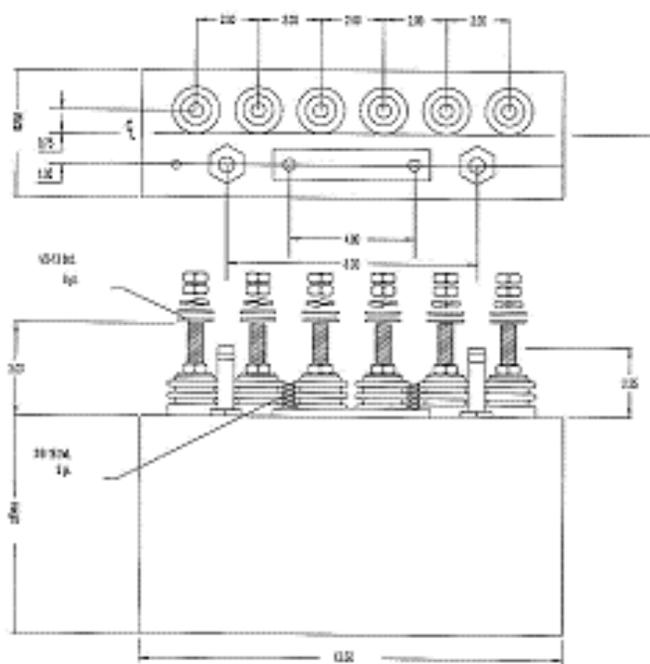
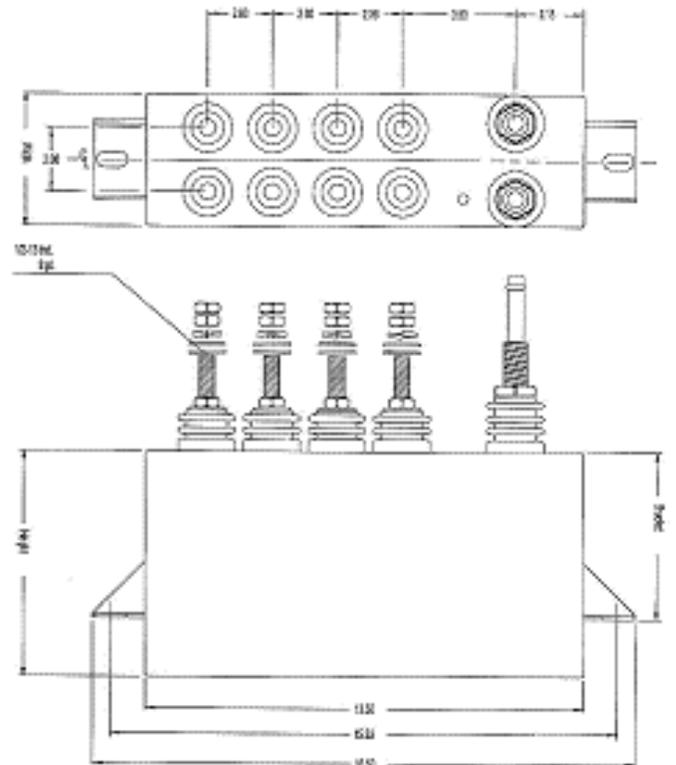
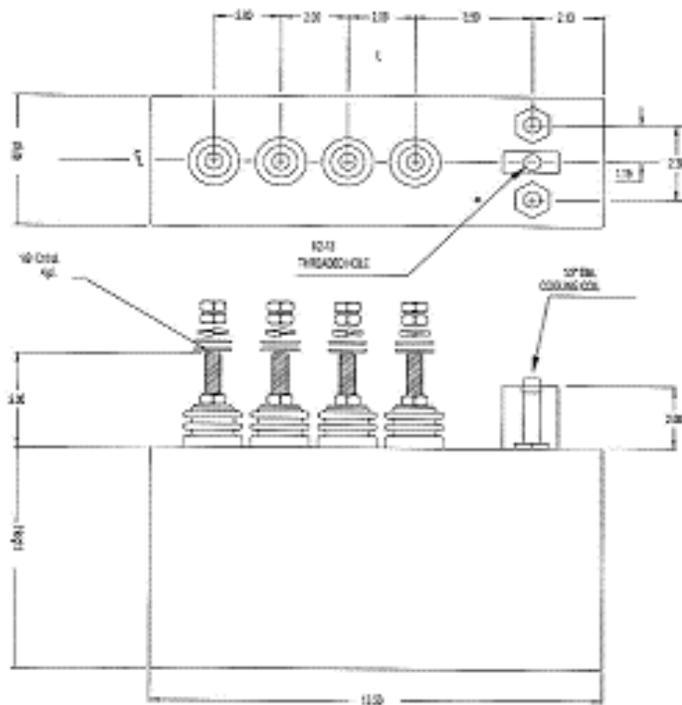
CAPACITANCE		DIMENSIONS (IN)					PART NUMBER
(μ F)	(V _{DC})	D	W	H	B	T	
25	600	3.75	4.56	6.00	1.25	2.00	SCR547
10	2,000	3.75	4.56	5.75	1.25	2.00	SCR560
15	2,000	3.75	4.56	7.00	1.25	2.00	SCR561

- High capacitance at high power
- 6 to 1,400 μF capacitance
- 800 to 1,250 V_{RMS}
- 240 to 2,000 A_{RMS}
- 300 to 2,000 kVA
- Up to 25 kHz



CAPACITANCE (μF)		ELECTRICAL PARAMETERS				DIMENSIONS		PART #
Total	By Tap	V_{RMS}	kVA	A_{RMS}	f_{Max} (kHz)	Width	Height	
750	4x187.5	900		1000	DC	5.25	14.38	ARS18
1400	4x350	750		1000	DC	5.25	15.5	ARS19
10.18	1.45+2.91+5.82	1250	300	240	3	4.13	7	AR482
24.87	1.31+2.62+5.24+2x7.85	800	300	375	3	4.13	7	AR499
37.34	1.96+3.93+7.85+2x11.8	800	450	563	3	4.13	7.5	AR488
74.60	4x18.65	800	900	1125	3	4.13	13	AR485
63.65	5x12.73	1000	1200	1200	3	4.13	13.5	AR487
40.80	4x3.4+4x6.8	1250	1200	960	3	4.13	9	AR496
7.77	2x.78+1.55+2x2.33	800	300	375	9.6	4.13	7	AR481
11.72	.26+.52+1.04+2.1+2x3.9	800	450	563	9.6	4.13	7	AR490
17.48	4x4.37	800	675	844	9.6	4.13	7	AR492
19.92	6x3.32	1000	1200	1200	9.6	4.13	13	AR486
31.10	5x6.22	800	1200	1500	9.6	4.13	7	AR495
13.40	2x1.34+4x2.68	1250	1260	1008	9.6	4.13	7	AR498
15.54	2x1.55+4x3.11	1200	1350	1125	9.6	4.13	9	AR500
19.88	4x4.97	800	800	1100	10	4.13	7	AR493
13.26	2x1.33+4x2.65	1200	1200	1000	10	4.13	7	AR497
31.08	6x5.18	800	1250	1563	10	4.13	13	AR483
39.90	1.9+3.8+6x5.7	800	1600	2000	10	4.13	14	AR489
6.0	6x1	800	603	754	25	4.13	7	AR484
4.92	6x.82	1250	1200	960	25	4.13	14.25	AR491

Custom capacitance values are available upon request.



Typical AR Series Can Configurations

Units

C = microFarad (μF)
L = microHenry (μH)
R = Ohm (Ω)
ESR = Equivalent Series Resistance (Ω)
f = Hertz (Hz)
V = Volt
I = Ampere
kVAR = Kilovolt-Amperes (Reactive)
e = dimensionless (2.71828 ...)

Current Under

... Sine Wave Conditions

$$I = 2\pi fCV \cdot 10^{-6}$$

Reactive Power

... Sine Wave Conditions

$$kVAR = 2\pi fCV^2 \cdot 10^{-9}$$

Capacitance Reactance

$$X_C = \frac{1}{2\pi fC \cdot 10^{-6}}$$

Dissipation Factor

$$DF = \frac{ESR}{X_C}$$

Quality Factor

$$Q = \frac{1}{DF}$$

Power Loss

$$Watts_{Loss} = DF \cdot kVAR \cdot 10^3 = I^2 \cdot ESR$$

Resonant Frequency

$$f_n = \frac{1}{2\pi\sqrt{LC} \cdot 10^{-12}}$$

Skin Depth

... in copper (centimeter)

$$\delta = \frac{6.62}{\sqrt{f}}$$

Capacitors in Series

... voltage drop across each capacitor in series is inversely proportional to capacitance value

$$C_S = \frac{1}{\frac{1}{C_1} + \frac{1}{C_2} + \dots + \frac{1}{C_n}}$$

Capacitors in Parallel

$$C_P = C_1 + C_2 + \dots + C_n$$

Energy Discharge Calculations

Stored Energy

$$\text{Joules} = \text{Watt} \cdot \text{seconds} = \frac{CV^2 \cdot 10^{-6}}{2}$$

Peak Current

... where circuit resistance is very small

$$I_{pk} \cong V_C \sqrt{\frac{C}{L}}$$

Voltage Reversal

... peak value of first voltage reversal

$$V_{Rev} = V \cdot e^{-\left(\frac{\pi R}{2} \sqrt{\frac{C}{L}}\right)}$$

Critical Damping Resistance

$$R_{Critical} = 2 \sqrt{\frac{L}{C}}$$

WARRANTY

All products purchased from High Energy Corporation are guaranteed to be free from defects of workmanship and material under normal use for a period of one year from the date of shipment.

LIMITATIONS

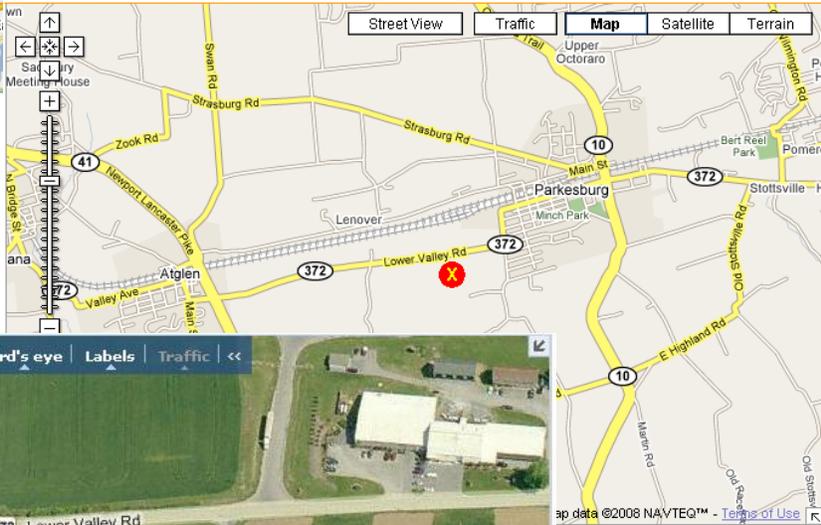
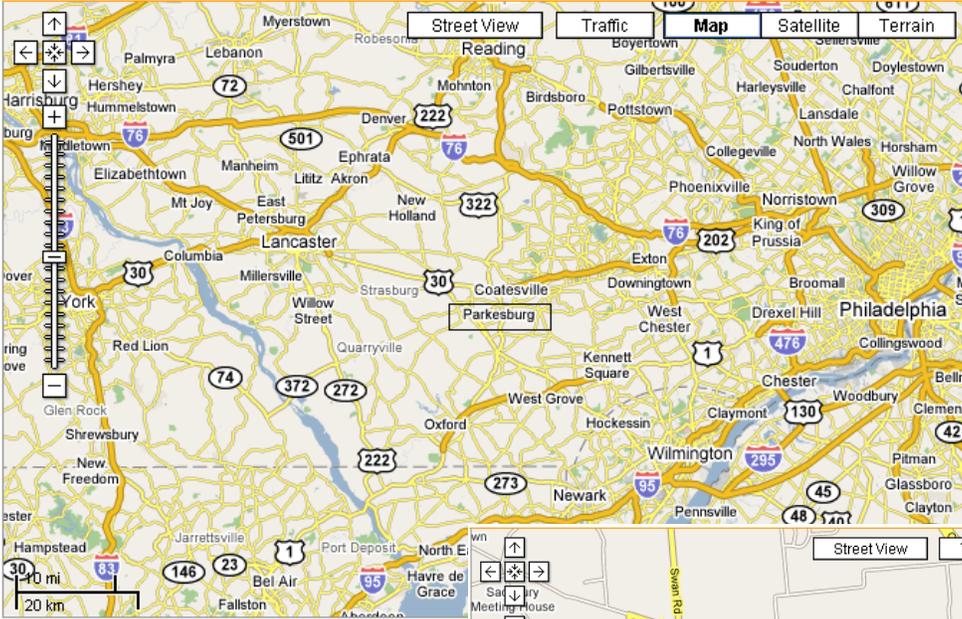
There are no other warranties, expressed or implied. Specifically excluded, but not by way of limitation, are the implied warranties of fitness for a particular purpose and merchantability.

It is understood and agreed that the seller's liability, whether in contract, in tort, under any warranty, in negligence or otherwise, shall not exceed the price paid by the purchaser, and under no circumstance shall the seller be liable for special, indirect or consequential damages. The price stated for the equipment is a consideration in limiting the seller's liability. No action, regardless of form, arising out of the transaction of this agreement may be brought by purchaser more than one year after the course of action has accrued.

Seller's maximum liability shall not exceed and buyer's remedy is limited to either (i) repair or replacement of the defective product, or at the seller's option (ii) return of the product and refund of the purchase price, and such remedy shall be the entire and exclusive remedy.

Note: Product specifications are subject to change without notice.

We're easy to find!



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