



DETUNED INDUCTORS FOR PF IMPROVEMENT CAPACITORS



Electrical supply systems harmonics is like a cancer on supply systems and causes extreme bad effects on the supply system component and connected electrical apparatus. This too, without one knowing about it. These harmonic currents & voltages are generated due to the modern day non-linear loads like variable speed drives, UPS, induction & arc furnaces, LED lamps and electronically operated CFL's and other fluorescent lamps, etc.

Capacitors put on supply lines play a vital role when the effect of harmonic is considered.

Normally capacitors causes:

- Enhances the harmonics.
- Gets itself deteriorated causing lower VAR compensation.
- Capacitor bursting causing human safety issues.
- Resonance on supply system causing excessive over voltage and over current.
- Enhancement in short circuit fault currents.

Despite these adversities, capacitors are needed to improve supply system power factor (D-PF).

TAS "DETUNED INDUCTORS" give effective solution to all these above problems and allows safe usage of capacitors to improve the power factor.

APPLICATION:

Detuned Inductors for
PF Improvement Capacitors

Designed according to the basic system odd-harmonic currents of 5th, 7th, 11th, and 13th Order as:

$I_5 = 50\% \text{ max.},$
 $I_7 = 25\% \text{ max.},$
 $I_{11} = 12.5\% \text{ max.},$
 $I_{13} = 5\% \text{ max.}$

(Others on special request)

FEATURES

- Protection to capacitors against harmonics
- Reduces harmonic distortion
- Reduces power losses
- High harmonic load handling capacity
- Has a high linearity to avoid magnetic saturation for higher crest factors of waveform.
- Convenient mechanical design for mounting
- Long lifespan
- Temperature protection in all 3 phase windings

TECHNICAL SPECIFICATIONS:

Frequency	50 Hz (60Hz on specific made to order)	Insulation strength	3kV 50 Hz for 1min 5mA tripping P-P,P-E
Voltage	380..440V AC 3 Phase Line to Line Value	Linearity	≤3% error of normal inductance value up to 130% of rated current
Rating	5 to 100 KVAR Capacitors	Cooling	Natural Cooling
Detuning/Filtering % voltage drop	6%, 7% & 14%	Enclosure	IP-00
Core	Multi Gap Silicon Steel Iron	Phase	3 phases
Ambient Temperature	50°C Max	Temperature protection	Thermal Switch, 130°C NC type in all three phase windings
Insulation Class	F (155°C)		

For 525 VAC, 3Phase 50Hz Capacitors						
For 7% Detuned Inductor						
Capacitor KVAR Value @525Vac	Frame Size	LC Combination Effective KVAR @ Voltages /50Hz				Type No.
		380Vac (Amp)	400Vac (Amp)	415Vac (Amp)	440Vac (Amp)	
5	A	2.82(4.29)	3.12(4.51)	3.36(4.68)	3.78(4.96)	AFR - 07/005/525
10	B	5.64(8.57)	6.25(9.02)	6.73(9.36)	7.56(9.93)	AFR - 07/010/525
15	B	8.46(12.86)	9.5(13.54)	10(14.00)	11.35(14.89)	AFR - 07/015/525
20	B	11.28(17.15)	12.5(18.05)	13.45(18.72)	15.13(19.84)	AFR - 07/020/525
25	C	14(21.43)	15.62(22.56)	16.82(23.41)	18.91(24.82)	AFR - 07/025/525
30	C	16.92(25.72)	18.75(27.07)	20.18(28.09)	22.69(29.78)	AFR - 07/030/525
40	C	22.56(34.29)	25(36.10)	26.92(37.45)	30.26(39.71)	AFR - 07/040/525
50	C	28.21(42.86)	31.25(45.12)	33.64(46.81)	37.82(49.63)	AFR - 07/050/525
60	D	33.85(51.44)	37.5(54.14)	40.37(56.17)	45.39(59.56)	AFR - 07/060/525
80	D	45.13(68.85)	50(72.19)	53.83(74.9)	60.52(79.41)	AFR - 07/080/525
100	E	56.42(85.73)	62.5(90.24)	67.29(93.62)	75.64(99.26)	AFR - 07/100/525
For 6% Detuned Inductor						
Capacitor KVAR Value @525Vac	Frame Size	LC Combination Effective KVAR @Voltages /50Hz				Type No.
		380Vac(Amp)	400Vac (Amp)	415Vac (Amp)	440Vac (Amp)	
5	A	2.77(4.22)	3.07(4.44)	3.31(4.61)	3.72(4.89)	AFR - 06/005/525
10	B	5.55(8.40)	6.17(8.91)	6.62(9.22)	7.45(9.77)	AFR - 06/010/525
15	B	8.33(12.66)	9.26(13.37)	9.93(13.82)	11.17(14.66)	AFR - 06/015/525
20	B	11.1(16.88)	12.35(17.83)	13.25(18.43)	14.89(19.54)	AFR - 06/020/525
25	C	13.88(21.10)	15.38(22.5)	16.56(23.04)	18.61(24.43)	AFR - 06/025/525
30	C	16.66(25.31)	18.5(27.00)	19.87(27.65)	22.33(29.31)	AFR - 06/030/525
40	C	22.21(33.75)	25(36.00)	26.49(36.86)	29.78(39.08)	AFR - 06/040/525
50	C	27.76(42.19)	30.6(45.00)	33.12(46)	37.23(48.85)	AFR - 06/050/525
60	D	33.32(50.63)	37.5(54.00)	39.74(55.29)	44.68(58.62)	AFR - 06/060/525
80	D	44.43(67.51)	49.5(72.00)	52.99(73.72)	59.57(78.16)	AFR - 06/080/525
100	E	55.54(84.38)	61.6(89.50)	66.24(92.15)	74.46(97.71)	AFR - 06/100/525
For 14% Detuned Inductor						
Capacitor KVAR Value @525Vac	Frame Size	LC Combination Effective KVAR @Voltages /50Hz				Type No.
		380Vac(Amp)	400Vac (Amp)	415Vac (Amp)	440Vac (Amp)	
5	A	3(4.62)	3.37(4.87)	3.62(5.05)	4.08(5.35)	AFR - 14/005/525
10	B	6.08(9.25)	6.74(9.73)	7.26(10.10)	8.16(10.71)	AFR - 14/010/525
15	B	9.13(13.87)	10.11(14.6)	10.88(15.15)	12.24(16.06)	AFR - 14/015/525
20	C	12.17(18.49)	13.48(19.47)	14.52(20.20)	16.32(21.41)	AFR - 14/020/525
25	C	15.21(23.12)	16.85(24.34)	18.14(25.25)	20.4(26.77)	AFR - 14/025/525
30	D	18.26(27.74)	20.23(29.2)	21.78(30.30)	24.48(32.12)	AFR - 14/030/525
40	D	24.34(36.99)	27(38.94)	29(40.40)	32.64(42.83)	AFR - 14/040/525
50	E	30.43(46.24)	33.71(48.67)	36.29(50.50)	40.8(53.54)	AFR - 14/050/525
60	E	36.52(55.48)	40.46(58.4)	43.55(60.59)	64.24(64.24)	AFR - 14/060/525

For 480 VAC, 3Phase 50Hz Capacitors

For 7% Detuned Inductor

Capacitor KVAR Value @480Vac	Frame Size	LC Combination Effective KVAR @ Voltages /50Hz			Type No.
		380Vac(Amp)	400Vac (Amp)	415Vac (Amp)	
5	A	3.37(5.13)	3.74(5.40)	4.02(5.60)	AFR - 07/005/480
10	B	6.75(10.26)	7.48(10.8)	8.05(11.20)	AFR - 07/010/480
15	B	10.13(15.38)	11.22(16.19)	12.08(16.80)	AFR - 07/015/480
20	B	13.5(20.51)	14.95(21.59)	16.1(22.40)	AFR - 07/020/480
25	C	16.87(25.64)	18.69(26.99)	20.12(28.00)	AFR - 07/025/480
30	C	20.25(30.77)	22.44(32.39)	24.15(33.60)	AFR - 07/030/480
40	C	26.99(41.02)	29.91(43.18)	32.2(44.80)	AFR - 07/040/480
50	C	33.75(51.28)	37.39(53.98)	40.25(56)	AFR - 07/050/480
60	D	40.5(61.53)	44.87(64.77)	48.3(67.20)	AFR - 07/060/480
80	D	53.99(82.04)	59.83(86.36)	64.41(89.60)	AFR - 07/080/480
100	E	67.5(102.55)	74.79(107.95)	80.5(112)	AFR - 07/100/480

For 6% Detuned Inductor

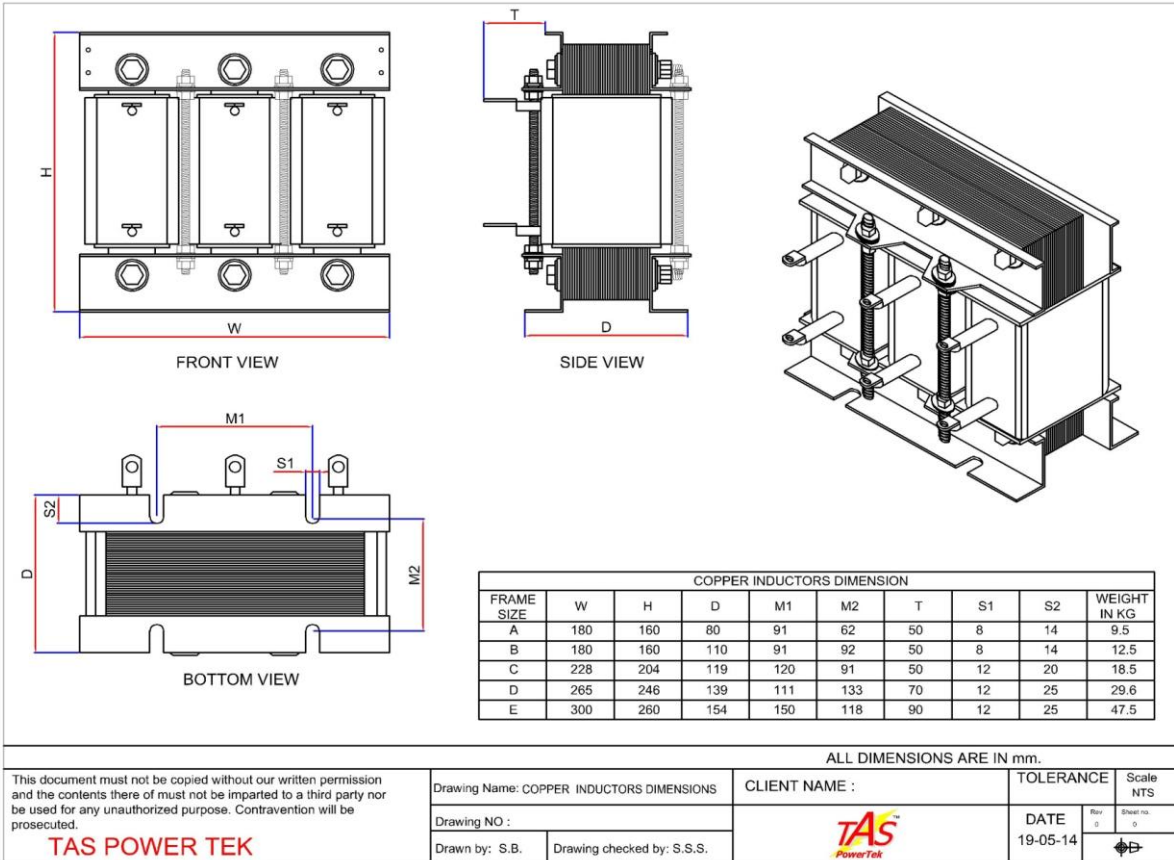
Capacitor KVAR Value @480Vac	Frame Size	LC Combination Effective KVAR @ Voltages /50Hz			Type No.
		380Vac(Amp)	400Vac(Amp)	415Vac (Amp)	
5	A	3.32(5.05)	3.68(5.31)	3.96(5.51)	AFR - 06/005/480
10	B	6.64(10.09)	7.36(10.63)	7.92(11.02)	AFR - 06/010/480
15	B	9.16(15.14)	11.04(15.94)	11.88(16.54)	AFR - 06/015/480
20	B	13.28(20.19)	14.72(21.25)	15.85(22.05)	AFR - 06/020/480
25	C	16.61(25.24)	18.4(26.56)	19.81(27.56)	AFR - 06/025/480
30	C	19.93(30.28)	22.08(31.88)	23.77(33.07)	AFR - 06/030/480
40	C	26.57(40.38)	29.44(42.50)	31.69(44.10)	AFR - 06/040/480
50	C	33.22(50.47)	36.8(53.13)	39.62(55.12)	AFR - 06/050/480
60	D	39.86(60.57)	44.17(63.75)	47.54(66.15)	AFR - 06/060/480
80	D	53.15(80.76)	58.89(85)	63.39(88.19)	AFR - 06/080/480
100	E	66.44(100.95)	73.62(106.26)	79.24(110.24)	AFR - 06/100/480

For 14% Detuned Inductor

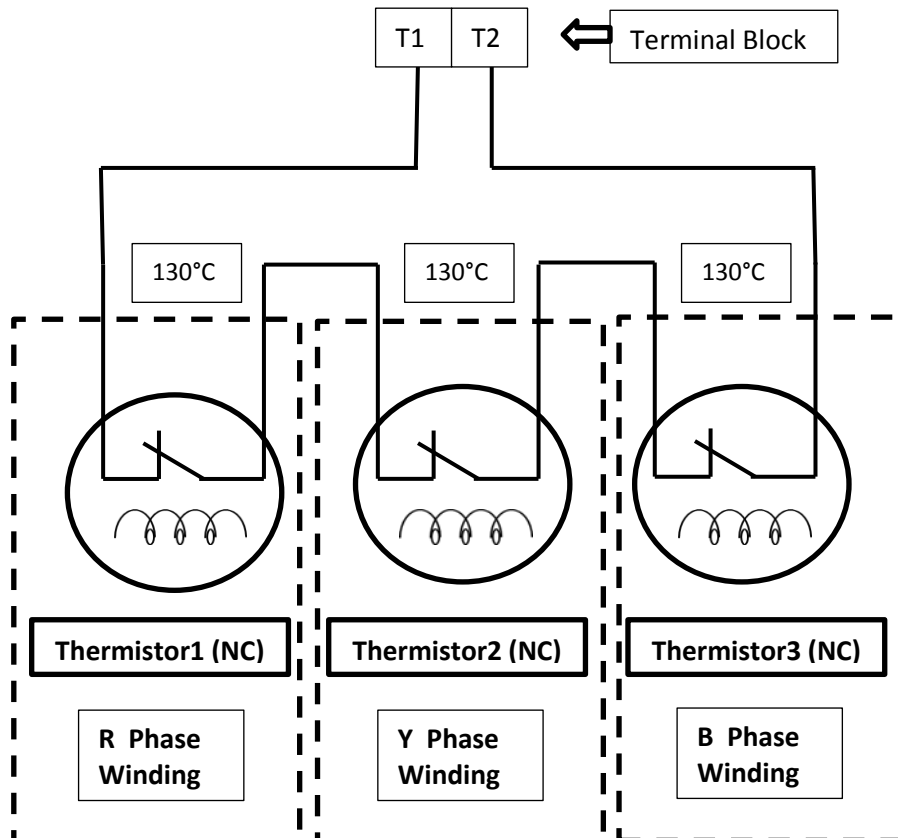
Capacitor KVAR Value @480Vac	Frame Size	LC Combination Effective KVAR @ Voltages /50Hz			Type No.
		380Vac(Amp)	400Vac (Amp)	415Vac (Amp)	
5	A	3.64(5.53)	4.03(5.82)	4.34(6.04)	AFR - 14/005/480
10	B	7.28(11.06)	8.06(11.64)	8.68(12.08)	AFR - 14/010/480
15	B	10.92(16.59)	12.1(17.27)	13.03(18.12)	AFR - 14/015/480
20	C	14.56(22.12)	16.14(23.29)	17.37(24.16)	AFR - 14/020/480
25	C	18.2(27.66)	20.17(29.11)	21.7(30.22)	AFR - 14/025/480
30	D	21.84(33.19)	24.2(34.93)	26.05(36.24)	AFR - 14/030/480
40	D	29.12(44.25)	32.27(46.58)	34.74(48.33)	AFR - 14/040/480
50	E	36.41(55.31)	40.34(58.22)	43.12(60.41)	AFR - 14/050/480
60	E	43.68(66.37)	48.41(69.87)	52.11(72.49)	AFR - 14/060/480

For 440 VAC, 3Phase 50Hz Capacitors				
For 7% Detuned Inductor				
Capacitor KVAR Value @440Vac	Frame Size	LC Combination Effective KVAR @ Voltages /50Hz		Type No.
		380Vac (Amp)	400Vac (Amp)	
5	A	4.02(6.10)	4.45(6.42)	AFR - 07/005/440
10	B	8.03(12.20)	8.9(12.85)	AFR - 07/010/440
15	B	12.05(18.31)	13.35(19.27)	AFR - 07/015/440
20	C	16.07(24.41)	17.8(25.69)	AFR - 07/020/440
25	C	20.8(30.51)	22.25(32.12)	AFR - 07/025/440
30	C	24.09(36.61)	26.7(38.54)	AFR - 07/030/440
40	C	32.13(48.82)	35.6(51.39)	AFR - 07/040/440
50	D	40.16(61.02)	44.5(64.24)	AFR - 07/050/440
60	D	48.2(73.23)	53.4(77.08)	AFR - 07/060/440
80	E	64.26(97.84)	71.2(102.78)	AFR - 07/080/440
100	E	80.33(122.05)	89(128.47)	AFR - 07/100/440
For 6% Detuned Inductor				
Capacitor KVAR Value @440Vac	Frame Size			Type No.
		380Vac(Amp)	400Vac (Amp)	
5	A	3.95(6.01)	4.68(6.32)	AFR - 06/005/440
10	B	7.91(12.01)	8.76(12.65)	AFR - 06/010/440
15	B	11.86(18.02)	13.14(18.97)	AFR - 06/015/440
20	C	15.81(24.03)	17.52(25.29)	AFR - 06/020/440
25	C	19.76(30.03)	21.9(31.61)	AFR - 06/025/440
30	C	23.72(36.04)	26.28(37.94)	AFR - 06/030/440
40	D	31.63(48.05)	35(50.58)	AFR - 06/040/440
50	D	39.53(60.07)	43.8(63.23)	AFR - 06/050/440
60	D	47.44(72.00)	52.57(75.87)	AFR - 06/060/440
80	E	63.25(96.11)	70(101.16)	AFR - 06/080/440
100	E	79.7(120.13)	87.61(126.46)	AFR - 06/100/440

Mechanical Dimensions:



Thermistors Connection Diagram In Inductor



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