

# REACTORS: ANTI-RESONANCE HARMONIC FILTER



## APPLICATIONS

- Avoiding of resonance conditions
- Tuned and detuned harmonic filters
- Reduction of harmonic distortion (network clearing)
- Reduction of power losses

## FEATURES

- High harmonic loading capability
- Very low losses
- High linearity to avoid choke tilt
- Low noise
- Convenient mounting
- Long expected life time
- Temperature protection (NC contact)

## GENERAL

The increasing use of modern power electronic apparatus (drives, uninterruptible power supplies etc.) produces nonlinear current and thus influences and loads the network with harmonics (line pollution).

The power factor correction or capacitance of the power capacitor forms a resonant circuit in conjunction with the feeding transformer. Experience shows that the self-resonant frequency of this circuit is typically between 250 and 500 Hz, i.e. in the region of the 5<sup>th</sup> and 7<sup>th</sup> harmonics.

Such a resonance although can lead to the following undesirable effects:

- Overloading of capacitors
- Overloading of transformers and transmission equipment
- Interference with metering and control systems, computers and electrical gear
- Resonance elevation, i.e. amplification of harmonics
- Voltage distortion

These resonance phenomena can be avoided by connecting capacitors in series with filter reactors in the PFC (Power Factor Correction) system. These so called “detuned” PFC systems are scaled in a way that the self-resonant frequency is below the lowest line harmonic. The detuned PFC system is purely inductive seen by harmonics above this frequency (50 or 60 Hz usually), the detuned system on the other hand acts purely capacitive, thus correcting the reactive power.

### Reactors: Anti-resonance Harmonic Filter (Table one)

Item	Ordering Code
25 kvar – 400 V, f = 50 Hz., P = 7%	B44066D7025*400
50 kvar – 400 V, f = 50 Hz., P = 7%	B44066D7050*400
100 kvar – 400 V, f = 50 Hz., P = 7%	B44066D7100*400
25 kvar – 440 V, f = 50 Hz., P = 7%	B44066D7025*440
50 kvar – 440 V, f = 50 Hz., P = 7%	B44066D7050*440
100 kvar – 440 V, f = 50 Hz., P = 7%	B44066D7100*440

*Other models can be sourced on request*

# Reactors – Anti-Resonance Harmonic Filter

## Main Technical parameters – 230/400 V coil

Characteristics						
Power	$\Delta$ capacitance	Inductance	$I^{rms}$ ( $I^{eff}$ )	Losses <sup>1)</sup>	Weight	Terminal
kvar	3. $\mu$ F	mH	A	W	kg	
<b>Rated Voltage V= 400 V, f = 50 HZ, p = 7% (fr = 189 Hz) / Linearity: <math>L \geq 0.95 \cdot L_n</math> for current up to <math>1.73 \cdot I_1</math></b>						
25	154	1.53	40.9	180	18	Cu bars $\varnothing$ 9mm
50	308	0.77	81.8	270	27	Cu bars $\varnothing$ 9mm
100	617	0.38	163.3	390	50	Cu bars $\varnothing$ 11mm
<b>Related Voltage V= 440 V, f = 50 HZ, p = 7% (fr = 189 Hz) / Linearity: <math>L \geq 0.95 \cdot L_n</math> for current up to <math>1.73 \cdot I_1</math></b>						
25	127	1.87	37.2	170	18	Cu bars $\varnothing$ 9mm
50	254	0.93	74.3	250	33	Cu bars $\varnothing$ 9mm
100	509	0.46	148.7	410	49	Cu bars $\varnothing$ 9mm

1) Total Max. losses, considering Max. specified overvoltage and harmonic currents

\* We offer reactors with slightly different specifications (e.g. dimensions) that can be used for the same applications although sometimes with slightly different resulting performances. These types are distinguished by different letters at digit 12 of the ordering code. Please discuss your requirements with our sales team to see what will suit your needs.

