

The REO logo is displayed in white, stylized, block letters within a blue rectangular box. The background of the entire page is a close-up photograph of a toroidal transformer winding machine. The machine is white and is in the process of winding a toroidal core with copper wire. The wire is wrapped in a neat, dense pattern around the core, and the machine's components are visible in the background and foreground, creating a sense of depth and industrial precision.

REO

## Toroidal fixed transformers

## Useful facts about toroidal fixed transformers

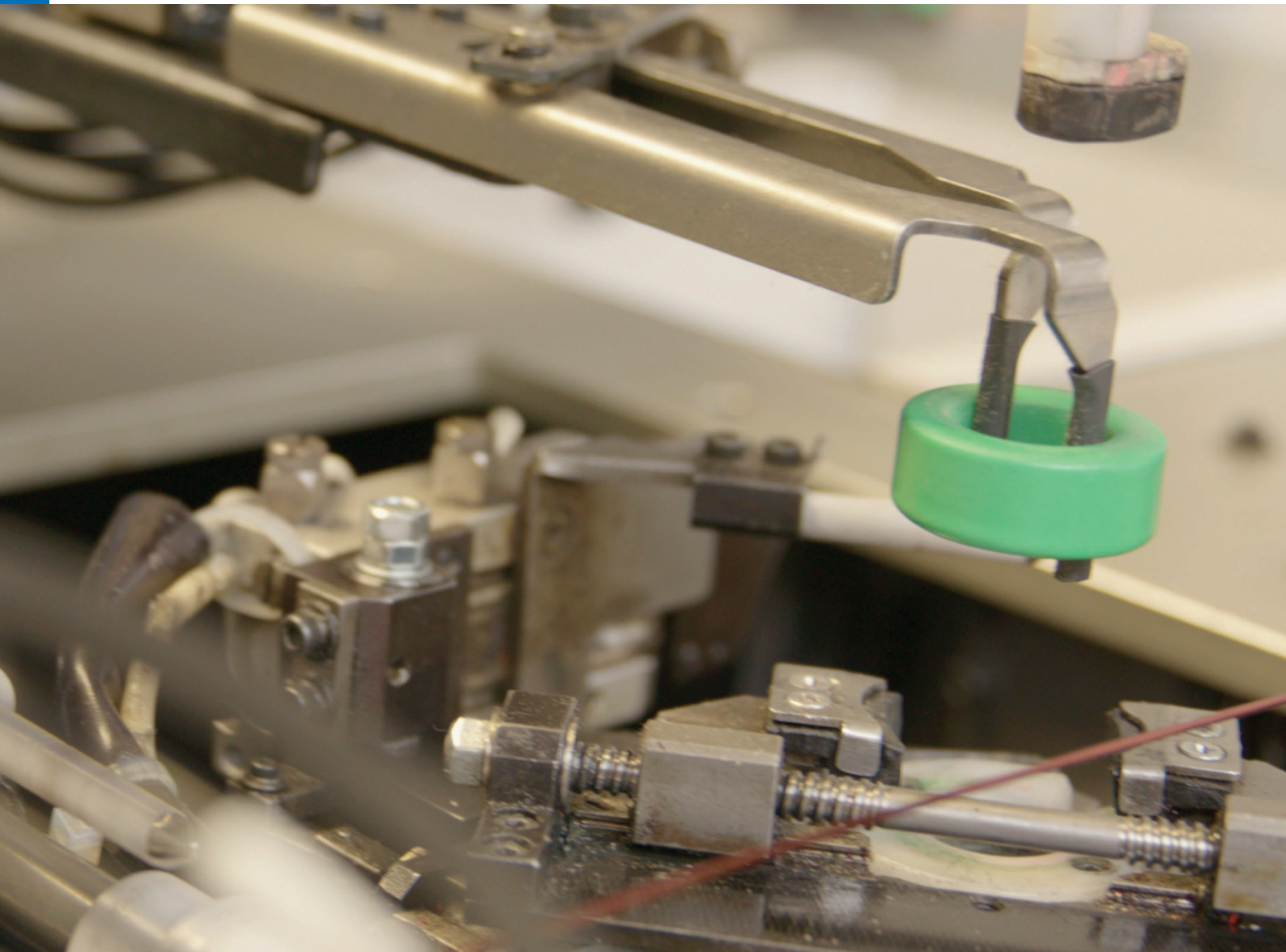
Wide range of toroidal fixed transformers for any application

REO has been developing and manufacturing toroidal fixed transformers for more than 25 years. It constantly implements optimisations in development and production processes and thus, ensures continuous further development and an increase in efficiency of the components.

Toroidal fixed transformers are mainly used when compact power supplies are required. The components are used in the entire field of electronics and electrical engineering and in addition to the small dimensions, they have many other considerable advantages compared to conventional transformers.

In general all manufactured transformers are tested in accordance with the EN ISO 9001 standard at the in-house laboratory and only approved once the single test has been passed. Other standards used for the toroidal fixed transformers:

- DIN EN 61558-2-1; DIN EN 61558-2-2; DIN EN 61558-2-4; DIN EN 61558-2-6; DIN EN 61558-2-13
- DIN EN 60601-1
- UL/cRU-certified according to OBJY2/OBJY8.E251513: Approved class B insulation system



# Service



## Guarantee

Winning quality - extra peace of mind, thanks to the expanded REO manufacturer's guarantee.

We believe in the quality of our own products and are confident of the durability of all components used, which is why we have [extended the legal guarantee from one to two years](#).



## Safety

We offer you devices with the highest possible operational safety. Should any unwanted events occur with any of our products, your professional emergency responder will be available to help you over the telephone free of charge. If the situation or query cannot be resolved over the telephone, you have the opportunity to have the defective device sent back after consultation.



## Repairs

After telephone consultation, and after the defective product has been received, we can even offer you [express repairs](#) if possible. This minimises downtime in the event of a fault and guarantees a swift exchange.



## Hotline

Our REO sales specialists look forward to giving you a helping hand. Contact your REO contact partner or call our hotline to receive further information about our services and the REO portfolio.

# Toroidal fixed transformers

Low energy consumption	P. 5
Toroidal fixed transformer, open	P. 6
Toroidal fixed transformer with sealed centre hole	P. 7
Fully sealed toroidal fixed transformer	P. 8
High current transformer	P. 9
Housing and interference suppression transformer	P. 10-12
Three-phase toroidal fixed transformer	P. 13
Switch-on current limiter with magnetic bias	P. 14
Switch-on current limiter with damping resistance	P. 15

## Low energy consumption

REO toroidal fixed transformers for efficient energy and cost reduction

Thanks to increased burdens on the environment and the resulting environmental awareness, the topic of energy efficiency is back in the spotlight. REO toroidal fixed transformers help achieve this goal. The following illustration

compares the leakage values between a commercially available transformer and a toroidal fixed transformer with different performance values. The direct comparison makes the extreme leakage differences easy to recognise.

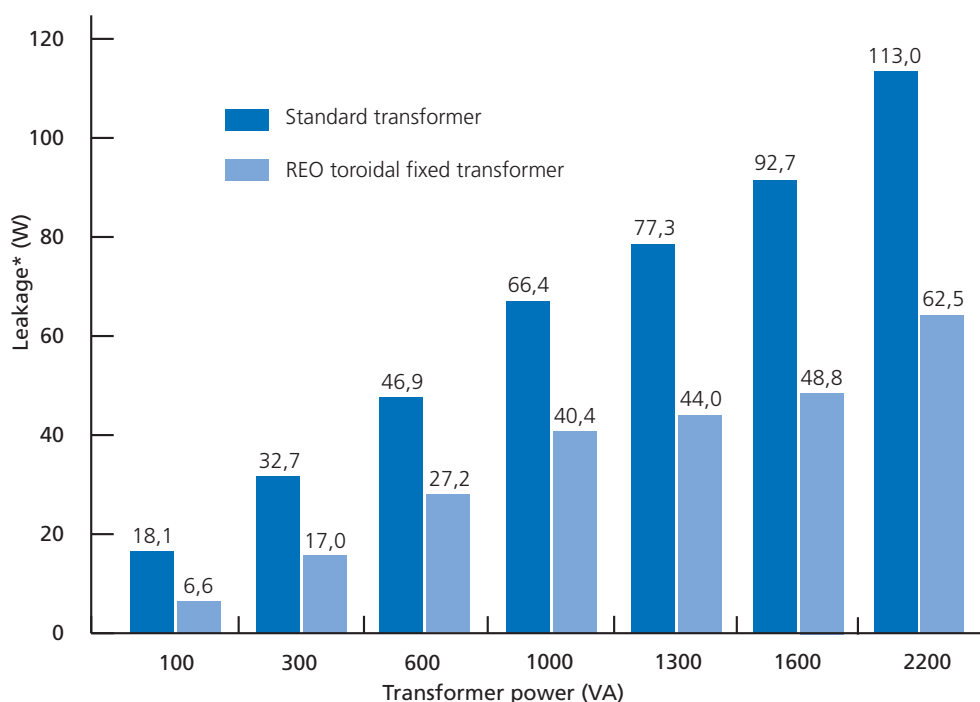
### REO Advantages

- Attractive price structure even for small quantities
- Individual solutions adapted to your application
- Rapid production of your standard or specific solution due to a range of cores available in stock
- In-house core production
- REO speaks your language: Due to our distribution centres worldwide we are always close to the customer. Regardless of what language you speak, which time zone you live in or which currency you use - an REO office is in your vicinity and it guarantees a quick, efficient and cost-effective processing of your order.

### Advantages of toroidal fixed transformers

- High energy savings
- Weight reduction of up to 50%
- Very low internal losses
- Low magnetic stray field
- Low development of humming sounds and noise
- Full sealing protects the toroidal fixed transformer when used in an aggressive environment
- UL-listed materials
- High safety level of downstream control systems or consumers
- Safe electrical separation
- Set-up of SELV circuits
- Protection class II prepared
- Small dimensions as well as a high level of efficiency
- Flexible adjustment of the dimensions to your requirements
- Diverse DIN-compliant mounting connections with a large number of housing designs
- Optional with temperature switch or thermal fuse

Efficient energy reduction



Comparison of leakages between a standard transformer and a REO toroidal fixed transformer. The actual energy savings soon become clear.

\*Leakages at operating temperature

## Toroidal fixed transformer, open

Toroidal fixed transformer in open design as a mains, auto, safety or isolation transformer

Toroidal fixed transformers have significant advantages over conventional transformers: their construction results in up to 50% less volume and low weight. Since the ring cores have almost no air gap, only a very low magnetic stray field is produced and the transformers are almost hum-free. The change in secondary voltage between idling and full load is much smaller than with transformers with a nested core.

Toroidal fixed transformer, open



### Advantages

- Adaptation of mains voltage to different output voltages
- No humming
- Low magnetic stray field
- Low voltage drop
- Minimum overall weight
- Small dimensions
- Connection with free wire or stranded wires
- Mounting set available as accessory
- Standards: EN 61558; EN 60601

### Technical data

Toroidal fixed transformer, open	
Rated power	10 - 6000 VA
Input voltage	230 V
Output voltage	24 - 690 V
Rated current	max. 50 A
Frequency range	50 - 400 Hz
Temperature class	T40/E and T40/B



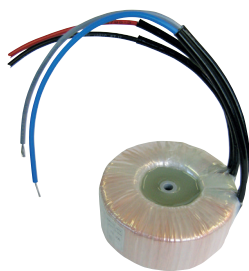
\*Special voltages and higher powers on request

## Toroidal fixed transformer with sealed centre hole

Toroidal fixed transformer with sealed centre hole as a mains, auto, safety or isolation transformer

The toroidal fixed transformers with sealed centre hole or sealed socket have the same advantages as the open transformers, however, offer a good mounting solution for the transformers. The costs for an additional mounting option are cut in this series of transformers and replaced by a central screw, which only requires a short set-up time. A safe distance to the mounting surface is ensured.

Toroidal fixed transformer with sealed centre hole



### Advantages

- Integrated mounting plate with partial sealing
- No humming
- Low magnetic stray field
- Low voltage drop
- High degree of efficiency
- Direct mounting option with just one screw
- Safe distance to the mounting surface
- Connection with wires or stranded wires
- Standards: EN 61558; EN 60601

### Technical data

Toroidal fixed transformer with sealed centre hole*	
Rated power	10 - 6000 VA
Input voltage	230 V
Output voltage	24 - 690 V
Rated current	max. 50 A
Frequency range	50 - 400 Hz
Temperature class	T40/E and T40/B



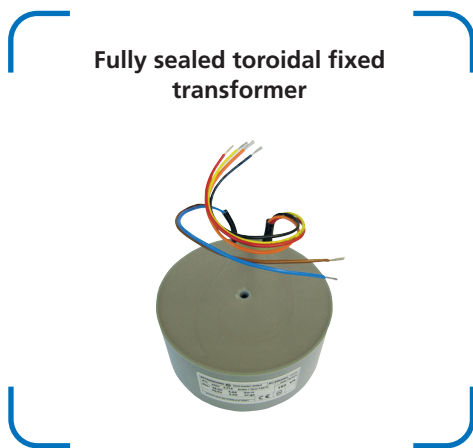
\*Special voltages and higher powers on request

## Fully sealed toroidal fixed transformer

Fully sealed toroidal fixed transformer as a mains, auto, safety or isolation transformer

All the advantages of the toroidal fixed transformer are combined in fully sealed toroidal fixed transformers in a special plastic housing. The shape of the housing is perfectly adapted to the application. The plastic housing offers optimal mechanical protection against

humidity and dust and also offers better thermal conductivity which results in an increased power density. The mounting is carried out by means of a central screw and thus, allows for a short set-up time.



### Advantages

- Fully sealed in the plastic housing
- High degree of efficiency
- Very low no-load losses
- No humming
- Low voltage drop
- Protection class IP 54 (for the fully sealed housing)
- Low magnetic stray field
- Optimal mechanical protection
- Protection against humidity and dust
- Even heat distribution
- Connects with wires, strands or clamps according to VBG 4
- Standards: EN 61558; EN 60601

### Technical data

Fully sealed toroidal fixed transformer*	
Rated power	10 - 6000 VA
Input voltage	230 V
Output voltage	24 - 690 V
Rated current	max. 50 A
Frequency range	50 - 400 Hz
Temperature class	T40/E and T40/B



\*Special voltages and higher powers on request



## High current transformer

High-current transformers according to the current transformer principle

High-current transformers enable the simple transformation of very small primary currents into very high secondary currents. The compact and robust structure is already provided with reinforced insulation. As a result, uncoated copper bars that are already safely insulated on the primary side, without any additional measures, can be used as a secondary winding.

The high-current transformers are completely pre-assembled on stable aluminium profiles and provided with terminals

according to VBG 4. In addition, a connection is provided for the grounding of the mounting rails. Due to parallel connection being possible, even higher output currents can be achieved.

Typical areas of application are: Test devices for switchgears as well as lifting gates to examine the current and heating tests of the switching contacts.

High current transformer



### Advantages

- Partial sealing with large push-through opening for cable rails or busbars
- Compact design
- Very low magnetic stray field
- Simply and quick assembly
- High electro-magnetic compatibility without additional components
- Pre-assembled on aluminium rails with clamps according to VBG 4
- Standard: EN 61558

### Technical data

High current transformer	
Rated power	815 - 4000 VA
Input voltage	230 V
Output voltage	0.8 - 1.67 V
Rated current	max. 5000 A
Frequency range	50 - 400 Hz
Temperature class	T40/E and T40/B



## Housing and interference suppression transformer

Transformer with special segregated windings

A damping of up to 90 dB is achieved with specially wound isolating transformers in segregated windings due to the low-capacitance design and an additional high-quality filter. An isolating transformer ensures additional safety - even for experimental constructions.

Housing and interference suppression transformer



Standard EN 61558

### Advantages

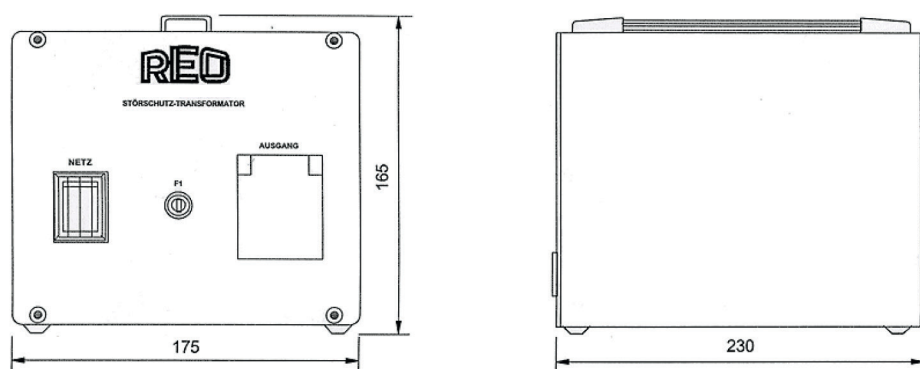
- Fault clearance of sources of interference, operation on contaminated networks
- Integrated mains input socket, power switch, device fuse and output socket
- Free-of-ground output voltage to establish an IT network
- Galvanic mains separation
- High insulation resistance
- Low-capacitance isolating transformer
- Broadband interference suppression
- Integrated mains filter with high damping
- Transportable with handle

## Technical data

Interference suppression transformer								
Typ	Rated power (VA)	Voltage (V)		Electrical current (A)	Dimension			Weight (kg)
		Primary current	Secondary current		A (mm)	B (mm)	C (mm)	
RFT/SST-300	300	230	230	1,3	175	165	230	6,0
RFT/SST-600	600	230	230	2,6	175	165	230	8,9
RFT/SST-900	900	230	230	3,9	175	165	230	10,2

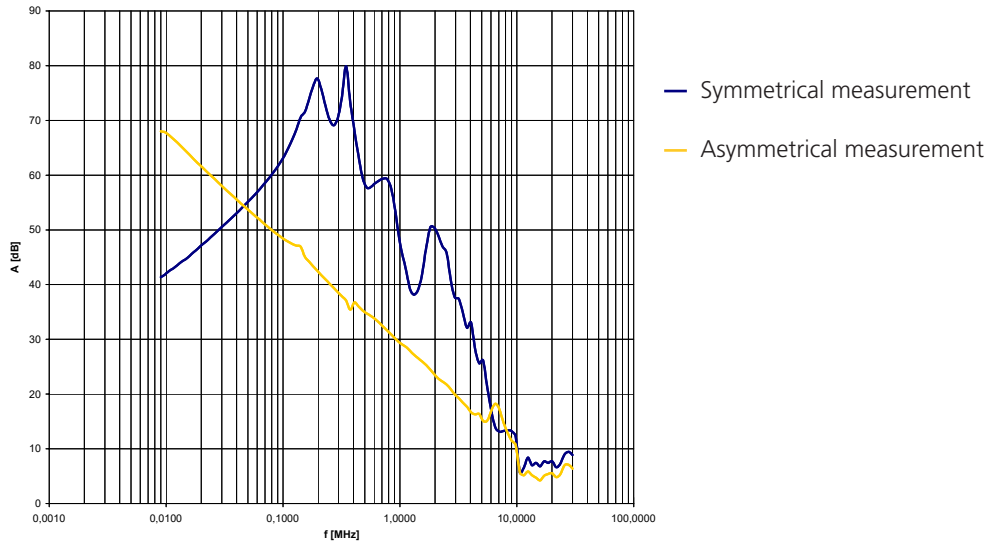


Maximum production range: up to 0.9 kVA, primary/secondary voltages: 230 V, rated currents: up to 3.9 A

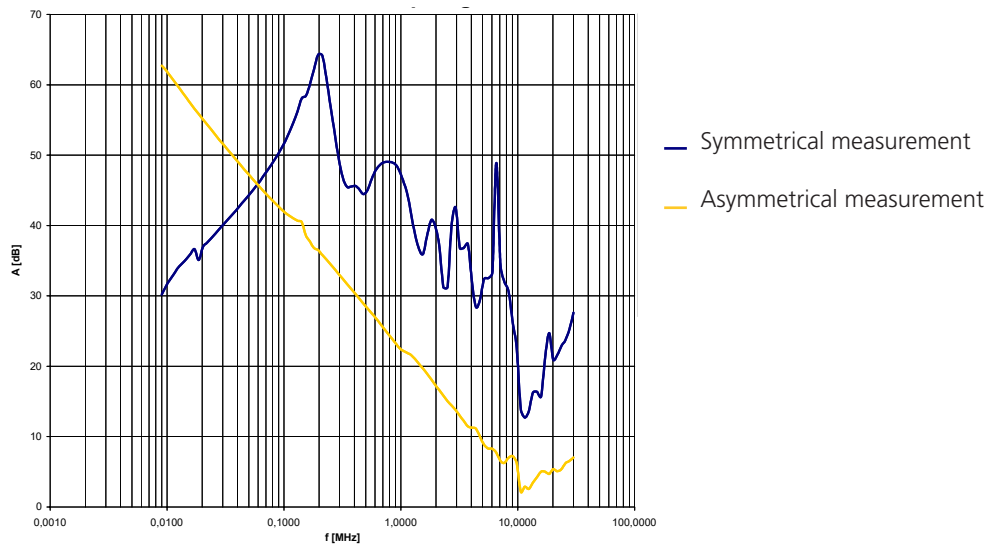


# Damping measurement

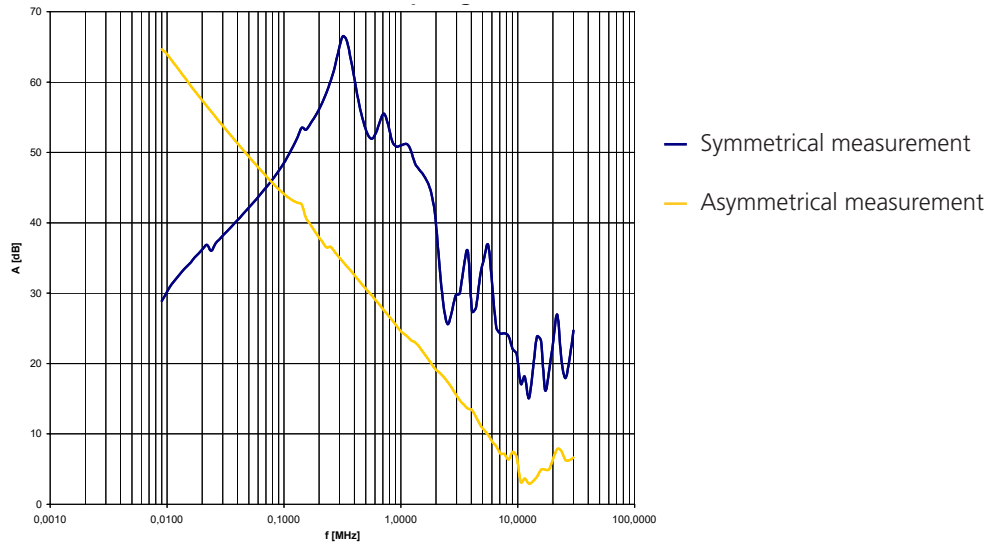
Rated power 300 VA



Rated power 600 VA



Rated power 900 VA



# Three-phase toroidal fixed transformer

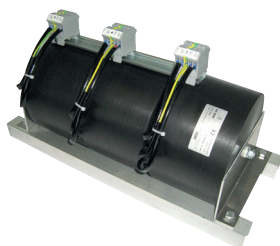
## Three-phase isolating transformer

The three-phase toroidal fixed transformer is used for protective separation between both alternating voltage networks (through double or reinforced insulation, optimal: shielding winding).

## Advantages

- Use in contamination levels of up to PD3
- Protection class IP 00 to IP 54 (with terminal boxes)
- Shock and vibration-resistant design (upon request)
- Use of high-quality cores for the minimisation of power loss
- Flexible adjustment to customer specifications (modified voltage ratio, voltage taps, performance values, high level of protection, temperature monitoring, additional windings and alternative switch groups possible)
- Optional: All materials upon request in accordance with REO UL-System E251513
- Standards: EN 61558

Three-phase toroidal fixed transformer



## Technical data

Three-phase toroidal fixed transformer*	
Rated power	600 - 15.000 VA
Input voltage	3 x 400; 3 x 230 V
Output voltage	3 x 230; 3 x 400 V
Rated current	up to 3 x 22 A
Frequency range	50 - 400 Hz
Temperature class	T40/E and T40/B %



\*Special voltages and higher powers on request

## Switch-on current limiter with magnetic bias

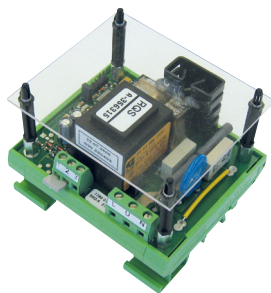
The switch-on current limiter ED 1/16 enables the direct switching on of single-phase transformers, without triggering upstream safety devices as a result of the inrush current.

The switch-on current limiter can be used for conventional transformers as well as for toroidal and strip-wound transformers.

### Advantages

- Protection class IP 00, IP 20
- No excessive inrush current of the transformer
- High transformer switch on frequency possible
- Use of transformers with low-loss sheet metals

Switch-on current limiter with magnetic bias



### Technical data

Switch-on current limiter with magnetic bias	
Rated voltage	115 - 230 VA
Mains frequency	45 - 65 Hz
Rated current	max. 16 A
Switch-on delay	approx. 500 ms
Operating temperature	0..45 °C

## Switch-on current limiter with damping resistance

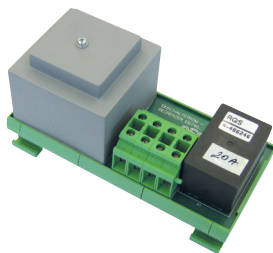
REO switch-on current limiters enable the safeguarding of the rated current and the use of automatic circuit breakers.

The areas of application include the inductive and capacitive consumers such as rectifiers, motors (circular saws etc.) and transformers.

### Advantages

- Compact design
- Long service life
- Standard rail mounting
- Robust relay technique
- Touch-proof according to VBG 4

Switch-on current limiter with damping resistance



### Technical data

Switch-on current limiter with damping resistance	
Input voltage	90 - 260 VA
Output voltage	90 - 260 V
Rated current	max. 32 A
Switch-on delay	approx. 100 ms

REO AG  
Brühler Straße 100 · D-42657 Solingen  
Phone: +49 (0)212 8804 0 · Fax: +49 (0)212 8804 188

Email: info@reo.de  
Internet: www.reo.de



#### **DIVISIONS:**

##### **REO Vibratory Feeding and Power Electronics Division**

Brühler Straße 100 · D-42657 Solingen  
Phone: +49 (0)212 8804 0 · Fax: +49 (0)212 8804 188  
Email: info@reo.de

##### **REO Train Technologies Division**

Erasmusstraße 14 · D-10553 Berlin  
Phone: +49 (0)30 3670236 0 · Fax: +49 (0)30 3670236 10  
Email: zentrale.berlin@reo.de

##### **REO Drives Division**

Holzhausener Straße 52 · D-16866 Kyritz  
Phone: +49 (0)33971 485 0 · Fax: +49 (0)33971 485 90  
Email: zentrale.kyritz@reo.de

##### **REO Medical and Current Transformer Division**

Schuldholzinger Weg 7 · D-84347 Pfarrkirchen  
Phone: +49 (0)8561 9886 0 · Fax: +49 (0)8561 9886 40  
Email: zentrale.pfarrkirchen@reo.de

##### **REO Test and PowerQuality Division**

Brühler Straße 100 · D-42657 Solingen  
Phone: +49 (0)212 8804 0 · Fax: +49 (0)212 8804 188  
Email: info@reo.de

#### **PRODUCTION + SALES:**

##### **India**

REO GPD INDUCTIVE COMPONENTS PVT. LTD  
Email: info@reogpd.com · Internet: www.reo-ag.in

##### **USA**

REO-USA, Inc.  
Email: info@reo-usa.com · Internet: www.reo-usa.com

#### **SALES:**

##### **China**

REO Shanghai Inductive Components Co., Ltd  
Email: info@reo.cn · Internet: www.reo.cn

##### **France**

REO VARIAC S.A.R.L.  
Email: reovariac@reo.fr · Internet: www.reo.fr

##### **Great Britain**

REO (UK) Ltd.  
Email: main@reo.co.uk · Internet: www.reo.co.uk

##### **Italy**

REO ITALIA S.r.l.  
Email: info@reoitalia.it · Internet: www.reoitalia.it

##### **Poland**

REO CROMA Sp.zo.o  
Email: croma@croma.com.pl · Internet: www.croma.com.pl

##### **Spain**

REO ESPAÑA 2002 S.A.  
Email: info@reospain.com · Internet: www.reospain.com

##### **Switzerland**

REO ELEKTRONIK AG  
Email: info@reo.ch · Internet: www.reo.ch

##### **Turkey**

REOTURKEY ELEKTRONIK San. ve Tic. Ltd. Şti.  
Email: info@reo-turkey.com · Internet: www.reo-turkey.com