REO AC electromagnets

Product catalogue

- Fully encapsulated
- With corrosion protection
- Nickel-plated
- Conformity for food contact
- Low frequency
- With corrosion protection
- Nickel-plated
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AC electromagnets

General overview

REO - more than 20 years of experience in the electromagnet sector

- Fully encapsulated AC electromagnets
- AC electromagnets with corrosion protection
- Use of FDA compliant materials
- Use of UL compliant materials
- The technical design of REO leads to an optimal size/performance ratio.
- Personal technical advice
- Customer-specific solutions
- Highest quality at optimal prices
- REOplus: REO speaks your language – with sales offices and production operators worldwide, REO is always highly customer-orientated and can react in a quick, efficient and cost-effective way
- All products were developed and tested according to DIN VDE 0580
Our strengths - your advantage
In addition to our standard product range from 5 VA to 4000 VA, we also offer customer-specific and special solutions. From development to the finished product, we are at your side. Thanks to our broad REOVIB product portfolio in the field of vibratory conveyor technology (vibratory magnets, control units and accessories), we can meet your specific requirements. On the basis of calculations and endurance tests in the company, optimisations are carried out between winding, air gap and magnetic circuit, so that an increased service life is guaranteed.

In particular for the food and pharmaceutical industries we produce corrosion-protected vibrating solenoids in nickel-plated or powder-coated versions which comply with FDA approval DA CFR 21, subsection 175.300, section 175 and subsection 177.1550.

Over the years, two corrosion protection measures have become established for vibrating solenoids; both variants offer different advantages:

Corrosion protection through nickel plating*
For low-cost vibrating magnets with outputs up to 2100 VA, the magnetic cores are nickel-plated to provide the greatest possible corrosion protection in humid environments.

Corrosion protection through powder coating
For vibrating solenoids with capacities up to 3900 VA, corrosion protection by powder coating is an option. This new method completely coats the core. It allows working under humidity and water jets; the material has been tested and approved for the food industry.
Series REOVIB WI 111
Standard series, fully encapsulated, maximum power of 350 VA at 3000 1/min or 6000 1/min
Mounting by means of standard round holes, base plate or slotted holes to allow more adjustment. Cable exit downwards or sideways.

Series REOVIB WI 121
Standard series, fully encapsulated, maximum power 3900 VA at 3000 1/min or 6000 1/min
Mounting with blind tapped holes at the base of the magnet and armature
Cable exit downwards with unshielded cable or shielded cable.

Series REOVIB WI 421
Nickel-plated model, fully encapsulated at 900 1/min, 1500 1/min, 3000 1/min or 6000 1/min, maximum power 1265 VA.
Mounting with blind tapped holes at the base of the magnet and armature
Cable exit downwards with unshielded cable or shielded cable.

Series REOVIB WI 721
Powder-coated model, fully encapsulated at 900 1/min, 1500 1/min, 3000 1/min or 6000 1/min, maximum power 3900 VA.
Mounting with blind tapped holes at the base of the magnet and armature
Cable exit downwards with unshielded cable or shielded cable.

Series REOVIB WI 211
Series with configurable voltage/frequency options, fully encapsulated, maximum power 250 VA at 3000 1/min or 6000 1/min
Mounting by means of standard round holes, base plate or slotted holes to allow more adjustment. Cable exit downwards or sideways.

Series REOVIB WE 131
Series in EI shape, maximum power 690 VA at 3000 1/min or 6000 1/min
Mounting with blind tapped holes at the base of the magnet and armature.

Special solutions / customer-specific magnets
REOVIB WI 111
Standard series

Benefits
- Optimal size/performance ratio
- Good adjustability
- Safe mounting by means of solid base plate/mountings through core
- Compact and robust structure

Technical data
Vibration frequency 3000 / 6000 1/min

<table>
<thead>
<tr>
<th>Types</th>
<th>Maximum rated air gap [mm]</th>
<th>Power at 3000 1/min [VA]</th>
<th>Rated current = thermal rated current at 230V [A]</th>
<th>Peak tensile force at nominal air gap [N]</th>
<th>Weight [kg]</th>
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Compatible REOVIB devices: REOVIB SMART, REOVIB RTS, REOVIB MTS, REOVIB MFS
Typical applications

- Packaging industry and weighing sector
  for feeding and sorting processes
- Automation process and assembly equipment
  which utilises electromagnetic drives

Dimensions in mm

| Types     | a   | b   | c   | d   | e   | f1  | f2  | f3  | g   | h   | i   | k   | l   | l1  | m   | øn | øo | p   | ør | s   | øt |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| REOVIB WI 111/3 | 44,4 | 36,4 | 30  | 32  | 2   | 42  | 9   | 5   | 30  | 12  | 10  | 4,2 | 22  | 20  | 22  | 4,2 | 4,4 | 4   | 4,4 | 20  | 3,6 |
| REOVIB WI 111/5 | 61,5 | 31,5 | 45  | 50  | 3   | 63  | 14  | 7,5 | 45  | 16  | 15  | 3   | 43  | 35  | 36  | 4,2 | 4,4 | 15  | 5,1 | 28  | 5,1 |
| REOVIB WI 111/6 | 64  | 42  | 45  | 50  | 3   | 63  | 14  | 7,5 | 45  | 20,5 | 15 | -   | 43  | 35  | 36  | 4,2 | 4,4 | 15  | 5,1 | 28  | 5,1 |
| REOVIB WI 111/7 | 78  | 47  | 54  | 60  | 3   | 77  | 17  | 10  | 54  | 21  | 20  | 4,5 | 45  | 40  | 45  | 7   | 5,5 | 20  | 6,5 | 37  | 6,5 |
| REOVIB WI 111/9 | 90  | 56  | 66  | 83  | 3   | 88  | 19  | 11  | 66  | 32,5 | 22 | -   | 66  | 50  | 66  | 7   | 6,4 | 44  | 8,1 | 44  | 8,1 |

Standard: without base plate

**View A**
Base plate for all types

WI 111/5-9

WI 111/3

Standard cable length: 0.2m and 1m
(when using a frequency control REOVIB MFS please order with shield)
Benefits

- Optimal size/performance ratio
- Good adjustability
- Maximum power 3900 VA
- Maximum tractive power 6900 N
- Low Profile

Technical data

Vibration frequency 3000 / 6000 1/min

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</table>

Compatible REOVIB devices:
REOVIB SMART, REOVIB RTS, REOVIB MTS, REOVIB MFS
Typical applications

- Packaging industry and weighing sector for feeding and sorting processes
- Automation process and assembly equipment which utilises electromagnetic drives

Dimensions in mm

<table>
<thead>
<tr>
<th>Typen</th>
<th>a</th>
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<th>c</th>
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<th>f1</th>
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* Standard cable length: 1m
  (when using a frequency control REOVIB MFS please order with shield)
**Benefits**

- Corrosion protection by means of nickel plating
- Optimal size/performance ratio
- Good adjustability
- Maximum power 2020 VA
- Also for low frequency applications
- Maximum tractive power 2900 N
- Low Profile

**Technical data**

**Vibration frequency** 3000 / 6000 1/min

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Compatible REOVIB devices:

REOVIB SMART, REOVIB RTS, REOVIB MTS, REOVIB MFS

Vibrating magnets for low frequencies on request.
**Typical applications**

- Packaging industry and weighing sector for feeding and sorting processes
- Automation process and assembly equipment which utilises electromagnetic drives.
- Particularly suited for the food processing sector and the pharmaceutical sector

**Dimensions in mm**

<table>
<thead>
<tr>
<th>Types</th>
<th>a</th>
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<th>c</th>
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* Standard cable length: 1m
  (when using a frequency control REOVIB MFS please order with shield)
**REOVIB WI 721**

Powder-coated model

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### Benefits

- Corrosion protection by means of powder-coating
- FDA compliant
- Optimal size/performance ratio
- Good adjustability
- Maximum power 3900 VA
- Also for low frequency applications
- Maximum tractive power 6900 N
- Low Profile

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### Technical data

**Vibration frequency 3000 / 6000 1/min**

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**Compatible REOVIB devices:** REOVIB SMART, REOVIB RTS, REOVIB MTS, REOVIB MFS

Vibrating magnets for low frequencies on request.
Typical applications

- Packaging industry and weighing sector for feeding and sorting processes
- Automation process and assembly equipment which utilises electromagnetic drives.
- Particularly suited for the food processing sector and the pharmaceutical sector (FDA compliant)

Dimensions in mm

<table>
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<tr>
<th>Typen</th>
<th>a</th>
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<td>170</td>
<td>121</td>
<td>48,5</td>
<td>75</td>
<td>M12</td>
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* Standard cable length: 1m (when using a frequency control REOVIB MFS please order with shield)
**Benefits**

- Maximum power 250 VA
- Configurable voltage/frequency options increases flexibility
- Quick change of the connection voltage by using the appropriate selector key

**Technical data**

Vibration frequency 3000 / 6000 1/min

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<td>1</td>
<td>175</td>
<td>600</td>
<td>0,75</td>
<td>40</td>
<td>1,15</td>
</tr>
<tr>
<td>REOVIB WI 211/9</td>
<td>1</td>
<td>210</td>
<td>600</td>
<td>0,9</td>
<td>105</td>
<td>1,96</td>
</tr>
<tr>
<td>REOVIB WI 211/10</td>
<td>1</td>
<td>250</td>
<td>600</td>
<td>1,1</td>
<td>210</td>
<td>2,1</td>
</tr>
</tbody>
</table>

Compatible REOVIB devices:
- REOVIB SMART
- REOVIB RTS
- REOVIB MTS
- REOVIB MFS
### Typical applications

- Packaging industry and weighing sector for feeding and sorting processes
- Automation process and assembly equipment which utilises electromagnetic drives.

### Dimensions in mm

| Type         | a | b | c | d | e | f | f1 | f2 | f3 | f4 | g | h | i | k | p | r | s | ø | t | u  |
|--------------|---|---|---|---|---|---|----|----|----|----|---|---|---|---|---|---|---|---|----|
| REOVIB WI 211/7 | 78 | 47 | 54 | 60 | 3 | 77 | 74 | 17 | 10 | 22 | 54 | 21 | 20 | 31 | 20 | 6,5 | 37 | 6,5 | 28 |
| REOVIB WI 211/9 | 90 | 56 | 66 | 83 | 3 | 91 | 88 | 19 | 11 | 24 | 66 | 32,5 | 22 | 31 | 44 | 8,1 | 44 | 8 | 28 |
| REOVIB WI 211/10 | 100 | 68 | 66 | - | - | 61,5 | 12 | 9 | 48 | 66 | 38 | 17,5 | 31 | 30 | M6 | - | - | 26 |

- Standard: without base plate
- with base plate
- with voltage/frequency selector
- View A: Base plate for all types

* Standard cable length: 0,2m and 1m
  (when using a frequency control REOVIB MFS please order with shield)
**REOVIB WE 131**
AC electromagnets with EI core

## Benefits
- Maximum power 690 VA
- Low Profile
- Particularly suited for small air gaps

## Technical data
Vibration frequency 3000 / 6000 1/min

<table>
<thead>
<tr>
<th>Types</th>
<th>Maximum rated air gap [mm]</th>
<th>Power at 3000 1/min [VA]</th>
<th>Power at 6000 1/min [VA]</th>
<th>Rated current = thermal rated current at 230V [A]</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Magnet Armature</td>
<td></td>
</tr>
<tr>
<td>REOVIB WE 131/75</td>
<td>0,5</td>
<td>110</td>
<td>0,5</td>
<td>1,4</td>
<td>0,27</td>
</tr>
<tr>
<td>REOVIB WE 131/135</td>
<td>0,8</td>
<td>460</td>
<td>2</td>
<td>7,2</td>
<td>1,6</td>
</tr>
<tr>
<td>REOVIB WE 131/136</td>
<td>0,6</td>
<td>690</td>
<td>3</td>
<td>8,7</td>
<td>2,2</td>
</tr>
</tbody>
</table>

Compatible REOVIB devices: REOVIB SMART, REOVIB RTS, REOVIB MTS, REOVIB MFS
Typical applications

- Packaging industry and weighing sector for feeding and sorting processes
- Automation process and assembly equipment which utilises electromagnetic drives

Dimensions in mm

<table>
<thead>
<tr>
<th>Typen</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>f1</th>
<th>f2</th>
<th>f3</th>
<th>g</th>
<th>h</th>
<th>i</th>
<th>l</th>
<th>l1</th>
<th>p</th>
<th>ør</th>
<th>øt</th>
</tr>
</thead>
<tbody>
<tr>
<td>REOVIB WE 131/75</td>
<td>75</td>
<td>88</td>
<td>115</td>
<td>80</td>
<td>50</td>
<td>11</td>
<td>3</td>
<td>75</td>
<td>40</td>
<td>12,5</td>
<td>56</td>
<td>98</td>
<td>62,5</td>
<td>4,5</td>
<td>7</td>
</tr>
<tr>
<td>REOVIB WE 131/135</td>
<td>135</td>
<td>125</td>
<td>175</td>
<td>110</td>
<td>90</td>
<td>18</td>
<td>3</td>
<td>135</td>
<td>70</td>
<td>22,5</td>
<td>155</td>
<td>90</td>
<td>112,5</td>
<td>7,5</td>
<td>7</td>
</tr>
<tr>
<td>REOVIB WE 131/136</td>
<td>135</td>
<td>150</td>
<td>175</td>
<td>110</td>
<td>90</td>
<td>18</td>
<td>3</td>
<td>135</td>
<td>95,5</td>
<td>22,5</td>
<td>155</td>
<td>90</td>
<td>112,5</td>
<td>7,5</td>
<td>7</td>
</tr>
</tbody>
</table>

* Standard cable length: 0,2m and 1m
  (when using a frequency control REOVIB MFS please order with shield)
**Key Points about AC electromagnets**

**General overview**
The complete electromagnet consists of the core bearing the winding and the corresponding armature (I Piece). The electromagnet, the armature and the leaf springs form the drive system of the vibratory feeder. The weight differential between the resting mass, the oscillating mass and the spring force result in a resonant vibration system.

Vibratory feeders can therefore only work in a relatively small frequency range around the resonance point. All components of the entire drive system must be adjusted to this frequency. It is therefore important that the electromagnet is constructed for the correct frequency otherwise the total power of the magnet cannot be utilised or it could become overheated due to increased losses.

Due to conventional control systems, most vibratory feeders work with the same or double vibration frequency of the connection power. 50 Hz or 100 Hz in the European region and the Asian region, 60 Hz or 120 Hz in the American region.

**Low frequency vibration systems**
Low frequency systems with vibration frequencies of approximately 15 Hz and 25 Hz are used for particular applications (bulk conveying or product with special feeding characteristics); these systems must be operated with special frequency converters (REOVIB MFS).

**Vibration frequency**
In addition to the frequency specification in Hz, also the terms “full wave” (6000 vibrations/minute) or “half-wave” (3000 vibrations/minute) have become customary for specification of the vibration frequency.

The terms “full wave” and “half-wave” are derived from the sinusoidal wave of the power frequency:

- **With half-wave = 50 Hz (60 Hz)** a sinusoidal half-wave is blocked by a diode or a triac.
- **With a full wave = 50 Hz (60 Hz)** the positive and negative half-waves each produce vibration.

3000 vibrations/minute = 50 Hz (50 x 60 sec), or
6000 vibrations/minute = 50 Hz (100 x 60 sec)

are comparable with the specification of revolutions per minute (rpm) for a motor.

It is important that the mechanical vibration frequency of the feeder system, the air gap as well as the type of drive control (output voltage and output frequency) are considered in the electrical design of the electromagnets.
**Key Points about AC electromagnets**

**Structure of the electromagnets**

With more than 20 years of experience REO is one of the leading suppliers in the vibratory feeding sector. REO electromagnets are reliable and field proven, and are suitable for industrial operation and laboratory operation as well as for food applications or pharmaceutical applications.

Our strengths - your benefits

- Corrosion protection by means of nickel plating*
- Corrosion protection by means of powder-coating

---

**Principle of operation**

1. Core with excitation winding
2. Armature
3. Spring system
4. Fixed counterweight
5. Air gap
6. Vibrating tray

---

### Designs with maximum power of 350 VA

Mounting via:

1. Round holes
2. Base plate
3. Slotted holes

### Designs with maximum power of 4000 VA

Mounting with blind tapped holes at the base of the magnet and armature depending on dimensions 2 holes or 4 holes

---

<table>
<thead>
<tr>
<th>Cable models up to 350 VA</th>
<th>Cable models up to 4000 VA</th>
</tr>
</thead>
</table>

* Standard cable length: 0.2m and 1m
(when using a frequency control REOVIB MFS please order with shield)

* Standard cable length: 1m
(when using a frequency control REOVIB MFS please order with shield)
### Key Points about AC electromagnets

#### Circuit examples

<table>
<thead>
<tr>
<th>Circuit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Circuit 1" /></td>
<td>Measurement of the rated voltage and the continuous rated current on the electromagnet or directly with the frequency controller MFS, display via the appropriate menu.</td>
</tr>
<tr>
<td><img src="image2.png" alt="Circuit 2" /></td>
<td>Measurement of the rated voltage and the continuous rated current on the electromagnet or directly via the programmable phase-angle controller MTS, display via the appropriate menu.</td>
</tr>
<tr>
<td><img src="image3.png" alt="Circuit 3" /></td>
<td>Measurement of the rated voltage and the continuous rated current on the electromagnet.</td>
</tr>
</tbody>
</table>
In addition to the standard electromagnets, REO has developed a range of special solutions - for example water-cooled electromagnets which are used in very hot ambient temperatures. Are you also looking for a special requirement? Our team members are happy to assist - please contact us!
If you didn’t find a suitable electromagnet here? No problem! Simply complete the guide below, detach it and send it to us via email or fax to info@reo.de - +49 (0) 33971 485 90.

Guide for your electromagnets

<table>
<thead>
<tr>
<th>Application</th>
<th>☐ Linear feeder</th>
<th>☐ Bowl feeder</th>
<th>☐ Food processing industry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Technical parameters**

- Supply voltage $U_N =$ _____________________V
- Power frequency $f_N =$ _____________________Hz
- Magnet voltage $U =$ _____________________V
- Operating frequency $f =$ _____________________Hz
- Magnet power $P =$ _____________________VA
- Vibration frequency = ________ 1 / min
- Solenoid current $I =$ _____________________A
- Rated air gap $LS =$ _____________________mm
- Maximum tractive power $F =$ _____________________N
- Temperature transmitter ☐ yes, °C ☐ no
- Plug connection ☐ yes ☐ no
- Switching ☐ yes ☐ no
- Voltage ________ V ☐ Frequency ________ Hz
- Corrosion protection ☐ yes, ☐ Nickel plating or ☐ Powder-coating ☐ no

**Mechanical parameters**

- Shape ☐ WI (U-Core) ☐ WE (E-Core)
- Base plate ☐ yes ☐ no
- Dimensions ☐ Reference values ☐ must be met
- Length: $L1 =$ ________ mm
- Length: $B1 =$ ________ mm
- Height: $H1 =$ ________ mm
- Mounting dimensions Length: $L2 =$ ________ mm
- Length: $B2 =$ ________ mm
- Cable length ☐ 0,2m ☐ 1m

**Other specifications** (for example test criteria, test voltage, standards, UL, mountings, cooling, mechanical requirements)

**Requirements planning** (for example samples, pre-series, series, expected quantities)

<table>
<thead>
<tr>
<th>Company</th>
<th>Contact person</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Department</td>
</tr>
<tr>
<td>Street</td>
<td>Telephone</td>
</tr>
<tr>
<td>City</td>
<td>Fax</td>
</tr>
<tr>
<td>Postcode</td>
<td>Email</td>
</tr>
<tr>
<td>Internet</td>
<td>Date</td>
</tr>
</tbody>
</table>
Controllers for the vibratory feeder

Each vibratory feeder requires a controller for an adjustable throughput. The ‘REOVIB’ range of controllers, provide control solutions for all requirements. No matter, the voltage, frequency, current or application, there is a controller in the ‘REOVIB’ range which is suitable for you. Please see below for a small selection of our controllers:

<table>
<thead>
<tr>
<th>Controllers</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REOVIB SMART</strong></td>
<td>This range of devices provide the main functions commonly required in vibratory feeding applications and represent a cost-effective option for the control of vibratory feeders – and with the addition of REO’s customary high quality. The devices are available in protection classes from IP00 to IP 54 - the series REOVIB SMART provide cost-effective controllers for many applications.</td>
</tr>
<tr>
<td><strong>REOVIB RTS</strong></td>
<td>In addition to the main functions, the REOVIB RTS devices offer enhanced functionality, such as adjustable soft start and also further control functions, like the implementation of a level scanning system. The devices are available in protection classes from IP00 to IP54.</td>
</tr>
<tr>
<td><strong>REOVIB MTS</strong></td>
<td>The series REOVIB MTS comprise 1-channel, 2-channel and 3-channel control units. These are phase angle-controllers with a triac as the power element. The vibration frequency of the conveyor devices can therefore be the same or twice the size of the power frequency of the input voltage. Connectors for all inputs and outputs allow for quick installation and facilitate the combination of several devices with one another or with external control systems. The devices use digital technology and are operated via an LED display or LCD display and keypad.</td>
</tr>
<tr>
<td><strong>REOVIB MFS</strong></td>
<td>The REOVIB MFS series for vibratory feeding, produce an output voltage and frequency to the vibratory feeder which is independent of the frequency of the connected power voltage. REO MFS is available as device in protection class IP 54 for the direct mounting onto a feeder system but also as a model in protection class IP 20 for housing within control cabinets. The devices use digital technology and are operated via an LED display (optional with LCD-Display) and buttons. All settings can be adjusted externally without the need for opening the case.</td>
</tr>
</tbody>
</table>

Meters for vibratory feeders

The REOVIB range of measuring and monitoring equipment has been specially developed for use in vibratory conveyor technology. The range includes equipment designed for monitoring of the current and voltage values, measurement data for the design and development of vibratory feeders and performance monitoring of the conveyor during operation. Whatever the requirement, REOVIB measuring and monitoring devices can provide the necessary data.

Please refer to our catalogue for controllers for vibratory feeders or www.reo.de for a wider selection.
Worldwide Sales Network

With a worldwide sales network and comprehensive product portfolio, REO can react rapidly to your wishes anywhere in the world - no matter what language you speak. Besides our wide selection of standard products, we can of course offer you tailor-made solutions, developed specially to meet your wishes. Our production facilities in China, India and the USA are equipped in exactly the same way as those in Germany, and designed to provide the same product at the same quality. Using the same software and with development and design in Germany we ensure that REO products are always up to the latest state of the art.

Wherever you are, even after the 1000th production run, a REO product always has the same quality.
REO AG
Brühler Straße 100 · D-42657 Solingen
Tel.: +49 (0)212 8804 0 · Fax: +49 (0)212 8804 188
E-Mail: info@reo.de
Internet: www.reo.de

Divisions:

REO Vibratory Feeding and Power Electronics Division
REO Vibratory Feeding and Power Electronics Division
Brühler Straße 100 · D-42657 Solingen
Tel.: +49 (0)212 8804 0 · Fax: +49 (0)212 8804 188
E-Mail: info@reo.de

REO Train Technologies Division
REO Train Technologies Division
Erasmusstraße 14 · D-10553 Berlin
Tel.: +49 (0)30 3670236 0 · Fax: +49 (0)30 3670236 10
E-Mail: zentrale.berlin@reo.de

REO Drives Division
REO Drives Division
Holzhausener Straße 52 · D-16866 Kyritz
Tel.: +49 (0)33971 485 0 · Fax: +49 (0)33971 485 90
E-Mail: zentrale.kyritz@reo.de

REO Medical and Current Transformer Division
REO Medical and Current Transformer Division
Schulholzinger Weg 7 · D-84347 Pfarrkirchen
Tel.: +49 (0)8561 9886 0 · Fax: +49 (0)8561 9886 40
E-Mail: zentrale.pfarrrkirchen@reo.de

REO Test and PowerQuality Division
REO Test and PowerQuality Division
Brühler Straße 100 · D-42657 Solingen
Tel.: +49 (0)212 8804 0 · Fax: +49 (0)212 8804 188
E-Mail: info@reo.de

PRODUCTION + SALES:

China
REO Shanghai Inductive Components Co., Ltd
E-Mail: info@reo.cn · Internet: www.reo.cn

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

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

SALES:

France
REO VARIAC S.A.R.L.
E-Mail: reovariac@reo.fr · Internet: www.reo.fr

Great Britain
REO (UK) Ltd.
E-Mail: main@reo.co.uk · Internet: www.reo.co.uk

Italy
REO ITALIA S.r.l.
E-Mail: info@reotalia.it · Internet: www.reotalia.it

Poland
REO CROMA Sp.zo.o
E-Mail: croma@croma.com.pl · Internet: www.croma.com.pl

Spain
REO ESPAÑA 2002 S.A.
E-Mail: info@reo-spain.com · Internet: www.reospain.com

Switzerland
REO ELEKTRONIK AG
E-Mail: info@reo.ch · Internet: www.reo.ch

Turkey
REOTURKEY ELEKTRONİK San. ve Tic. Ltd. Şti.
E-Mail: info@reo-turkey.com · Internet: www.reo-turkey.com