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Technology Full of Attraction

Demagnetizing

- Clamping Plates
- Clamping Chucks
- Lifting Magnets
- Holding Magnets
- Demagnetizing Units
- Control Electronics
- Metal Detectors
- Magnet Separators
- Non-Ferrous Separators

wagner magnete

Demagnetizing

Demagnetizing-Units

Demagnetizing-Systems

Why demagnetizing?

A lot of machined parts have to be absolutely free of magnetism because of their intended use. If materials or tools are magnetized, there may be negative effects, e.g.:

- sticking steel chips or grinding dust
- assembly problems
- blow effects which complicate the welding process or lead to faulty weld seams
- sticking parts in collecting tanks or on machine parts
- premature wear of components due to sticking microparticles, e.g. in bearings and gears

Workpieces may become magnetized by:

- transport with lifting magnets or magnetic roller conveyors
- magnetic particle tests
- magnetic clamping fixtures
- DC welding with high currents
- induction hardening

What happens during the demagnetizing process?

Physical process:

In magnetizable (ferromagnetic) materials extremely weak magnetic fields are available, also called molecular magnets. Without the influence of an external magnet field these molecular magnets are arranged at random. When applying an external magnetic field, the molecular magnets start arranging. As stronger the external magnetic field, as stronger the arrangement of the molecular magnets until magnetic saturation is reached. After removing the external magnetic field, this forced formation remains.

The parts are demagnetized by passing them through a strong alternating magnetic field which gradually becomes weaker. The alternating field causes a continuous change in magnetization of the molecular magnets. If the strength of the magnetic field is gradually reduced, less and less molecular magnets are arranged. The strength of the magnetic field is reduced by moving the part slowly and consistently out of the alternating field.

What does the degree of demagnetizing depend on?

The degree of demagnetizing depends on the following factors:

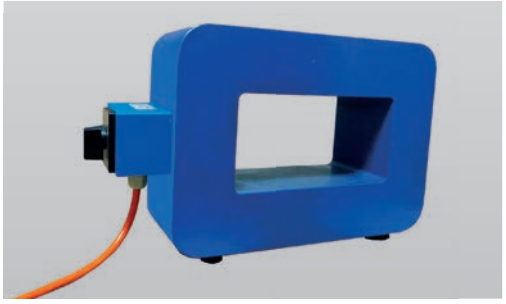
- size, shape and material of the parts to be demagnetized
- distance of the parts to the demagnetizing unit
- distance between the parts
- magnetic condition before demagnetizing and the permissible limit values after demagnetizing
- the speed of the workpiece while moving through the demagnetizing area
- the frequency of the alternating magnetic field

Wagner Demagnetizing-Units

Plate-Demagnetizing-Units are for separate small parts, tools or measuring devices. The parts are demagnetized by moving them over or through the Demagnetizing-Unit. These units can also be integrated into existing conveyor systems.

Type 211 Plate-Demagnetizing-Unit

Type 221 Tunnel-Demagnetizing-Unit



For detailed information, please refer to our brochures 211, 221.

Wagner Demagnetizing-Systems

Best demagnetization results are obtained by optimal parameter settings. Belt speed, demagnetizing frequency and distance of demagnetizing unit to workpiece are manually adjustable. Therefore, Wagner demagnetizing units with conveyor ensure an extremely uniform demagnetizing of workpieces. The unit can be used as fully automated system or independent single workplace solution.

Type 215 Conveyor type
(for all sorts of parts)

Type 215R Roller conveyor type
(for very heavy parts)

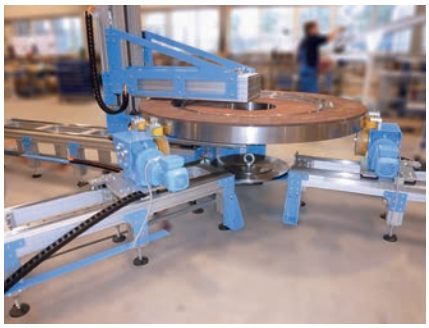
Other types:

Linear type - for rod-shaped parts with traversable demagnetizing unit
Turntable - the large round part is rotated through the demagnetizing unit
Table type - the parts are pushed manually through the demagnetizing area

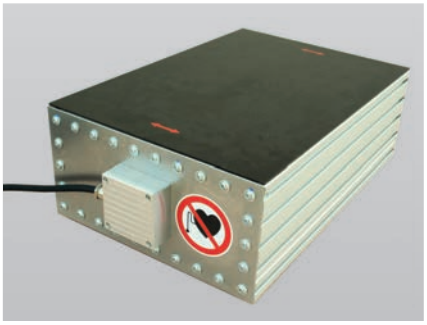
For detailed information, please refer to our brochures 215, 225.

Wagner Magnete offer a large range of demagnetizing systems. From table versions to electronically controlled systems.

It is our pleasure to advise you in selecting the demagnetizing technology most suitable for you.



Wagner Magnete GmbH & Co. KG
Technology
Full of Attraction
since 1935



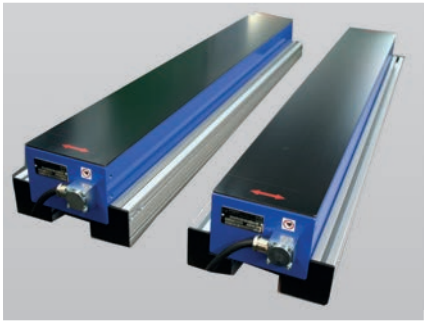


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Plate-Demagnetizing-Unit

Ferromagnetic parts often become magnetized by transport magnets or by being machined by magnet clamping systems. These parts can be demagnetized using plate demagnetizing unit.

During the demagnetizing process, the workpieces are moved over the pole gap at a speed of approximately 0.06 to 0.12 m/s. Please note, that you have to move the workpiece at the same speed approximately 30 cm before and after the demagnetizing unit.

This process can be repeated for large, critical parts to achieve better demagnetizing results.

A synthetic plate inserted on the pole surface protects finished workpieces becoming damaged.

Mass-produced parts can be demagnetized in a flat container made from unmagnetized material. To obtain optimal demagnetizing results, the parts should not contact each other.

The allowed operating time of the units is 100%. Therefore, they are also suited for a later integration into automated systems. They can be mounted as standing or suspended units.

With high alloy tempered workpieces, or components with complex shapes, the series installation of a Low-Frequency-Generator type 243 can considerably improve the demagnetizing effect.

Type 211-15/.. and 211-17/..

- Demagnetizing of workpieces with a thickness of up to 50 mm
- By default, the demagnetizing unit is supplied with rubber buffers, and it can also be screwed to the workplace.
- stand alone type with protection class IP 54, connecting cable with length 1.5 m, with switch and pilot light
- for automated systems with protection class IP 65, connecting cable with length 1.5 m, without switch and pilot light
- Voltage: 230 or 400 VAC
- Frequency: 50 - 60 Hz

Type 211-40/..

- Demagnetizing of workpieces with a thickness of up to 90 mm
- The demagnetizing unit is optionally supplied with assembly set (rubber buffer or mounting bracket).
- Connecting cable, length: 3,0 m
- Protection class: IP 65
- Voltage: 400 VAC
- Frequency: 50 - 60 Hz

Dimensions and technical data:

Type	Width [mm]	Demagnetizing area [mm]	Overall height [mm]	Overall lenghth [mm]	Power [VA]	Protection class	Weigth app. [kg]
211-15/16:230	148	160	121	278	850	IP 54	22
211-15/16 S-1:230	148	160	121	272	850	IP 65	22
211-15/25:230	148	250	121	368	1380	IP 54	30
211-15/25 S-1:230	148	250	121	362	1380	IP 65	30
211-15/40:230	148	400	121	518	2050	IP 54	46
211-15/40 S-1:230	148	400	121	512	2050	IP 65	46
211-15/50 S-1:230	148	500	121	612	2200	IP 65	57
211-17/25 S-1:400	166	250	148	403	1800	IP 65	37
211-17/40 S-1:400	166	400	148	553	2860	IP 65	54
211-17/50 S-1:400	166	500	148	653	3600	IP 65	67
211-17/60 S-1:400	166	600	148	753	4420	IP 65	80
211-17/65 S-1:400	166	650	148	803	4700	IP 65	84
211-17/70 S-1:400	166	700	148	853	5000	IP 65	92
211-17/80 S-1:400	166	800	148	953	5600	IP 65	100
211-17/90 S-1:400	166	900	148	1053	6400	IP 65	115
211-17/100 S-1:400	166	1000	148	1153	7000	IP 65	129
211-40/20 S-1:400	400	200	203	426	2000	IP 65	104
211-40/30 S-1:400	400	300	203	526	3000	IP 65	128
211-40/40 S-1:400	400	400	203	626	4000	IP 65	154
211-40/50 S-1:400	400	500	203	726	5000	IP 65	176
211-40/60 S-1:400	400	600	203	826	6000	IP 65	215
211-40/70 S-1:400	400	700	203	926	7400	IP 65	245
211-40/80 S-1:400	400	800	203	1026	8000	IP 65	271
211-40/90 S-1:400	400	900	203	1126	9000	IP 65	311
211-40/100 S-1:400	400	1000	203	1226	10000	IP 65	335
211-40/110 S-1:400	400	1100	203	1326	11000	IP 65	372
211-40/120 S-1:400	400	1200	203	1426	12000	IP 65	410

Special voltages and special lengths on demand.

Special solutions:

Tandem demagnetizing units for integration into conveyor systems:

- mechanically adjustable
- hydraulically adjustable
- with low-frequency generator

Demagnetizing-Systems

If steel and cast iron parts get into the magnetic field, residual magnetism remains. For further processing, it is very often necessary to demagnetize such parts sufficiently. The type 215 demagnetizing system is characterized by very strong demagnetizing power. It is used if complete demagnetizing of parts is necessary, e.g. for measuring tools, cutting tools or milling cutters.

Demagnetizing units ensure an extremely uniform demagnetizing of workpieces. Optimal parameter settings ensure best demagnetizing results. Belt speed, demagnetizing frequency and distance of demagnetizing units with conveyor ensure an extremly uniform demagnetizing of workpieces The device can be used as fully automatic complete system or independent single unit system.

The degree of demagnetizing depends on the following factors:

- size, shape and material of the parts to be demegnatized
- distance of the parts to the demagnetizing unit
- distance between the parts
- belt speed
- the frequency of the alternating magnetic field

Conveyor type

- for all sorts of parts
- continuous or reversing operation

Linear type

- for rode-shaped parts
- traversable demagnetizing unit

Roller conveyor type

- for very heavy parts
- continuous or reversing operation

Turntable

- for big round parts
- the part is rotated through the demagnetizing unit

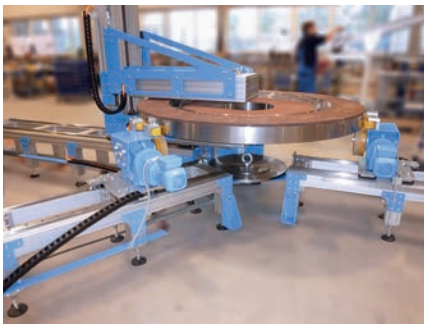

Table type

- for all sorts of parts
- part is manually moved through the demagnetizing area

Options:

- Adjustable belt speed
- Low-frequency generator or special frequencies
- Belt length and working height according to customer specifications
- Automatic and/or manual operation
- Actuation and Monitoring of belt start, belt end and height control of upper demagnetizing unit via light barriers and limit switches or external control signals
- Multi-reversing demagnetizing process through selectable number of cycles
- electro-hydraulic height adjustment of upper demagnetizing unit via display, or mechanical adjustment via crank handle
- Access barriers and protective covers
- support roller conveyors or support roller tables at belt start and belt end
- Adjustable material guide
- castors with clamp-on design or spindle feet
- demagnetizing system with drip pan and discharge nozzle
- Special voltage, special protection class
- Special coating

Design:

- Protection class: IP 54
- Mains: 400/230 VAC, 50 Hz (3Ph.+N+PE)
- Operating time: 100 %

Special solutions are our strength.

It´s our pleasure to advise you!

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Tunnel-Demagnetizing-Unit - Type 221

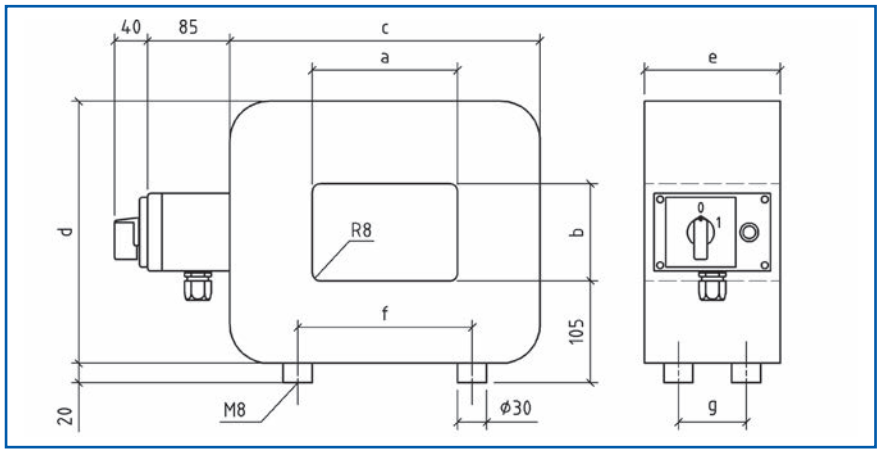
If steel and cast iron parts get into the magnetic field, residual magnetism remains. Our pole reversal control units reduce magnetic fields to a large extent, which are generated by clamping magnets. Often, however, the parts have to be fully demagnetized because of their intended use. Tunnel units are particularly suited to demagnetize large, thin-walled parts, e.g. tubes, rods, etc..

The parts to be demagnetized are moved through the tunnel and out of the alternating field at a speed of about 0,06 - 0,12 m/s. For parts which are difficult to demagnetize our low-frequency generator can be used for optimisation.
The demagnetizing coil is cast in plastic. In addition, fixing threads M8 as well as an on/off switch with signal lamp are available.

Design:
- Protection class: IP 65 in the sphere of action, IP 40 for electric connection unit
- Operating time: 100 %

Nominal Values:
- Main voltage: 230 V or 400 V
- Single-phase current
- Main frequency: 50/60 Hz

(other voltages upon request)

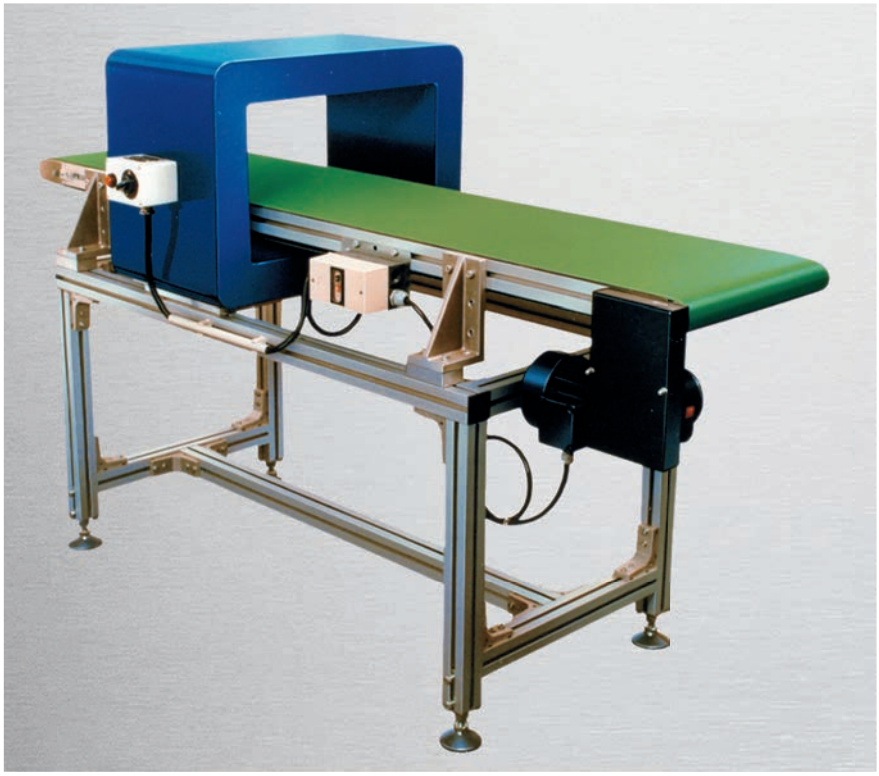


Dimensions and technical data:

Type	a [mm]	b [mm]	c [mm]	d [mm]	e [mm]	f [mm]	g [mm]	Power [VA]	Weight app. [kg]
221-15/10	150	100	320	270	140	180	70	820	25
221-26/13	260	130	430	300	140	290	70	1800	27
221-25/25	250	250	420	420	230	280	160	2300	44
221-40/20	400	200	570	370	350	430	270	3500	78
221-40/35	400	350	570	520	350	430	270	4300	92
221-40/40	400	400	570	570	350	430	270	5000	100
221-55/55	550	550	720	720	350	580	270	6500	145
221-75/55	750	550	920	720	350	780	270	9000	160

Other sizes avaible on request.

Tunnel-Demagnetizing-Unit with transport belt - Type 225



Application:
Demagnetizing units with transport belt ensure an extremely uniform demagnetizing of thin-walled work-pieces. Optimal parameter settings ensure best demagnetizing results. Belt speed, demagnetizing frequency and distance of demagnetizing unit to work-piece are adjustable. The device can be used as fully automatic complete system or independent single unit system.

Design:
- Protection class: IP 54
- Mains: 400/230 VAC, 50 Hz (3Ph.+N+PE)
- Operating time: 100 %

Options:
- Adjustable belt-speed
- Low-frequency generator
- Belt length and working height according to customer specifications
- Automatic and/or manual operation
- Actuation and Monitoring of demagnetizing units via light barriers and limit switches or external control signals
- Multi-reversing demagnetizing process through selectable number of cycles
- Access barriers and protective covers
- Adjustable material guide
- Special voltage
- Special protection class
- Special coating

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243

Low-Frequency-Generator

Application:

Low frequency generators are used to improve the demagnetizing effects of plate and tunnel demagnetizing units.

Low frequency generators from WAGNER reduce the mains frequency to 16.5 Hz. This allows greater field strengths in the alternating magnetic field of demagnetizing units and improves the demagnetizing quality considerably, in particular in case of high-alloyed and hardened materials.

In case of massive materials, mass parts and bulk materials in containers the depths effect is considerably increased.

All alternating current demagnetizing units from WAGNER can be operated with the low-frequency generator, type 243, as cut-in unit. It needs to be considered that the nominal output of the low frequency generator must be sufficient for the connected unit.

Design:

The unit is integrated in a housing with protection class IP 20, which is easy to assemble and service, and it complies with all EMC guidelines. In order to comply with protection class IP 65, the unit is additionally integrated in a housing complying with this protection class.

Special features:

- easy installation and assembly of the compact unit
- Function monitoring of:
  overcurrent, heat-sink temperature and the 16.5 Hz function
- Feedback via 24V control signals
- Switching off the demagnetizing unit in ramps of 16.5 Hz
- Display of the demagnetizing current via LED bargraph display
- To increase the output, the units can be operated in master/slave mode

Performance:

- Operating time: 100%
- Mains frequency: 50/60 Hz
- Input voltage: 230 or 400 V AC depending on the model, max. 15 or 30 A for the demagnetizing unit

Dimensions and technical data:

Type	Article no.	Protection class IP	Connection [Volt] *	Output [VA]	Dimensions [W x H x D]	Weight [kg]	Power choke [Art. no.]
243-15/16.5:230	1064367	20	230	3450	160x175x128	2,9	0216339
243-15/16.5:400	1067010	20	400	6000	160x175x128	2,9	0216339
243-15/16.5 S-1:230	1067033	65	230	3450	200x400x150	8,0	included
243-15/16.5 S-1:400	1067034	65	400	6000	200x400x150	8,0	included
243-15/16.5 S-2:230	1067035	65	230	3450	200x400x150	8,0	included
243-15/16.5 S-2:400	1067036	65	400	6000	200x400x150	8,0	included
243-30/16.5:230	1064368	20	230	6900	160x175x128	2,9	0216340
243-30/16.5:400	1067011	20	400	12000	160x175x128	2,9	0216340
243-30/16.5 S-1:230	1065623	65	230	6900	200x400x150	8,0	included
243-30/16.5 S-1:400	1067030	65	400	12000	200x400x150	8,0	included
243-30/16.5 S-2:230	1067031	65	230	6900	200x400x150	8,0	included
243-30/16.5 S-2:400	1067032	65	400	12000	200x400x150	8,0	included

* Mains frequency: 50/60 Hz

Low-Frequency-Generators IP 20

The low frequency generator plus corresponding power choke is to be installed in the electrical cabinet which is provided by the customer.

Low-Frequency-Generators IP 65

The low frequency generator is integrated in the housing for wall installation.

S-1 control via external signals (24V DC)
S-2 with integrated switch "50 Hz / OFF / 16,5 Hz"

692-6

Magnetic field meter

The magnetic field meter is a handy and practical device to measure static or dynamic magnetic fields.

Technical data:

- Measuring range: 0 bis 3000 mT
- Measuring accuracy: ± 5% of display value
- Minimal value: 0,01 mT
- External data output: Digital output (USB) and analog output
- Energy supply: Batteries or external power source
- Application temperature: 0 bis 40 °C
- Dimensions (LxWxH): Measuring unit 140x64x30 mm
- Weight: 250 g (including sensor and batteries)

Special features:

- The meter is compact, light and easy to operate.
- Strong magnetic forces within the range of 0 to 3000 mT can be measured.
- The high resolution measurement mode ensures precise measuring.
- The sensor can be replaced without complex calibration.
- The membrane keypad provides excellent dust protection.
- The automatic switch-off function prevents any unnecessary battery consumption.
- To allow several hours of use of the sensor, an external power source can be connected.
- Both digital and analog signals can be output. The digital output via USB allows further processing of the data on a PC.